SUMMARY MINUTES

Scientific and Statistical Committee

Pacific Fishery Management Council
Multnomah Room
Hyatt Regency Oregon Convention Center
375 NE Holladay Street, Portland, OR 97232
Telephone: 971-222-1234
April 3, 2026 - **Online**
April 6-7, 2026 - **In Person**

Members in Attendance

Dr. Cheryl Barnes, Oregon State University and Oregon Department of Fish and Wildlife, Newport, OR
Dr. Aaron Berger, National Marine Fisheries Service Northwest Fisheries Science Center, Newport, OR
Dr. John Budrick, California Department of Fish and Wildlife, San Carlos, CA
Dr. Tim Copeland, Idaho Department of Fish and Game, Boise, ID
Dr. John Field, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA
Dr. Chris Free, University of California Santa Barbara, Santa Barbara, CA
Dr. Owen Hamel, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
Dr. Michael Hinton, San Diego, CA
Dr. Dan Holland, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
Dr. Galen Johnson, Northwest Indian Fisheries Commission, Olympia, WA
Dr. André Punt, University of Washington, Seattle, WA
Dr. Matthew Reimer, University of California Davis, Davis, CA
Dr. Alberto Rovellini, University of Washington, Seattle, WA
Dr. William Satterthwaite, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA
Dr. Jason Schaffler (SSC Chair), Muckleshoot Indian Tribe, Auburn, WA
Dr. Tien-Shui Tsou, Washington Department of Fish and Wildlife, Olympia, WA
Dr. Cisco Werner, Silver Spring, MD

Members Absent

None

SSC Recusals for the March 2026 Meeting		
SSC Member	**Issue**	**Reason**
Dr. Owen Hamel	C.3 Widow Rockfish Alternative Harvest Control Rule	Internal reviewer on assessment and author supervisor
Dr. Will Satterthwaite	D.3 Sacramento River Fall Chinook Terms of Reference	Chair of workgroup whose product is being reviewed

SSC Administrative Matters

Dr. Galen Johnson (SSC Chair) called the meeting to order. Mr. Merrick Burden briefed the Scientific and Statistical Committee (SSC) on their tasks at this meeting and answered questions from SSC members.

The April 2026 SSC agenda was approved. Several minor edits in italic notes were made prior to March 2026 SSC minutes being adopted as final. The April 2026 briefing book version of the March 2026 SSC Minutes will be updated to reflect SSC approved changes, and the final document will be posted to the SSC minutes archive website.

Subcommittee assignments were reviewed with no modifications.

Open discussion included comments about the importance of the recusal process and the tradeoffs between avoiding conflicts of interest (real or perceived) versus involving the most qualified experts when selecting reviewers. There was also a broader discussion on how stocks could be managed with a different framing of the Magnuson-Stevens Act (MSA) that may be less conventional yet effective and in line with regulatory guidance and legislative requirements. Finally, there was a brief discussion and acknowledgement of the use of predictive text algorithms in synthesis and process evaluations in decision making processes and the need for ongoing conversations around expectations.

Per suggestion in March 2024, a public comment period continued to be conducted at the start of each day's meeting or strategically placed in the Agenda to allow for relevant public comments to be made and considered prior to the SSC taking up an Agenda Item.

I. Administrative Matters

1. Membership Appointments (SSC Closed Session)

C. Groundfish Management

3. Widow Rockfish Alternative Harvest Control Rule

The Scientific and Statistical Committee (SSC) reviewed the analysis of the Council-proposed annual catch limit (ACL) alternatives for widow rockfish (Agenda Item C.3 Attachment 1) and discussed their potential risks and impacts as well as methods for deriving Overfishing Limits (OFLs) and Acceptable Biological Catches (ABCs) for selected alternatives. Jessi Waller (Council staff) was available to answer questions and clarify Council requests.

The SSC appreciates the work of the STAT to produce this analysis, which the SSC found to be correctly conducted and useful for evaluating short-term risks and medium-term tradeoffs associated with the alternatives. The analysis shows that alternatives with higher catches in 2027 and 2028 require lower catches from 2029 to 2036 to reach a similar fraction of unfished spawning output in 2036. The 2027 and 2028 ACLs from Alternatives 2a, 2b, and 2c exceed the OFL from the default control rule (Alternative 1), which is calculated as the yield resulting from $F_{SPR=50\%}$. Therefore, if fully attained, ACLs from Alternatives 2a, 2b, and 2c would have a greater than 50% chance of exceeding $F_{SPR=50\%}$. Under a conventional reading of the Pacific Coast Groundfish Fishery Management Plan and the default OFL control rule, this would be considered to be overfishing.

The SSC found that the analysis does not explicitly address the long-term risks and impacts of the *ad hoc* Council-proposed catch limits for 2027 and 2028. This is because the long-term risks and impacts of these catch limits also depend on Council decisions about catch limits after 2028. Although the analysis presented in Appendix A of Agenda Item C.3 Attachment 1 shows that switching to the default ACL harvest control rule in 2029 would return stock to $B_{40\%}$ no later than 2031 under all of the alternatives, this is based on a deterministic catch projection. A stochastic management strategy evaluation (with a defined harvest control rule after 2028) would be necessary to fully understand the long-term risks of the alternative *ad hoc* catch limits proposed for 2027-2028.

The SSC discussed alternative ways to define the OFL that could be consistent with recent technical guidance (March 2026, Informational Report 4). The SSC agreed that a harvest control rule that sets the OFL at a constant proxy MSY value whenever the stock is estimated to be above the proxy B_{MSY} ($B_{40\%}$) would be consistent with that guidance. Given that the stock is currently estimated to be above the $B_{40\%}$ reference point, the SSC determined that the OFL should be set equal to the yield corresponding to $B_{40\%}$, which is 6,239 mt (March 2026, Agenda Item D.2, Attachment 1, Table v). Under the assumption that the ABCs are set to the ACL values provided in the alternatives, only the ABCs for 2027 and 2028 proposed under Alternative 1 (4,596 and 4,810 mt) and Alternative 2c (5,858 mt) are below the OFL of 6,239 mt. The ABCs for 2027 and 2028 proposed under Alternative 2a (8,400 mt) and Alternative 2b (6,720 mt) exceed this OFL and thus lead to a probability of overfishing (P*) greater than 0.5. The SSC calculated the buffer and implied P* associated with each alternative assuming a sigma of 0.5, which is the default for a Category 1 assessment, provided in the table below:

	Alt 1	**Alt 2a**	**Alt 2b**	**Alt 2c**

Value	2027	2028	2027	2028	2027	2028	2027	2028
OFL (mt)	4,916	5,172	6,239	6,239	6,239	6,239	6,239	6,239
ABC = ACL (mt)	4,596	4,810	8,400	8,400	6,720	6,720	5,858	5,858
Implied ABC buffer	0.935	0.930	1.346	1.346	1.077	1.077	0.939	0.939
Sigma	0.5375	0.5750	0.5	0.5	0.5	0.5	0.5	0.5
Implied P*	0.45	0.45	0.724	0.724	0.559	0.559	0.450	0.450

If the Council wanted to set the ABCs by specifying a risk tolerance policy, it could select ABCs associated with any of the following P* values:

Value	P* = 0.45		P* = 0.40		P* = 0.35		P* = 0.30	
	2027	2028	2027	2028	2027	2028	2027	2028
OFL (mt)	6,239	6,239	6,239	6,239	6,239	6,239	6,239	6,239
Sigma	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
ABC buffer	0.939	0.939	0.881	0.881	0.825	0.825	0.769	0.769
ABC = ACL (mt)	5,858	5,858	5,497	5,497	5,147	5,147	4,797	4,797

Any of the ABCs from Alternatives 1 or 2c or those from the P*-based values in the table above would be consistent with the OFL resulting from the approach based on equilibrium MSY and past default practices around risk tolerance with P* ≤ 0.45. Ramp down approaches, which set the 2027 and 2028 ABCs to any value less than the OFL, would be consistent with an existing precedent for *ad hoc* phase in control rules (e.g., yellowtail rockfish, March 2026, Agenda Item D.6, Attachment 5).

As stated in March 2026 (D.4.a Supplemental SSC Report 1), the SSC emphasizes that its application of this approach to deriving the OFL is limited to this specific case. In particular, the SSC's discussion and recommendations would differ for a stock assessed or projected to be below the proxy B_{MSY} reference point. More broadly, the SSC cautions that the frequent use of *ad hoc* harvest control rules would add workload and result in the use of harvest policies that have not been evaluated using management strategy evaluation for their ability to meet management objectives.

SSC Notes

Switching from a constant MSY-derived catch in 2027-2028 to the default HCR in 2029 introduces a sharp step change that could be a concern. In general, steep transitions or discontinuities in harvest control rules can have undesirable properties (e.g., variable catch).

An MSY-based approach seems sensible and there is precedent. However, one problem with the MSY approach is that a thorough analysis of uncertainty around the estimate of MSY has not been conducted. MSY is deterministic and it is a function of steepness, which is assumed / pre-specified in the model. Steepness is not well known for widow rockfish as evidenced by the fact that steepness defines the axis of uncertainty in the states of nature.

As part of this analysis the SSC is not recommending catch limits for 2029 onwards.

Alternatives 2a-c are not feedback HCRs. Alternative language may include: ad-hoc HCRs, phase-in HCR, Council-recommended catch limits, etc.

From this analysis, the SSC calculated that only Alternative 1 (default) is likely to prevent the stock from experiencing overfishing, defined here as F exceeding the F_{target}, in 2027. Under Alternatives 2a, 2b, and 2c, the stock has an 84%, 72%, and 63% probability of experiencing overfishing in 2027, respectively.

Another wording of the above: Because the ACLs from Alternatives 2a, 2b, and 2c exceed the OFL based on the default harvest control rule (Alternative 1), which has a 50% probability of resulting in overfishing by definition, these ACLs all have a greater than 50% chance of resulting in overfishing.

As noted in the cited technical guidance, "when virgin biomass can be more reliably estimated than biomass at MSY, then B_{MSY} can be based on a specified percentage of the unfished biomass ($\%B_0$). This can occur if historical fishing levels have been low enough such that the SSB at the onset of data collection is not much below B_0 and the data are informative about B_0. This situation is much more common on the West Coast and Alaska versus in New England with its long history of fishing." Estimates of B_0 in the update assessment were relatively stable across all sensitivity model runs.

Moreover, guidance on consistency among proxy values and the impact of changing the stock status metric to spawning output indicated that the proxy MSY based upon the biomass target would meet that guidance better than that based on the F_{SPR} target. The F_{SPR} target that leads to $B_{40\%}$ in equilibrium is approximately $F_{46\%}$. Thus, moving to $B_{40\%}$ MSY is equivalent to moving to a $F_{46\%}$ MSY.

A subsequent stock assessment will also help understand the longer term consequences of the ad hoc catch limits.

Alternative 2c is noted to have a greater than 50% probability of maintaining the stock above $B_{40\%}$ in 2029. It is also noted to have a greater than 50% probability of exceeding $F_{SPR=50\%}$, which is often used to define the OFL, and in those instances would mean overfishing. It is also noted to result in a catch (ACL=ABC) less than the OFL (6,239) with an implied P of 0.45 (i.e., probability*

of overfishing is less than 50%). Collectively, these points could be interpreted as a conflict. However, that is not the case because the F_{SPR} leading to $B_{40\%}$ ($F_{SPR=45.83\%}$) in equilibrium is being used to calculate the MSY proxy for defining the constant OFL when the stock is above 40%. Since $F_{SPR=50\%}$ is not being applied in this case for defining annual OFLs, the relative size of the implied OFL from that fishing rate is no longer relevant.

The deterministic B_{MSY} is not consistent with the guidance of when steepness is pre-specified, and also does not account for time-variation in productivity.

The sigma is set at 0.5 and is not time-varying as it is applied to a constant MSY value, which does not change over time. However, as the time from the assessment gets larger, the uncertainty in the status does increase, such that at some point (based on probability of being below proxy Bmsy) there should be a change in the sigma (such as when we switch to MSY and category 3 for very old assessments).

The catch projections assume full attainment, which might not actually happen, which means that Alternative 2b may also have a greater than 50% chance of being above $B_{40\%}$ in 2029.

The analysis also shows that only Alternatives 1 (default) and 2c (equilibrium MSY at B_{40}) have a greater than 50% probability of maintaining stock size above $B_{40\%}$ in 2029.

The OFL values from Alternative 1 are well below the $F_{SPR=50\%}$ proxy MSY level, when they would be expected to be close to that value given the stock is a bit above $B_{40\%}$ in those years. This is due to the interplay of the age structure and midwater fleet selectivity in 2027-2028 coming out of the assessment. This mismatch was an important factor in the SSC deliberations around a constant MSY value being used to define the OFL in 2027-2028.

C. Groundfish Management

4. Harvest Specifications for 2027-28 Fisheries

The Scientific and Statistical Committee (SSC) reviewed the interim 2027 and 2028 overfishing limits (OFLs) and acceptable biological catches (ABCs) for US West Coast groundfish stocks and stock complexes identified in the harvest specification impact analyses for the 2027-28 biennium (Agenda Item C.4 Attachment 1). This included provisional harvest specifications using the default harvest control rules (HCRs) and alternative HCRs under consideration.

The SSC endorses the OFLs and ABCs listed in Appendix 1 of Attachment 1 that use the default HCR. The SSC also endorses the OFLs and ABCs in Table 4 (Agenda Item C.4 Attachment 1) that were provided under alternative HCRs (preliminary preferred alternative 2) for the remaining stocks under consideration.

SSC Notes

There was a typo in the Description column of Table 4 (pp. 10-11 of Attachment 1) for chilipepper rockfish apportionment- apportionment to the northern region is 7% (not 9%). However, the harvest specifications for chilipepper rockfish north/south presented in Table 4 are correct.

D. Salmon Management

3. Sacramento River Fall Chinook Revised Spawner Abundance at Maximum Sustainable Yield – Terms of Reference

The Scientific and Statistical Committee (SSC) received a presentation from Angela Forristall (Council staff) on and discussed marked up and clean versions of a "Draft Terms of Reference Revised Sacramento River Fall Chinook S_{MSY} estimation of the S_{MP}". The SSC offers the following comments on the scope, peer review charge, structure of peer review process and meetings, and schedule and milestones.

Peer Review Charge

The evaluation of the appropriateness of the approach directed by the Council to estimate S_{MSY} (#5 in the peer review charge of the TOR) on the basis of the formula $S_{MSY} = F_{MSY} \times S_{MP}$ should occur before the evaluation of the appropriateness of the datasets. This evaluation should be made relative to the scientific support for the status quo.

Structure of Peer Review Process and Meetings

Soliciting preliminary questions and concerns from the panelists increases the likelihood of a successful outcome from the review. However, it is not necessary to limit the number of questions and concerns per panelist. The Chair should lead the compiling and prioritization of questions in conjunction with the Panel for transmitting to the Sacramento River Work Group (SRWG) more than a week in advance of the initial meeting. Additional analyses considered for subsequent meetings should be discussed among the Chair, Panel, and SRWG.

Peer Review Panelists

The Peer Review Panel should have at least three members to ensure sufficient technical expertise for a thorough review. Therefore, the Panel should consist of one Chair and at least two additional members. More than seven panelists in total can result in increased difficulty with achieving consensus and may result in duplicative expertise that is not needed for a thorough review. Ideally, at least one panelist should have expertise based on direct experience with Sacramento River salmonid research. At a minimum, expertise in comparable large river systems with substantial hatchery production and water management would be useful.

The groundfish and coastal pelagic species Stock Assessment Review Panel (STAR) processes have an SSC member as Chair of the Panel and another SSC member often serves on the Panel, which can bring SSC and Council history and context to the Panel and improves the communication of Panel discussions to the SSC during later stages of review. The SSC therefore recommends that at least one member of the Peer Review Panel be a member of the SSC.

Schedule and Milestones

There is minimal time between peer review meetings and little flexibility due to the need for public notifications to meet briefing book deadlines for the September 2026 Council meeting. Therefore, it could be advantageous if meetings are scheduled such that the final report would be completed in time for the November Council meeting. The need for meetings subsequent to the initial meeting should be discussed and agreed upon by the Chair, Panel, and SRWG to ensure adequate progress on items raised for additional analyses can be completed.

It could be useful to discuss the relative trade-offs associated with hosting the initial review meeting in California where access may be improved for stakeholders and the analysts versus at the Council offices where hybrid participation would be maximized.

SSC Notes

It is not possible to apply typical approaches for estimating S_{MSY} given the nature of the data sets and the presence of many hatchery-origin fish on the spawning grounds. For some years, recruitment can only be estimated at the juvenile stage, while it is possible to identify the escapement that maximizes juvenile production, this does not translate directly into harvestable fish or potential escapement in the absence of fishing. Even when recruits can be estimated as potential escapement in the absence of fishing, consistent units and plausible mechanistic relationships are critical. For example, the classic approach for direct estimation of MSY from a spawner-recruit curve involves maximizing the vertical distance between the spawner-recruit curve and the 1:1 or self-replacement line. The 1:1 line only represents self-replacement if spawners and recruits are measured in the same units (e.g. natural-origin for both spawners and recruits), but a spawner-recruit curve only makes mechanistic sense if recruits are produced from spawners (e.g., natural-origin recruits produced by natural-area spawners), and the distance above the 1:1 line only represents the total surplus available for harvest if recruits (produced by spawners) are the only source of yield. The presence of substantial numbers of hatchery derived recruits on the spawning grounds complicates these analyses by making it impossible to satisfy all of these conditions simultaneously.

Should the SSC recommend holding the initial meeting at the SWFSC Santa Cruz lab or other locations in California be considered?

The current SRFC S_{MSY} and conservation objective are known to contain multiple shortcomings https://www.pcouncil.org/documents/2022/11/d-2-a-supplemental-ssc-report-1-4.pdf/. In brief, it is based on logically flawed premises (see previous citation), the arithmetic leading to the specific numerical value given that premise cannot be reproduced from the currently available data from the years referenced, and includes an "interim" adjustment where the condition identified as prompting the "interim" adjustment no longer applies.

D. Salmon Management

5. Methodology Review Preliminary Topic Selection

The Scientific and Statistical Committee (SSC) met with the Salmon Technical Team (STT) to discuss potential topics to be reviewed by the SSC Salmon Subcommittee during fall 2026. The STT did not propose any methodology review topics to the SSC.

There are several items that the SSC has discussed during previous years that remain worthy of consideration should the analyses be complete in time for the 2026 Salmon Methodology Review. Should a methodology review meeting occur in the fall of 2026, there are also a few informational items (i.e, item 6) that might be included but likely do not need SSC or SSC Salmon Subcommittee review.

1. Bias and uncertainty in forecasts. Forecasts and abundance estimates should include uncertainty bounds, and there would be value in consistent metrics of performance when comparing across forecasts for different stocks or methods for a particular stock. The methods in Satterthwaite & Shelton (2023) could be used to quantify forecast performance, including measures of bias and uncertainty. Although this paper may be covered by a planned September 2026 agenda item on risk management, a methodology review could focus on the aspects related to quantifying forecast performance as opposed to potential management responses to that performance.
2. Sacramento Index (SI) forecast. Exploration of alternative approaches to the SI forecast was identified as a potential topic in April 2023 and 2024, and remains a high priority topic (Agenda Item E.4.a, Supplemental SSC Report 1 April 2023 and April 2024) and forecast performance was mentioned in multiple public comments this meeting. However, the SI itself is not a good measure of ocean abundance nor of potential escapement in the absence of fishing compared to the cohort reconstruction that was reviewed during the 2024 Salmon Methodology Review (Chen et al. 2024). There could be value in receiving a progress report on implementing a cohort reconstruction for Sacramento River Fall Chinook and it may be more useful to move away from the SI rather than attempt to refine its forecast.
3. Comprehensive review of salmon reference points. Many are based on old data that may not reflect current productivity or capacity. The SSC sees value in compiling and verifying information on the methods used and years informing the inputs to the analyses used to support the reference points for each salmon stock, some of which currently lack supporting citations. Conservation objectives and reference points (e.g., S_{MSY} and F_{MSY}) for multiple stocks do not incorporate any information from the last 40+ years on run sizes, productivity, or other available biological parameters.
4. The Klamath River Fall Chinook Workgroup (KRWG (2024)) produced an updated spawner-recruit analysis for Klamath River Fall Chinook using the methods used to derive the reference points currently in use; the suitability of that analysis for potentially updating reference points could readily be evaluated.
5. Review of SAFE/Pre-I/II/III. Due to workload timing and capacity, the SSC review for the Pre-I report continues to be challenging during the March Council meeting. Comprehensively reviewing the SAFE/Pre-I/II/III documents during methodology review, or separately over the summer, for accuracy and necessity could help to streamline reviews of future iterations during the March Council meeting.
6. There are two informational items suggested. An informational report may be provided on a planned Chinook FRAM base period update due to a data change affecting ~20 years of

Canadian sport catch estimates that were used for the FRAM base period. An informational report may be provided on the status of the Pacific Salmon Commission's Chinook Technical Committee Statistical Catch-at-Age model that is currently under development. Including these items in a methodology review would ensure that changes in other salmon management arenas can be considered prior to preseason management discussion in 2027.

SSC Notes

Lower Columbia River Natural Chinook forecast methods. This stock is ESA listed. Washington Department of Fish and Wildlife (WDFW) and Oregon Department of Fish and Wildlife are updating forecast methods for this stock and expect those to be ready during 2027. Lower Columbia River Hatchery Chinook (Tule) are one of the major targeted stocks in Washington and northern Oregon. Forecast methods should be evaluated for the hatchery and natural stock even though they are not Council managed stocks. The rationale is similar to that for OPI hatchery coho, which often support Council managed coho fisheries. Improvements to large components are warranted since misspecifications for these stocks can lead to larger-than-modeled impacts to smaller natural stocks.

Newly developed in-season catch harvest guidelines or quotas for South of Falcon fisheries based on the Sacramento Harvest Model (SHM). The application started in 2025 for California sport Chinook fishery, and is extending to the commercial troll fishery in 2026. California Department of Fish and Wildlife is preparing information for the public on how these catch limits are informed by the SHM. The SHM has been reviewed previously, although not with this application in mind.

Integration of salmon stoplight indicators into the pre-season salmon process. Currently, the salmon stoplight indicators are presented in the California Current Integrated Ecosystem Assessment Team's Ecosystem Status Report each March. This type of ecosystem information may be valuable to pre-season salmon management analyses and actions. There is at least one relevant manuscript currently being revised for publication that could be ready for methodology review in 2027.

Application of risk tables to the Salmon Fishery Management Plan (FMP). Council action in March 2024 tasked the Ecosystem Work Group to work with National Marine Fisheries Service and the appropriate advisory bodies to "broaden the application of risk tables to the Salmon FMP as described in Agenda Item H.2.a Supplemental HC Report 1." (An agenda item on risk management framework scoping in salmon management is tentatively scheduled for September 2026.)

Investigation of whether the performance of the Oregon Production Index-Hatchery (OPI-H) forecast might be improved with disaggregation. The SSC reiterates its previously stated position that the OPI-H team should explore breaking the forecast into key component stocks, including natural origin stocks, and should clearly and completely document how the aggregate OPI-H

forecast is broken into the components used by the STT and modelers (e.g., Fishery Regulation Assessment Model). This was identified as a priority in 2021, 2022, 2024 and 2025.

Collin Edwards (WDFW) gave a brief overview for a temporary base period fix applied this year to the Chinook FRAM to correct a disconnect in effort and catch for the sport catch in Puget Sound area 8D (Tulalip bubble fishery). When the comanagers update the Chinook FRAM base period to reflect new catch estimates for the past 20 years of Canadian sport fisheries, this issue will also be addressed.

The SSC reiterates its suggestion to establish a formal process that outlines how and when salmon reference points and conservation objectives are reviewed and updated (see Agenda Item D.4.a Supplemental SSC Report *1 April 2022 and the SSC-SSC report appended to Agenda Item C.10.a Supplemental SSC Report 1 June 2021).In contrast to how infrequently salmon reference points are updated, the values for reference points are routinely updated as a part of the groundfish stock assessment process, and populations with assessments that do not incorporate recent data are identified as having greater uncertainty.*

F. Coastal Pelagic Species Management

5. Fishery Management Plan Amendment – Sardine Stock Definition and Fishery Management Unit Revision

The Scientific and Statistical Committee (SSC) reviewed the "Analysis of the PPA Sardine stock Definition and Review of Next Steps for Revision of the Sardine stock definition in the Coastal Pelagic Species Fishery Management Plan" (Agenda Item F.5, Attachment 1) along with the "Supplemental Report: Planning for Next Steps" (F.5, Supplemental Attachment 2) and the Supplemental NMFS Report. Katrina Bernaus (Council Staff) was available to clarify Council requests and answer questions.

Pacific Sardine Stock Definition and Workload Implications

Alternative 1, which would create a single management stock based on all Pacific Sardine in U.S. waters, is compatible with scientific information indicating a lack of genetic differentiation between what are currently recognized as a Northern Subpopulation (NSP) and a Southern Subpopulation. Evidence suggests a genetically well-mixed population that spans international boundaries. A management stock operationally defined to exclude the part of the population in Mexico may be necessary for management tractability. However, biological analyses to derive reference points and overfishing limit (OFL), acceptable biological catch (ABC) and harvest guideline (HG) harvest control rules (HCRs) will need to account for the biological dynamics and removals occurring throughout the biological range.

Substantial review and revision of reference points and the inputs to HCRs will be necessary if Alternative 1 is adopted as the interim Final Preferred Alternative (iFPA). Although the general form of the HCRs may not need to change, the biological analyses and assumptions underpinning the current values or functional forms for E_{MSY} and MSST reflect a stock structure hypothesis that

would no longer be supported. Similarly, values or functional forms for FRACTION, CUTOFF, and MAXCAT were informed by simulations that assumed a different biological understanding than would be implied by Alternative 1. Restricting the assessed BIOMASS to U.S. waters might eliminate the need for a DISTRIBUTION term in the HG HCR, but biological connectivity with Mexico would need to be accounted for when evaluating the HCRs. The workload associated with reviewing and revising HCRs and biological reference points will be substantial, and the timeline presented in Attachment 1 and Supplemental Attachment 2 is almost certainly unrealistically short.

A benchmark or research assessment of Pacific Sardine coastwide would be necessary to derive the updated biological parameters that would allow for selection of biological reference points. Such an assessment would also be the first step in providing the biological parameters needed to analyze the consequences of alternative HCRs using management strategy evaluation (MSE). Efficient development of an MSE that would address management needs would require close collaboration between analysts, the SSC, the CPS advisory subpanel (CPSAS), the CPS Management Team (CPSMT), and Council. Consideration should be given during the MSE to include evaluation of HCRs that depend on survey estimates of abundance rather than assessment model-based estimates of age-1+ biomass.

Supplemental NMFS Report 1 indicated that NMFS could complete a new benchmark assessment in time for review by April of 2028. A new assessment based on a revised stock definition would be necessary to allow informed review of the biological reference points and HCRs. Therefore, completion of a coastwide benchmark assessment for Pacific Sardine should be a high priority if the stock definition is changed. An update assessment of the NSP could address stakeholder questions about age-1+ biomass relative to the current NSP MSST, which might remove some of the constraints currently faced by the fishery. The SSC strongly recommends proceeding with an agenda item in June 2026 to more fully explore the workload tradeoffs and prioritization necessary for effective and timely Coastal Pelagic Species management.

Japanese Sardine

While the SSC concurs that including Japanese Sardine in the assessed biomass and counting Japanese sardines against the catch limit is appropriate given the lack of information available for realtime distinction between the species, some clarification of the SSC's previous recommendations regarding Japanese Sardine is warranted relative to how they are characterized on page 9 of Attachment 1. The SSC did not make a direct recommendation to treat Japanese Sardine the same way Pacific Sardine are treated. The SSC only recommended that the way Japanese Sardine are treated when assessing biomass should be consistent with the way Japanese Sardine are treated in comparing catch against catch limits -- i.e., either included in both calculations or excluded from both calculations.

SSC Notes

The operating model for any MSE should include Mexico, but evaluate management in US waters. Management in Mexico impacts sardine dynamics in US waters.

The most appropriate way to manage Pacific Sardine would be cross-border, but there is limited collaboration with Mexico on sardine management at present.

Past efforts to update E_{MSY} and the HCR for Pacific Sardine, or the updated management framework for northern anchovy, could serve as useful models for a relatively efficient process.

F. Coastal Pelagic Species Management

2. Methodology Review: Integrated West Coast Pelagics Survey

A Methodology Review Panel was held from 24-26 February 2026 to perform a methodology review related to the switch from the Nordic 264 surface trawl to the new Multi-Function Trawl (MFT) net on the Integrated West Coast Pelagics Survey (IWCPS). The IWCPS provides the survey-related inputs for the stock assessments for Pacific Sardine, northern anchovy, and Pacific mackerel. The MFT was used during the 2024 and 2025 surveys for coastal pelagic species (CPS). The MFT has a different configuration and fishes deeper than the Nordic 264, potentially changing species- and length-composition data and this was a focus for the review. The Terms of the Reference for the review included two main questions: (1) Has the switch from the Nordic 264 to the new MFT net resulted in important changes to species- and length-based selectivities? and (2) If so, have these changes resulted in important changes to the survey-derived data inputs for the stock assessment?

The Panel was unable to draw definite conclusions about selectivity (species or length) because data for the two nets were not collected during the same years. Thus, it was not possible for the Panel to clearly distinguish possible changes in selectivity from natural variability. Nevertheless, the Panel concluded that the MFT appears to be more efficient and have higher catch volumes for CPS even though the magnitude of the potential increase in efficiency and catch could not be quantified. The Panel endorsed the continued use of the IWCPS to provide the survey-related inputs to the stock assessments for Pacific Sardine, northern anchovy, and Pacific mackerel. It recommended that work continue to quantify any changes in species- and length-composition data and emphasized that conducting comparative trawling or other efficiency studies is essential to fully comprehend the distinctions between the two types of trawls. The Panel identified a variety of research recommendations related to refining the understanding of the performance of the MFT and the potential for changed species- and length-based selectivities.

The Panel recommended that near-term base models within benchmark assessments for CPS should initially assume no change in survey trawl selectivity or acoustic catchability starting in 2024 because effects of changing the net on selectivity have not been identified. Further, length compositions between nets indicated that selectivity changes were likely minor. The Panel also recommended that sensitivity analyses that include time blocking can be used to evaluate potential changes in survey catches.

The Scientific and Statistical Committee (SSC) endorsed the conclusions and recommendations from the Methodology Review Panel. However, the SSC emphasizes that paired trawling is the best way to quantify the changes in survey operations but no such data were available for the review.

The SSC highlighted that the differences in length-compositions for Pacific mackerel between the Nordic 264 and the MFT indicate that there are some differences in length selectivity between the two nets, as the larger MFT net appears to be more effective at catching the faster swimming large Pacific mackerel than the Nordic 264. This provides support for conducting paired trawls in the future to quantify changes in species- and length-based selectivities.

SSC Notes

Differences in length-selectivity for sardine should become more apparent if / when a large cohort passes through the population.

Conduct research on other aspects of the survey, including those related to its acoustic aspects, as identified by previous Methodology Reviews.

F. Coastal Pelagic Species Management

4. Pacific Sardine Specifications and Management Measures for 2026-27 – Final Action

The Scientific and Statistical Committee (SSC) discussed Pacific Sardine specifications for 2026-2027. New information available relative to the biomass and productivity of the Northern Subpopulation (NSP) of Pacific Sardine is restricted to the 2025 survey biomass estimate, which is in units of survey-selected biomass. Age 1+ biomass estimated in an assessment is used in the ACL formula under the rebuilding plan and, in conjunction with E_{MSY}, is the basis for overfishing limit (OFL) determination. However, neither an updated assessment nor new temperature information was available to update age 1+ biomass or E_{MSY}.

The SSC determined that rolling over the OFL of 4,645 mt from 2025-2026 is appropriate for informing management for 2026-2027. Given the lack of new information and the short generation time of Pacific Sardine, the SSC determined the acceptable biological catch (ABC) should be calculated by coupling the OFL value with a Category 3 sigma value of 2.0. Associated ABC values are found in Table ES.4 of F.4 Attachment 1. For P* = 0.45, the ABC is 3,613 mt.

Moving to a survey-based harvest control rule (HCR) could alleviate the need to obtain age-structure information when only survey data are available. The performance of such an HCR should be evaluated through a management strategy evaluation, particularly if the stock structure of Pacific Sardine is updated (Agenda Item F.5 Situation Summary).

SSC Notes

The change to Category 3 for rolling over OFLs for sardine is a change from previous approaches. This appears to be the correct action given the lack of new information on 1+ biomass and E_{MSY}, and the new approach of moving to Category 3 for groundfish assessments after 16 years (for species with lifespans an order of magnitude larger than that of sardine).

Retaining Category 2 would have led to a time-varying sigma of 1.551 and an ABC of 3,822 mt.

I. Administrative Matters

2. Future Council Meeting Agenda and Workload Planning

The Scientific and Statistical Committee (SSC) discussed workload planning and has the following updates to its March 2026 statement under this agenda item.

The SSC Economics subcommittee will meet for a half day webinar June 2, 2026, to review a Community Resilience Decision Tool being developed by Northern Economics.

The SSC requests that the Groundfish Subcommittee meet in late summer to review a revised version of the Terms of Reference for Groundfish Stock Assessments. This meeting could be online or paired with the in-person methodology review of fishery-dependent indices of abundance for groundfish stock assessments.

An eDNA-based index of abundance, which has been developed for the Pacific hake stock assessment, has been informally proposed for application to widow rockfish and other groundfish species. The SSC requests a meeting to review this methodology. If an eDNA index is available, the SSC requests pairing its review with the methodology review for fishery-dependent indices of abundance for groundfish assessments.

The SSC requests that the Ecosystem and Economics subcommittees hold a one day webinar during August or September or one day hybrid meeting ahead of September SSC meeting to review future topics for the California Current Integrated Ecosystem Assessment Ecosystem Status Report.

A benchmark assessment for the Northern Subpopulation of Pacific Sardine is scheduled for early 2027 (in-person), but could be particularly challenging if the stock is redefined to encompass all sardine in US waters given the need to select a new model structure are recompile all of the input data. In addition, the specifications for the OFL, ABC and HG harvest control rule for Pacific Sardine need to be reviewed and the parameter values revised based on the new stock structure hypothesis.

An update assessment for Pacific mackerel is scheduled for early 2027 as an online meeting.

Proposed Workshops and SSC Subcommittee Meetings for 2026 and Beyond *Italic items are noted as potential or preliminary* *Shaded rows indicate newly added items since the prior statement*						
Workshop/Meeting	**Potential Dates**	**Sponsor/ Tentative Location**	**SSC Reps.**	**Additional Reviewers**	**AB Reps.**	**Council Staff**
Special Project #2: Community Resilience Decision Tool Review	June 2, 2026	Council/Webinar	Economics Subcommittee	N/A	GMT GAP	Gilly Lyons
Groundfish Terms of Reference	*Late Summer*	*Virtual*	*Groundfish Subcommittee*	*N/A*	*GMT GAP*	*Diana Perry*
Groundfish Harvest Specifications Flexibility Topic Review *	September 16, 2026	Council	Groundfish and Economics Subcommittees	N/A	N/A	Jessi Waller
Sacramento River Fall Chinook Peer Review	*June 2026*	*California/ Council/Hybrid*	*Salmon Subcommittee*	*TBD*	*SSC STT SAS*	*Angela Forristall*
*Groundfish Methodology Review - Standardization of the commercial fishery-dependent indices (tentative)**	*Fall 2026*	*Council/TBD*	*Groundfish and Economics Subcommittees*	*TBD*	*GMT GAP*	*Diana Perry*
*Groundfish Methodology Review - eDNA index of abundance for use in groundfish stock assessments (tentative)**	*Fall 2026*	*Council/TBD*	*Groundfish Subcommittee*	*TBD*	*GMT GAP*	*Diana Perry*
Salmon Methodology Review	*October 2026*	*Council/TBD In person preferred*	*Salmon Subcommittee*	*TBD*	*STT*	*Angela Forristall*
Ecosystem Status Report Science Topics Review (2026 topics) *	September 15, 2026	Council	Ecosystem and Economics Subcommittees	TBD	EWG EAS	Gilly Lyons
Review of Pacific Sardine Management	*July 2026*	*La Jolla, CA*	*CPS Subcommittee*	*TBD*	*CPSMST CPSAS*	*Katrina Bernaus*
CPS Terms of Reference	*Late Summer*	*Virtual*	*CPS Subcommittee*	*TBD*	*CPSMST CPSAS*	*Diana Perry*
Bridging Coastwide Pacific Sardine Biomass Estimate	*Early 2027*	*Council/TBD*	*CPS Subcommittee*	*TBD*	*CPSMST CPSAS*	*Katrina Bernaus*

Pacific mackerel stock assessment (update)	*Early 2027*	*Online*	*CPS Subcommittee*	*TBD*	*CPSMST CPSAS*	*Katrina Bernaus*

*If the Groundfish Methodology Review meeting becomes unnecessary, the ESR Topics Review and SpexFlex Review meetings could be moved from Sep 15-16 to Sep 28-30.

SSC Subcommittee Assignments

Salmon	Groundfish	Coastal Pelagic Species	Highly Migratory Species	Economics	Ecosystem-Based Management
Jason Schaffler	**Cheryl Barnes** (Co-Chair)	**André Punt**	**Michael Hinton**	**Dan Holland**	**Chris Free**
John Budrick	**Aaron Berger** (Co-Chair)	Aaron Berger	Cheryl Barnes	Chris Free	Cheryl Barnes
Tim Copeland	John Budrick	John Budrick	Aaron Berger	Michael Hinton	Tim Copeland
Owen Hamel	John Field	John Field	John Field	André Punt	John Field
Galen Johnson	Owen Hamel	Owen Hamel	Dan Holland	Matthew Reimer	Dan Holland
Will Satterthwaite	André Punt	Michael Hinton	André Punt	Cisco Werner	Galen Johnson
	Alberto Rovellini	Tien-Shui Tsou	Matthew Reimer		André Punt
	Jason Schaffler	Cisco Werner	Cisco Werner		Matthew Reimer
	Tien-Shui Tsou				Alberto Rovellini
					Will Satterthwaite
					Cisco Werner

Bold denotes Subcommittee Chairperson

ADJOURN

PFMC
04/13/26