SUMMARY MINUTES

Scientific and Statistical Committee

Pacific Fishery Management Council
Salon I
DoubleTree Sonoma
One DoubleTree Drive
Rohnert Park, CA 94928
707-584-5466

June 12-13, 2025

Members in Attendance

Dr. Cheryl Barnes, Oregon State University and Oregon Department of Fish and Wildlife, 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
Carly Somerset, Idaho Department of Fish and Game, Boise, ID: Alternate
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. Dan Holland, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
Dr. Galen Johnson, Northwest Indian Fisheries Commission, Olympia, WA
Dr. Tommy Moore, Northwest Indian Fisheries Commission, Forks, WA
Dr. André Punt, 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

Members Absent

Dr. Michael Hinton, San Diego, CA
Dr. Matthew Reimer, University of California Davis, Davis, CA

SSC Recusals for the June 2025 Meeting		
SSC Member	**Issue**	**Reason**
[None]		

SSC Administrative Matters

Dr. Jason Schaffler (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 June 2025 SSC agenda was approved, with one modification for Dr. John Field to provide the discussion lead role for Agenda Item E.6. Several minor edits to italic notes were made prior to the April 2025 SSC minutes being adopted as final. The June 2025 briefing book version of the April 2025 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 updates noted.

Open discussion included the opportunity to confirm individuals from the PFMC SSC to participate in planning the next Council Coordination Committee's (CCC) Scientific Coordination Subcommittee meeting (SCS9).

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

H. Administrative Matters

1. Membership Appointments and Council Operating Procedures (SSC Closed Session)

E. Groundfish Management

8. 2027-2028 Harvest Specifications and Management Measures Planning

The Scientific and Statistical Committee (SSC) discussed the proposed process and timeline for 2027-2028 harvest specifications and management measures and has the following comments.

The SSC provided feedback reflected in the updated schedule for developing 2027-2028 harvest specifications and management measures (Table 1 in Agenda Item E.8, Supplemental Revised Attachment 1) in response to the change in review timing of the update assessments.

The SSC's Groundfish Subcommittee (GFSC) will review the update assessments, the catch-only projections, and the five full assessments during their August 12-13 meeting. Due to the timing of STAR Panel 3, it is not realistic for the revised stock assessments coming out of that STAR Panel to be available, and instead the GFSC anticipates reviewing the pre-STAR panel draft assessments and STAR Panel reports. For this meeting, if possible, participation by the full assessment STAT leads, the lead update assessment authors, and representatives from the Groundfish Management Team (GMT) and Groundfish Advisory Panel (GAP) would be beneficial. The GFSC report will be finalized and submitted within 2 weeks of the completion of this meeting.

At the September Council meeting, the GFSC requests to meet in the morning of the first day of the SSC meeting to review harvest specifications and any other QA/QC that might be required.

The SSC would like to rename the meeting formerly known as the "mop-up meeting" as "Supplemental Review Meeting", as "mop-up" does not fully reflect the considerable time and effort that goes into the stock assessment review process.

SSC Notes

There is more specificity in Table 1 than there has been in the past, and it more clearly outlines the roles of the SSC and other Advisory Bodies.

The SSC will know if the CIE reviewer will be needed for the Supplemental Review meeting after the August GFSC meeting.

In the Allowable Biological Catch paragraph of Section 1 in Attachment 2 (page 2) of this Agenda Item, the wording that the ABC is set equal to the ACL is incorrect and should read that the ACL is set equal to the ABC (i.e., it is the ABC calculation that is the driver not the ACL).

E. Groundfish Management

6. Phase 2 Stock Definitions – Final Action

The Scientific and Statistical Committee (SSC) discussed (1) the stock definition alternatives for the Phase 2 groundfish stocks; (2) combining sub-area assessments with different category designations; (3) previous SSC recommendations regarding population structure and its interaction with partial inclusion versus exclusion of spatial components of a species in the Fishery Management Plan (FMP); and (4) the 10-factor analysis for determining whether a species is in need of conservation and management in the Exclusive Economic Zone (EEZ). Todd Phillips (PFMC) and Katrina Bernaus (PFMC) provided a summary of the issues of interest to the analysts and were available for questions and discussion.

Phase 2 stock definition alternatives

The SSC agrees that the stock definition alternatives are consistent with the available scientific information, except for cowcod, where Option 2 should be north and south of Point Conception.

Combining sub-area assessments with different category designations

The SSC discussed methods for making status determinations and for deriving Acceptable Biological Catches (ABCs) when sub-area assessments with different category designations need to be combined.

The SSC recommends that status determinations be made when combining Category 1 and 2 sub-area assessments by dividing the summed current abundance estimates by the summed unfished abundance estimates. Status determinations when assessments for Category 3 sub-area assessments are combined with Category 1 or 2 sub-area assessments should generally be based on the results for the Category 1 and 2 sub-area assessments. This can be done when the abundance within or OFL from the areas with Category 3 designations is low relative to that in areas with Category 1 or 2 designations, which is typically the case.

The SSC revisited the approaches proposed for deriving ABCs when combining sub-area assessments with different category designations (Agenda Item H.3.a, NWFSC Report 1, June 2023) and revisited its previous preference for the "weighted sigma" approach (Agenda Item H.3.a, Supplemental SSC Report 1, June 2023). Going forward, the SSC recommends the more straightforward approach of setting the total ABC as the sum of the sub-area ABCs calculated based on each assessment.

Previous SSC recommendations about population structure and its interaction with partial inclusion versus exclusion of spatial components of a species in the FMP

The SSC was asked to clarify its previous recommendations for defaulting to finer-scale stock structure for nearshore rockfish species when stock structure is uncertain (Agenda Item H.5.a, Supplemental SSC Report 1, November 2022) and previous recommendations against state-specific exclusion of a species from the FMP when it is included in other states (Agenda Item H.6.a, Supplemental SSC Report 1 March 2025). The SSC notes that this issue is not directly related to whether a species is in need of conservation and management within the EZZ. Rather it relates to when one or several spatial components for a species have been designated as being in need for conservation and management within the EEZ.

The SSC reiterates that nearshore rockfish species typically have finer-scale population structure than shelf or slope species. Management based on the assumption of finer-scale population structure reduces risks of localized depletion relative to the assumption of no population structure. The absence of evidence of stock structure is not evidence of lack of stock structure, particularly for nearshore species. Additionally, the locations of potential stock boundaries are generally difficult to identify. Thus, the SSC maintains its recommendation to keep all spatial components

of a species in the FMP if at least one component qualifies for inclusion. Doing so would account for considerable uncertainty in stock structure and maintain data collection and research coordination for the would-be-excluded spatial components. Consistent data collection and research on these components will be vital to increase confidence in stock boundaries, now and under changing ecological conditions.

10-factor analysis for determining whether a stock is in need of conservation and management within the EEZ

The SSC appreciates the work by Council staff to develop the 10-factor analysis. The SSC recognizes the importance of the 10-factor analysis for informing upcoming Council decisions related to including or excluding species from the FMP and identified some key considerations for future work. The SSC had limited time for review of these supplemental materials, which merit a more comprehensive review before the Final Preferred Alternative (FPA) is determined. Several minor comments and recommendations are provided to Council staff within our italicized notes.

The SSC discussed the rationale for why some species might be more likely to be considered "universally unimportant" to the fishery than others. Specifically, the bin developed to facilitate the analysis for shallow shelf rockfish contains a number of dwarf rockfish species with very low catches, which might be candidates for Ecosystem Component (EC) species. Larger-bodied species such as flag, rosy, and speckled rockfishes would best be considered in a separate bin. Similarly, larger but more rarely encountered species in the deeper shelf rockfish bin (e.g., bronzespotted, Mexican, and pink rockfishes) might not be considered explicit fishery "targets" but may be locally abundant in some habitats and would presumably be valued and retained by commercial and recreational fishermen when encountered. A more robust identification of fishery "importance" would consider size and desirability or marketability from the perspective of the likelihood of retention. Consistent with the Productivity-Susceptibility Analysis referred to in the March 2025 SSC statement (Agenda Item H.6.a Supplemental SSC Report 1, March 2025), the SSC continues to recommend that species identified as having high vulnerability to fishing impacts not be considered good candidates for EC designation.

Although Supplemental Attachment 2 presents information in ecological bins, the SSC recommends species-specific consideration for inclusion or exclusion from the FMP.

SSC Notes

Phase 2 stock definition alternatives

The SSC did not have a strong recommendation for coastwide versus finer-scale stock designations for cowcod, bocaccio, greenspotted, blackgill, or darkblotched rockfishes, and recognized that assessments would be less constrained by coastwide designations, which could still allow for sub-area assessments, than finer-scale stock designations, and might result in the need to do more

assessments (e.g., state or region specific assessments) for species formerly assessed as coastwide (such as darkblotched rockfish).

Comments on E.6 Attachment 1:

On page 40, the document states that the 2017 bocaccio assessment (He and Field 2018) reports status for the portion of the population south of 40° 10` N. The assessment area actually extends to Cape Blanco, OR (approximately 43 N).

On page 40, last paragraph, the first sentence reads "Summary: Option 1 would define the stock as a single coastwide population, which aligns with BSIA. Option 2 reflects the knowledge that there are two demographic groups of bocaccio, as well as the current state of knowledge regarding stock structure is uncertain." The assertion that Option 1 aligns with BSIA seems overly stated, but it might be recognized that Option 1 is not inconsistent with BSIA. Overall, the sentence is not clearly written.

Combining sub-area assessments with different category assessments

Our endorsement of the original approach: "The SSC concurs with the recommendations provided by the Northwest Fisheries Science Center (NWFSC) report on proposed approaches for combining multiple sub-area assessments (Agenda Item H.3.a, NWFSC Report 1, June 2023). The simplest and most intuitive approach to estimating acceptable biological catch (ABC) would be to weight sub-area sigmas by the proportional sub-area overfishing limits to estimate stock-level sigma. The standard approach to increasing sigma over time should then be applied. When multiple area assessments are conducted, the SSC recommends applying 40-10 and 25-5 harvest control rules to the stock-level ABC to calculate stock-level annual catch limits in each year. The SSC Groundfish Subcommittee will revisit questions regarding whether and how to define stock status for stocks with multiple sub-area assessments and stock categories at an upcoming meeting in August 2023."

Disadvantages of the approach listed in the NWFSC document: A more traditional approach for ABC calculation, in contrast, would be to calculate and sum sub-ABC values to get the stock-wide ABC. However, this does not account for the additional uncertainty in managing multiple sub-areas with different amounts of information under single stock management. This would require applying different buffer values to each sub-area (when we are not necessarily applying management at the sub-area level), then summing the resulting sub- ABCs; and would require a back-calculation to get the associated σ value for the stock unit for each year. With the weighted σ approach described above, one could simply apply the standard increase in σ with time.

The SSC recognizes that there is ongoing debate about which category 2 stock assessments should be used for status determination.

Previous SSC recommendations

May 2022: "Past SSC recommendations for stock definitions have generally been consistent with the recognition that nearshore rockfish are more likely to have finer-scale population structure compared to shelf or slope groundfish species. Typically, management of nearshore stocks is not based on coastwide overfishing limits, acceptable biological catches, and status determinations because the evidence supports population structure at a finer scale than coastwide. In cases where there is a lack of data on spatial structure, the SSC recommends stock definitions and stock assessments at finer spatial scales, based on scientific evidence for similar species and data availability."

March 2025: "The SSC recommends against state-specific inclusion or exclusion of species in the FMP due to considerable uncertainty in the information used to define stock structure."

From 2023 CA Black rockfish stock assessment research and data needs- "There is conflicting evidence or limited information with which to evaluate black rockfish stock structure… a notable proportion of fish appear to cross stock boundaries. Additional research on the directions and distances that black rockfish move in northern California and southern Oregon would help elucidate the degree of intergenerational exchange across this particular stock boundary." Similar uncertainties and concerns apply over OR/WA boundaries.

Major biogeographic boundaries, such as Cape Mendocino and Cape Blanco, may be more likely boundaries for nearshore stocks than state boundaries.

10-factor analysis

Attachment 2, Table 3.1 is missing black rockfish

Attachment 2, Table 3.1 includes sand sole twice

Attachment 2, Table 4-1, Light Dusky Rockfish are listed as "No Mortality" but are also described in the document as "often captured and retained with other, targeted species" by the CA commercial fishery in Table 4-1. The phrase "No Mortality" should be replaced by "No observed or estimated mortality" in this and other similar references.

Attachment 2 (pg 57) - It was unclear what the purpose of referring to the plot of relative probabilities as a Poisson distribution analysis was and how the probabilities were calculated.

There will be an opportunity to comment on EC species in the future and the SSC will want to comment on the scientific basis of EC designations.

The 10-factor analysis should distinguish between whether a species is unimportant because it is rare or because it is diminutive (small) and not likely to be desirable or marketable.

The shallow shelf rockfish bin contains several dwarf rockfish species with very low catch, which could be considered as EC species, while flag, rosy, and speckled rockfish could be included in a separate bin for analysis. For the deeper shelf rockfish bin, bronzespotted rockfish also has low catch, although this may be the result of recent depth restrictions and accessibility and would be retained by fishers if encountered, making it less viable as an EC species. In addition, the vulnerability of low-catch species should be considered before contemplating designation as EC species.

On page 41, with respect to the recognition that recent de minimus mortality could be a consequence of historical fishing pressure, the document notes that most of these species have only been subject to category 3 assessments, which cannot be used to formally determine stock status. However, the SSC comments relied largely on historical catch trends, which are well documented, which at a minimum do indicate that some of these populations were formerly an important part of the fishery.

The GMT may want to review the species in Table 2 that are only found south of 40° 10` N. Latitude (black and yellow rockfish, swordspine rockfish, treefish, speckled rockfish, pinkrose rockfish, pink rockfish, olive rockfish, mexican rockfish, kelp rockfish, honeycomb rockfish, halfbanded rockfish, greenblotched rockfish, gopher rockfish, freckled rockfish, flag rockfish, calico rockfish, bronzespotted) or only in California to consider whether it is advantageous to relegate them to the area to the south as not to unnecessarily complicate rockfish stock complex composition to the north by including them there when they do not currently exist. In the future, WCGOP catch reports can be examined for range expansions, potentially necessitating a larger portion of the coast to be added, rather than assuming a broader range than currently exists to accommodate potential future range expansion, where limiting their range may be beneficial to management in the near term.

GMT report 1 on E.6, in Table 1 the scientific name for soupfin shark is incorrect, table lists Galeohinus zyopterus, the correct species name should be Galeorhinus galeus.

D. Cross Fishery Management Plan (FMP)

3. Research and Data Needs – Final Action

The Scientific and Statistical Committee (SSC) discussed Research and Data Needs - Council Preliminary Priorities (Agenda Item D.3 Attachment 1) and an advance copy of the Ecosystem Workgroup (EWG) statement provided by Tommy Moore (EWG Chair, SSC member). Appended to this report is a version of Agenda Item D.3 Attachment 1 with the SSC's suggested modifications, which include the recommendations of the EWG with minor edits. The SSC did not find the bulleted list in the preamble to be a necessary or clarifying addition to the document, as

the topics were overly broad. The SSC also revised a few suggestions from other advisory committees that were repetitive, unclear, or not targeted at research or data. For future iterations of the research and data needs priorities (RDN), the SSC encourages the development of a more efficient process, timed to maximize early engagement with Council advisory bodies and researchers that consult or use the RDN document in prioritizing their research.

Agenda Item D.3
Supplemental SSC Report 1 Appendix
June 2025

RESEARCH AND DATA NEEDS – SCIENTIFIC AND STATISTICAL COMMITTEE FINAL RECOMMENDATIONS ~~COUNCIL PRELIMINARY PRIORITIES~~

~~In April 2025, the Pacific Fishery Management Council (Council) adopted their preliminary research and data needs (Agenda Item C.2), which included Scientific and Statistical Committee recommendations and the edits and recommendations from other Advisory Body reports. This document represents the compilation of Council preliminary priorities for review and consideration for final action.~~

The Council's research priorities are, first and foremost, the ~~continued~~ implementation and execution of ~~those~~ scientific activities that support the fundamentals of fishery management off the west coast of the United States~~; generally characterized as follows:~~

~~Stock Abundance and Forecasts~~

- ~~Fishery-independent surveys, such as trawl, acoustic, or visual surveys to estimate abundance~~
- ~~Fishery-dependent data collection~~
- ~~Age and growth studies, such as otolith analysis, tagging, and length-frequency analysis~~
- ~~Population modeling~~
- ~~Genetic studies to determine stock structure and connectivity between populations~~
- ~~Forecast modeling, such as the prediction of future stock status/run size under catch scenarios~~

~~Harvest Control Rules and Reference Points~~

- ~~Yield per recruit and spawning biomass per recruit modeling~~
- ~~Risk analysis~~
- ~~Evaluation of trade-offs in different management strategies~~
- ~~Management Strategy Evaluation~~

~~Monitoring and Enforcement~~

- ~~Electronic monitoring and vessel monitoring systems~~
- ~~Observer programs~~
- ~~Catch and bycatch accounting/estimation~~

~~Ecosystem-Based Information~~

- ~~Habitat mapping and habitat impact assessment~~
- ~~Oceanographic data and integration thereof~~

~~Economic and Social Information~~

- ~~Landed catch and ex-vessel revenue data~~
- ~~Data on participation and effort~~
- ~~Catch and revenue per unit effort information~~

~~Stakeholder Involvement and Social-Economic Analyses~~

- ~~Socioeconomic impact assessments~~
- ~~Participatory research, such as engagement of fishers in data collection and knowledge co-production.~~

~~These core research activities support the sound management of U.S. west coast fisheries resources and remain fundamental to good decision making by the Council. Additional priorities identified in this document add to or emphasize aspects of these fundamental activities.~~

~~The remainder of this document is structured to outline the initial science and management challenges adopted by the Council, that can stretch across more than one fishery management plan (FMP) to communicate research areas needed to advance Council objectives, and then lists specific research and data needs which could be pursued for potential solutions under each challenge. Items are provided with no order or ranking.~~

Science and Management Challenges

The order in which items are listed is not representative of any preference or ranking.

1. **Data collection**: Data collection is required to conduct stock and ecosystem assessments, evaluate policies, and support management. It is necessary to continue and expand existing data collection efforts, develop new data streams (e.g., to support indices of abundance or life history parameter estimation) and improve access to relevant databases. Community-based participatory research programs can aid in this effort.

Preliminary Research and Data Needs

- Age structures
  - Investigate and improve age estimation and age validation methods for federally-managed groundfishes and coastal pelagic species (CPS) (e.g., FT-NIRS).
  - Develop robust stock-specific sampling procedures for age structures and other biological data.
- Indices of abundance
  - Maintain complete spatial and temporal coverage of the existing shelf-slope trawl surveys to continue generation of fishery-independent indices for groundfish stock assessment models.
  - Develop a fishery-independent survey method to inform stock assessments for midwater groundfish species.

- Explore and expand fishery-independent nearshore survey methods for CPS stocks.
- ~~Consider additional CPS~~ Develop new surveys ~~(outside the annual summer survey),~~for CPS, including those with a greater offshore geographic ~~survey~~ scope, and ~~all available~~ identify additional data sources (~~including~~ e.g. satellites, drones, environmental DNA [eDNA]~~, and other methods~~) to complement ~~and augment~~ the existing ~~surveys (e.g., eDNA to detect species presence when low abundance influences catchability of existing surveys).~~ acoustic trawl survey.
- ~~Data collection of~~ Collect fishery-independent ~~indices of abundance and/or cooperation to obtain~~ data from international waters bordering the FMU (e.g., Mexican waters ~~for~~ to inform abundance of CPS stocks).
- Continue research to further improve the acoustic-trawl methods for estimating biomass and survey age and length compositions by studying the vertical distribution of CPS, improving estimates of target strength, implementing net monitoring devices, reviewing the sampling scheme, testing the efficiency and suitability of the trawl component of the survey, and evaluating fish avoidance.
- Develop new approaches for using citizen science and improve fishery-dependent data usage to inform stock assessments.
- ~~Research to develop a method incorporating fishery-dependent sampling to reveal forage fish in predator diet (particularly in areas where surveys observe no fish).~~
- Develop coastwide fishery-independent surveys of nearshore and/or hard substrate (untrawlable) habitats to inform groundfish stock assessments ~~as well as~~ and to improve life history parameters (e.g., growth, natural mortality) and research to locate older female rockfish.
- ~~Geographic~~ Collect habitat ~~characterization~~ data and ~~mapping~~ utilize existing spatial information in the Exclusive Economic Zone (e.g., backscatter, high resolution multi-beam bathymetry) ~~with the goal of~~ to develop a method to extrapolate~~developing a methodology/rubric (e.g., flat, low/medium/high relief) for use in extrapolating~~ biomass estimates from transect data (i.e. remotely operated vehicle, manned submersible, SCUBA)~~; utilizing any existing spatial data~~.

- Catch (landings and discards)
  - Improve historical catch and discard time series, including the development of uncertainty measures and a process for archiving and updating estimates on the Pacific Fisheries Information Network (PacFIN).
  - Collect finer-resolution measures of effort (e.g., location, attributes of gear used) for landings to support economic and fishery analyses.
  - Improve estimates of discards and discard mortality from commercial and recreational fisheries, including the effects of barotrauma, descending devices, mark-selective fisheries, and catch-and-release practices.
  - Double index tagging (DIT) of relevant salmon exploitation rate indicator stocks and electronic sampling in ~~relevant~~ all salmon fisheries.
  - Collect highly migratory species (HMS) landings, effort, composition and bycatch data as indicated by Regional Fisheries Management Organization (RFMO) management plans, particularly the Western Pacific Fisheries Management Commission and the Inter-American Tropical Tuna Commission, to support stock assessments.

- ~~Support development of innovative fishing methods to support management and increase domestic harvest of underutilized HMS while minimizing bycatch to the extent practicable.~~
- ~~Explicitly looking for opportunities for commercial and recreational fishing vessels to collect data of opportunity in a cost effective manner.~~

- Ecosystem monitoring
  - Investigate new data sources such as historical ecosystem variability and fishery-dependent data, ~~improving~~ improve location data of catch and effort, krill concentrations and California Cooperative Oceanic Fisheries Investigations (CalCOFI) larval data.
  - Develop a more comprehensive review of the strengths and weaknesses of various krill indicators. Evaluate existing and potential new ecosystem monitoring programs ~~and incorporation of new data streams (e.g., environmental DNA). Evaluations should consider the importance~~ accounting for the utility of existing programs, the impacts of reductions or removal of specific programs, and cost-effective alternatives. ~~Evaluations should also consider new variables such as stomach content data, data collected from sources such as marine reserves and marine protected areas, and exploration of the Pan-Basin Warming Pattern.~~
- Evaluate the value of and leverage opportunities for real-time "on the water" observations through collaboration with the fishing community to quantify oceanographic conditions and ecosystem processes (e.g., thermoclines, bottom temperatures) to inform ecosystem variability with fisheries impacts.

2. **Stock assessment methodologies**: Routine methodological development and advancement are required to improve the best scientific information available for stock status determinations. This will include the development and testing of data-limited and data-moderate assessments, dynamic reference points, and methods to account for large spatial closures.

Preliminary Research and Data Needs

- Explore use of a multi-species approach to estimate catch-per-unit-effort (CPUE) for nearshore groundfish species.
- Investigate the mechanism for skewed sex ratios and identify appropriate means to model these mechanisms in groundfish stock assessments (e.g., age-varying natural mortality, dome-shaped selectivity; black and canary rockfishes).
- Develop methods to assess currently unassessed stocks of groundfish and CPS that occur off the US West Coast (e.g., the southern subpopulation of Pacific sardine, jack mackerel).
- Examine methods for constructing groundfish decision tables.
- Develop methods to explicitly consider bias, uncertainty, and risk in salmon management.
- Examine how to model spatially-varying life history characteristics such as growth within a stock (e.g., "coastwide" fleets, fleets-as-areas, spatially-explicit and independent models).
- Accommodate use of genetic stock identification, parentage based tagging, and other techniques in salmon stock assessments and management tools.

- Continue research on methods of inclusion and accounting for long-term closed areas in assessment models.
- Develop joint stock assessments for transboundary stocks.
- ~~Catchability~~ Investigate catchability assumptions ~~should be further investigated, particularly when species~~ to improve survey-based estimates of absolute abundance. ~~is relatively low.~~
- Develop and test multispecies stock assessment methods and ecosystem-based reference points.

3. **Life history and stock structure**: Regular collection and evaluation of scientific information is needed to parameterize life history traits, inform the degree of population connectivity and ensure appropriate spatial scales for management actions.

Preliminary Research and Data Needs

- Improve meta-analyses for natural mortality and steepness, including an exploration of alternative stock-recruitment relationships, for groundfish stock assessment models.
- ~~Analyses for~~ Improve estimates of natural mortality and steepness for CPS stocks.
- Continue to improve estimates of biological parameters (e.g., growth, fecundity) for federally-managed species.
- Improve the identification of stock structure and boundaries including in response to changing environmental conditions, community compositions, fishing pressure. (e.g., groundfish stock definition, Pacific sardine).
- Develop key physical and biological indicators for managed species, variability in stock availability, and changes in movement and ~~in~~ distribution of species.
- Track dynamics of natural- and hatchery-origin salmon separately, accounting for different release practices.
- Evaluate the impacts of hatchery-origin salmon on natural-origin dynamics.
- Identify and quantify freshwater habitat factors which limit the productivity of salmon stocks.
- Investigate the effects of nest guarding on reproductive output (e.g., lingcod, cabezon).

4. **Evaluating fishery impacts**: Many federally-managed fisheries rely on the evaluation of fishery impacts associated with trip limits, bag limits, season or area closures, incidental mortality, and other factors. These require research and data to inform a number of assumptions utilized in estimation.

Preliminary Research and Data Needs

- Evaluate competing ocean uses that may impact federally-managed fisheries, including offshore wind energy, aquaculture, marine carbon removal, and deep-sea mineral extraction/mining. As investment and industrial use associated with other ocean uses may provide a range of positive and negative impacts to existing infrastructures and users, consider the implications to fisheries and fisheries infrastructure.
- ~~Improve location data of catch and effort for commercial and recreational fisheries.~~
- Improve estimates of natural salmon stocks contributions in ocean fisheries, fisheries-related mortality, and escapement.

- Develop a framework for regular evaluation of salmon forecast and harvest models' performance, and develop and refine forecast and harvest models for west coast salmon stocks, including investigating the precision and accuracy of forecasts.
- Complete documentation for salmon management models (e.g., FRAM).
- Develop a method to quantify the uncertainty of the outputs of FRAM (salmon).
- Incorporate movement between spatial areas over time into planning models for salmon.
- ~~Improvements to~~ Improve groundfish fishery impact projection ~~modeling~~ methodologies.
- ~~Further work to consider the relative impacts of natural mortality from marine mammal and seabird predation relative to fisheries impacts, to more fully understand the potential for fisheries to affect stocks (particularly in times of low abundance and low catch limits).~~

5. **Ecosystem dynamics**: The effects of a changing ecosystem and habitats raise challenges for fishery science and management. Continued efforts to account for ecosystem and habitat change can involve approaches such as collecting diet data, developing ecosystem models, evaluating the use of ecological indicators in stock assessments and identifying environmental thresholds.

Preliminary Research and Data Needs

- Evaluate methods to capture environmental and ecosystem variability in stock assessments, including temporal or spatial changes in recruitment, growth, maturity, fecundity, mortality, and other life history traits.
- Develop and evaluate environmental or biological indicators that help to inform or forecast recruitment.
- Develop ecosystem indicators, including indices of overall productivity in the California Current Ecosystem, and connect indicators to stock assessments and biologically- or socially- meaningful reference points.
- Develop an alternative to the temperature-recruitment relationship (E_{MSY}) based on the California Cooperative Oceanic Fisheries Investigations (CalCOFI) temperature time series for Pacific sardine for the CPS Fishery Management Plan (FMP) under Science and Management.
- Monitor, model, and predict the impacts of changing ocean conditions and variability on fisheries, due to changes in distributions and predator/prey relationships.
- Evaluate the role of federally-managed resources in the ecosystem (e.g., predator-prey relationships, competition, disease, and behavior), including development of climate-productivity relationships.
- ~~Leverage~~ Identify and evaluate environmental or biological data needed to help inform or validate dynamic ocean management tools for fisheries needs (e.g., HMS). ~~opportunities for real-time "on the water" observations through collaboration with the fishing community to quantify oceanographic conditions and ecosystem processes (e.g., thermoclines, bottom temperatures) to inform ecosystem variability with fisheries impacts.~~

6. **Harvest policy**: Improved methods are needed to evaluate harvest policies, including harvest control rules and reference points, which are integral to Council decision-making, especially during periods of nonstationary environmental conditions.

Preliminary Research and Data Needs

- Conduct simulation studies and/or management strategy evaluations (MSEs) that evaluate effects of alternative harvest policies and stock-recruitment relationships on biological reference points. Better understand how changing environmental conditions affect performance of existing and potential alternative harvest control rules.
- Develop a management strategy evaluation to test survey-based projections method for Pacific sardine and other CPS.
- Incorporate ecosystem-based fishery management (EBFM) and social science considerations into MSEs.
- Investigate alternative approaches to time-area management for salmon.
- Evaluate effectiveness of standardized bycatch reporting methodologies in all FMP fisheries.
- Develop management strategies that are robust to forecast errors.
- Improve ability to quantify scientific uncertainty to inform the magnitude of uncertainty buffers as part of the harvest specification process.
- Re-evaluate the harvest control rule for Pacific sardine to reflect the most up-to-date understanding of environmental drivers of recruitment, including the apportionment of biomass within U.S. waters.
- Develop ecosystem-based models that incorporate environmental variation and anthropogenic disturbances (e.g., potential harvest control rules for Sacramento River Winter Chinook, harvest control rule for Pacific sardine based on temperature recruitment relationship, environmental drivers on sablefish).
- Review and improve the adaptiveness of our management process to external change. These changes may include environmental, economic, or social aspects.

7. **Economics**: Data and analytical tools are needed to develop and evaluate fishery management policies that aim to ensure the economic viability of recreational, Tribal, and commercial fisheries, including post-harvest sectors and infrastructure.

Preliminary Research and Data Needs

- Conduct regular commercial cost-earnings surveys in all federally-managed fisheries, including the Economic Data Collection (EDC) program for catch share fisheries, which includes first receivers and the survey of all groundfish catch share quota owners.
- Conduct periodic recreational angler and charter boat (CPFVs) surveys and develop recreational valuation, behavior, and impact models.
- Maintain and update the regional input-output model for Pacific Coast Fisheries (IO-PAC).
- Develop data sources and analyses of seafood markets and supply chains relevant to U.S. West Coast fisheries (e.g., an emerging issue with volatile CPS international markets).
- Improve location data of catch and effort for commercial and recreational fisheries and develop measures of effort associated with landings (e.g., days at sea).
- Develop models of fleet dynamics for commercial harvesters and recreational charter boats that can be used to conduct retrospective and prospective evaluations of regulations

on fishing behavior and outcomes, including economic and social effects of alternative capacity management programs and bycatch.
- Conduct value of information and cost-effectiveness analysis of data collection and fishery monitoring programs for FMP species.
- Quantify impacts to fishing and processing sectors that result from volatility in year to year catch limits.

8. **Social science**: Data and analytical tools are needed to develop and evaluate fishery management policies intended to address social and cultural objectives of participants in fisheries and fishing communities.

Preliminary Research and Data Needs

- Maintain, further develop, and validate community-level indicators of engagement, dependence, and vulnerability related to commercial and recreational fishing needed to identify and characterize fishery-dependent communities and their impacts on them.
- Conduct periodic surveys of fishing communities and participants to collect information on social, demographic, and economic characteristics suitable for use in social impact analyses for each FMP.
- Investigate how the viability and resilience of coastal communities are affected by changes in ecosystem structure and function, including through the connection of ecosystem indices to socially meaningful reference points.
- Improve understanding impacts of fishing fleet behavior on fishing communities.

9. **Habitat science and spatial management**: Ongoing and emerging uses of marine, estuarine, and freshwater resources are diverse, potentially conflicting, and likely to impact fished stocks and their habitats, as well as the surveys used to inform science and management. Continued development of the models used to designate essential fish habitat and otherwise inform spatial management are needed, including those for transboundary stocks.

Preliminary Research and Data Needs

- Quantify spatiotemporal variation in habitat use for all life stages of federally-managed species to inform essential fish habitat (EFH) and habitat area of particular concern (HAPC) designations, marine spatial planning, and environmental impact assessments.
- Identify environmental (e.g., spatially-refined indices of ecosystem state) and ecological (e.g., ~~occurrence of structure-forming invertebrates~~ spatiotemporal variation in species-habitat associations, prey ~~availability~~ densities) sources of variation ~~and changes in habitats,~~ and the effects of those changes on federally-managed species.
- Evaluate impacts of non-fishing activities (e.g., offshore development, freshwater operations) on habitat use by federally-managed species.
- Evaluate fishing effects on habitat and ecological responses to spatial closures.

C. Administrative Matters

6. Future Council Meeting Agenda and Workload Planning

The Scientific and Statistical Committee (SSC) discussed workload planning and has the following updates to its April 2025 statement under this agenda item.

STAR Panel 2 will cover benchmark assessments for chilipepper rockfish and California quillback rockfish on June 23-27, 2025 in Santa Cruz, CA. The meeting will be conducted in-person, and broadcast for listening and remote public comment. The STAR Panel will be Cheryl Barnes (chair), two CIE reviewers, and one additional reviewer with knowledge of West Coast groundfish assessments. Representatives from the GMT and GAP have been confirmed.

STAR Panel 3 will cover rougheye/blackspotted rockfish and sablefish on July 14-18, 2025 in Seattle, WA. The meeting will be conducted in-person, and broadcast for listening and remote public comment. The STAR Panel will be John Field (chair), two CIE reviewers, and Chris Free (SSC). Representatives from the GMT and GAP have been confirmed.
The SSC Economics Subcommittee proposes conducting a review of the Trawl Catch Share Program Review in advance of the September 2025 Council meeting so that feedback from the Subcommittee and the SSC can be addressed prior to final action scheduled in November. This review could occur as a virtual meeting in late August or early September of 2025.

The SSC Groundfish Subcommittee will meet to review update stock assessments for widow rockfish and yelloweye rockfish, full stock assessments that have been through STAR Panel review in 2025, and catch-only projections before the September 2025 Council meeting. The SSC suggests a 2 day in-person meeting in Seattle, WA on August 12-13, 2025. The meeting would be broadcast for listening and remote public comment. Representatives from the GMT and GAP are requested.

At the September Council meeting, the GFSC requests to meet in the morning of the first day of the SSC meeting (September 18, 2025) to review harvest specifications and any other QA/QC that might be required.

If further review and discussion of groundfish stock assessments and rebuilding analyses (if needed) are warranted, the SSC Groundfish Supplemental Review meeting is anticipated during the week of September 29-October 3, 2025. Depending upon the degree of complexity of any review materials, this meeting could be in-person, and broadcast for listening and remote public comment.

The SSC recommends that the SSC Salmon Subcommittee hold a Salmon Methodology Review with participation from the Salmon Technical Team (STT), and any other appropriate advisory bodies or subcommittees October 8-9, 2025, pending selection of final topics and completion of materials. Given the potential impact of two topics on California fisheries, and comments in April about public accessibility of Sacramento River Fall Chinook Work Group meetings, the SSC recommends holding the methodology review in California, and ensuring an accessible broadcast. The Salmon Subcommittee requests that, if the meeting will take more than one day, it be scheduled as one full day and one partial day, rather than two partial days.

The SSC Ecosystem Subcommittee anticipates conducting its annual review of Ecosystem Status Report Science Topics from 1-5 pm on October 6, 2025 (virtual), based on the proposals put forward by the California Current Integrated Ecosystem Assessment team at the March 2025 Council meeting.

For the November 2025 Council meeting, the SSC proposes to meet for 2.5 days starting November 13 at 8 AM.

The SSC proposes the Coastal Pelagic Species (CPS) Subcommittee conduct a review of the new SWFSC/NWFSC integrated survey in early 2026 to identify any issues or additional analyses to be conducted prior to use of the results from the survey in CPS stock assessment.

Proposed Workshops and SSC Subcommittee Meetings for 2025 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**
1	Groundfish STAR Panel 2: Chilipepper Rockfish Quillback Rockfish - California	June 23-27, 2025	Santa Cruz, CA/ Broadcast	Barnes – Chair	CIE (TBD), Invited Reviewer - Hicks	GMT GAP	Bellman
2	Groundfish STAR Panel 3: Rougheye/Blackspotted Rockfish Sablefish	July 14-18, 2025	Seattle, WA/ Broadcast	Field – Chair, Free - Reviewer	CIE (TBD)	GMT GAP	Phillips/ Bellman
3	*Economic Subcommittee Meeting:* *Trawl Catch Share Program Review*	*August/Sept 2025*	*Council/Virtual*	*Economics Subcommittee*	*NA*	*GMT* *GAP*	*Waller/ Bellman*
4	Groundfish Subcommittee Meeting: Stock Assessment Reviews	August 12-13, 2025	Council/ Seattle,WA/ Broadcast	Groundfish Subcommittee	TBD	GMT GAP	Bellman
5	*Groundfish Subcommittee Meeting:* *Prepare Harvest Specifications*	*September 18, 2025 (AM)*	*Council/ Spokane, WA/ TBD*	*Groundfish Subcommittee*	*NA*	*GMP* *GAP*	*Bellman*
6	*Groundfish Supplemental Review*	*Sept 29-Oct 3, 2025* *(After Sept CM)*	*Council/ TBD/Broadcast*	*Groundfish Subcommittee*	*TBD*	*GMT* *GAP*	*Bellman*
7	*Ecosystem Subcommittee Review:* *Ecosystem Status Report Science Topics*	*Oct 6, 2025;* *1-5 pm*	*Council/Virtual*	*Ecosystem Subcommittee*	*TBD*	*EWG* *EAS*	*Lyons/ Bellman*

Proposed Workshops and SSC Subcommittee Meetings for 2025 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**
8	*Salmon Methodology Review*	*October 8-9, 2025 (tentative)*	*Council/ Portland, OR*	*Salmon Subcommittee*	*TBD*	*STT*	*Forristall/ Bellman*
9	*CPS Methodology Review: SWFSC/NWFSC Integrated Survey*	*Early 2026*	*TBD*	*CPS Subcommittee*	*TBD*	*CPSMT CPSAS*	*Bernaus/ Bellman*

SSC Subcommittee Assignments

Salmon	Groundfish	Coastal Pelagic Species	Highly Migratory Species	Economics	Ecosystem-Based Management
Galen Johnson	**John Field** (Chair)	**André Punt**	**Michael Hinton**	**Dan Holland**	**Tommy Moore**
John Budrick	**Cheryl Barnes** (Vice-Chair)	John Budrick	Cheryl Barnes	Chris Free	Cheryl Barnes
Tim Copeland [Carly Somerset, Alternate]	John Budrick	John Field	John Field	Michael Hinton	Tim Copeland [Carly Somerset, Alternate]
Owen Hamel	Chris Free	Owen Hamel	Dan Holland	André Punt	John Field
Tommy Moore	Owen Hamel	Michael Hinton	André Punt	Matthew Reimer	Chris Free
Will Satterthwaite	Tommy Moore	Will Satterthwaite	Matthew Reimer		Dan Holland
Jason Schaffler	André Punt	Tien-Shui Tsou			Galen Johnson
Tien-Shui Tsou	Jason Schaffler				André Punt
	Tien-Shui Tsou				Matthew Reimer
					Will Satterthwaite

Bold denotes Subcommittee Chairperson

ADJOURN

PFMC
09/18/25