

SUMMARY MINUTES

Scientific and Statistical Committee

Pacific Fishery Management Council
Doubletree Hilton Hotel, Seattle Airport
Cascade Room 12
18740 International Boulevard
Seattle, WA 98188
206-246-8600

March 4-5, 2023

Members in Attendance

- Dr. Cheryl Barnes (Oregon Department of Fish and Wildlife Alternate), Oregon State University, Newport, OR
- Dr. John Budrick, California Department of Fish and Wildlife, Belmont, CA
- Mr. Alan Byrne, 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. Dan Holland (SSC Chair), National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
- Dr. Galen Johnson, Northwest Indian Fisheries Commission, Olympia, WA
- Dr. Kristin Marshall, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
- Dr. Tommy Moore, Northwest Indian Fisheries Commission, Olympia, WA
- Dr. Matthew Reimer, University of California Davis, Davis, CA
- Dr. William Satterthwaite, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA
- Dr. Jason Schaffler (SSC Vice-Chair), Muckleshoot Indian Tribe, Auburn, WA
- Dr. Ole Shelton, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
- Dr. Cameron Speir, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA
- Dr. Tien-Shui Tsou, Washington Department of Fish and Wildlife, Olympia, WA

Members Absent

- Dr. André Punt, University of Washington, Seattle, WA

SSC Recusals for the March 2023 Meeting		
SSC Member	Issue	Reason
Dr. Galen Johnson	D.2 Review of 2022 Fisheries & 2023 Stock Forecasts	Dr. Johnson supervises contributors and provides consultation on forecasting methods.
Dr. Tommy Moore	H.2 FEP Initiative Workplan	Dr. Moore also serves on the Ecosystem Workgroup and contributed to the workplan.
Dr. John Field	F.7 Amendment 31 Stock Definitions	Dr. Field served on the project team and authored sections of Agenda Item F.7, Attachment 1.

A. Call to Order

Dr. Dan Holland (SSC Chair) called the meeting to order at 0800. Mr. Merrick Burden briefed the Scientific and Statistical Committee (SSC) on their tasks at this meeting. Dr. Chris Free volunteered to serve on the Groundfish, Economics, and Ecosystem Subcommittees. The March 2023 SSC agenda was approved. Several suggested edits were made to the November 2022 SSC Minutes. Thus, the March 2023 briefing book version of the November 2022 SSC Minutes will be updated to reflect SSC approved changes and the final document will be posted to the [SSC minutes archive website](#).

G. Administrative Matters

5. Membership Appointments and Council Operating Procedures
 - b. Council Operating Procedures

The Scientific and Statistical Committee (SSC) reviewed and discussed the model policy on addressing allegations of harassment of process participants other than Council employees and recommendations for defining professional meeting decorum (Agenda Item G.5, [Attachment 3](#) and [Attachment 5](#)). The SSC is supportive of efforts to formalize these policies and has the following suggestions for improving the policies as they are incorporated in Council Operating Procedures:

1. It would be useful to review harassment and conduct policies for other organizations, particularly those involved in Council activities, to ensure Council policies are comprehensive and consistent with currently accepted norms¹.

¹EEOC task force: <https://www.eeoc.gov/select-task-force-study-harassment-workplace-report-co-chairs-chai-r-feldblum-victoria-lipnic>

SAFS: https://fish.uw.edu/wp-content/uploads/sites/29/2022/11/SAFSCoCodeOfConduct_Sept2022.pdf

AFS: <https://fisheries.org/about/governance/standards-of-professional-conduct/>

<https://fisheries.org/about/governance/afs-meetings-code-of-conduct/>

2. It would be useful for the policies to include clear definitions and specific examples of harassment and misconduct to ensure a clear understanding of what is and is not acceptable conduct.
3. There should be diversity in the designated set of people to whom allegations of harassment or misconduct can be reported and in the methods of reporting. For example, at a minimum, there should be more than one gender represented in the points of contact.
4. It would be useful to clarify the types of actions the Council might take against the offending individual in response to harassment and misconduct, and the anticipated time period for a response.

D. Salmon Management

2. Review of 2022 Fisheries and Summary of 2023 Stock Forecasts

The Scientific and Statistical Committee (SSC) discussed the Review of 2022 Ocean Salmon Fisheries and Preseason Report I for 2023. Dr. Michael O'Farrell (Southwest Fisheries Science Center, Salmon Technical Team [STT] Chair) provided a brief summary of the reports and members of the STT were available to answer questions. The SSC appreciates the work of the STT in compiling the reports and providing a draft of the Sacramento River fall Chinook (SRFC), Klamath River fall Chinook (KRFC), and Willapa Bay natural coho forecasts on February 28, 2023; however, the full Preseason Report I was not available until Thursday, March 2, 2023, less than 48 hours before the SSC met, limiting a comprehensive review of the other forecasts.

Dr. O'Farrell pointed out some errors in the Preseason I report: (1) The Nooksack-Samish hatchery coho forecast is 66,567 not 49,208 (page 60), and (2) the exploitation rate for SRFC in Table V-4 (page 98) should be 0.75 not 0.52, and the projected three year geometric mean escapement of 81,817 should be bolded to indicate an approaching overfished condition.

The Council is tasked with specifying annual catch limits (ACLs) for SRFC, the indicator stock for the Central Valley fall Chinook complex, KRFC, the indicator stock for the Southern Oregon/Northern California Chinook complex, and Willapa Bay natural coho. Preseason Report I provides the ACLs for these stocks (Table V-5). The forecasts for SRFC and Willapa Bay natural coho were derived from forecast models that were reviewed and approved by the SSC in previous years. The SRFC forecast now uses the median rather than the mean when converting the Sacramento Index from logarithmic to arithmetic scale following the recommendation of the SSC review in November 2022. In years prior to 2023, the KRFC forecasts were made using all complete (or nearly complete) brood years (BY) since BY1979. The 2023 forecast was made using the methodology reviewed and approved previously by the SSC, however the input data was truncated to the most recent ten BYs, as described in Appendix D in Preseason Report I. The SSC found the calculations of the three acceptable biological catches (ABCs) and corresponding ACLs correct based on the forecasts for all three stocks.

The Council adopted rebuilding plans in 2019 for five salmon stocks: SRFC, KRFC, Queets River natural coho, Juan de Fuca natural coho, and Snohomish River natural coho. In 2021,

SRFC met the criteria for rebuilt status. The recent three-year (2019 – 2022) SRFC geometric mean spawning escapements was 96,613, which is more than the minimum stock size threshold (MSST) of 91,500, hence the stock is not considered overfished. The status of the four other stocks were:

- KRFC. The three-year geometric mean (2020 – 2022) natural area spawning abundance was 25,857, which is less than the MSST of 30,525. The stock meets the criteria for overfished status.
- Queets River natural coho. The three-year geometric mean (2019 – 2021) escapement was 3,445, which is less than the MSST of 4,350. The stock meets the criteria for overfished status.
- Juan de Fuca natural coho. The three-year geometric mean (2019 – 2021) natural coho escapement was 9,374, which is more than the MSST of 7,000 but less than the S_{MSY} of 11,000. The stock meets the criteria for not overfished/rebuilding status.
- Snohomish River natural coho. The three-year geometric mean adult spawning escapement (2019 - 2021) was 55,154, which is more than the MSST of 31,000 and more than the S_{MSY} of 50,000. The stock meets the criteria for rebuilt status.

In 2022, Hood Canal natural coho met the overfished criteria based on the geometric mean of the 2018 – 2020 escapements, however it was never formally declared overfished. The most recent three-year geometric mean adult spawning escapement (2019 – 2021) was 16,870, which is more than the MSST of 10,750 and more than the S_{MSY} of 14,350. Hood Canal natural coho would now meet the criteria for rebuilt status if it had been declared overfished.

The three-year geometric mean (2019 – 2021) of the Queets River spring/summer Chinook escapement was 314, which is less than the MSST of 350. This stock now meets the criteria for overfished status.

None of the Chinook or coho stocks were determined to be subject to overfishing; however, the exploitation rates (ER) for 2021 were only available for coho stocks and SRFC and KRFC. In 2022, only the SRFC and KRFC ERs were reported and the SRFC ER (0.75) was close to the maximum fishing mortality threshold (MFMT) of 0.78 (Table V-4). The SSC notes that Table V-4 reports the 2019 Hoko summer/fall Chinook ER as "NA", with a footnote indicating that a reliable ER could not be calculated due to insufficient coded-wire-tag (CWT) information. However, the Pacific Salmon Commission (PSC) Chinook Technical Committee (CTC) reported an ER of 0.785 (<https://www.psc.org/download/35/chinook-technical-committee/14883/tcchinook-23-01.pdf>). The SSC recommends that consistent criteria be used for making changes to ER-based analyses approved by the PSC for Pacific Salmon Treaty managed stocks, with sufficient scientific review, oversight, and reporting of any changes.

Although no cases of overfishing were reported, the MFMT reference points for many stocks are based on old data and dated analyses, and a review and re-analysis of MFMTs using recent data and newer methods is warranted.

A stock is approaching an overfished condition if the three-year geometric mean of the most recent two years and the 2023 forecast of spawning escapement given last year's fishing regulations are less than the MSST. The KRFC and SRFC meet the criteria for being at risk of approaching an overfished condition.

The SSC notes that the Sacramento River winter run Chinook hatchery production was increased because poor survival was anticipated. However, the choice of the survival term applied to the hatchery release to forecast hatchery abundance was not adjusted to reflect this anticipated poor survival.

The results presented in Preseason Report I are point estimates and associated uncertainties are generally not reported. The SSC reiterates its strong recommendation that PFMC salmon reports provide and incorporate appropriate measures of uncertainty as is currently done for groundfish, coastal pelagic species, and highly migratory species.

SSC Notes

The Oregon Production Index (OPI) coho stock has been over-forecasted in 7 of the past 8 recent years. This is an abundant stock that is important in ocean fisheries and whose abundance affects modeled impacts of other coho stocks, especially the Queets River coho (which is under a rebuilding plan) hence it is important to have an accurate forecast. The SSC encourages the STT to investigate (or ask those that make the forecast) this trend of over-forecasting and explore alternative methods that could be reviewed at a future Salmon methodology review meeting.

Forecasting methodologies used for salmon stocks in the Preseason Report I may have changed over the time periods shown. The SSC recommends that the STT develop a database or Appendix for their report where changes to forecasting methodologies for each stock can be described and archived. In figures showing forecast performance over time (e.g. Figure II-4 and III-1 of Preseason I), different symbols could be used for different methods.

The issue with the Hoko Summer/Fall Chinook ER for 2019 is a process problem, not the SSC disagreeing that spawning ground escapements of Hoko Chinook may have been under-represented in RMIS for 2019. If the CTC Exploitation Rate Analysis (ERA) is considered best scientific information available (BSIA) under the current BSIA framework, there should be transparent and consistent standards for deciding not to report those values.

A quantitative analysis of forecast performance should be undertaken.

Sampling of fisheries in 2022 was not affected by the COVID-19 pandemic; however, the disruption of tagging and marking of juveniles in 2020 will affect recoveries of coded-wire-tags (CWTs) from adults of that cohort and may affect planning and implementation of mark-selective fisheries on that cohort.

The SRFC 2022 exploitation rate was 0.754 which approached the MFMT of 0.78.

For KRFC the FMSY (and OFL, ABC, ACL) and status determination reference points were based on the stock-recruit analysis of the full time series as it was available in 2005, which has no overlap with the years now used to inform the abundance forecast model. These values could change if the analysis is re-done using a different time period. The motivation for changing the input years for the forecast was a change in maturation rates, which would be expected to affect productivity and reference points as well.

The SSC notes that there remains considerable uncertainty about which aspects of the Preseason Report I the SSC is specifically charged with reviewing and endorsing under the Pacific Coast Salmon Fishery Management Plan (FMP) and about the process of initiating potential changes to salmon reference points (e.g., MSST and MFMT; see the Salmon Subcommittee Report attached to Agenda Item C.10.a, Supplemental SSC Report 1, June 2021).

F. Groundfish Management

7. Amendment 31 Groundfish Stock Definitions

Mr. Todd Phillips (PFMC staff) briefed the Scientific and Statistical Committee (SSC) on an analytical document for the range of alternatives (ROA) for Amendment 31 ([Agenda Item F.7 Attachment 1](#)), which would define stock units, including geographic delineations, for thirteen priority species: black rockfish, canary rockfish, copper rockfish, Dover sole, lingcod, Pacific spiny dogfish, petrale sole, quillback rockfish, rex sole, sablefish, shortspine thornyhead, squarespot rockfish, and vermilion/sunset rockfish. The SSC also reviewed a report that details potential approaches for determining the acceptable biological catch and annual catch limits for stocks with multiple sub-area assessment models ([Agenda Item F.7.a NWFSC Report 1](#)). As noted in the SSC's prior statements on this agenda item, defining stocks through an amendment to the Groundfish FMP involves a combination of scientific and policy considerations, and the SSC limited discussion to scientific considerations.

The SSC commends the project team for completing the ROA analyses on a short timeline and endorses the report for Council consideration. In recognition of both the complexity and the uncertainty regarding the scientific evidence for alternative stock determinations, the SSC continues to recommend a workgroup to evaluate processes for future work on stock definitions for the remaining species in the Groundfish FMP, and to review new scientific information that may lead to a reconsideration of the stock definitions for the priority species. This evaluation can be incorporated into the groundfish stock assessment prioritization process in Figure 8 of Agenda Item F.7 Attachment 1.

The SSC continues to recommend that stock units be defined and assessments be conducted at finer geographic scales when the stock boundaries are uncertain and there are reasons to assume there may be finer than coastwide scale population structure.

Based on scientific information related to spatial population structure ([Agenda Item F.7 Attachment 1](#), Appendix 1) the SSC finds support for the following alternatives for the stocks currently under consideration for Amendment 31:

The SSC finds scientific support for Alternative 1 defining canary rockfish, Dover sole, Pacific spiny dogfish, petrale sole, rex sole, sablefish, and shortspine thornyhead as single coastwide stocks and Alternative 2 for lingcod as two stocks (North and South of 40° 10' N. Lat.). The SSC recognizes that squarespot rockfish are generally limited in distribution to Southern California and sees little scientific basis for considering an alternative other than a single stock. The SSC finds scientific support for Alternative 3 (stock delineation at state boundaries) for black and quillback rockfishes. For copper rockfish and sunset/vermillion rockfishes, the SSC finds scientific support for a scale finer than coastwide, but does not find scientific justification for selection of a particular alternative.

For copper rockfish, the results of the southern and northern California assessments were combined for status determination in 2021 (see [Agenda Item E.3.a, Supplemental SSC Report 1, November 2021](#)), however, the SSC recommends Alternative 4 be under consideration for copper rockfish due to uncertainty in stock delineation. This will preserve the option for the delineation of two, three, or four stocks (southern California, northern California, Oregon, and Washington) at the Council's discretion.

The NWFSC provided an analysis of alternative approaches for setting catch limits when a stock is assessed using multiple independent sub-area assessment models. The report proposed potential processes for assessment authors to conduct projections for SSC review and Council consideration under Alternative 1a and 1b. The SSC did not have sufficient time to fully evaluate these alternative approaches, and would benefit from additional guidance, such as Council's preliminary preferred alternatives, prior to the April SSC meeting. This will help the SSC have a more fruitful discussion about the short- and long-term implications of the alternative approaches. Given that the California copper rockfish assessments are to be reviewed in early June, there is a need for guidance by April if projections are needed during the STAR panel.

SSC Notes

Future research may (or may not) indicate the presence of a meaningful population structure divide at Point Conception (34°27' N. Lat.) for copper rockfish.

Highlights of SSC statements on this topic stretching back to November of 2021

November of 2021

E.2.a The SSC notes that the process of recommending stock and management delineations would have been more objective, had a priori criteria for deciding whether or not to combine assessment areas for purposes of status determination been established prior to adopting the assessments.

E.3.a

The SSC recommends for Quillback Rockfish that three separate stock areas be maintained for status determination: California, Oregon, and Washington.

For Copper Rockfish, the SSC recommends a reduction to two stock areas: pooling the biomass estimates from Southern and Northern California assessments to determine status in California and pooling the biomass estimates from the Oregon and Washington assessments for a northern area status determination.

For Sunset/Vermilion rockfish, separate stock areas should be assumed for status determination for the Southern and Northern California assessments because of the presence of sunset rockfish primarily south of Point Conception. The Oregon and Washington assessments should be combined into a single stock area because of the lack of population structure within vermilion rockfish at the northern extent of its range.

The SSC notes there is considerable uncertainty regarding stock structure for the three species and that additional data may clarify the situation. The SSC reviewed and endorsed methods for catch allocation between regions.

The SSC re-iterates that harvest should be spatially allocated proportional to relative biomass to reduce risk owing to stock structure uncertainty, particularly for the Copper Rockfish off California.

March 2022 (E.3.a)

The Scientific and Statistical Committee (SSC) discussed options and approaches for defining stocks in the Groundfish Fishery Management Plan (FMP). The SSC discussed the alternative uses of the word “stock”, noting that for these purposes “stock” refers to a status determination unit/management unit rather than an assessment unit. Assessment areas should take into account, but not be dictated by, status determination/management boundaries, while status must be reported at the status determination/management unit.

A variety of information may be useful for defining stocks for status determination and management. This includes a suite of data on species biology and distribution, as well as information on data availability across space. Properly considering the available information will require a multi-stage process, including development and review of a proposed framework for defining stocks, application of said framework to FMP species, review of results, and Council deliberation and decision making. Option 2 does not provide adequate time for this process, and therefore would largely involve formalizing the status quo, while the more deliberative approach of Option 1 would still need to be undertaken at a future date.

June 2022 (F.4.a)

Agenda Item F.4, Attachment 1 states that the SSC had extensive discussions on aggregating assessments across stock boundaries in November 2021. However, those discussions occurred on a limited timeline and were focused exclusively on copper, quillback, and vermilion and sunset rockfishes. Stock delineation should take genetic data, adult movement, and larval dispersal into account, but other factors, including the ability of available data to distinguish biological stocks, should be included in any biological framework for stock definition. The

biological factors used for stock definition, and how they are ranked, should be considered broadly by the proposed working group.

The SSC recommends the working group follow the National Standard guidelines to take into account economic, social, and ecological factors in determining management units and stock complexes. Analyses of stock complexes conducted in 2013 by the GMT are still informative and provide a starting place for consideration of additional analyses by a working group, with subsequent review and comment by the SSC.

September 2022 (G.5.a)

Past SSC recommendations have generally been consistent with the recognition that nearshore rockfish are more likely to have finer-scale stock structure than shelf or slope groundfish species. Consequently, the SSC concurs with the recommendations of assessment analysts with respect to stock boundaries for copper and Black Rockfish, who have discussed the available information to inform stock structure in the relevant assessment documents. Analysts have subsequently structured these and many other nearshore rockfish assessments around state boundaries and indicated the likelihood of at least some level of stock structure among those areas. The briefing materials for this agenda item did not suggest any basis for reconsideration of previous recommendations regarding likely or plausible stock structure of nearshore rockfish.

November 2022 (H.5.a)

The SSC recommends examining the evidence for stock structure on a species-specific basis for nearshore stocks. 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.

H. Ecosystem Management

1. California Current Ecosystem Annual Report

The Scientific and Statistical Committee (SSC) met with representatives of the California Current Integrated Ecosystem Assessment (CCIEA) team, Drs. Andrew Leising (Southwest Fisheries Science Center) and Chris Harvey (Northwest Fisheries Science Center). The SSC's discussion with the CCIEA team encompassed three topics, which are reported upon below in turn: 1) the 2022-2023 California Current Ecosystem Status Report ([Agenda Item H.1.a CCIEA Team Report 1](#)), 2) the report of the 2022 SSC Ecosystem-based Management Subcommittee (SSCES) meeting ([Agenda Item H.1.a SSC-ES Report 1](#)), and 3) discussion of ecosystem science review topics for 2023 ([Agenda Item H.1.a CCIEA Team Report 2](#)).

Review of the 2022-2023 CCIEA Ecosystem Status Report (ESR)

The Ecosystem Status Report (ESR) provides important information on environmental, biological, social, and economic indicators and provides an ecosystem perspective on West Coast fish stocks, fisheries, and coastal communities for the Council process. The SSC commends the CCIEA team's openness and responsiveness to Council and SSC questions and recommendations, and their continuing efforts to improve the Status Report each year. Significant additions to the report this year include an expanded discussion of potential interactions between fisheries and wind energy, indices of the abundance of juvenile groundfish from the NMFS bottom trawl survey, expanded information about coastal pelagic abundance and distribution, a streamlined salmon indicator section, and additions to the climate change appendix (see Appendix C for a full list of changes to the ESR). The SSC appreciates the ESR's narrative style to describe oceanographic and ecological conditions in 2022 and the breadth of the supplemental information presented in the many appendices and in the CCIEA data portal (<https://www.integratedecosystemassessment.noaa.gov/regions/california-current/california-current-ia-indicators>). The SSC supports the shift to more automated report generation and the use of Open Science principles for the ESR and hopes the CCIEA team can find more ways to reduce their workload.

SSC Ecosystem-based Management Subcommittee (SSCES) Report from 2022

The SSC reviewed the SSCES report ([Agenda Item H.1.a SSC-ES Report 1](#)) from its meeting held via webinar in September 2022 and discussed the report with SSCES Chair Dr. Kristin Marshall (NWFSC). The SSCES reviewed the portfolio of salmon indicators used in the ESR and discussed additions and changes to the climate change appendix. For salmon indicators, the SSC agrees with the SSCES recommendations to more strongly link ecosystem indicators to existing salmon life cycle models, develop best practices for stoplight tables, and continue exploring using ecosystem indicators for near term salmon outlooks. For the climate change appendix, the SSC supports an increased focus on characterizing and communicating uncertainty in climate projections, improving clarity in terminology discussing forecasts of biological and ecological indices, and improving indicators of resilience for fisheries and fishing communities. The SSC appreciates the progress the CCIEA team has already made toward implementing these recommendations in the 2023 report (see Appendix C).

Proposed Ecosystem Science Review Topics for 2023

The CCIEA team has proposed no topics for review by the SSC in September 2023. The CCIEA team would instead apply the time and effort toward making improvements to the ESR previously identified in concert with the SSC, and assisting with Fishery Ecosystem Plan Initiative 4. The SSC supports the CCIEA team's proposal to forgo the SSCES review for 2023 and suggests that the SSCES consult with the CCIEA team to continue implementing suggestions from the SSC and other advisory bodies to improve the ESR. Additionally, the SSC supports using the SSCES time in September to review methods and materials for implementing FEP Initiative 4 or other ecosystem-related topics.

SSC Notes

The SSC suggested exploring the implementation of surveys to inform what aspects of the ESR council bodies find particularly helpful or informative.

There is substantial wind energy development occurring in California but those areas are not considered in the ESR at present.

Warm waters are persistent far offshore over the winter of 2022-23. There was some discussion about whether warm water constitutes a heat wave if it is largely consistent with the new “normal” conditions. Further, there was discussion about how to calculate climate normals in a shifting environment.

There was interest in considering including information about further north migrating salmon stocks (e.g. Puget Sound Chinook). Adding information on these stocks would require building new indicators and would involve including information from non-traditional contributors to the ESR report (e.g. DFO, Alaska).

Consider moving to an every other year process for the CCIEA topic review? Using off-years to link into the management process? Through the FEP 4 process.

These areas of focus include:

- o Ongoing improvements to ESR efficiency, automation, and use of Open Science practices;*
- o Continued refinement of the Climate Change Appendix and salmon indicator portfolio, from the SSCES review of September 2022;*
- o Potential requests to develop indicators or indicator summaries specific to petrale sole or other potential pilot stocks, in relation to FEP Initiative 4; and*
- o Ongoing improvements to other previously reviewed topics (e.g., threshold analyses, fishery participation networks, and species distribution model outputs).*

1. Highly Migratory Species Management

3. Drift Gill Net Hard Caps

The Scientific and Statistical Committee (SSC) received a presentation from Dr. Stephen Stohs (NMFS, SWFSC) describing revisions made to a bootstrap simulation model used to analyze a range of alternatives to establish hard caps for high-priority protected species (HPPS) in the large-mesh drift gillnet (DGN) fishery. The model predicts the effects of different hard-cap options on the catch of marketable and unmarketable species, HPPS mortalities and injuries, and economic profits.

The SSC reviewed the bootstrap methodology in November 2022 and offered several recommendations for improving the presentation of model results ([Agenda Item G.3.a, Supplemental SSC Report 1, November 2022](#)). The revised presentation includes measures of risk

associated with the different hard-cap options and the distributions of the effects for each alternative relative to the status quo. The SSC finds that the revisions satisfactorily address their November 2022 comments and commends the analysts for their excellent work.

SSC Notes

The SSC supports the approach of computing tail conditional expectations (TCEs) of the differences in outcomes relative to the status quo rather than computing the “absolute” TCEs for each alternative.

H. Ecosystem Management (*continued*)

2. Fishery Ecosystem Plan Initiative

The Scientific and Statistical Committee (SSC) received a briefing by Kit Dahl (Council staff) and Dr. Tommy Moore (Northwest Indian Fisheries Commission) on the workplan to advance the new Fishery Ecosystem Plan (FEP) initiative Ecosystem and Climate Information for Fishery Management, as presented in [Agenda Item H.2.a EWG Report 1](#). The SSC appreciates the work of the Ecosystem Work Group (EWG) to advance the new FEP initiative and supports the proposed timeline outlined in the report.

The SSC discussed the risk table approach proposed by the EWG and currently used by the North Pacific Fishery Management Council (NPFMC). Risk tables could be used by the Council to inform decisions on harvest specification and provide supporting information in decisions to set P* and annual catch limits (ACLs). Risk tables or similar tools could also be used to inform the scientific uncertainty buffer selected by the SSC, as is the approach adopted by NPFMC. The current SSC approach for groundfish and coastal pelagic species using category designations incorporates aspects of assessment and population uncertainty but does not allow for climate or ecosystem uncertainty to be incorporated. The SSC is interested in further discussions on potential applications of these types of approaches, noting the importance that information in risk tables should allow for both increased and decreased buffers and not be unidirectional in their application. The SSC recommends that stock assessment authors be included in risk table development and that climate and ecosystem information be brought into the process as early as possible.

The stock assessment prioritization process is another avenue that could be expanded to incorporate more climate and ecosystem information. Also, the strong recent cohort of sablefish suggested by this year’s CCIEA Report ([Agenda Item H.1.a CCIEA Report 1](#)) indicates the potential need for pathways to bring environmental information into management outside of the assessment prioritization or review process. This may be particularly important for other species that are not frequently assessed.

The SSC supports the EWG recommendation to focus on groundfish and its choice of petrale sole as a demonstration species, given the timing of the groundfish harvest specifications cycle, the scheduled petrale sole assessment, and recent research on environmental drivers of recruitment.

There may be value in piloting more than one species, to the extent workload considerations allow. The SSC discussed several other potential species for consideration, and recommends the EWG consider species with a range of life histories and with differing amounts and qualities of available information. Recent presentations on ecosystem considerations for Pacific hake by the Joint Technical Committee of the Pacific Whiting Treaty revealed the utility of climate and ecosystem research in providing contextual information and corroborating evidence for the stock assessment in years when recruitment is estimated to be highly variable and uncertain. Formalizing that information into a risk table for Pacific hake could be another demonstration species for the FEP initiative. The SSC also discussed the potential to focus on coastal pelagic species and salmon, noting that further work may be needed to understand how risk tables could be applied in those cases.

The SSC also discussed the potential use of Ecosystem and Socioeconomic Profiles (ESPs) as a stepping stone between Ecosystem Status Reports and more actionable tools like risk tables. ESPs may be particularly valuable for gathering relevant information for species or groups of species where that information has not yet been compiled. For petrale sole and other species where environmental linkages have already been identified, moving forward directly with risk table development is a reasonable approach.

The SSC recommends developing a framework for prioritizing the selection of species for focused climate and ecosystem work and supports the general criteria outlined in the EWG report. The availability of existing environmental information may also dictate which species can be brought into the process. Formalizing a process for choosing focal species would help ensure species are selected using pre-specified criteria rather than in an ad hoc manner.

The SSC is willing to review products from the FEP initiative (e.g., the risk table approach and any demonstration risk tables) this year in September or November and notes that a decision to forgo the SSC Ecosystem Subcommittee review of CCIEA topics this year would allow time for that review to occur.

SSC Notes

A recent publication on the ESP approach is provided in [Shotwell et al. 2022](#).

The information in the walleye pollock example table is evaluated with qualitative scoring. There would be benefit in using quantitative measures and informed thresholds as well, where possible.

Petrale sole is a reasonable choice, but a risk table may not make as much of a difference because recruitment and natural mortality variability is considerably lower for this species than Pacific hake, sablefish, or more short-lived species.

The SSC has concerns with recommending a risk table solely on the basis of the apparent large recruitment from sablefish coming in, given a similar recommendation may not be made if several years of no recruitment were to be observed.

There may be a perception that the MSA constraint that $P^ \leq 0.50$ means that there is limited potential for “good news” to reduce buffers. Another way of stating this could be that the default $P^* = 0.45$ provides only a limited amount of precaution. If the default buffer were more precautionary, there would be more room for good or bad news to substantially change buffers/target catch amounts in either direction.*

F. Groundfish Management (*continued*)

6. Final Assessment Methodologies

The Scientific and Statistical Committee (SSC) discussed the Accepted Practices Guidelines for Groundfish Stock Assessment in 2023 and 2024 that were developed by the SSC’s Groundfish Subcommittee and revised during a meeting on December 12, 2022. In contrast to the Terms of Reference for the Groundfish Stock Assessment Review Process for 2023-2024 (TORs), which is more prescriptive, the Accepted Practices document provides guidelines and advice for conducting and reviewing assessments. In particular, it describes methods and approaches, sometimes more than one for the same process or parameter, that have been reviewed and are considered good practice. While alternative approaches can be used by assessment authors, those supported in the Accepted Practices generally require less justification.

The SSC does not suggest any substantive changes to the version in the Briefing Book, though a few minor edits were made. The SSC endorses the revised version of the Accepted Practices Guidelines for Groundfish Stock Assessment in 2023 and 2024, which will be available on the [PFMC groundfish stock assessment documents webpage](#).

SSC Notes

Note that as with the TOR, we have moved to separate CPS and Groundfish Accepted Practices Guidelines into separate documents. This is in contrast to what the SSC had indicated previously ([Agenda Item D.2.a. Supp SSC Report 1, June 2022](#)), but, as noted, is in line with the TOR.

The Accepted Practices Guidelines includes results of the hook and line workshops in 2022 and from recently published peer-reviewed articles, which were not available when the TORs were finalized in September 2022.

G. Administrative Matters (*continued*)

6. Future Council Meeting Agenda and Workload Planning

The Scientific and Statistical Committee (SSC) discussed workload planning and has the following updates to its November 2022 statement under this agenda item.

The SSC is scheduled to hold its April meeting as a remote meeting. The SSC recommends also holding its June meeting as a remote meeting and its September meeting in-person. The April SSC

meeting is scheduled over a weekend. SSC has a strong preference for not scheduling meetings on weekends in future when possible.

The SSC Groundfish Subcommittee will hold a Pre-Assessment Workshop for 2023 groundfish stock assessments of shortspine thornyhead, rex sole, and petrale sole to be held as a webinar March 20, 2023 and chaired by Drs. John Field and Jason Schaffler with participation from the GMT and the GAP.

The SSC Coastal Pelagic Species (CPS) Subcommittee will meet remotely on March 20-21, 2023 to review revisions to the habitat model for the northern subpopulation of Pacific sardine and methods for analyzing and using the 2022 CPS survey.

The Pacific Mackerel STAR Panel will be held April 11-13th, 2023 at the Southwest Fisheries Science Center in La Jolla, California with Dr. André Punt as chair and with participation from SSC CPS Subcommittee Members Drs. Theresa Tsou and Chris Free, the CPS Management Team (CPSMT), CPS Advisory Subpanel (CPSAS), and a Center of Independent Experts (CIE) participant to be determined. The STAR Panel is planned as an in-person review meeting, with web broadcast to allow for remote public comment.

The Western Groundfish Conference will be held April 23-29, 2023 in Juneau, Alaska. Several SSC members are likely to attend.

The SSC recommends holding a methodology review on May 9, 2023 to review the Sablefish Trip Limit Model. This would be a webinar with Dr. Cameron Speir as chair and with participation by SSC Economics and Groundfish Subcommittee members, the Groundfish Management Team (GMT), and the Groundfish Advisory Subpanel (GAP).

The SSC will participate in the three STAR panels for groundfish assessments in June and July of 2023 with participation from the SSC, GMT, GAP and CIE participants yet to be determined. The SSC proposes STAR panels be in-person review meetings, with web broadcast to allow for remote public comment.

- Groundfish STAR Panel 1 for copper rockfish in California, shortspine thornyhead, and rex sole will be held June 5-9, 2023 in Seattle with Dr. Jason Schaffler as chair.
- Groundfish STAR Panel 2 for black rockfish will be held July 10-14, 2023 in Santa Cruz with Dr. John Budrick as chair.
- Groundfish STAR Panel 3 for petrale sole and canary rockfish will be held July 24-28, 2023 in Seattle with Dr. John Field as chair.

The SSC recommends holding an SSC Groundfish Subcommittee meeting to prepare Spex Recommendations in August 2023 as webinars. The SSC recommends splitting this into two meetings with the first held on August 14-15, 2023 to address the first two STAR panels, as well as catch only projections, and the second on August 28, 2023 to address the third and any outstanding items, both with participation from Groundfish Subcommittee members, the GMT, and the GAP.

The SSC concurs with the CCIEA team and does not recommend holding an SSC Ecosystem-based Management Subcommittee Meeting in September of 2023 with the CCIEA team. However, the SSC Ecosystem-based Management Subcommittee may want to schedule a meeting with the Ecosystem Workgroup (EWG) and the Ecosystem Advisory Subpanel (EAS) to review the Fishery Ecosystem Plan (FEP) initiative. The need for and timing of that meeting is yet to be determined.

The SSC will participate in the Groundfish Mop-up Panel, if needed, September 25-29, 2023 at a place to be determined with participation from Groundfish Subcommittee members, the GMT, and the GAP.

The SSC recommends holding a Salmon Methodology Review in October 2023 with participation from the SSC Salmon Subcommittee, the Salmon Technical Team (STT), and the Model Evaluation Workgroup (MEW) at a time and place to be determined.

The SSC recommends participation in the next Sablefish Management Strategy Evaluation (MSE) Workshop in 2024 at a time and place to be determined with participation from the SSC Groundfish Subcommittee, the GMT, and the GAP.

The SSC proposes holding a Workshop to Develop Alternative Harvest Control Rules for Pacific Spiny Dogfish in 2024 at a time and place to be determined.

SSC Notes

Consider a workshop for exploration of ageing Pacific spiny dogfish. This may be proposed as a methodology review topic in September 2023.

A methodology review to consider the use of ages from the spectroscopy method in stock assessments could be identified/selected as a new methodology review topic in September 2023 to be undertaken in winter 2023-2024. (This is also from the ageing coordination meeting report.)

Proposed Workshops and SSC Subcommittee Meetings for 2023 and Beyond

Workshop/Meeting		Potential Dates	Sponsor/ Tentative Location	SSC Reps.	Additional Reviewers	AB Reps.	Council Staff
1	CPS Subcommittee Review of Abundance and Catch Estimation of the Northern Subpopulation of Pacific Sardine	Mar 20-21, 2023	Council/Webinar	CPS Subcommittee Members (Punt - chair)	Science Center Assessment/ Survey Staff	CPSMT CPSAS	Doerpinghaus
2	Groundfish Pre-assessment Workshop for shortspine thornyhead, rex sole, and petrale sole	March 20, 2023	Council/Webinar	GFSC (Field/Schaffler - chairs)	NA	GMT GAP	Bellman
3	Pacific Mackerel STAR Panel	April 11-13, 2023	SWFSC/ La Jolla, CA/ in-person with web broadcast	Punt - chair Tsou Free	CIE (TBD)	CPSMT CPSAS	Doerpinghaus
4	Methodology Review of the Sablefish Trip Limit Model	May 9	Council/Webinar	Economics and Groundfish Subcommittee Members (Speir - chair)	NA	GMT GAP	Bellman
5	Groundfish STAR Panel 1 for copper rockfish in CA, shortspine thornyheads, and rex sole	June 5-9, 2023	NWFSC/ Seattle, WA/ in-person with web broadcast	Schaffler - chair	CIE (TBD) Hicks	GMT GAP	Bellman
6	Groundfish STAR Panel 2 for black rockfish	July 10-14, 2023	SWFSC/ Santa Cruz, CA/ in-person with web broadcast	Budrick - chair	CIE (TBD) Dorn	GMT GAP	Bellman

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Workshop/Meeting		Potential Dates	Sponsor/ Tentative Location	SSC Reps.	Additional Reviewers	AB Reps.	Council Staff
7	Groundfish STAR Panel 3 for petrale sole and canary rockfish	July 24-28, 2023	NWFSC/ Seattle, WA/ in-person with web broadcast	Field - chair Marshall	CIE (TBD)	GMT GAP	Bellman
8	Groundfish Subcommittee Meetings to Prepare Spex Recommendations	August 14-15 and 28, 2023	Council/Webinar	Groundfish Subcommittee Members	TBD	GMT GAP	Bellman
9	Ecosystem Subcommittee Meeting to review FEP initiative product	September 2023 TBD	Council/Webinar	Ecosystem Subcommittee Members	NA	EWG EAS	Bellman
10	Groundfish Mop-up Panel, if needed	Sept 25-29, 2023	Council/TBD	Groundfish Subcommittee Members	TBD	GMT GAP	Bellman
11	Salmon Methodology Review	October 2023 TBD	Council/TBD	Salmon Subcommittee Members	TBD	STT MEW	Ehlke Bellman
12	Sablefish MSE Workshop	2024 TBD	TBD	Groundfish Subcommittee Members	TBD	GMT GAP	Bellman
13	Proposed Workshop to Develop Alternative Harvest Control Rules for Spiny Dogfish	2024 TBD	Council/Webinar	Groundfish Subcommittee Members	TBD	GMT GAP	Bellman

SSC Subcommittee Assignments

Salmon	Groundfish	Coastal Pelagic Species	Highly Migratory Species	Economics	Ecosystem-Based Management
Alan Byrne	John Budrick	André Punt	John Field	Cameron Speir	Kristin Marshall
John Budrick	John Field	John Budrick	Dan Holland	Chris Free	John Field
Owen Hamel	Chris Free	Alan Byrne	Kristin Marshall	Dan Holland	Chris Free
Galen Johnson	Owen Hamel	John Field	André Punt	André Punt	Dan Holland
Tommy Moore	Kristin Marshall	Owen Hamel	Matthew Reimer	Matthew Reimer	Galen Johnson
Will Satterthwaite	Tommy Moore	Will Satterthwaite			Tommy Moore
Jason Schaffler	André Punt	Tien-Shui Tsou			André Punt
Ole Shelton	Jason Schaffler				Matthew Reimer
Cameron Speir	Tien-Shui Tsou				Will Satterthwaite
Tien-Shui Tsou					Ole Shelton
					Cameron Speir

Bold denotes Subcommittee Chairperson

ADJOURN

PFMC
04/06/23