

SUMMARY MINUTES

# Scientific and Statistical Committee

Pacific Fishery Management Council

Online Meeting

June 8-9, 2022

## **Members in Attendance**

Dr. John Budrick, California Department of Fish and Wildlife, Belmont, CA

Mr. Alan Byrne, Idaho Department of Fish and Game, Boise, ID

Dr. Fabio Caltabellotta, Oregon State University, Corvallis, OR

Dr. Melissa Haltuch, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA

Dr. Owen Hamel, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA

Dr. Dan Holland, Chair, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA

Dr. Galen Johnson, SSC Northwest Indian Fisheries Commission, Olympia, WA

Dr. Kristin Marshall, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA

Dr. Melissa Monk (alternate for Dr. John Field), National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA

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

Dr. Matthew Reimer, University of California Davis, Davis, California

Dr. William Satterthwaite, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA

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. John Field, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA

Dr. Steve Munch, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA

Dr. Jason Schaffler, Muckleshoot Indian Tribe, Auburn, WA

<b>SSC Recusals for the June 2022 Meeting</b>		
<b>SSC Member</b>	<b>Issue</b>	<b>Reason</b>
Dr. John Budrick	D.1 Central Subpopulation of Northern Anchovy Assessment and Harvest Specifications	Dr. Budrick was a STAR panel reviewer.
Dr. André Punt	D.1 Central Subpopulation of Northern Anchovy Assessment and Harvest Specifications	Dr. Punt was a STAR panel reviewer.
Dr. Will Satterthwaite	D.1 Central Subpopulation of Northern Anchovy Assessment and Harvest Specifications	Dr. Satterthwaite was a STAR panel reviewer.

A. Call to Order

Dr. Dan Holland called the meeting to order at 0800. Mr. John DeVore briefed the Scientific and Statistical Committee (SSC) on their tasks at this meeting.

D. Coastal Pelagic Species Management

1. Central Subpopulation of Northern Anchovy Assessment and Harvest Specifications

The Scientific and Statistical Committee (SSC) reviewed the 2021 [stock assessment](#) for the Central Subpopulation of Northern Anchovy (CSNA), and the associated Stock Assessment Review (STAR) [Panel Report](#). Dr. Peter Kuriyama, National Marine Fisheries Service (NMFS) Southwest Fisheries Science Center (SWFSC) presented the assessment and Dr. André Punt (University of Washington) presented the STAR Panel Report.

This is the first assessment of CSNA in over 25 years. As with most stock assessments of PFMC-managed stocks, the assessment was performed using Stock Synthesis. Key features of the model include:

- Acoustic Trawl (AT) survey biomass as the main abundance index, split by season, with catchability ( $q$ ) estimates based on the assumption of full catchability within the AT survey area (including various methods to account for nearshore biomass), and overall  $q$  set to account for seasonal estimates of the proportion of CSNA biomass inside U.S. waters;
- Age-composition data from the AT survey and from the fishery;
- Combined catches from the Mexico plus California fisheries, with seasonal, age-based, and time-varying selectivity patterns;
- AT survey assumed to be fully selective for age-1+ and with time-varying selectivity for age-0;

- Beverton-Holt stock-recruitment relationship with steepness fixed at 0.6 and total recruitment variability ( $\sigma_r$ ) fixed at 1; and
- Natural mortality ( $M$ ) estimated (but assumed constant across time and age).

It was the STAR Panel's understanding that the summer 2021 AT survey report would be officially finalized by the time the assessment was adopted by the Council, but that was not the case, in part because it is being prepared as a joint report with Mexico. Nevertheless, the assessment using the preliminary 2021 AT survey estimate remains the best scientific information available.

The SSC endorses the 2021 CSNA Assessment as the best scientific information available for management of this stock. Under the Council Operating Procedure [\(COP\) 9 framework](#) for anchovy management, an estimate of  $E_{MSY}$  and a 10-year mean biomass ( $B_{LT}$ , to be taken from the assessment) are required to calculate the OFL and default ABC ( $ABC_d$ ), and a 3-year mean biomass estimate ( $B_{ST}$ , ideally from surveys) is required to calculate a candidate ABC that is to be adopted if it is smaller than 60% of  $ABC_d$ . Although COP 9 does not specify the units of biomass to be used, the supporting analyses for adoption of the framework were based on age-1+ biomass ([November 2019 Agenda Item D.4, Supplemental Attachment 2](#)), and  $E_{MSY}$  was calculated based on age-1+ biomass (Appendix E of the assessment report).

The SSC endorses the  $E_{MSY}$  value (labeled  $F_{MSY}$  in the assessment) of 0.493 estimated within the assessment, where  $E$  is expressed as annual total catch divided by summary age-1+ biomass, while noting that the value of  $E_{MSY}$  remains a major uncertainty. COP 9 specifies that the uncertainty buffer ( $Q$ , not to be confused with catchability  $q$ ) is equal to 0.25.

Although COP 9 calls for  $B_{LT}$  to be based on a 10-year mean of age-1+ biomass estimates, the assessment only presents biomass estimates for seven years (2015-2021, Table 14) along with a biomass forecast for 2022 (page 18). Because forecasts are dependent on highly uncertain recruitment projections and natural mortality, the SSC determined that 2021 should be the most recent year included in the  $B_{LT}$  calculation. Although the assessment does not estimate biomass for 2012-2014, the information presented in Figure 45, along with Appendices B through D, indicate that age-1+ biomass was low and comparable for the period from 2012-2015. Due to concerns about the 2015 AT survey and its impact on the 2015 biomass estimate, the SSC decided to average the 2015 and 2016 assessed biomasses (mean = 118,236 mt) to serve as a yearly proxy biomass for 2012 to 2014. The SSC then calculated  $B_{LT}$  from 2012 to 2021, resulting in  $B_{LT} = 603,025$  mt.

The stock-wide OFL is equal to 297,291 mt ( $E_{MSY} \times B_{LT} = 0.493 \times 603,025$  mt) and the default stock-wide  $ABC_d$  is 74,323 mt ( $Q \times OFL = 0.25 \times 297,291$  mt). The FMP calls for applying a DISTRIBUTION term of 0.82 to obtain OFL and ABC values for U.S. waters, resulting in U.S. waters OFL = 243,779 mt and  $ABC_d = 60,945$  mt.

COP 9 specifies that  $B_{ST}$ , used to determine the candidate ABC, should be calculated as a recent 3-year mean of AT survey biomass estimates. However, no AT survey was carried out during calendar year 2020, and survey results for 2019 and 2021 were publicly reported as total biomass but not summary age-1+ biomass. Given these constraints, for this management cycle, the SSC calculated  $B_{ST}$  based on assessment estimates of stock-wide age-1+ biomass (Table 14 of the

assessment), yielding a 2019-2021 mean stock-wide  $B_{ST} = 1,412,553$  mt and resultant candidate U. S. waters  $ABC = 142,760$  mt ( $0.82 \times 0.25 \times 0.493 \times 1,412,553$  mt). The SSC had to apply the DISTRIBUTION term since the assessment biomass estimates include biomass in Mexico. Since this candidate ABC value is larger than 60% of the  $ABC_d$ , the U.S. waters ABC should be set equal to the default  $ABC_d$  value of 60,945 mt. In the future, AT survey reports to the Council should include estimates of age-1+ biomass to facilitate direct calculation of  $B_{ST}$ . Ideally, the AT survey age-1+ biomass estimates would be reported for U.S. waters, alleviating the need for a DISTRIBUTION term in calculating  $B_{ST}$  and candidate U.S. waters ABC values.

Several important data and research needs remain for this stock. In particular, there is substantial uncertainty in  $E_{MSY}$  due to uncertainty in selectivity, steepness, and natural mortality (which also have implications for other aspects of the assessment). The best treatment of nearshore biomass when nearshore AT observations are unavailable remains an important consideration, as is the proportion of CSNA biomass in Mexico at various times of year. Anchovy dynamics are rapid and involve spawning and growth year round, which may be better captured by a continuous-time or monthly model. Ecosystem considerations might be predicted to drive variation in  $M$ , but  $M$  is assumed to be age- and time-invariant in the assessment. Stock structure and the boundary between the Central and Northern Subpopulations are also important uncertainties. An assessment, potentially conducted as a research assessment, in the near future (i.e., sooner than the 8 years called for in COP 9) might address some of these issues and could provide a full 10 years of biomass estimates for calculation of  $B_{LT}$ .

*SSC Notes:*

*A prior on  $M$  could be helpful. The  $M$  estimated in the assessment is hard to reconcile with the maximum observed age.*

*Appendix B (RREAS) gives some indication of abundant YOY in 2014-2015ish but doesn't see those recruits showing up as adults until later (Appendix B Figure 1). Appendix C (CalCOFI) generates an index of abundance that is low for 2010-2016 (Figure C-5). Appendix D (sea lion diet) shows a near absence of anchovy from sea lion diets in 2011-2015, though this is spatially restricted. Care needs to be taken when interpreting the RREAS data given the proportion of the stock in nearshore waters.*

*Because the arithmetic mean is more sensitive to large values than small values, the biomass assumptions used for 2012-2014 have little impact on  $B_{LT}$ .*

*Sensitivity analyses using various assumptions to extract three-year mean age-1+ U.S. waters biomass estimates from the available survey estimates all yielded candidate ABC values too large to replace  $ABC_d$ .*

*COP 9 specifies that  $B_{ST}$  should be based on biomass estimates from surveys. However, it does not state whether to use the spring survey versus the summer survey versus both. The [2019 CSNA workshop report](#) and the [June 2021 CPSMT Report 1](#) can be read to imply a preference for the summer survey when available, but this is not explicitly stated.*

*There is some potentially useful discussion of approaches to estimating  $E_{MSY}$  for anchovy in <https://www.pcouncil.org/documents/2019/03/agenda-item-e-4-attachment-1-emsy-methodology.pdf> and the analyses therein could be updated with the outputs of the new assessment, although it may be more fruitful to address outstanding uncertainties in the assessment first.*

*Agenda Item E.2.b, SSC Report, September 2016: "the SSC cautions that the development of an integrated assessment may not be as straightforward as implied by the workshop report. CPS have highly variable population dynamics and biological characteristics that present difficulties for assessment. Assessment models may need to be developed specifically for northern anchovy rather than relying on standard assessment software such as Stock Synthesis."*

## 2. Stock Assessment Terms of Reference (TOR)

The Scientific and Statistical committee (SSC) discussed the draft Terms of Reference (TOR) for stock assessments of coastal pelagic species (CPS), as well as upcoming proposed workshops on Pacific sardine. Ms. Jessi Doerpinghaus (Council Staff) was available to provide details on these topics. The SSC CPS Subcommittee met on May 5<sup>th</sup>, along with some members of the CPS Management Team (CPSMT) and the CPS Advisory Subpanel, to develop a draft TOR for CPS stock assessments. In recent years, there has been a single combined TOR for CPS and groundfish, and thus the task involved removing terminology and sections that did not apply to CPS and modifying language to reflect current practices in the CPS assessment process. The SSC agrees that the current version of the TOR is ready for public review. The SSC expects to revisit this draft TOR prior to the September Council meeting, so that a revised version can be provided in the advance November briefing book.

The version of the TOR posted to the June advance briefing book is the one endorsed by the CPS Subcommittee. The CPS Subcommittee report appended to this statement notes changes made relative to the previously combined TOR, including those changes that might be considered for the groundfish TOR. In relation to the seven issues raised in that report, the SSC recommends:

1. A combined, living accepted practices document for both CPS and groundfish that can be updated as appropriate be developed;
2. Post-assessment cycle meetings that includes CPS and groundfish analysts and reviewers be conducted. In cases where substantial fishery management plan (FMP)-specific issues arise, an additional separate meeting for that FMP would be appropriate;
3. The scientific uncertainty,  $\sigma$ , used to calculate the scientific uncertainty buffer should increase with the age of the assessment for CPS. The current approach for groundfish has been endorsed and should currently be implemented for CPS. However, CPS-specific rates of increase need to be developed, as they are expected to be higher than those for groundfish;
4. Given that the amount of work associated with some of the expectations for Panel members and stock assessment teams is substantial, capacity to meet these expectations needs to be considered in prioritization and meeting scheduling;
5. As with groundfish, it is important to ensure that data and document deadlines are met, and mechanisms to achieve this should be discussed further;

6. Members of review bodies should take implicit bias training, with Council staff indicating the need for the training in the material sent to reviewers; and
7. A TOR for CPS rebuilding analysis should be developed by the SSC and the CPSMT.

The SSC recommends moving forward with the two proposed workshops: A Pacific sardine stock structure workshop in Fall 2022 and a Council-sponsored Methodology Review with the goal of improving estimates of the abundance of the Northern Subpopulation of Pacific Sardine, which is proposed for Winter 2023. The CPS Subcommittee is willing to participate in these workshops.

*SSC Notes:*

*Deadlines:*

- *Can the Council enforce deadlines for data and documents?*
- *We have different deadlines for the two types of assessments.*
- *Data delivery enforcement is in the hands of the Council in the GF TOR.*
- *Note that supervisors are responsible to have people submit documents on time.*

*Implicit Bias:*

- *Implicit bias is an automatic reaction we have towards other people. These attitudes and stereotypes can negatively impact our understanding, actions, and decision-making. The idea that we can hold prejudices we don't want or believe was quite radical when it was first introduced, and the fact that people may discriminate unintentionally continues to have implications for understanding disparities in so many aspects of society, including but not limited to health care, policing, and education, as well as organizational practices like hiring and promotion. (from <https://www.projectimplicit.net/>)*
- *Research shows that most of our actions occur without our conscious thoughts, which means that our implicit biases often predict behavior more accurately than our conscious values. Self-awareness of our own implicit, unconscious, bias can and encourage each of us to be mindful of the risks of implicit bias can help us avoid acting according to biases that are contrary to our conscious values and beliefs.*
- *An implicit bias evaluation tool is available at <https://implicit.harvard.edu/implicit/education.html>.*

## REPORT OF THE SCIENTIFIC AND STATISTICAL COMMITTEE COASTAL PELAGIC SPECIES SUBCOMMITTEE

The SSC's Coastal Pelagic Species (CPS) Subcommittee (CPSSC) met via webinar on May 5, 2022 to discuss revisions to a draft Terms of Reference (TOR) for CPS Assessments, as well as plans for proposed CPS workshops in late 2022 and early 2023. Members of the CPS Management Team (CPSMT), CPS Advisory Subpanel (CPSAS), past Stock Assessment Review (STAR) Panels and Stock Assessment Teams (STATs) were present.

### **CPS Stock Assessment Terms of Reference**

The draft CPS TOR for 2023-2024 was adapted from the previous combined TOR for groundfish and CPS assessments. In reviewing the draft TOR, the CPSSC identified several changes necessary to tailor the TOR to CPS and incorporated these into a revised draft. The CPSSC also identified several changes that might merit incorporation into the groundfish TOR as well and incorporated these changes while flagging them for full SSC review. Finally, the CPSSC identified several issues, many with the potential to affect both TORs, which merited discussion by the full SSC before implementing changes to the draft TOR. These different categories of TOR changes or potential changes are discussed below in turn.

#### ***CPS-specific changes***

- The introduction to the CPS TOR acknowledges that until recently a combined groundfish-CPS TOR was used (although there was a separate CPS TOR before that) and summarizes the major changes.
- Material describing data-moderate and data-limited assessments was removed, as these have only been applied to groundfish, and most accepted approaches are not well suited to CPS life histories.
- It was noted that catch reports for CPS “may be” reviewed by the SSC but have not been to date.
- Reference to ecosystem dynamics as a particular topic for methodology review was removed, though the incorporation of ecosystem expertise in STAR Panels as appropriate was retained.
- Reference to a rebuilding TOR was removed because no rebuilding TOR exists for CPS. The need for a rebuilding TOR has been highlighted by CPS STAT and should be discussed by the full SSC (see below).
- Language suggesting that update assessments were only done for stocks with relatively “stable” full assessments was removed.
- Description of the CPS stock assessment prioritization process and the anchovy management framework was added.
- It was noted that STAR Panels should, if appropriate, raise concerns about the continued suitability of any of the parameters driving harvest control rules (e.g., temperature dependence, distribution terms) and not just  $F_{MSY}/E_{MSY}$  values.
- The equation for calculating sigma from an assessment's internal estimate of uncertainty was removed.
- Descriptions of timelines and document deadlines were revised to be consistent with the CPS assessment schedule. For example, final completion of assessment documents was

changed from “the November briefing book deadline” to “following the meeting in which the assessment is adopted.”

- For catch-only projections, primary responsibility for catch streams was assigned to the STAT, in consultation with the CPSMT.
- The sample table for catch-only projections will be revised to reflect the projection periods and quantities needed for CPS.
- References to “actively managed” versus “monitored” stocks were removed as this terminology is no longer used by the Council.
- The description of category 3 assessments was revised to reflect situations other than data-limited assessments.
- With respect to developing assessment prioritization guidance (section 5.5), National Marine Fisheries Service “NMFS” was changed to “NMFS/ the CPSMT.”
- Although CPS Management Team responsibilities were trimmed relative to the Groundfish TOR, the CPSMT still has concerns, and will provide a draft replacement paragraph.
- With respect to assessment updates, it was noted that Council Operating Procedure 9 outlines the schedule for update assessments by species.

#### **Changes made to CPS TOR that may merit consideration for groundfish TOR as well**

- The reference to the TOR being included in the Council’s Statement of Organization, Practices and Procedures (SOPP) was removed because it is not true for the CPS TOR. It should be verified that this remains true for groundfish, or if the groundfish TOR should be revised accordingly.
- Language about the Federal Advisory Committee Act (FACA) is not relevant to how reviews are actually conducted and so was dropped from the CPS TOR, it might merit removal from the groundfish TOR as well.
- The language describing methodology review panel reports was modified because the review panel report does not necessarily reflect the decisions of the SSC; the SSC reviews the panel report and may or may not adopt its recommendations. A similar change in the groundfish TOR may be warranted.
- Language describing the calculation of sigma was revised to clarify that the STAT and Council Staff have a role in initial recommendations of methods to determine sigma, but the final decision on sigma lies with the SSC. The corresponding language in the groundfish TOR may need revision as well.
- To the extent that pre-assessment workshops are held for CPS, it was the CPSSC’s position that the STAR Panel Chair should be encouraged, but not expected or required, to attend. A similar change may be warranted to the groundfish TOR, or it may become harder to find STAR Panel Chairs.
- Language on detailed comments from advisors (CPSMT and CPSAS) in STAR Panel Reports versus separate advisory body reports was removed from the CPS TOR. Similar language in the groundfish TOR might merit revisiting.
- CPSSC members are not expected to attend pre-assessment workshops. It may be worth revisiting expectations of the Groundfish Subcommittee for pre-assessment workshop attendance.
- Language was added clarifying the definition of “competing STATs” and when such a scenario might arise. This could be suitable for inclusion in the groundfish TOR as well.

- With respect to “within STAT” disagreements, the CPSSC suggested leaving the existing language, recognizing that it is impossible to anticipate every potential scenario and resolution regarding conflicts and disagreements.
- With respect to new data sources or methods, the language that such changes “should ideally be reviewed by a methodology review panel” was changed to “should typically be reviewed...”
- Language “requiring” Council staff to enforce data deadlines was removed, due to absence of meaningful enforcement mechanisms. Language regarding STAT responses to CPSMT or Council Staff requests regarding ACL alternatives for forecasts was amended to add the words “prior to the end of the STAR panel.”
- The workshop clarified that catch reports are reviewed by the SSC.

### **Issues identified for discussion by the full SSC**

- The merits of a combined stock assessment “best practices” for both groundfish and coastal pelagic species versus separate documents for each FMP, and their respective schedules for updating, warrants discussion.
- The merits of combined versus separate post-assessment process review meetings (a.k.a. post-mortems) should be discussed.
- It was unclear whether the SSC intended to adopt the practice of increasing sigma over the course of projection periods for CPS in the same manner as groundfish. This should be clarified, and SSC guidance should be clearly communicated and followed in the future.
- The implications of workload creep (e.g., CPSSC attendance at pre-assessment workshops, expectations for STAR Panel Chairs to be available for CPSMT and Council meetings) should be considered relative to the continued availability of reviewers.
- Deadlines, and means of enforcing them, may be needed for provision of data and requests for projections, as well as the preparation of supplemental reports and rebuttals should be clarified.
- The appropriateness of the recommendation that STAR Panelists participate in implicit bias training should be discussed.
- A TOR for CPS rebuilding analysis should be developed.

### **Proposed Sardine Workshops**

Mr. Dale Sweetnam (Southwest Fisheries Science Center) discussed two Pacific Sardine Workshops, tentatively scheduled for Fall 2022 and February 2023. The workshops were designed to address research and data needs that were previously identified by the SSC, CPSMT, and CPSAS.

The first workshop is designed to address the sardine stock structure to better delineate the Northern Sub-Population (NSP) and Southern Sub-Population (SSP) and improve the catch on which NSP assessments are based. The currently-used methods will be reviewed and alternative approaches explored. Mr. Sweetnam stated that NMFS would host this workshop. However, the issue of reimbursing attendees was raised if NMFS hosted the meeting, which raises the question of whether this should be a Council-sponsored workshop.

The second Workshop, proposed for 2023, is intended to be a methodology review and would be sponsored by the Council. The goal of this review is to improve estimates of NSP abundance. If the first Workshop recommends new methods be adopted to improve the delineation of the NSP and SSP stocks, these will need a review prior to use in a new assessment. Other potential topics

include acoustic trawl method survey revisions, nearshore acoustic methods, and aerial survey methods and how to include these in the assessment.

## F. Groundfish Management

### 2. Limited Entry Fixed Gear Catch Share Program Review

Dr. Jim Seger provided the Scientific and Statistical Committee (SSC) with an overview of changes made to the draft Limited Entry Fixed Gear Permit Stacking Program Review document ([Agenda Item F.2, Attachment 1](#)) in response to SSC comments on a previous draft. The SSC found the changes sufficiently addressed previous concerns raised by the SSC and appreciates the hard work of the authors.

*SSC Notes:*

*Port dependence concerns were addressed on pp. 32-33.*

*Some summary of the private data may be helpful, such as numbers of transactions from Dock Street Brokers.*

### 3. Stock Assessment Plan and Terms of Reference – Final Action

The Scientific and Statistical Committee (SSC) discussed stock assessment priorities for new groundfish stock assessments for 2023 and 2025 and final revisions to the Terms of Reference (TOR) for the 2023-2024 groundfish stock assessment process. The additional two TORs for the 2023-2024 groundfish rebuilding analyses and groundfish and coastal pelagic species (CPS) methodology reviews are endorsed by the SSC with no changes. The upcoming stock assessments will inform the harvest specifications and management measures decisions for groundfish fisheries in 2025 and beyond. Drs. Jim Hastie and Chantel Wetzel (Northwest Fisheries Science Center) presented an overview of stock assessment prioritization materials. Dr. John Budrick (California Department of Fish and Game) guided discussion on questions posed by the Council, and previously discussed by the Groundfish Subcommittee. The SSC appreciates the extensive analyses and reports completed for this agenda item.

The SSC agreed on a limited number of final revisions to the draft TOR for groundfish stock assessments for 2023. The CPS Subcommittee report appended to [Agenda Item D.2.a, Supplemental SSC Report 1](#) notes changes that were made relative to the previously combined groundfish and CPS TOR, most of which have also been made in the groundfish TOR. This revised version of the TOR is endorsed by the SSC and is provided to the Council as [Agenda Item F.3, Supplemental REVISED Attachment 6 \(Electronic Only\)](#).

The SSC discussed stock assessment priorities and data availability for upcoming stock assessments, including available age data, the backlog of unaged otoliths, and aging effort needed to produce ages, stock assessment workload, and the proposed Stock Assessment Review (STAR) panel calendar for 2023. There was broad agreement that black rockfish is a high priority for 2023 stock assessment as this species ranked first in the National Marine Fisheries Service stock

assessment prioritization process. The 2023 assessment is likely to capture spatial stock structure through three separate regional stock assessment models. The current lack of size and age data to estimate regional growth curves for quillback rockfish is problematic; there is a lack of samples at small and large sizes that needs to be addressed prior to the next quillback rockfish stock assessment. While sampling for quillback rockfish age-structures is ongoing, conducting a benchmark stock assessment for quillback rockfish in 2025 may provide the opportunity to ensure the data necessary for growth estimation for quillback rockfish in California are available. The SSC discussed additional data from Remotely Operated Vehicle Surveys, the California Cooperative Fisheries Research Program, and fishery-dependent surveys that could provide indices of abundance and length compositions for a future quillback rockfish benchmark assessment in California.

The SSC discussed that, from an age reading perspective, it would not be possible to produce ages for 2023 stock assessments for petrale sole, canary rockfish, and roughey/blackspotted rockfish in the same cycle, even if otoliths are subsampled from available samples. Roughey rockfish are difficult to age and there is a large backlog of both survey and fishery unaged structures. The SSC suggests that conducting a roughey rockfish benchmark assessment during 2025 would ensure a greater number of ages would be available for the stock assessment. The possibility of conducting a data-moderate roughey assessment was discussed briefly, but the SSC does not recommend this course of action due to high attainment by the fishery. If a data-moderate stock assessment for roughey rockfish resulted in an unfavorable stock status, the Council could have similar issues to those encountered during 2021. The aging backlog for canary rockfish is smaller than that for roughey rockfish so could more easily be brought up to date for 2023 stock assessments. While a canary rockfish assessment would require less aging capacity, it will require greater assessor capacity than roughey rockfish due to spatial structure and fleet complexity.

The SSC endorses conducting stock assessments and making status determinations for all areas concurrently within a stock's designated management unit (i.e., stock definition). The SSC recommends 2023 copper rockfish assessments that encompass, at a minimum, all of California. However, given that stock definitions are not yet determined for copper rockfish, the Council may want to consider assessments that encompass the entire coast. Additional data, similar to those described for quillback rockfish, are available for California copper rockfish benchmark stock assessments. A sufficient number of otoliths are available to provide California growth estimates to replace current proxy growth estimates in the 2021 data-moderate assessments based on data from Oregon and Washington.

The SSC discussed the idea of working on assessments outside of the stock assessment cycle during summer and fall of the even years, with the aim of providing the Council an early view of results during November. The purported goal is to allow the Council to remove that stock from the stock assessment cycle based on preliminary results. SSC concerns with this approach include the expansion of the current stock assessment process and increased workload, and that such a process could result in the removal of stocks from the stock assessment cycle due to adverse results. The SSC is not in favor of the proposed process that would allow the removal of an assessment with preliminary results at the November Council meeting.

The SSC suggests deferring the STAR Panel schedule in [Agenda Item F.3, Attachment 1](#) to the science centers and Council staff once Council decisions for 2023 stock assessment priorities have been finalized. The review for a data-moderate shortspine thornyhead assessment also needs to be completed at an early STAR Panel to allow for student engagement.

The SSC provides the following feedback on Council questions regarding the 2023 groundfish stock assessment process.

*1. How will 2023 assessments proceed in line with discussions on stock definitions?*

Stock definitions for management purposes for stocks to be assessed during 2023 should be defined during November 2022. While the stock designations will not define the spatial resolution of the assessment units, assessment units will need to be structured so that their results can be aggregated to match the stock definitions. The 2023 assessments will initially assume that the stock designations will match the current regions for harvest specifications, which could lead to mismatches between stock definitions as designated by the Council and assessment areas.

*2. How stocks of the same species may be assessed according to conservation need (i.e., do all areas need to be assessed at once)?*

There is value in conducting assessments for all areas simultaneously given the desire to base assessments on similar assumptions and model specifications for all assessment units along the coast. Some stocks may be subject to a full assessment that implements more data-limited methods (e.g., 2021 vermilion rockfish in Washington), which would not limit the ability to assess all areas.

*3. Presuming nearshore and shelf stocks should be assessed at as fine a scale as the data allows or when areas are combined, how should regional differences in status be evaluated?*

Regional differences in stock depletion may depend on multiple factors, including fishing intensity and movement. Assessments will be structured so that their results can be aggregated to the stock definitions selected by the Council, but there may be multiple assessment areas within each stock as designated by the Council, providing some information on regional stock depletion differences. Assessment areas will be based on the availability of data and preliminary analyses that will be brought forward at the pre-assessment workshops. In some cases, it may be possible to allocate overfishing limits within an assessment area to a finer resolution if there is evidence for localized depletion at a spatial scale finer than that of the assessment.

*4. What is the feasibility of a research assessment for shortbelly rockfish in 2023, 2025, or out-of-cycle?*

The last assessment of shortbelly rockfish was conducted as a research assessment in 2007. Shortbelly is currently an ecosystem component species that is not identified as a priority species for 2023 assessment. If the Council wishes to assess shortbelly rockfish, it should be prioritized for a future full assessment and not done out-of-cycle.

SSC Notes:

Age readings for the petrale sole and canary rockfish stock assessments are a priority if they are chosen for assessment. Aging labs will be able to catch up on the backlog of unread otoliths from recent years for a 2023 stock assessment.

Revisions to TORs:

See the notes on implicit bias in [Agenda Item D.2.a, Supplemental SSC Report 1, June 2022](#).

In the future, the SSC may consider a 4<sup>th</sup> category of assessment products.

#### 4. Stock Definitions – Scoping

The Scientific and Statistical Committee (SSC) discussed scoping for Amendment 31 to the Pacific Coast Groundfish Fishery Management Plan that defines stocks, focusing on the scoping questions and considerations in [Agenda Item F.4, Attachment 1](#). Amendment 31 will provide refined definitions for actively managed stocks, Ecosystem Component Species, stock complexes, and the area delineations used for determining stock status and harvest specifications. The definitions of stocks involve scientific and policy considerations. The SSC discussion addressed scientific considerations only.

The SSC endorses a multi-phase approach to establishing stock definitions and notes that the priority species should be those assessed in 2021 and that are planned for assessment in 2023 and 2025. It was also noted that stock definitions for several species (e.g., sablefish and petrale sole) are coastwide and there is no evidence for changing these definitions. Assigning these stock definitions should also be a priority for the first phase. Similarly, it may be possible to select stock definitions for stocks that constitute very small overfishing limit components ([Attachment 1, Table 2](#)) and could be designated as Ecosystem Component Species during the first phase given lack of evidence that they require conservation and management.

Subsequently, the Council could consider a more comprehensive evaluation of species co-occurring in the nearshore, shelf, and slope, as well as delineation of stocks in each. As part of this process the Council should evaluate the current stock complexes to determine whether they comply with National Standard 1 guidelines and can benefit from sharing of information on connectivity and distribution among species with stock definitions being refined over time.

The SSC supports the establishment of a working group to work on analyses informing stock definitions that includes members of Council advisory bodies and outside experts, including scientists from the Science Centers. The working group should review the approaches used by other Councils, and whether their approaches can be applied for West Coast groundfishes. The SSC is willing to review the products produced by the working group.

The SSC encourages the Groundfish Management Team (GMT) to lead an update of the Productivity and Susceptibility Analysis, which is needed due to the rebuilding of shelf stocks and

associated increases in acceptable biological catches, expanded access to some rockfish conservation areas, and climate-related range shifts.

[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.

*SSC Notes:*

*Analysis of the yield at  $B_{MSY}$  and current ABC contribution for the full suite of co-occurring species in the nearshore, shelf and slope can be undertaken to identify which species provide economically meaningful contributions to aggregate yield and which are incidental to the fishery. Additionally, average ex-vessel price per pound can be applied to the yield contribution for each species to provide a measure of the relative economic contribution to revenue from each stock in the broader complex to account for disproportionate contributions to aggregate potential revenue from stocks in each complex as a whole. Such analyses can help ensure that the stock complexes are managed to bring about the greatest long-term net benefit to the nation while meeting the requirements of National Standard 3.*

## 5. Sablefish Gear Switching

The Scientific and Statistical Committee (SSC) received a report from Dr. Jim Seger and Ms. Jessi Doerpinghaus on an annotated outline for the analytical document that will be used to evaluate alternatives under consideration by the Council on limiting the use of fixed gear in the trawl individual fishing quota (IFQ) fishery (gear switching) ([Agenda Item F.5, Attachment 4](#)). The SSC provided feedback to the analysts.

The SSC was asked to provide feedback on a “baseline” scenario that describes conditions under the No Action alternative (i.e., no changes to current rules regarding gear switching). The effects of each alternative will then be analyzed relative to the conditions under the No Action baseline. The analysts are proposing an historical baseline (e.g., average of 2016-2019) as representative of gear switching that would be expected in the future under a No Action alternative. Multiple factors, including changes in sablefish recruitment patterns, changes in annual catch limits, production, and market disruptions due to the global pandemic, and changes in export market conditions, make it unlikely that recent years will be an accurate estimate of future conditions. Rather than using an average of recent years (e.g., 2016-2019) as a baseline, it may be useful to use several individual years as baselines of comparison. Each historical year evaluated would

represent the No Action alternative under different assumptions regarding future conditions and the amount of gear switching that would occur. These comparisons might include recent years that were considered unusual.

The SSC also had several other recommendations for the analysts in the development of the analytical document. The SSC recommends that the analysts choose appropriate metrics to evaluate the effects of each alternative. The annotated outline uses attainment for multiple groundfish species and gross revenues, among other metrics. The analysis should evaluate effects on net revenue as well. While there is evidence that reducing gear switching may increase gross revenues, the different cost structures for the different gear types suggests that reducing gear switching may not necessarily increase net revenue. The Economic Data Collection program at the Northwest Fisheries Science Center has cost and revenue data for trawlers and gear switchers that can be used to estimate net revenue and how it may be affected by changes in prices, costs, and species composition in trawl fisheries. The SSC also notes it is important that the analysis evaluate tradeoffs from each alternative. While limiting gear switching may increase attainment of some species, it may have negative income effects on participants that would prefer to gear switch and on the value of quota shares. Finally, the analysis should address whether and why the current market-driven allocation of sablefish quota pounds is undesirable, and what problems the proposed alternatives are trying to correct by constraining the market. This context is important for evaluating whether the alternatives under consideration are meeting their desired objectives or may result in unintended consequences.

*SSC Notes:*

*Given that future conditions depend on a variety of factors (which may have opposing effects on permit holders' decision to switch gears), it may be worthwhile to estimate a model that projects the degree of gear switching that occurs as a function of conditions like ACLs and prices.*

*Erin Steiner and Dan Holland at the NWFSC have done some work calculating net revenue in some components of the limited entry trawl fishery (both DTS trawl and fixed gear sablefish by gear switchers) and how it is affected by costs, prices, and catch ratios. That work may provide some examples of how to model gear switching and catch.*

*Given that we are unlikely to know or be able to accurately project future conditions, presenting multiple scenarios that reflect extreme conditions and bracket the upper and lower bounds of the effect of the program may be the best approach.*

## 6. Exempted Fishing Permits, Harvest Specifications, and Management Measures for 2023-2024 Fisheries – Final Action

Mr. John DeVore (Council staff) provided a review of the corrected apportionment of copper rockfish found in Agenda Item F.6, [Attachment 3](#) as well as alternative harvest specifications for quillback rockfish found in [Table 1-6](#) of Agenda Item F.6, Attachment 2.

The original apportionment of copper rockfish that was based on the proportion of historical catches north of 40° 10' N. lat. for all of California was corrected to reflect only the proportion for the assessment area north of Point Conception. The Scientific and Statistical Committee (SSC) agrees with the correction to copper rockfish apportionment in Tables 2 and 3 of Attachment 3 and endorses the resulting values for use in management in 2023-2024.

In Attachment 2, the No Action alternative for quillback rockfish uses the default 40-10 harvest control rule, while the alternatives considered use spawning potential ratio harvest rates of 0.55 and 0.60 as calculated in the [rebuilding analysis](#) to inform annual catch limit contributions. The SSC endorsed the rebuilding analysis for use in management ([Agenda Item E.2.a, Supplemental SSC Report 1, November 2021](#)), with which the alternatives are consistent.

C. Administrative Matters (*continued*)

8. Future Council Meeting Agenda and Workload Planning

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

The 7<sup>th</sup> National Meeting of the Scientific Coordination Subcommittee of the Council Coordination Committee (SCS7) is scheduled for August 15-17 in Sitka, Alaska. The meeting will explore fishery management adaptations to a changing climate. Dr. André Punt has been invited to be a keynote speaker and other SSC members anticipated to attend include Drs. Kristin Marshall, Melissa Haltuch, Theresa Tsou, and Galen Johnson and potentially Owen Hamel.

The SSC recommends convening the annual SSC Ecosystem Subcommittee meeting with the CCIEA team to review additions to the Integrated Ecosystem Assessment (IEA) report as a webinar on September 16. The SSC also recommends inviting the SSC Salmon Subcommittee, Salmon Technical Team, and Salmon Advisory Subpanel to the September SSC Ecosystem Subcommittee meeting since one of the recommended topics is specifically relevant to salmon management. The Ecosystem Workgroup and Ecosystem Advisory Subpanel are also invited to this meeting.

The SSC Coastal Pelagic Species (CPS) Subcommittee will hold a webinar meeting in August or early September to review the changes to the CPS Stock Assessment Terms of Reference.

The SSC recommends holding the annual Salmon Methodology Review in late September or late October; a specific date and topics are yet to be determined

The SSC recommends moving forward with the two proposed workshops on Pacific Sardine. A Pacific Sardine stock structure workshop is proposed for Fall, 2022. A Council-sponsored Methodology Review with the goal of improving estimates of the abundance of the Northern Subpopulation of Pacific Sardine is proposed for Winter, 2023. The CPS Subcommittee is willing to participate in these workshops.

The SSC Groundfish Subcommittee is planning additional meetings and workshops over the next several months.

- The SSC Groundfish Subcommittee plans to hold workshop June 21-23 to develop methods for constructing abundance indices based on hook-and-line surveys and to review the Template Model Builder implementation of a species distribution model to generate biomass indices. This meeting has been noticed and will be held as a webinar over three days.
- The SSC Groundfish Subcommittee proposes a planning meeting to be held as a webinar in late July or early August to coordinate aging prioritization to inform the groundfish stock assessments prioritized for review in 2023. This will allow early coordination to provide as much age data as possible.
- The SSC Groundfish Subcommittee will conduct a workshop to be held as a webinar over 3 to 4 days in late August to explore approaches to model the effect of large closed areas and other regulation changes in stock assessments. The Subcommittee will also discuss catch estimation procedures to inform catch reconstructions for 2023 assessments.
- The SSC Groundfish Subcommittee will review the Oregon Department of Fish and Wildlife's proposed acoustic/ROV survey methodology for semi-pelagic rockfish on September 27-30 with the participation of a Center of Independent Experts scientist with expertise on acoustic abundance estimation methods. The SSC recommends combining the review of methods for constructing abundance indices from Washington hook-and-line surveys to this meeting to reduce the number of meetings. Due to participation by a CIE expert, this is proposed as a hybrid in-person meeting in Portland over 3.5 to 4 days with remote access available for those unable to attend in person. The specific dates are not fixed and are subject to the agenda.
- The SSC Groundfish Subcommittee recommends scheduling a workshop on using ROV data in stock assessments in November or December of 2022.
- The SSC Groundfish Subcommittee previously proposed a workshop to discuss alternative harvest control rules for spiny dogfish to reflect its lower productivity and the finding from the most recent assessment that the SPR 50% harvest rate may not be sustainable. The SSC recommends postponing that workshop until 2024 due to lack of data and capacity to make progress on this topic prior to the 2023 stock assessment cycle.

*SSC Notes:*

*For the ROV workshop to be held in November or December, it may not be possible to get this on the March SSC agenda. The workshop report could be included in the briefing book as an informational item but it would not get the review and approval of the full SSC.*

**Proposed Workshops and SSC Subcommittee Meetings for 2022 and Beyond**

<b>Workshop/Meeting</b>		<b>Potential Dates</b>	<b>Sponsor/ Tentative Location</b>	<b>SSC Reps.</b>	<b>Additional Reviewers</b>	<b>AB Reps.</b>	<b>Council Staff</b>
<b>1</b>	Proposed Workshop to Develop Methods for Constructing Abundance Indices Based on Hook-and-line Surveys/ sdmTMB Model Review	June 21-23	Council/Webinar	Groundfish Subcommittee Members	TBD	GMT GAP	DeVore
<b>2</b>	Aging Prioritization Meeting for 2023 Stock Assessments	late July/Aug TBD	Council/Webinar	Select Groundfish Subcommittee Members	NA	GMT GAP	DeVore
<b>3</b>	Proposed Groundfish Subcommittee Meeting to Explore Approaches to Deal with Large Closed Areas, Catch Estimation, and Other Regulation Changes in Stock Assessments/Catch Estimation Meeting	Aug TBD	Council/Webinar	Groundfish Subcommittee Members (Budrick & Field - co-chairs)	TBD	GMT GAP	DeVore
<b>4</b>	7 <sup>th</sup> National Meeting of the Scientific Coordination Subcommittee of the Council Coordination Committee	Aug 15-17, 2022	NPFMC/ Sitka, AK	Punt, Marshall, Haltuch, Tsou, Johnson, and Hamel (?)	NA	NA	DeVore

**Proposed Workshops and SSC Subcommittee Meetings for 2022 and Beyond**

<b>Workshop/Meeting</b>		<b>Potential Dates</b>	<b>Sponsor/ Tentative Location</b>	<b>SSC Reps.</b>	<b>Additional Reviewers</b>	<b>AB Reps.</b>	<b>Council Staff</b>
<b>5</b>	Ecosystem Subcommittee/CCIEA Team Meeting	Sept 16, 2022	Council/Webinar	Ecosystem and Salmon Subcommittee Members	CCIEA Team	EWG EAS STT SAS	DeVore Dahl Ehlke
<b>6</b>	CPS TOR Review	Aug or Sept TBD	Council/Webinar	CPS Subcommittee Members	Science Center Assessment Staff	CPSMT CPSAS	Doerpinghaus
<b>7</b>	Proposed Methodology Review for the ODFW Acoustic Survey, Proposed Workshop to Develop Methods for Constructing Abundance Indices Based on WA Hook-and-line Surveys	Sept 27-30 (subject to final agenda), 2022	Council/Portland Hybrid	Groundfish Subcommittee Members (Budrick & Hamel - co-chairs)	CIE, Science Center Assessment Staff	GMT GAP	DeVore
<b>8</b>	Salmon Methodology Review	Sept or Oct 2022 TBD	Council/TBD	Salmon Subcommittee Members	TBD	STT MEW	Ehlke
<b>9</b>	ROV Survey and Workshop for Using ROV Data in Stock Assessments	Nov/Dec TBD	Council/Webinar	Groundfish Subcommittee Members (Budrick - chair)	Science Center Assessment Staff	GMT GAP	DeVore

**Proposed Workshops and SSC Subcommittee Meetings for 2022 and Beyond**

<b>Workshop/Meeting</b>		<b>Potential Dates</b>	<b>Sponsor/ Tentative Location</b>	<b>SSC Reps.</b>	<b>Additional Reviewers</b>	<b>AB Reps.</b>	<b>Council Staff</b>
<b>10</b>	Pacific Sardine Stock Structure Workshop	Fall 2022	SWFSC/TBD	CPS Subcommittee Members	Science Center Assessment/ Survey Staff	CPSMT CPSAS	Doerpinghaus
<b>11</b>	Methodology Review on Abundance and Catch Estimation of the Northern Subpopulation of Pacific Sardine	Winter 2023	Council/TBD	CPS Subcommittee Members (Punt - chair)	Science Center Assessment/ Survey Staff	CPSMT CPSAS	Doerpinghaus
<b>12</b>	Proposed Workshop to Develop Alternative Harvest Control Rules for Spiny Dogfish	2024 TBD	Council/Webinar	Groundfish Subcommittee Members	TBD	GMT GAP	TBD

## SSC Subcommittee Assignments

<b>Salmon</b>	<b>Groundfish</b>	<b>Coastal Pelagic Species</b>	<b>Highly Migratory Species</b>	<b>Economics</b>	<b>Ecosystem-Based Management</b>
<b>Alan Byrne</b>	<b>John Budrick</b>	<b>André Punt</b>	<b>John Field</b>	<b>Cameron Speir</b>	<b>Kristin Marshall</b>
John Budrick	Fabio Caltabellotta	John Budrick	Fabio Caltabellotta	Dan Holland	John Field
Owen Hamel	John Field	Alan Byrne	Dan Holland	André Punt	Melissa Haltuch
Galen Johnson	Melissa Haltuch	John Field	Kristin Marshall		Dan Holland
Steve Munch	Owen Hamel	Owen Hamel	André Punt		Galen Johnson
Will Satterthwaite	Kristin Marshall	Steve Munch			André Punt
Jason Schaffler	André Punt	Will Satterthwaite			Will Satterthwaite
Ole Shelton	Jason Schaffler	Tien-Shui Tsou			Ole Shelton
Cameron Speir	Tien-Shui Tsou				Cameron Speir
Tien-Shui Tsou					

**Bold** denotes Subcommittee Chairperson

ADJOURN

PFMC  
08/09/22