DRAFT SUMMARY MINUTES
Scientific and Statistical Committee
Pacific Fishery Management Council
Hilton Vancouver Hotel
Heritage F Room
3001 West Sixth Street
Vancouver, Washington 98660
Telephone: 360-993-4500

March 7-8, 2017

Members in Attendance

Dr. Evelyn Brown, Lummi Nation, Bellingham, WA
Dr. John Budrick, California Department of Fish and Wildlife, Belmont, CA
Mr. Alan Byrne, Idaho Department of Fish and Game, Boise, ID
Dr. Martin Dorn, National Marine Fisheries Service Alaska Fisheries Science Center, Seattle, WA
Dr. John Field, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA
Dr. Owen Hamel, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
Dr. Michael Harte, Oregon State University, Corvallis, OR
Dr. Dan Holland, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
Dr. Galen Johnson, Northwest Indian Fisheries Commission, Olympia, WA
Dr. Kevin Piner, National Marine Fisheries Service Southwest Fisheries Science Center, La Jolla, CA
Dr. André Punt, University of Washington, Seattle, WA
Dr. David Sampson, Oregon Department of Fish and Wildlife, Newport, OR
Dr. William Satterthwaite, SSC Chair, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA
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. Aaron Berger, National Marine Fisheries Service Northwest Fisheries Science Center, Newport, OR

SSC Recusals for the March 2017 Meeting		
SSC Member	**Issue**	**Reason**
Dr. Dan Holland	F.1. Annual State of the California Current Ecosystem Report.	Dr. Holland was a contributing author of the CCIEA report. In addition, Dr. Holland supervises some members of the IEA Team

A. Call to Order

Chairman Will Satterthwaite called the meeting to order at 8 a.m. Mr. Tracy briefed the Council on last week's Council Coordination Committee and commended the SSC with their engagement in planning the agenda for the next Scientific Coordination Subcommittee meeting in January 2018. He then briefed the SSC on the issues to be discussed this week.

F. Ecosystem Management

1. Annual State of the California Current Ecosystem Report

The Scientific and Statistical Committee (SSC) received a presentation by Drs. Chris Harvey (Northwest Fisheries Science Center) and Toby Garfield (Southwest Fisheries Science Center) on the Annual State of California Current Ecosystem Report to the Council. The report is a concise source of information on patterns of climate forcing on the California Current ecosystem and the biological response of ecosystem components, including fish stocks and fisheries. The report is an important contribution to the Council process that provides an ecosystem perspective on West Coast fish stocks, fisheries, and coastal communities. The SSC appreciates the California Current Integrated Ecosystem Assessment (CCIEA) team's responsiveness to suggestions by the Council and SSC on the previous year's report, and those arising from the comprehensive indicator review completed by the Council and its advisory bodies last year.

This year's annual ecosystem report indicates that there has been a return to more normal oceanographic conditions. The biological responses to the marine heat wave are lagged relative to oceanographic conditions, and the impacts on Council-managed stocks are ongoing. Although some of the effects of the climate "stress test" on the ecosystem were successfully anticipated, others were unexpected, such as the high numbers of juvenile rockfish that were detected in the juvenile rockfish survey and in anecdotal observations. Recruitment success of these year classes will not be known with any certainty until they start showing up in groundfish surveys and in the fishery in 3-5 years.

The SSC emphasizes that interpretation of many of the indicators in the report requires an understanding of the uncertainty and natural variability that is associated with the indicator. Without that context, there is a risk of overconfidence in the predictive power of the indicators. For example, the plots showing abundance and trends in regional forage availability and salmon escapement do not currently show the uncertainty associated with the points, so it is difficult to

know whether the patterns are meaningful. In addition, they can understate the severity of depletion when the recent mean abundance is low and variability is high (for example, compare results for sardine and anchovy in Fig. 4.2.2 in Agenda Item F.1.a, NMFS Report 1 with Fig. G2 on page S20 of Agenda Item F.1.a, NMFS Report 2). Interpretation of indicators also requires that the broader context of the indicator be considered. For example, the interpretation of indices for California sea lions should take into account the current population size and whether the sea lion population has reached carrying capacity.

The SSC discussed with the CCIEA team which components in the Integrated Ecosystem Assessment (IEA) were appropriate for technical review at a joint meeting with the SSC Ecosystem Subcommittee (SSCES) scheduled for September 13-14 during the September 2017 Council meeting in Boise. A preliminary list of topics relative to the annual ecosystem report include:
- new habitat indicators, particularly those based on salmon life cycle stages;
- use of time series models to smooth the indices and separate signal from noise;
- definition and identification of biologically meaningful thresholds in indicators for risk assessment.

Additional topics that are not presently included in the annual ecosystem report, but may benefit from SSCES review include:
- an initial management strategy evaluation based on current assessment assumptions that includes an environmental driver of sablefish recruitment;
- models of fishery participation choices under a variable climate.

This meeting will be most useful if the primary analysts conducting the work being reviewed attend the meeting.

Notes to SSC and the CCIEA team:
- *The SSC notes that interpreting the health of sea lion (and other potential mammal or sea bird indicator species) foraging and reproductive metrics should be conditioned on population information including the proximity to carrying capacity for the species or species complex.*
- *The SSC is concerned about how well regional trends, where data is pooled across large areas, represent actual trends. The small-scale variability of physical parameters should be evaluated before summarizing over broad geographic regions. For example, indicators representing watersheds likely operate at smaller scales than marine regions and therefore should not be pooled at the same scale.*
- *The SSC recommends decomposing the time series for climate indices into seasonal and interannual components to improve the information derived from the index. For example, the seasonal pattern could be removed from the Pacific Decadal Oscillation, thereby making the interannual signal more evident.*
- *The SSC recommends that a skill assessment be done of the Columbia River salmon stoplight indicators by comparing a composite index score (e.g., % of red scores, etc.) to observed run sizes. This comparison could be included in the stoplight figure.*
- *The SSC recommends exploring the use of percentiles instead of standard error in the Quad plots since the distribution of many variables is log normal (low values cannot be*

accurately displayed). In addition, evaluate alternative approaches to adding error bars to the plots.

- *The SSC noted that in the aquaculture and seafood demand section, what is presented is "consumption" and not "demand".*
- *In the time series of crab landings, check that the annual data represent landings by crab season, and not calendar year.*
- *In the indicator time series plot, consider the appropriate time frame for calculating the average, which would depend on the indicator in question. For example, the Oceanic Niño Index oscillates on a 5-7 year frequency, so a five-year average is an average for typical cycle and not indicative of a pattern.*
- *Recheck the groundfish status plot. It is unlikely that widow rockfish is being harvested at close to the F_{MSY} proxy.*
- *In referring to groundfish status plot, be careful in use of the terms overfished and overfishing. Terminology should follow that used in the NMFS species information system (SIS). Retrospective fishing mortalities that are above the proxy F_{MSY} do not meet the Council's definition of overfishing.*

2. Sablefish Ecosystem Indicators

An update on the ongoing work to evaluate oceanic drivers of sablefish recruitment was presented to the Scientific and Statistical Committee (SSC) by Dr. Melissa Haltuch (NWFSC) and Dr. Nick Tolimieri (NWFSC). A written document was not made available prior to the meeting, which limited substantive discussion. The sablefish modelling group incorporated the SSC recommendation to use residuals from the spawner-recruit relationship in lieu of recruitment estimates in the new analyses. The analyses could not be extended to the most recent years (2011-2014) due to changes in the Regional Ocean Modelling Systems (ROMS) model that provides environmental covariates used as potential drivers of recruitment in the model. The process of creating a consistent time series of ROMS model output representing environmental conditions is complex and will require resources and expertise in oceanic modelling beyond those of the sablefish modelling group. The source of those resources has not yet been identified. The SSC encourages the sablefish modelling group to continue working with Canadian and Alaskan colleagues in understanding sablefish stock structure and developing a population model consistent with that understanding. If the stock being assessed is defined to cover a broader spatial range, it may be necessary to obtain ROMS outputs that cover a broader spatial range as well. Due to the complexity of the remaining tasks, a completed revision of this analysis is not anticipated in time for incorporation into a stock assessment in 2019.

SSC Notes:

The best predicting model (r^2=0.57) had difficulty in predicting the last 5 years or so of recruitments. The SSC reiterated that identifying an appropriate stock structure will be needed prior to a final examination of oceanic drivers of recruitment. The sablefish modelling group indicated that a subjective comparison of area-specific models for similarities in recruitment trends might be feasible before 2019.

3. Review of Fishery Ecosystem Plan Initiatives

The Scientific and Statistical Committee (SSC) reviewed the candidate ecosystem plan initiatives listed in Agenda Item F.3, Attachment 1, along with the comments on each initiative made by the Ecosystem Workgroup (Agenda Item F.3.a, EWG Report).

All of the initiatives are feasible and useful, but unlike the first two initiatives (Protection for Unfished Forage Fish and Review of Ecosystem Indicators), most of the remaining initiatives will be long-term projects. Appropriate resources need to be dedicated to the chosen initiatives to ensure adequate progress is made. The SSC notes that the choice of initiatives is a policy decision. However, most of the initiatives involve scientific considerations. The SSC should be involved throughout the implementation of the initiatives, particularly during the planning stages.

The SSC has the following comments on the initiatives:
- Initiative A2.1 (Potential Long-Term Effects of Council Harvest Policies on Age- and Size-Distribution in Managed Stocks) has the advantage that much of the data and models are already available or are in development.
- If initiative A2.6 (Human Recruitment to the Fisheries Initiative) or A2.7 (Cross-Fishery Management Plan Socio-Economic Effects of Fisheries Management Initiative) are selected, account should be taken of work already being conducted by staff at the Northwest and Southwest Fisheries Science Centers, which should be completed in the next two to three years. In addition, for initiative A2.6, the suggested analysis of available demographic data on participants in Council-managed fisheries would be facilitated by data collected by states on fishing crew (e.g., crew and commercial fishing license applications). This will require cooperation with the states, which the SSC encourages.
- There is new science (NOAA Climate Plan; Western Regional Action Plan) as well as ongoing research such as the climate vulnerability analysis for West Coast marine fish that should be taken into account if initiative A2.8 (Cross-Fishery Management Plan Effects of Climate Shifts) is selected. The SSC expects that climate change will lead to changes in stock productivity and a consequent need to revise reference points. This initiative should therefore explore the impact of changing climate on harvest policy choices, including how reference points are calculated.

Many of the initiatives (such as A2.1 and A2.8) will require involvement of scientific staff who are already committed to conducting analyses to support Council decision-making. Care should be taken to ensure that implementing the new initiatives will not lead to a loss of the basic information on which management is based, such as stock assessments.

E. Salmon Management

2. Review of 2016 Fisheries and Summary of 2017 Stock Abundance Forecasts

2016 Review of Ocean Salmon Fisheries

Dr. Robert Kope (Northwest Fisheries Science Center) discussed the *Review of 2016 Ocean Salmon Fisheries* with the Scientific and Statistical Committee (SSC). The report includes

sections on status determination criteria in Chapters II and III for Chinook and coho salmon stocks, respectively. Klamath River Fall Chinook and Queets and Skagit coho salmon stocks are approaching an overfished condition. In addition, several Chinook salmon stocks failed to meet escapement goals, while recent escapement estimates for many coho stocks were unavailable. Although 2016 exploitation rate estimates are not yet available for any stock and 2015 exploitation rate estimates are only available for two stocks, the most recent exploitation rate estimate for most stocks were below their maximum fishing mortality thresholds (MFMT). However, the most recent exploitation rate estimate for Hood Canal coho (from 2014) exceeded its MFMT, meaning that Hood Canal coho were subject to overfishing in 2014. Table II-5 contains the performance of Chinook salmon stocks relative to 2016 preseason conservation objectives while Table II-6 contains Chinook salmon stock status relative to overfished and overfishing criteria. There were no Chinook salmon stocks classified as overfished. Tables III-6 and III-7 contain this same information for coho salmon stocks. There were no coho salmon stocks classified as overfished.

2017 Stock Abundance Forecasts

Dr. Kope discussed Chinook and coho salmon stock abundance forecasts for 2017 in P*reseason Report I.* The SSC endorses the 2017 forecasts, acceptable biological catches, and overfishing limits in *Preseason Report I* as the best available science for use in 2017 salmon management.

Considerations Regarding Recent Environmental and Biological Conditions in 2016-2017

The California Current Integrated Ecosystem Assessment team described ocean conditions as generally unfavorable to salmon. Environmental conditions are incorporated into forecasts for some stocks, but not all. While mechanisms are not in place to quantitatively incorporate such considerations into the forecasts for all stocks in 2017, caution is warranted in setting harvest levels and management measures.

Dr. Kope and the SSC note that the variability of escapements has increased over the past decade, making them more difficult to forecast. As a result of this increasing variability, forecast errors may be larger.

SSC Notes:

Juan de Fuca and Stillaguamish coho stocks were quite close to overfished based on the three most recent escapement estimates available.

The following stocks failed to meet their escapement goals: Sacramento River fall Chinook, Klamath River fall Chinook, South/Local Migrating Oregon Chinook stocks, Columbia River Basin fall Chinook MCB, and Quillayute Spring/Summer fall Chinook.

The Preseason I Report was available the afternoon of Friday, March 3, leaving no full working days for the SSC to read the report before their meeting (Monday is a travel day for most members). SSC members could give more thoughtful and careful consideration to the science with a more reasonable window of time for review.

The SSC based their conclusions on numbers available in the corrected versions of the document available March 7, 2017.

I. Groundfish Management

1. Salmon Endangered Species Act (ESA) Consultation Analysis

The Scientific and Statistical Committee (SSC) reviewed the document "Alternatives for Salmon Bycatch Management in the Pacific Coast Groundfish Fisheries" (Agenda Item I.1.a, NMFS Report 1), which provides estimates of salmon bycatch in the groundfish fisheries under a suite of scenarios specified by the Council. Ms. Susan Bishop (West Coast Region) and Drs. Paul Moran (Northwest Fisheries Science Center) and Sean Matson (West Coast Region) were available to answer questions. To characterize uncertainty in the potential bycatches of salmon by the groundfish fisheries, the analyses projected salmon bycatches for three levels of groundfish landings (the minimum, mean and maximum observed amounts) given three salmon bycatch rates per ton of landed groundfish (the minimum, mean and maximum observed amounts).

To apportion the salmon bycatch to impacts on individual salmon stocks (defined at the level of genetic reporting groups), the analysts used a regression approach to estimate salmon stock proportions as a linear function of the mean latitude of the groundfish catch. The SSC expressed concern regarding technical issues associated with this approach, as it ignores potentially important details of the spatial distribution of the groundfish catches. However, the regressions do mimic the available data. An analysis using suitable latitudinal strata would be an improvement over assuming a linear relationship with latitude. The SSC notes that predictions of salmon bycatch and its composition are more uncertain for southern salmon stocks because data from south of Cape Blanco are sparse or unavailable for certain sectors.

The SSC also noted that using a bycatch ratio approach (number of salmon per ton of groundfish) is potentially a noisy predictor of salmon bycatch because the ratio will depend on temporal and spatial variation in the relative densities of salmon and groundfish, as well as fishing effort. It might be advantageous to explore an approach that predicts salmon bycatch based on salmon catch per trawl hour rather than per ton of groundfish catch. Further, the approach of using minimum, mean and maximum values to capture uncertainty does not frame the problem in a manner that cleanly illustrates the potential risk of exceeding a given salmon bycatch cap. It would have been useful to consider a resampling approach to estimate the probability of exceeding a bycatch cap, such as was used previously in a Council analysis of bycatch in the drift gill net fishery for swordfish.

Finally, the SSC is concerned that the time periods selected to represent the different scenarios may not provide a good basis for projecting the likely impact of future groundfish fisheries on salmon. For example, salmon abundance and stock compositions are variable and may differ substantially in the future, and projections of catch in the non-whiting midwater trawl fishery do not reflect potential for expansion of this fishery. There is also concern that using the recent bycatch rates for the bottom trawl fishery may underestimate potential bycatch because some vessels are resuming use (under permits) of bottom trawl nets that catch rockfish in lieu of the flatfish nets, which tended to reduce catch of species up off the bottom.

SSC Notes:

Table 14 provides estimates of potential chinook bycatch that are derived by multiplying projected total groundfish catches for non-whiting bottom trawl and non-whiting mid-water trawl sectors. The projected catches are based on historical catches during the 1995-1999 period. The total for the non-whiting mid-water trawl fishery at the high end projection is 2,379 mt. The 2016 combined catch of widow and yellowtail rockfish was 2000 mt. With the recent 20 fold increase in the quota pound allocation for canary rockfish, there is the potential for a significant expansion of the catch of yellowtail and widow rockfish to well above 2379 mt since the fisheries have likely been constrained by canary rockfish. Thus the projected chinook bycatch for the non-whiting mid-water trawl sector, even for the high catch projections, may be too low.

2. Reports and Recommendations from Groundfish Science Workshops and Methodology Reviews

The Scientific and Statistical Committee (SSC) discussed reports and recommendations from two workshops and one methodology review, conducted in the fall and winter of 2016-2017, to support groundfish stock assessment data, science and analytical methods. The SSC also discussed reports from the Oregon Department of Fish and Wildlife (ODFW) and the Groundfish management Team (GMT).

I.2, Attachment 1: Report of the Groundfish Historical Catch Reconstruction Workshop

Dr. David Sampson (SSC Groundfish Subcommittee Chair) provided an overview of the Groundfish Historical Catch Reconstruction Workshop. The focus of the workshop was on understanding and improving analytical approaches for estimating total catches at the species level prior to 1981 (the PacFIN and RecFIN era), although some presentations discussed potential improvements for the analysis of more recent data (including uncertainty estimates).

Presentations on catch reconstructions for all three West Coast states were included, and potential improvements to all of these efforts were identified. There was greater emphasis on the Washington catch reconstruction, which is less developed than those in California and Oregon. The workshop included an attempt to recreate catch reconstructions used in recent assessments with data queries and analyses conducted on site. This revealed inconsistencies for some species, including historical catches of darkblotched rockfish, which will be revised for the 2017 stock assessment update.

Dr. Theresa Tsou (WDFW) provided the SSC with an update regarding Washington catch history reconstruction efforts conducted since the workshop, focused on lingcod and rockfish, to support upcoming assessments. There was uncertainty as to whether the Washington reconstruction will include complete or partial historical tribal landings.

The SSC is in agreement with the recommendations in the workshop report, noting that several of the recommendations address issues relevant to upcoming stock assessments. The SSC is supportive of a methodology review for the Bayesian methodology for model-based catch estimation as an off-year science activity in 2018. Finally, it was noted that there is still much more work to be conducted in improving catch reconstructions in all three states, and ongoing or

anticipated future efforts should be reviewed at future catch reconstruction workshops.

I.2, Attachment 2: Groundfish Productivity Workshop Report

Dr. Martin Dorn (AFSC) provided an overview of the report of the Groundfish Productivity workshop. The format of the meeting was presentations by scientists in academia and management agencies. Most talks focused on the challenges associated with estimating spawner-recruit relationships, including the functional shape of such relationships and the resulting uncertainties associated with subsequent estimates of productivity and potential yield. The report includes extended abstracts, highlights of panel discussions, and a series of recommendations and conclusions. The SSC recommends adopting the ten recommendations and conclusions listed in the workshop report, with the following caveats:

The SSC clarifies that recommendation 5b ("Evaluation of different three-parameter models and alternative leading parameters for incorporation into Stock Synthesis") reflects the desire to include a wider range of alternative stock recruit relationship functional forms in the Stock Synthesis modeling platform. Similarly, recommendation 5d refers to the need to continue to perform meta-analyses that assume nonparametric shapes.

With respect to point 7 (regarding the gradual increase of steepness estimates for rockfish from ~0.6 to ~0.8 since the initial productivity workshop in 2002), the SSC notes that the most recent estimate of the steepness prior suggests a decline in the steepness point estimate from ~0.78 to ~0.72. This would lead to less of a difference between inferred productivity (yield) from the steepness prior estimate and the lower yield associated with the SPR-based reference points used by management. The SSC recommends that a workshop that includes specific analyses exploring the consistency among reference points be scheduled for the next non-assessment year in 2018.

I.2, Supplemental SSC Groundfish Subcommittee Report on the Review of Assessment Methodologies Proposed for Use in 2017 Assessments

Dr. David Sampson presented an overview of the results of the Groundfish Subcommittee Report on the Review of Assessment Methodologies. The SSC recommends adopting the recommendations in the workshop report, and will revise the Accepted Practices Guidelines for Groundfish Stock Assessment document accordingly, with the following modifications:

The SSC discussed the geostatistical GLMM software developed and maintained by Dr. Jim Thorson (VAST, vector autoregressive spatial temporal model, www.fishstats.org). For fisheries-independent survey data, the software includes a range of options that can either replicate previously recommended model complexity levels or use more advanced analytical methods. The SSC recommends that analysts have the latitude to use this software, and strongly encourages analysts to compare model results with and without autoregressive features. Analysts need to provide appropriate diagnostic statistics if they intend to use the geostatistical features of the model.

With respect to the revised set of priors for natural mortality (M), the recommendation should be to set the fixed value equal to the median rather than the mean value of the prior.

I.2.a, ODFW Report: Regarding Speciation of Unspecified Rockfish Landings in Oregon for Inclusion in Stock Assessment Time Series of Removals

Mr. Patrick Mirick (ODFW/GMT), discussed results of this analysis with the SSC. He noted that for species that had their own market categories (such as Pacific ocean perch), catches do not change much, but total landings of other species do undergo substantive changes (such as darkblotched and yelloweye). This document should be consulted in the development of rockfish catch histories from Oregon.

Agenda Item I.2.a, GMT Report 2: Discard Mortality Rates Applicable to the Nearshore Fishery

The SSC discussed the GMT report on discard mortality rates applicable to the nearshore fishery. The SSC concurred that if fishing practices in the nearshore sectors are comparable, then it would be reasonable to apply the previously endorsed recreational mortality rates to the commercial nearshore fishery using "sport-like" jig and pole gears for the 20 to 30 fathom depth bin. However, the SSC did not review a complete comparison of fishing practices between the two sectors.

With respect to the mortality rates applied with the use of a descending device, the GMT report expressed a diversity of opinions regarding whether recreational rates should be applicable to the nearshore commercial fishery. Given these concerns, the SSC would recommend a more formal analysis be conducted prior to considering a change in these rates.

SSC Notes:

Re: Productivity workshop report- Relative to revisiting inconsistencies between steepness and adopted SPR targets, interest was expressed in replicating analyses presented at the first productivity workshop by Robin Cook regarding replacement values for recruits per spawner under a range of harvest rates.

Re: Subcommittee Report on the Review of Assessment Methodologies- The SSC concurs with the workshop report recommendation to endorse the Francis method (TA1.8) for weighting age, length- and conditional age-at-length compositional data. Assessment documents should include sensitivity runs that use (a) the MI harmonic mean weighting approach as well as (b) the Dirichlet multinomial likelihood approach, as a means to gauge the uncertainty associated with the choice of methodology.

Another revision included a change to the guidelines for using maximum age estimates from within assessment areas, to add the term "generally" to that recommendation.

One issue in developing the natural mortality prior was, what is the correct way to estimate the variability of the relationship between maximum age and M. Don Gunderson estimated this using a confidence interval in one paper, essentially assuming all observed variation was due to estimation error in the values of M used on the meta-analysis. This approach would to the same median estimate, given M, but a very different mean.

Add language to the accepted practices document to the effect that CA historical catch reconstruction might not include some CA landings caught in OR, lingcod catches can be easily developed, but rockfish will not be assigned to species level prior to assessment cycle.

Re- ODFW report on unspecified rockfish landings- It was noted that there are still unidentified rockfish species codes (URCK) in Washington landings as well. The SSC also noted that the term "speciation" typically refers to the formation of new and distinct species in the course of evolution, and the term "species assignments of unspecified rockfish landings" would be a more accurate reflection of the content of this report.

Re: GMT Report 1: Groundfish Management Team informational report on sablefish and lingcod discard mortality rates. It was noted that WCGOP includes discard mortality credits for sablefish and lingcod that were not applied to the shorebased IFQ program. The SSC was not asked to review this document, and did not review or discuss the document in detail.

RE: GMT Report 2: T Groundfish Management Team report on discard mortality rates applicable to the nearshore fishery- the report indicates that the SSC has in the past concurred that that mortality rates applied to the charter vessel fleet could be extended to private boats and commercial nearshore catches, essentially removing the mortality buffer in waters deeper than 20 fathoms for the commercial nearshore fishery. However, a clear record of this endorsement could not be readily located, although a recommendation that "additional research should be pursued" was found.

C. *Council Administrative Matters*

5. Future Council Meeting Agenda and Workload Planning

Discussion of the Central Subpopulation of Northern Anchovy Overfishing Limit: Process and Timeline

The Scientific and Statistical Committee (SSC) reviewed a draft SSC/Coastal Pelagic Species Management Team (CPSMT) joint report entitled "Potential options for setting an OFL for the Central Substock of Northern Anchovy." Ms. Lorna Wargo (CPSMT chair) and Mr. Joshua Lindsay (CPSMT) were also in attendance and provided comments on behalf of the CPSMT, which had been provided a copy of the draft report. An earlier draft was reviewed and revised at a meeting of the CPSMT, with Drs. Satterthwaite and Punt (chairs of the SSC and SSC CPS Subcommittee, respectively) participating remotely. The SSC anticipates coordinating with the CPSMT on finalizing the report and submitting it to the advance briefing book for the April 2017 Council meeting.

Review of the Proposed Methodologies in the Amendment 28 Essential Fish Habitat Process

The SSC reviewed the report of the SSC Economics Subcommittee on "Methodology for Estimating Catch, Revenue, And Effort for Pacific Coast Groundfish Bottom Trawl EFH and RCA Areas" and agreed with the recommendations of the report (appended to this statement).

- No quantitative predictions of the social and economic impacts of the proposed alternatives are made.
- Biological data from habitat maps and anecdotal information from fishermen could indicate the relative level of effort that re-opened areas are likely to experience.
- The results should be presented by port group as well as coast-wide.

The Project Team asked the Economic Subcommittee for guidance on the base period for the historical effort analysis prior to closures. The Subcommittee recommended conducting separate analyses using two base periods. The Project Team indicated it will use a single, expanded base period (1994-2001). Using a single base period results in a loss of information about variability in effort displacement estimates, but there is a tradeoff between the timeliness of analysis and the additional benefit of this information.

**REPORT OF THE SSC ECONOMICS SUBCOMMITTEE ON
"METHODOLOGY FOR ESTIMATING CATCH, REVENUE, AND EFFORT FOR
PACIFIC COAST GROUNDFISH BOTTOM TRAWL EFH AND RCA AREAS"**

The SSC's Economics Subcommittee conducted a webinar on February 9, 2017 to discuss proposed methods for evaluating socioeconomic impacts of alternative proposal for changes to groundfish essential fish habitat (EFH) and the trawl Rockfish Conservation Area (RCA). This report summarizes the discussion during the webinar with emphases on recommendations by the subcommittee to the analysts.

Overview of the Proposed Analysis

The Project Team provided a document "Methodology for estimating catch, revenue, and effort for Pacific Coast groundfish bottom trawl EFH and RCA areas" to the subcommittee prior to the webinar. The document consists of definitions of the proposed alternatives, detailed description of the data, and a statement of the project teams proposed methods of analysis. At the webinar, the Project Team provided additional details on the proposed analysis.

The Project Team describes its approach to assessing the potential impacts of the Council's proposed alternatives as using a "qualitative methodology informed by quantitative indicators." The Project Team does not propose quantifying future catch or other impacts for the alternatives. Rather, the analysis of future impacts would be qualitative. The exact nature of the qualitative analysis is not clear. However, the Project Team proposed generating quantitative estimates of historical catch, effort, and revenue in areas subject to closure or re-opening to help inform this analysis.

The subcommittee recommends that the quantitative indicators should be clearly separated into two components:
1) Effort, catch, and revenue that would be displaced by proposed closed areas (new closure analysis).
2) Historical effort, catch, and revenue that occurred in previously closed EFH and RCA areas, but would be re-opened (re-opening analysis) under various alternatives.

The first indicator (new closure analysis) is a straightforward tabulation of the effort, catch, and revenue that occurred in a recent baseline period within areas that would be closed under an alternative. The second indicator (re-opening analysis) consists of a tabulation of the effort, catch, and revenue that occurred in some baseline period prior to historical closures that occurred in areas that were closed as a result of implementation of the RCA (2002/2003) and EFH actions (2006).

Summary of Subcommittee Comments

Comments on the Method of Analysis

There is more certainty associated with the new closure analysis since effort has been observed in areas proposed for closure in the recent past. By contrast, the re-opening analysis does not extrapolate cleanly how effort might redistribute after areas are re-opened because conditions in

the fishery are so different from the pre-closure periods; there are many fewer vessels operating, the geographic distribution of landings has changed substantially, there are new gear restrictions in place, and catch limits are different for many species. In addition, the biomass of fish inside areas that have been closed for many years would be expected to differ from pre-closure periods.

The Project Team stated that combining the two quantitative estimates does not generate reasonable estimates of the net effect of alternatives. That is, for example, a result that an alternative displaces 10 percent of existing effort and re-opens areas that previously hosted 10 percent of effort prior to historical closures does not imply a net impact of zero. The subcommittee agrees that the two are not equivalent and that it is not possible to do a rigorous analysis of the net effects of closures and re-openings of previously closed areas by presenting the proportion of historical effort that occurred in current or proposed closed areas. The final presentation of results should avoid any side-by-side comparisons or presentations of the two displaced effort analyses.

The subcommittee recommends that a set of areas that have remained open across the entire time period be analyzed. Changes in the proportional effort in these areas would give a sense of how much the distribution of effort has changed over time and provide a mechanism to validate the reliability of the proposed quantitative indicators for drawing conclusions about redistribution of effort.

Quantitative estimates of the proportion of catch/effort in historical closures that may be reopened or in areas that may be closed will be most useful for assessing whether the effects of an alternative would be felt disproportionately by a particular port or region. The subcommittee recommends presenting results by port group (or other geographic classifications) as an indicator of which regions will be most affected by each alternative.

It is not clear from the written document or from the discussion during the webinar whether the Project Team intends to make some statement on the net effects of the alternatives. Future iterations of the proposal should clarify what the qualitative assessment of impacts will consist of including what results will be presented, what the analysis can accomplish, and how it will inform the Council's decision. Further, the methods proposed by the Project Team include only the analyses of historical effort and catch. Qualitative analysis of re-opening areas would be strengthened by using additional information. Species distribution from trawl survey data or habitat suitability maps could be used to identify which re-opened areas might experience larger (or smaller) increases in effort based on target species preferences, for example. Surveys or anecdotal information from fishermen could also indicate the relative level of effort that specific re-opened areas are likely to experience.

Comments on Data

The Project Team proposes to use data from the West Coast Observer Program (WCOP) and vessel logbooks to tabulate effort, catch, and revenue by area.

Data Quality

The subcommittee has some concern regarding the accuracy of the positional data, particularly in

older logbook entries. Sampson (2011) found that reported depth did not agree well with actual depth at reported latitude and longitude in logbook data prior to 2001. This indicates that either or both of the reported depth and position may be unreliable. Holland and Speir both noted that their own internal analysis comparing logbook position and reported depth to actual depth at the reported coordinates (Holland) and to logbook position and Vessel Monitoring System data (Speir) indicated relatively good agreement in more recent data (2008-2013). Agreement of depth and position is an indicator of the quality of the spatial data, and should be explored if possible (for different periods and places).

Baseline Data for Re-opening Analysis

There are four sets of data that could be used as a baseline for estimating the amount of effort, catch, and revenue that occurred in a given area: (1) logbook data from 1994-1998 supplemented with fish ticket data; (2) logbook data from 1998-2001 supplemented with fish ticket data; (3) trawl logbook data from 2002-2005; and (4) observer data supplemented with logbook and fish ticket data for 2011-2014. For analysis of re-opening RCAs, data are limited to pre- 2002 data when RCAs were closed. Newer data (2002-2005) can be used for EFH closures, and recent 2011-2017 data can be used to evaluate displacement from new closures.

The consensus view of the subcommittee is that the recent years' data (2011-2014 WCGOP) should be used for the new closures analysis.

The best time period to use for the re-opening analyses is less clear because the two historical closures occurred at different times. There are two options for base periods:
- Option 1: Evaluate each historical closure (RCA and EFH) using data that is most recent. For the RCA this is 1998-2001, and for EFH this is 2002-2005. The advantage of this option is that the proportion of effort displaced by each closure will incorporate important changes in gear restrictions and fleet composition that had occurred up to that time.
- Option 2. Use a common base period to evaluate both closures (e.g., 1994-1998). One advantage of this option is that the proportion of effort displace by each closure would be measured in terms of a common base period. Another advantage is that displaced effort would be measured from a time period when spatial choice and target species choice were less restricted.

Both options would provide useful input to the qualitative analysis of effects of the alternatives. There have been many major changes in the groundfish trawl fishery over the last 25 years including the disaster declaration, foot rope restrictions, changes in abundance and allowable catch for many species, and the vessel buyback program. Each of these changes occurred at different times, which makes interpreting displace effort estimates as indicators of future changes very difficult. Using multiple base periods (i.e., using both options), if possible, would strengthen the analysis.

Use of area/species specific CPUE as an indicator

There was discussion about whether the analysts should use historical catch per unit effort (CPUE) or revenue per unit effort (RPUE) in the analysis. The advantages of using CPUE or RPUE are limited. Changes in harvest strategies, technological advances, markets, and species distribution

since the RCA and EFH closures may make application of CPUE/RPUE to current time periods misleading. Information on current species distribution (trawl survey and habitat suitability) and prices would likely provide better input to an assessment of future impacts.

Reference

Sampson, David B. "The accuracy of self-reported fisheries data: Oregon trawl logbook fishing locations and retained catches." Fisheries research 112.1 (2011): 59-76.

SSC Subcommittee Assignments, March 2017

Salmon	Groundfish	Coastal Pelagic Species	Highly Migratory Species	Economics	Ecosystem-Based Management
Galen Johnson	**David Sampson**	**André Punt**	**Kevin Piner**	**Cameron Speir**	**Martin Dorn**
John Budrick	Aaron Berger	Aaron Berger	Aaron Berger	Michael Harte	Evelyn Brown
Alan Byrne	John Budrick	Evelyn Brown	John Field	Dan Holland	John Field
Owen Hamel	Martin Dorn	John Budrick	Michael Harte	André Punt	Michael Harte
Michael Harte	John Field	Alan Byrne	Dan Holland	David Sampson	Dan Holland
Will Satterthwaite	Owen Hamel	John Field	André Punt		Galen Johnson
Cameron Speir	André Punt	Owen Hamel	David Sampson		Kevin Piner
	Tien-Shui Tsou	Will Satterthwaite			André Punt
		Tien-Shui Tsou			Will Satterthwaite
					Tien-Shui Tsou

Bold denotes Subcommittee Chairperson

Council Meeting Dates	Location	Likely SSC Mtg Dates	Major Topics
~~March 7-14, 2017~~ ~~Advisory Bodies may begin Tue, March 7~~ ~~Council Session may begin Wed, March 8~~	~~Hilton Vancouver Washington~~ ~~301 W. Sixth Street~~ ~~Vancouver, WA 98660 USA~~ ~~Phone: 360-993-4500~~	~~Two-day SSC Session~~ ~~Tue, March 7 – Wed, March 8~~	~~Identify Salmon Management Objectives (possible test fishery alternatives)~~ ~~Salmon Review/Pre I~~ ~~Stock Prod., Hist. Catch Recon. WS Reports~~ ~~CA Current IEA Report~~ ~~Sablefish Ecosystem Indicators~~ ~~Identify New FEP Initiatives~~
April 6-12, 2017 Advisory Bodies may begin Thurs, April 6 Council Session may begin Fri, April 7	DoubleTree by Hilton Sacramento 2001 Point West Way Sacramento, CA 95815 Phone: 916-929-8855 or 1-800-686-3775	Two-day SSC Session **Thu, April 6 – Fri, April 7**	Pacific Sardine Assessment Salmon Methodology Topic Selection Anchovy OFL Process
June 7-14, 2017 Advisory Bodies may begin Wed, June 7 Council Session may begin Thurs, June 8	DoubleTree by Hilton Spokane City Center 322 N. Spokane Falls Court Spokane, WA 99201 Phone: 509-455-9600	One-day SSC GF Subcm Session **Wed, June 7** Two-day SSC Session **Thu, June 8 – Fri, June 9**	Pacific Mackerel Assessment Groundfish Update Assessments & Cowcod Catch Report 5-year IFQ Program Review 2019-2020 Groundfish Spex Planning CCC Meeting Update
September 11-18, 2017 Advisory Bodies may begin Mon, Sept 11 Council Session may begin Tues, Sept 12	The Riverside Hotel 2900 Chinden Blvd Boise, ID 83714 Phone: 208-343-1871	Two-day SSC Session **Mon, Sept 11 – Tue, Sept 12** Two-day SSC Ecosystem Subcommittee Session **Wed, Sept 13 - Thu, Sep 14**	Groundfish Assessments Review 2019-2020 Groundfish Spex Groundfish Stock Assessment Methodology Review Topic Selection Groundfish EFH Analyses Off-year Science Improvements Salmon Methodology Topic Priorities

November 13-20, 2017 Advisory Bodies may begin Mon, Nov 13 Council Session may begin Tues, Nov 14	Hilton Orange County/Costa Mesa 3050 Bristol Street Costa Mesa, CA 92626 Phone: 714-540-7000	Two-day SSC Session **Mon, Nov 13 – Tue, Nov 14**	CPS Methodology Topic Selection CPS SAFE Groundfish Stock Assessments (if needed) & Rebuilding Analyses 2019-2020 Groundfish Spex Groundfish Stock Assessment Methodology Topic Priorities Salmon Methodology Review

	Workshop/Meeting	Potential Dates	Sponsor/ Tentative Location	SSC Reps.	Additional Reviewers	AB Reps.	Council Staff
	Proposed Workshops and SSC Subcommittee Meetings for 2017 and 2018						
1	~~Sardine Assessment Review~~	~~Feb. 21-24~~	~~Council/ La Jolla, CA~~	~~Punt (Chair), Satterthwaite, and Brown~~	~~2 CIE~~	~~CPSMT CPSAS~~	~~Griffin~~
2	Groundfish Pre-Assessment Workshop	Mar. 21-22	Council/ Portland, OR	Hamel (Chair), GF Subcommittee	None	GMT GAP	DeVore
3	CPS Methodology Review	Apr. 17-18	Council/ La Jolla, CA	Punt (Chair), Hamel, + Brown	1 or 2 CIE + SWFSC Assessment Scientist	CPSMT CPSAS	Griffin
4	P. Mackerel Update Review	May 1	Webinar	CPS Subcommittee	None	CPSMT CPSAS	Griffin
5	5-year IFQ Program Review	May 24-25	Council/ Seattle, WA? TBD	GF & Economics Subcommittees	None	GMT GAP	Seger
6	Groundfish Update Assessments & Cowcod Catch Report Review	June 7	Council/ Spokane, WA	GF Subcommittee	None	GMT GAP	DeVore
7	Lingcod & Yelloweye STAR Panel	June 26-30	Council/ Seattle, WA	Sampson (Chair) + Piner	2 CIE	GMT GAP	DeVore
8	Yellowtail RF & POP STAR Panel	July 10-14	Council/ Seattle, WA	Field (Chair) + Budrick	2 CIE	GMT GAP	DeVore
9	Blue/Deacon RF & CA Scorp. STAR Panel	July 24-28	Council/ Santa Cruz, CA	Dorn (Chair) + Hamel	2 CIE	GMT GAP	DeVore

	Proposed Workshops and SSC Subcommittee Meetings for 2017 and 2018						
	Workshop/Meeting	**Potential Dates**	**Sponsor/ Tentative Location**	**SSC Reps.**	**Additional Reviewers**	**AB Reps.**	**Council Staff**
10	CCIEA Indicator Review	Sep. 13-14	Council/ Boise, ID	Ecosystem Subcommittee	None	None	Dahl
11	Groundfish Mop-up	Sep. 25-29	Council/ Seattle, WA	GF Subcommittee	None[1]	GMT[2]	DeVore
12	Salmon Methodology Review	Oct. TBD	Council/ Portland, OR	Salmon Subcommittee	None	STT SAS MEW	Ehlke
13	SCS6 Meeting	Jan. 17-19, 2018	Council & NMFS/ So Cal TBD	Satterthwaite, Punt, + 2(?) TBD	TBD	None	DeVore Others? TBD

PFMC
03/23/17