MINUTES
Scientific and Statistical Committee

Pacific Fishery Management Council
Hilton Orange County/Costa Mesa
Laguna Beach 1 and 2 Room
3050 Bristol St.
Costa Mesa, CA 92626
Telephone: 714-540-7000
November 14-15, 2017

Members in Attendance

Dr. Aaron Berger, National Marine Fisheries Service Northwest Fisheries Science Center, Newport, OR
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
Ms. Meisha Key, Key Coaching and Development, Lake Oswego, OR
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. Rishi Sharma, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
Dr. Ole Shelton, National Marine Fisheries Service Northwest Fisheries Science Center, Seattle, WA
Dr. Cameron Speir, National Marine Fisheries Service Southwest Fisheries Science Center, Santa Cruz, CA
Dr. Tien-Shui Tsou, Washington Department of Fish and Wildlife, Olympia, WA

Members Absent

None.

SSC Recusals for the November 2017 Meeting		
SSC Member	**Issue**	**Reason**
Dr. John Budrick	Agenda Item F.10	Dr. Budrick contributed to the proposed nearshore ROV survey in California
Dr. John Field	Agenda Item F.10	Dr. Field is one of the sponsors of a methodology topic (Agenda Item E.3, Attachment 1, September 2017) proposed for review
Dr. John Field	Agenda Item F.6	Dr. Field supervised staff who contributed to the DBSRA assessments of Washington cabezon (Attachment 2) and starry flounder (Attachment 3)
Dr. Owen Hamel	Agenda Item F.4	Dr. Hamel supervised staff who contributed to the Pacific ocean perch assessment (Attachment 1) and the yelloweye rockfish rebuilding analysis (Attachment 2)
Dr. Owen Hamel	Agenda Item F.6	Dr. Hamel supervised staff who contributed to the Washington cabezon DBSRA assessment (Attachment 2) and the lingcod assessment (Attachment 4)
Dr. Theresa Tsou	Agenda Item F.6	Dr. Tsou contributed to the DBSRA assessments of Washington cabezon (Attachment 2), starry flounder (Attachment 3), and lingcod (Attachment 4)

A. Call to Order-SSC Administrative Matters

Will Satterthwaite called the meeting to order at 0800. Chuck Tracy thanked Martin Dorn for his 15 years of service on the SSC. He thanked Will and John DeVore for helping to plan the Sixth National Scientific Coordination Subcommittee (SCS6) meeting next January. He explained that we will be planning the March and April Council meeting agendas at this meeting. One upcoming task will be the five-year review of the Fishery Ecosystem Plan next year. The Climate Change initiative has been adopted. The Nature Conservancy has agreed to host a workshop on this initiative. The Sablefish MSE will be reviewed in March. The sardine assessment update will be reviewed next year. The SSC should report on whether that review should be during a face to face meeting or via webinar.

A round of introductions was made before Chuck continued with the tasks associated with this meeting's agenda. Will asked folks attending the SCS6 meeting to stay and plan logistics after the SSC adjourns for the day. The SSC then discussed how they want to review the upcoming sardine assessment next year. The SSC agreed a review via webinar would be acceptable. If issues with the assessment are identified, a follow-up CPS Subcommittee meeting could be scheduled before the April SSC meeting.

Rishi Sharma volunteered to serve on the Salmon, Groundfish, and Highly Migratory Species subcommittees. Meisha Key volunteered to serve on the Groundfish and Coastal Pelagic Species subcommittees. Dan Holland volunteered to chair the Ecosystem Subcommittee.

Aaron Berger mentioned there is a plan to schedule a Center for the Advancement of Population Assessment Methodology (CAPAM) workshop on spatial stock assessments next October. The dates and venue are to be determined.

Dave Sampson briefed the SSC on the Groundfish Subcommittee review of the Jagielo assessment of silvergray rockfish, shortraker rockfish, and California skate under the MSC request. The Groundfish Subcommittee's recommendations were captured in their report from the September 28 mop-up webinar.

Martin Dorn reviewed the Ecosystem Subcommittee report with their recommendations on ecosystem issues to be highlighted in March. After a thorough discussion of the report, the report was endorsed by the SSC. The SSC discussed plans to review the sablefish MSE. If it is available by March, it may take a considerable amount of SSC agenda time to review the MSE.

John DeVore explained that there will be a Recreational Fisheries Information Network (RecFIN) webinar to discuss the APEX bag limit analysis tool. There will also be a webinar to go over the new groundfish harvest specifications database being developed with Council staff and the Pacific States Marine Fisheries Commission. Kerry Griffin explained there will be some EFH analyses to be reviewed in April.

The SSC then went into closed session to discuss credentials of three nominees to Council management teams and advisory bodies.

D. Salmon Management

2. Methodology Review Final Approval

The Scientific and Statistical Committee (SSC) reviewed a proposal by Oregon Department of Fish and Wildlife (ODFW) to revise the marine survival forecast method used in the Oregon Coastal Natural (OCN) Coho Harvest Matrix (Agenda Item D.2, Attachment 1, November 2017). The OCN Coho Harvest Matrix sets allowable exploitation rates based on observed parental returns and forecasted marine survival. An ensemble of models is annually re-fit to OCN smolt-to-adult return rates estimated from six life cycle monitoring (LCM) sites throughout Oregon.

Recently, the northern-most LCM site, North Fork Nehalem, was eliminated due to budget reductions. ODFW evaluated the performance for years 2014 to 2017 of three alternatives to handle this change: (1) discontinue re-fitting the models annually and use the most recent fit from now on [fixed option], (2) re-fit the models annually using only the remaining five LCM locations [reduced option], and (3) revert to the method used prior to 2013, the Oregon Production Index (OPI) jack/smolt indicator [OPI option]. Although the fixed option fit the estimated marine survival pattern slightly better than the reduced option, ODFW expressed concern that future changes in the relationship between oceanographic indices and survival may be overlooked if the model is not annually refit. The OPI option had a poor relation to OCN Coho marine survival and resulted in allowable exploitation rates that were biased low.

The SSC agrees that refitting the model each year may make it possible to detect a signal if environmental predictor performance changes, as is common in forecast models. Although the loss of the most northerly site did not seem to lead to a major loss of information at this time, the SSC encourages the use of spatially diverse monitoring sites to represent the OCN Coho salmon. The SSC supports the adoption of the reduced option and recommends reviewing the method periodically.

SSC Notes:

All the models badly missed return year 2015, which was an unusual year. Further work could look at whether anything could be done to predict such a low year (or a high year like 2014), and whether such years may over-influence the forecasts.

The loss of the northern-most site is a potential concern, but the decision to fund the North Fork Nehalem LCM is not the purview of the Council. However if there is an indication of north-south differences in the future, that could warrant further consideration.

The reduced option marine survival was highly correlated to that of the current method, suggesting that the reduced option is not biased. The fixed option and the reduced option resulted in the same allowable exploitation rates from the OCN Coho Harvest Matrix as the current method. The SSC agrees with the ODFW conclusion that the predictive ability of the OPI option is inferior to the other options.

Usually the Model Evaluation Workgroup participates in the Salmon Methodology Review, but they did not provide feedback this year.

C. Coastal Pelagic Species Management

2. 2018 Exempted Fishing Permits (EFPs) Notice of Intent

The Scientific and Statistical Committee (SSC) reviewed two exempted fishing permit (EFP) proposals for coastal pelagic species (CPS). Ms. Diane Pleschner-Steele presented the proposal for aerial survey work in Southern California submitted by the California Wetfish Producers Association (CWPA) (Agenda Item C.2, Attachment 1, November 2017) and Mr. Mike Okoniewski briefed the SSC on the proposal submitted by the West Coast Pelagic Conservation Group (Agenda Item C.2, Attachment 2, November 2017).

The SSC supports the two EFPs moving forward if additional methodological details are included. Each proposal needs to provide a clear description of the sampling design and how it will achieve its objectives. The SSC posed numerous questions on issues that were not addressed in the proposals (e.g., how will the schools being sampled be chosen?) and passed on detailed suggestions to the applicants. The SSC is also concerned whether the proposed catch amounts, and associated sample sizes, are appropriate to accurately characterize the biomass, age-structure, and size-structure, as well as the variance associated with each. The rationale behind the amount requested should be provided.

The EFP proposal from 2010 (Agenda Item F.1.a., Attachment 1, April 2010) can provide guidance in addressing many of the recommendations brought up during our discussion.

SSC Notes:

California Wetfish Producers Association (Agenda Item C.2, Attachment 1, November 2017)

- *The EFP provided an example of point set distribution from 2010 and this needs to be updated.*
  How will they ensure a sufficient range of school sizes is covered? Age-structures?
- *How is the pilot going to choose which schools to sample?*
- *How will species comps. be validated from the air in point sets?*
- *How much of the biomass (%) is expected to be in extreme nearshore areas (<5 fm)- those waters too shallow to sample? Inshore biomass is a key uncertainty.*
- *Independence – how will the two observers/spotters be kept independent?*

West Coast Pelagic Conservation Group (Agenda Item C.2, Attachment 2, November 2017)

- *Provide some information from last year (e.g., sample sizes, etc.)*
- *What would the protocol be to gather a random sample dip-netting?*
- *What's the plan for next steps or the end goal… to complement ATM survey? For stock assessments? What are the plans down the road for this comparison work?*

3. Methodology Review Preliminary Topic Selection

This item was cancelled since no proposals were submitted.

F. Groundfish Management

4. Final Stock Assessments and Rebuilding Analyses

The Scientific and Statistical Committee (SSC) Groundfish Subcommittee (GFSC) met via Webinar on September 28 to review the additional model runs for Pacific ocean perch requested by the SSC at its September 2017 meeting. The SSC also reviewed the updated rebuilding analysis for yelloweye rockfish. Dr. David Sampson presented the report of the GFSC to the SSC.

Pacific Ocean Perch

The SSC requested additional model runs because there was inadequate rationale for removing the Triennial survey index from the assessment. Two runs bound the range of models investigated: (a) the post-Stock Assessment Review (STAR) model; and (b) the post-STAR model with steepness estimated and including the Triennial survey as a single time series. Both models result in outputs that were judged to be implausible. The SSC concluded that the available data are insufficient to estimate steepness. It is usual in this situation to base the assessment on the mean of the prior for steepness, but this value leads to an unrealistically low estimate of survey catchability. The SSC endorsed the GFSC-recommended base model, which involves setting steepness equal to 0.5 (Agenda Item F.4, Attachment 1, November 2017) as best available science regarding the current status and productivity of Pacific ocean perch. The stock is assessed to be rebuilt to above the B_{MSY} target, with a 2017 estimated depletion of 77 percent.

Given the considerable uncertainty associated with the assessment, the SSC recommends that the next assessment be a full assessment. In addition, the analysts for the next assessment should reconsider the Triennial survey.

The SSC recommends that the Pacific ocean perch assessment be assigned to Category 2 owing to the extreme sensitively of the model outputs to changes to the specifications of the model (i.e., Category 2d).

Yelloweye Rockfish Rebuilding Analysis

The SSC reviewed and endorsed the revised Yelloweye Rockfish rebuilding analysis (Agenda Item F.4, Attachment 2, November 2017), which followed the Terms of Reference for Groundfish Rebuilding Analyses.

The probability of rebuilding changes from 0 to 100 percent over a single year (2027). This is an unexpected result, but for yelloweye this occurs because a sequence of good year classes spawned from 2007 to 2011 will join the spawning population starting around 2020 such that the projected spawning biomass will exceed the target biomass by 2027. The results of the rebuilding analysis do not depend strongly on forecasted recruitment. The rapid change in rebuilding probability is a consequence of this rebuilding analysis not accounting for uncertainty about starting biomass and age-structure, which is acceptable under the Terms of Reference for Groundfish Rebuilding Analyses.

The SSC evaluated progress to rebuilding. Catches have been less than annual catch limits, and the stock is rebuilding faster than anticipated from the previous rebuilding analysis. The SSC concluded that rebuilding progress has been adequate.

T_{MAX} is the maximum rebuilding time allowable under the Magnuson-Stevens Act. It is computed as the sum of mean generation time and the time to rebuild in the absence of removals after the stock was declared overfished. T_{MAX} is reduced from its 2011 value of 2083 to 2070, given the changes to the results from the assessment. T_{MAX} cannot be earlier than T_{TARGET}, the target year for rebuilding. However, this is now the case because T_{TARGET} is currently 2074. T_{TARGET} will consequently need to be reduced. The choice of T_{TARGET} is a policy matter, but the SSC notes that Management Strategy Evaluation analyses have shown that fishery stability is enhanced if the probability of rebuilding by T_{TARGET} exceeds 50 percent.

Marine Stewardship Council and the Limited Entry Bottom Trawl Fishery

The SSC received a report from the GFSC summarizing the review of a report from Mr. Tom Jagielo that describes whether data collected on silvergray rockfish, shortraker rockfish, and California skate are sufficient to estimate outcome status with respect to biologically-based limits. The SSC endorses the GFSC conclusion that all three populations appear to be in a healthy state at the center of their geographic distributions.

SSC Notes:

Pacific Ocean Perch

- *The decision table from the post-STAR model involved finding the 12.5% and 87.5% quantiles for ending spawning output and selecting values for M that corresponded to those choices for ending spawning output. This approach was used again.*
- *Basing the decision table on the two models considered by the GFSC would not be appropriate because those models would not have half the probability as the recommended base model.*
- *The Pacific Ocean Perch assessment should not be included in the next steepness meta-analysis as it is a category 2 stock.*
- *There is good evidence that the 2008 recruitment is strong compared to other recruitments in recent years.*

Yelloweye Rebuilding Analysis

- *The value for current (2017) eggs in Table 2 of the rebuilding analysis is incorrect (appears to be double the correct value).*
- *Delete the $T_{F=0}$ (beginning in 2017) row of Table 2.*
- *There is no evidence from model diagnostics that setting steepness to the mean of the prior (0.718) leads to implausible results, unlike the case for Pacific Ocean Perch.*

Issues related to TOR for Groundfish Rebuilding Analyses

- *Analysts should consider allowing for parameter uncertainty when conducting the forecasts on which rebuilding analyses are based, but this could be computationally intensive (e.g., due to the need to conduct Bayesian analyses).*
- *Analysts should provide explanations in rebuilding analysis reports when the results appear surprising given previous rebuilding analyses (e.g., the knife-edged increase in rebuilding probabilities).*

6. Biennial Harvest Specifications for 2019-2020

Overfishing Limit (OFL) Determinations for the 2019-2020 Harvest Specifications

At the September 2017 meeting, the Scientific and Statistical Committee (SSC) evaluated, and the Council adopted, OFLs for most stock and area combinations (Agenda Item F.6, Attachment 1, November 2017). However, OFL values were not yet available for several stocks, as those values depended on the outcome of additional analyses that were subsequently reviewed at the SSC Groundfish Subcommittee (GFSC) September 2017 webinar. The recommended OFLs for those stocks are reported here.

For lingcod, the stock assessment team (STAT) provided a revised set of 2020 OFLs for the southern (California) model (Table 1 in Agenda Item F.6, Attachment 4, November 2017) to address technical issues that arose during the September meeting. The final 2020 OFLs also depend on Council decisions regarding the alternative treatments for uncertainty in the southern (California) lingcod assessment, specifically whether the acceptable biological catch (ABC) is based on the default P* (probability of overfishing) harvest control rule value of 0.40 (leading to an ABC of 91.3% of the OFL), or a revised P* of 0.45 (leading to an ABC of 95.6% of the OFL). With a southern assessment P* of 0.40 (corresponding to the values reported in Table 1) to determine 2019 removals, the 2020 OFL for the southern assessment is 1,136 metric tons (mt) and the subsequent 2020 OFLs for the northern and southern management areas (north and south of 40°10') are 4,701 and 894 mt, respectively. With a southern assessment P* of 0.45, the southern assessment OFL is 1,129 mt, and the 2020 OFLs are 4,699 and 888 for the northern and southern management areas, respectively. In both cases, the northern assessment model P* was maintained at 0.45.

For Pacific ocean perch (POP), the SSC recommends adoption of the revised OFLs reported in the most recent revised assessment for 2019 and 2020 of 4,753 and 4,632 mt, respectively. The 2020 OFL assumes 2019 ABC removals of 4,340 mt. The 2019-2020 management specifications include a change for POP in that there is now a coastwide OFL for this stock, without explicit OFL designations north and south of 40° 10' (the southern OFL was previously a contribution to the southern slope rockfish complex).

For starry flounder, a data poor assessment using Depletion-Based Stock Reduction Analysis ([DB-SRA], Agenda Item F.6, Attachment 3, November 2017) was reviewed at the September GFSC webinar and recommended for adoption. The recommended coastwide OFL for starry flounder is 652 mt for both 2019 and 2020.

For cabezon off Washington, a data poor assessment using DB-SRA (Agenda Item F.6, Attachment 2, November 2017) was reviewed and recommended for adoption by the SSC. The recommended 2019 and 2020 OFLs are 5.5 and 5.4 mt, respectively. These would lead to "Other Fish" OFLs of 480 and 465 mt for 2019 and 2020, respectively.

For yelloweye rockfish, the rebuilding analysis (Agenda Item F.4, Attachment 2, November 2017) was reviewed and recommended for adoption by the SSC. Based on this analysis, and the assumption of 65% annual catch limit (ACL) attainment in 2017 and 2018, the 2019 OFL is 81.2 mt. The 2020 OFL depends on the ACL adopted for 2019. Assuming the default rebuilding spawning potential ratio of 76% is used to inform the 2019 ACL, the 2020 OFL is 83.9 mt. (based on the assumption of full 2019 ACL attainment).

Stock Assessment Category Designations and Sigma Values for the 2019-2020 Harvest Specifications

The category designations in Table 1 (Agenda Item F.6, Attachment 1, November 2017) have been confirmed by the SSC as consistent with the approach used to determine OFLs, with the exception that POP should have been reported as a category 2 stock, not a category 1 (the OFL values are correct for a category 2 designation).

The SSC notes that the OFLs endorsed here can be used as stand-alone OFLs or as contributions to stock complexes, including those currently under consideration for this management cycle (Table 6 in Agenda Item F.6, Attachment 1; Agenda Item F.6.a, WDFW Report 1; Agenda Item F.6.a, GMT Report 1, November 2017).

The SSC would like to thank the assessment teams for the high quality of additional analyses that were conducted in time to inform final stock status and OFL determinations for the 2019-2020 management cycle.

SSC Notes:

For lingcod, the SSC should verify that the correct ACL and ABC values for 2026 are reported before the final document is posted to the website. Note that the term "default harvest control rule value" in the statement refers to the fact that under Amendment 24 the P from the previous biennial management cycle is defined as the "default" for the ABC harvest control rule.*

With respect to yelloweye rockfish, the SSC discussed the approach of assuming 65% ACL removals for current management cycle to inform 2019 and 2020 OFLs, noting that this is a fairly aggressive strategy of giving credit for non-full attainment and should be tracked closely by SSC to confirm that the basis for making this assumption (e.g., that this is a consequence of fishing practices, not lack of availability of the stock) is met.

For Pacific Ocean perch, the change to a coastwide OFL is justified given that the southern OFL was formerly a contribution of 0 metric tons to the southern slope rockfish complex, due to the extremely low historical contributions of POP to this complex south of 40°10' N lat.

For cabezon off of Washington State, OFL values based on the DB-SRA were not provided past 2020. Consequently, this stock will have to be revisited in the next management cycle with respect to OFL value determination, as the values for this management cycle cannot be "rolled over." This is not the case for starry flounder, as the equilibrium MSY value is used for the OFL. In the future, a comprehensive strategy for providing OFLs over a longer time period for data-limited stocks should be developed.

For starry flounder, the notes in Agenda Item F.6, Table 1 for starry flounder include the wrong value (value prior to a correction made by the STAT to the final document) for the southern (California) model of 370 mt. The correct value is 354 mt.

10. Off-Year Science and Stock Assessment Methodology Review Final Topic Selection

The Scientific and Statistical Committee (SSC) reviewed the proposals by the California Department of Fish and Wildlife (CDFW) (Agenda Item F.10.a, CDFW Report 1, November 2017) and the Oregon Department of Fish and Wildlife (ODFW) (Agenda Item F.10.a, ODFW Report 1, November 2017) for methodology reviews of their remotely operated vehicle (ROV) video transect survey data collection programs and proposed approaches for incorporating the information into assessments of nearshore groundfish stocks. Dr. John Budrick (CDFW) was available to discuss the CDFW proposal and Mr. Patrick Mirick (ODFW) was available to discuss the ODFW proposal. The SSC also reviewed the report by the Northwest Fisheries Science Center (NWFSC) (Agenda Item F.10.a, NMFS NWFSC Report 1, November 2017) and received a presentation by Dr. James Hastie (NWFSC) on the NWFSC prioritized list of groundfish research activities planned for 2018.

Under the Council's Operating Procedures, methodology reviews are needed for new methods that will be used in upcoming stock assessments; typically the review panels include external experts. Methodology reviews require specific terms of reference, developed in consultation with the proponents of the methodology, to focus the review process. In contrast, off-year science workshops provide opportunities for wider ranging discussions of topics relevant to the Council's assessment and management process. Workshops may result in new methods or new data sources that require a subsequent review to approve their application in the Council process. Routine or small adjustments to stock assessment methods or data or topics not requiring external reviewers may be reviewed by the SSC in consultation with the Council's advisory bodies.

The SSC offers the following observations and recommendations regarding the nine topics identified in the Situation Summary for possible off-year science workshops and stock assessment methodology reviews.

Off-Year Science Workshops

The SSC anticipates that the following two workshops could lead to improvements in the Council process for groundfish stock assessments and management.

Review of the Data-Limited Methods Toolkit for use in groundfish stock assessments. The first workshop is closely related to this Situation Summary item. The workshop goal is to broaden the suite of stock assessment methods applicable to stocks with limited data (e.g., by including

compositional data). The workshop would identify methods in the Data-Limited Methods Toolkit that would be relevant and acceptable in the Council process and those that would not. Methods beyond those in the Toolkit would be also considered. This workshop could probably be scheduled for the spring of 2018 and is the SSC's highest priority topic for an off-year science workshop. It would benefit from the participation of invited experts.

Follow-up workshop on historical catch reconstruction. The second workshop is related to this Situation Summary item. However, the scope would likely be limited to producing a catch reconstruction for skates, in keeping with the NWFSC's interest in this topic (NWFSC Item 9).

The skate catch reconstruction will require the development of estimates of both landed and discarded catch. Other species could be reviewed at this workshop if new reconstructions are available. The workshop, which could be scheduled for the fall of 2018, would not require the expertise of outside reviewers.

Methodology Reviews

Three items from the Situation Summary list would be suitable for formal Methodology Reviews during 2018.

Improve catch estimation methods in sparsely sampled mixed stock fisheries. Work by the Southwest Fisheries Science Center on the Bayesian statistical approach associated with this topic was presented previously to the SSC Groundfish Subcommittee (Agenda Item I.2, Attachment 1, March 2017). If the approach is approved, it would likely lead to the eventual replacement of the current ad hoc system of borrowing sample data to partition mixed-species landings (e.g., rockfish) to the species level. The SSC was informed that a demonstration application of the methodology could be ready for a formal review during February or March 2018. The SSC views this as its highest priority groundfish methodology topic for 2018.

Proposed remotely operated vehicle (ROV) survey of nearshore stocks, California & Oregon. The SSC recommends a second methodology review during 2018 of the CDFW and ODFW programs for collecting video transect survey data, which were developed independently but use similar approaches. A specific focus of the workshop will be how the data can be used to inform stock assessments. This second Methodology Review could probably take place during the fall.

SSC Groundfish Subcommittee Activities

Best practices for modeling conditional age-at-length data. Although this item was listed in the Situation Summary as a workshop, the SSC recommends that this activity be addressed by the SSC's Groundfish Subcommittee (GFSC) at a GFSC meeting or webinar late in 2018 or early in 2019 to revise the Accepted Practices Guidelines. Other potential revisions to the Guidelines include approaches for developing representative compositional data (NWFSC Item 22) and items that may be identified at the upcoming GFSC webinar scheduled for December 1.

The GFSC will need to conduct a review of the two research activities currently underway for the characterization and propagation of stock assessment uncertainty (sigma) for use in acceptable biological catch (ABC) calculations (Agenda Item E.2.a, Supplemental SSC Report 1, September 2017). Results based on these two research activities, which will primarily be used by the SSC,

will not require a full methodology review. However, they will require approval by the SSC and Council.

Remaining Situation Summary Topics

- *Workshop on transboundary issues in groundfish stock assessments*. Dr. Hastie indicated that Canadian data had been assembled during the 2017 assessment cycle for yelloweye rockfish, yellowtail rockfish, and Pacific ocean perch, and that NWFSC stock assessors could explore how those data could be incorporated into or used to inform the corresponding Council assessments (NWFSC Item 19). He also stated that Dr. Michelle McClure (NWFSC) is on a binational committee that is working to improve coordination of assessments for transboundary stocks. A transboundary workshop would be appropriate only after preliminary results have been produced, reviewed with Canadian scientists, and terms of reference defined for potential transboundary assessments.
- *Follow-up workshop on modeling stock productivity in groundfish stock assessments*. The Center for the Advancement of Population Assessment Methodology (CAPAM) held a workshop on recruitment during October 2017. Multiple GFSC members attended the workshop and publications from the workshop are likely to be available in late 2018. The GFSC plans to review the workshop findings and incorporate relevant points into revised Accepted Practices Guidelines for the 2019 assessment cycle.
- *Workshop to determine best practices for modeling recreational catch per unit effort*. A CAPAM workshop related to modeling catch per unit effort data is planned for fall 2018. The SSC will revisit this topic following the CAPAM workshop.

SSC Notes:

- *One CIE reviewer with expertise in Bayesian hierarchical estimation modeling will be needed for the methodology review of the SWFSC method for catch estimation in sparsely sampled mixed-stock fisheries.*

Two external reviewers will be needed for the methodology review of the CA and OR ROV video surveys of nearshore stocks. One reviewer should have expertise in line-transect and/or geostatistical methods; the other should have expertise with underwater visual survey design and methods.

11. Electronic Monitoring – Final Halibut Discard Mortality Rates, Discard Species List, and Third Party Review

The Scientific and Statistical Committee (SSC) reviewed a report from the Groundfish Management Team (GMT) (Agenda F.11.a, GMT Report 1, November 2017), which evaluates methods for determining Pacific Halibut discard mortality rates (DMR) for electronically monitored (EM) groundfish bottom trawl trips. Patrick Mirick (Oregon Department of Fish and Wildlife and GMT) and Aileen Smith (Pacific States Marine Fisheries Commission [PSMFC]) presented a summary of the GMT report which was based on analysis done by PSMFC. Currently Pacific halibut caught on EM trips are assigned a DMR of 90 percent. Mr. Mirick indicated that the GMT was seeking the endorsement of the proposed method for assigning Pacific halibut EM DMRs based on time-on-deck.

The PSMFC analysis used observer data from groundfish bottom trawl tows with Pacific halibut catch in 2015-2016 to fit statistical models that estimate probabilities of halibut condition (excellent, poor, or dead) as a function of time-on-deck, haul duration, average depth, catch weight, fork length, and catch composition. The GMT found that a simple single-variable model with time-on-deck as the explanatory variable performed nearly as well as more complicated multi-variable models and proposed using this model to assign DMRs to Pacific halibut caught on EM groundfish trawl tows. Estimated probabilities for each condition (excellent, poor, dead) are multiplied by International Pacific Halibut Commission (IPHC) endorsed survival rates to calculate a weighted average DMR that would be assigned to each fish.

While the GMT analysis showed that more complex multivariable models with haul duration or fork length yield statistically better fits to the data, adding these variables leads to very small changes in estimated probabilities of different conditions and do not justify the use of the more complex model. However, additional analysis presented by the GMT to the SSC indicates that gear type may have a larger impact on estimated condition probabilities. The SSC recommends consideration of a model that includes gear type.

Independent of whether a single or multi-variable model is chosen, the SSC is concerned that the proposed approach for assigning a DMR (because of the non-linear model structure) may lead to a bias in the average DMR assigned, relative to the average that would be calculated by the methods used in the non-EM fishery. There was no analysis available to evaluate this bias using the full data set, but an analysis with a small sample from observed EM trips did indicate a negative bias in calculated DMRs. This issue can be resolved by altering the survival rates associated with each condition category in the equation used to calculate DMRs.

Assigning a DMR based on time-on-deck, and potentially gear, should create strong incentives for fishers to minimize time-on-deck which may in turn reduce actual discard mortality. However, it may be important to ensure that use of proper handling procedures is not undermined by a rush to get halibut off the deck. The SSC notes that the analysis did not fully assess how well the approach accurately represents long-term vessel-specific DMRs, which was a point of interest noted in GMT Report 1.

The SSC conditionally endorses the approach proposed by the GMT to assign DMR rates based on time-on-deck subject to the following three conditions:

1. The analysts estimate and evaluate an additional model that includes gear type so the Council can consider using this alternative model for assigning DMRs.
2. The analysts determine and correct for bias in the average DMR assigned by this approach relative to the average DMR calculated using conditions noted by observers.
3. The analysts adjust the survival rates in the equation used to calculate an overall DMR such that fish categorized by observers as "excellent" have an average overall calculated DMR of 20% and the DMR for fish that are out of water for a long time approaches 100% on average.

The SSC recommends that the GMT confer with the chairs of the SSC Groundfish and Economics Subcommittees after conducting this analysis before making a final recommendation on the specific model parameters that will be used to assign a Pacific Halibut DMR to EM groundfish

trawl trips.

SSC Notes:

Changes in AIC scores as more variables are added to the logit models are probably overstated given the pseudo replication in the data. A comparison of estimated probabilities and actual observer categorizations indicates a small bias in the simpler model toward rating in a better condition. However the differences were very small, resulting in only about 1 percent difference in average probabilities estimated for different categories. The SSC concurred that the lower AIC scores for the multivariable models were probably not sufficient to validate use of the more complex models for practical reasons and due to the pseudo replication issues. However, there were larger changes in condition probability between different gear types, and the SSC recommends consideration of models that include gear as a categorical explanatory variable.

Estimates for individual fish will always be biased toward the middle (e.g., since there is generally some probability of excellent and dead), the weighted average DMR tends toward intermediate values and may be biased low on average.

To correct for bias in the DMR assignment function (equation 1), the SSC recommends the following approach to altering the weighted probability function that assigns an overall DMR to each fish. Change the rate applied to the probability of fish being dead to 100% from the current 90% value. Reduce the rate applied to fish in excellent condition (X in equation 1) from 20% to a lower percentage that results in the average DMR assigned to fish that observers rated as "excellent" being equal to 20%. Lastly adjust the rate applied to fish in poor condition (Y in equation 1) to a percentage that yields an overall average DMR for all observed and categorized fish in the 2015-2016 sample equal to the average DMR that would be calculated by multiplying IPHC survival rates to the actual conditions noted by observers.

*Equation 1: DMR = ProbabilityExcellent*X + ProbabilityPoor*Y + ProbabilityDead*1.0*

G. Council Administrative Matters

5. Future Council Meeting Agenda and Workload Planning

Proposed Ecosystem Subcommittee Meeting Planning Agenda Item

For the last three years, the Scientific and Statistical Committee Ecosystem Subcommittee (SSCES) has scheduled a meeting with members of the California Current Integrated Ecosystem Assessment (CCIEA) team in the fall of the year, usually in conjunction with the September Council meeting. The primary objective of this meeting has been to conduct technical review of selected indicators in the annual ecosystem status report. Occasionally, other aspects of the CCIEA effort have been reviewed if the CCIEA team considers them sufficiently developed to benefit from SSC review, and if there is potential for the topics to be useful to the Council process. The timing of the review allows the CCIEA team sufficient time to incorporate SSC recommendations in the next iteration of the ecosystem status report delivered to the Council the following March. A regular schedule of technical review has improved the usefulness and scientific quality of the annual ecosystem report, and the SSC recommends that these reviews continue.

The SSC also recommends that the Council consider a more formal approach to identifying the list of ecosystem topics for review. Specifically, the SSC recommends an agenda item for the March Council meeting that would identify the list of ecosystem-related topics to for review during the September meeting. This agenda item would follow the CCIEA report agenda item. This approach would allow for advisory body input, National Marine Fisheries Service (NMFS) input, and Council guidance on the list of review topics. The SSC recommends that NMFS (i.e., the CCIEA team) be tasked with developing an initial list of proposed topics for consideration in March. Advisory bodies should also have the opportunity to propose topics for consideration, provided that they identify the responsible parties for analyses to be reviewed. To assist the Council and advisory bodies in recommending topics for review, each proposed topic should include a narrative no longer than a couple of paragraphs addressing the following:

1. Short description of the topic including analytical methods used, and the responsible party.

2. Documentation that will be available for the review meeting.

3. Short discussion of how the topic might inform the Council process.

Establishing a formal review process is not intended to make it impossible to add ecosystem information to an assessment, or add a new indicator to annual ecosystem report, without going through this process first.

Pacific Sardine Update Assessment

The SSC discussed options for the sardine update assessment review tentatively scheduled for March 2018. The SSC agreed that a webinar would be an acceptable format for reviewing the update assessment, so long as it was scheduled with sufficient lead time to allow for subsequent work and in-person review prior to the April 2018 Council meeting if problems were identified. Scheduling a webinar at a time that works for the entire CPS subcommittee and relevant advisory body representatives may be challenging.

Sablefish Management Strategy Evaluation (MSE)

Assuming that the sablefish MSE is ready for review at the March 2018 meeting, it will likely require two to three hours on the SSC agenda.

Research and Data Needs Document

The SSC began planning for the Pacific Fishery Management Council Five-year Research and Data Needs document to be completed in 2018. The SSC will provide a draft document by the briefing book deadline for the April 2018 Council meeting. The SSC does not anticipate major changes to the format of the overall document. However, the SSC will emphasize revising and updating the current document to make clear which items have the highest priority and what progress has been made on the highest priority items from the 2013 Research and Data Needs document.

SSC Notes:

Ecosystem Subcommittee Planning

Incorporation of ecosystem considerations in the Council process is ongoing and challenging task, so there should be realistic expectations concerning the immediate relevance of many ecosystem-related topics. This alone should not prevent conducting reviews on topics that are otherwise of interest.

During the SSCES meeting in September, it was noted that there is a heavy workload for the SSC and other advisory groups during September Council meetings in odd years because of the groundfish stock assessment and harvest specification process, while even years are less demanding. Therefore, one possibility would be to schedule shorter meetings in odd years (no more than one day), but potentially longer meetings in even years if needed. The group discussed the idea of an SSCES review meeting scheduled separate from Council meetings, but concluded that the disadvantage of the CCIEA team not being able to engage with other advisory groups outweighed any potential benefits.

Research and Data Needs Document

The SSC discussed the North Pacific research and data needs format and searchable database.

- *Items are shorter and less detailed with distinct categories for subject matter and prioritization*
- *Advantages:*
    - *Succinctness, searchability, ability to cross-reference*
    - *Makes for consistent, systematic way to discuss, rank, and prioritize*
- *Disadvantages:*
    - *Database development for PFMC document would be costly*
    - *Too simple and boiled down. More detailed write up avoids disagreements and misinterpretations*
    - *NP situations is different in that there is a mechanism for funding high-priority items (NPRB). The PFMC document is not used this way.*

Timeline for SSC

- *Subcommittee chairs draft report – due by briefing book deadline in March. Editing will occur via google docs*
- *Subcommittee chairs are responsible for delegating tasks, compiling and submitting draft on time*
- *Drafts must be in good shape prior to March meeting*

Format and content

- *Organize major headings according to subcommittees/FMPs - some previous sections don't map directly to subcommittees (e.g. EFH could fit under multiple sections, MPAs may fit under ecosystems)*
- *Include a review of progress on specific items from previous document*
- *Some cross-referencing would be helpful*

Some existing documents include research and data needs that could inform specific items (e.g., EFH documents, catch share review report, STAR panel reports, etc.).

Consider getting input from entities such as Science Centers and documents such as EBFM roadmap.

SSC Subcommittee Assignments, November 2017

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

Bold denotes Subcommittee Chairperson

Council Meeting Dates	Location	Likely SSC Mtg Dates	Major Topics
March 8-14, 2018 Advisory Bodies may begin Thu, March 8 Council Session may begin Fri, March 9	DoubleTree by Hilton Sonoma One Doubletree Drive Rohnert Park, CA 94928 Phone: 707-584-5466	Two-day SSC Session **Thu, March 8 – Fri, March 9**	Election of new SSC officers Identify salmon management objectives Salmon review/Pre I CA current & IEA report FEP Climate Shift Initiatives Report Sablefish Ecosystem Indicators MSE Groundfish initial stock assessment plan and Terms of Reference Groundfish harvest specifications
April 5-11, 2018 Advisory Bodies may begin Thu, April 5 Council Session may begin Fri, April 6	Sheraton Portland Airport Hotel 8235 NE Airport Way Portland, OR 97220 Phone: 503-281-2500	Two-day SSC Session **Thu, April 5 – Fri, April 6**	Pacific Sardine Assessment Coastal pelagic species EFPs Salmon Methodology Topic Selection ATM Methodology Final Approval Process for Review of Ref. Points for Monitored Stocks
June 6-14, 2018 Proposed Subcommittees may meet Wed, Jun 6 Advisory Bodies may begin Thu, June 7 Council Session may begin Fri, June 8	DoubleTree by Hilton Spokane City Center 322 N. Spokane Falls Court Spokane, WA 99201 Phone: 509-455-9600	Two-day SSC Session **Thu, June 7 – Fri, June 8**	Final stock assessment plan and Terms of Reference Research and Data Needs, Prelim.
September 5-12, 2018 Proposed Subcommittees may meet Wed, Sept 5 Advisory Bodies may begin Thu, Sept 6 Council Session may begin Fri, Sept 7	DoubleTree by Hilton Hotel Seattle Airport 18740 International Boulevard Seattle, WA 98188 Phone: 206-246-8600	One-day Ecosystem Subcm Session? **Wed, Sep 5** Two-day SSC Session **Thu, Sep 6 – Fri, Sep 7**	Groundfish Stock Assessment Methodology Review Topic Selection Research and Data Needs, Final Salmon Methodology Topic Priorities

November 1-8, 2018 Proposed Subcommittees may meet Thu, Nov 1 Advisory Bodies may begin Fri, Nov 2 Council Session may begin Sat, Nov 3	San Diego Marriott Del Mar 11966 El Camino Real San Diego, CA 92130 Phone: 858-523-1700	Two-day SSC Session **Fri, Nov 2 – Sat, Nov 3**	CPS Methodology Topic Selection Groundfish Stock Assessment Methodology Topic Priorities Salmon Methodology Review

Proposed Workshops and SSC Subcommittee Meetings for 2018							
	Workshop/Meeting	**Potential Dates**	**Sponsor/ Tentative Location**	**SSC Reps.**	**Additional Reviewers**	**AB Reps.**	**Council Staff**
1	~~SCS6 Meeting~~	~~Jan. 17-19~~	~~Council & NMFS/ San Diego, CA~~	~~Satterthwaite, Holland, Punt, Berger, Budrick, Field, Hamel, Harte, Johnson, Sharma, Speir, Tsou~~	~~TBD~~	~~None~~	~~Tracy, DeVore Others? TBD~~
2	~~CPS ATM Methodology Review~~	~~Jan. 30 – Feb. 2~~	~~Council/ La Jolla, CA~~	~~Punt, Brown, Hamel~~	~~TBD~~	~~TBD~~	~~Griffin~~
3	~~GF Subcommittee Webinar Review of Harvest Specifications and GF R&D Needs~~	~~Feb. 8~~	~~Council/Webinar~~	~~GF Subcommittee~~	~~None~~	~~None~~	~~DeVore~~
4	CAPAM Workshop on Spatio-Temporal CPUE Indices	Feb. 26 – Mar. 2	CAPAM/ La Jolla, CA	TBD	TBD	None	TBD
5	Review of Sardine Update Assessment	Mar. 6	Council/ Webinar	CPS Subcommittee	None	CPSMT CPSAS	Griffin, DeVore
6	Review of Catch Estimation Methods in Sparsely Sampled Mixed Stock Fisheries	Mar. 28-29	Council/ Santa Cruz, CA	GF Subcommittee	TBD	TBD	DeVore
7	Review of Nearshore ROV Survey Designs and Methodologies	Late Summer/Early Fall?	Council/ TBD	GF Subcommittee	TBD	TBD	DeVore

Proposed Workshops and SSC Subcommittee Meetings for 2018							
Workshop/Meeting		**Potential Dates**	**Sponsor/ Tentative Location**	**SSC Reps.**	**Additional Reviewers**	**AB Reps.**	**Council Staff**
8	CCIEA Indicator Review	Sep. 5?	Council/ Seattle, WA	Ecosystem Subcommittee	None	EWG? EAS?	Dahl
9	Salmon Methodology Review	Oct. TBD	Council/ TBD	Salmon Subcommittee	TBD	STT MEW	Ehlke