

SUMMARY MINUTES
Scientific and Statistical Committee

Pacific Fishery Management Council
Sheraton Portland Airport Hotel
Garden B/C Room
8235 Northeast Airport Way
Portland, OR 97220
(503) 281-2500

April 10-11, 2010

Call to Order and Scientific and Statistical Committee (SSC) Administrative Matters

The meeting was called to order at 8 a.m. on Friday, April 10, 2010. Dr. Don McIsaac was unable to brief the SSC on priority agenda items because the Pacific Fishery Management Council was in session concurrently.

Members in Attendance

Mr. Robert Conrad, Northwest Indian Fisheries Commission, Olympia, WA
Dr. Ramon Conser, National Marine Fisheries Service, La Jolla, CA
Dr. Martin Dorn, SSC Chair, National Marine Fisheries Service, Seattle, WA
Dr. Carlos Garza, National Marine Fisheries Service, Santa Cruz, CA
Dr. Vladlena Gertseva, National Marine Fisheries Service, Newport, OR
Dr. Owen Hamel, SSC Vice-Chair, National Marine Fisheries Service, Seattle, WA
Dr. Selina Heppell, Oregon State University, Corvallis, OR
Mr. Tom Jagielo, Oregon Department of Fish and Wildlife
Ms. Meisha Key, California Department of Fish and Game, Santa Cruz, CA (Alternate)
Dr. Peter Lawson, National Marine Fisheries Service, Newport, OR
Dr. Todd Lee, National Marine Fisheries Service, Seattle, WA
Dr. Charles Petrosky, Idaho Department of Fish and Game, Boise, ID
Dr. André Punt, University of Washington, Seattle, WA
Ms. Cindy Thomson, National Marine Fisheries Service, Santa Cruz, CA
Dr. Theresa Tsou, Washington Department of Fish and Wildlife, Olympia, WA
Dr. Vidar Wespestad, Research Analysts International, Seattle, WA

Members Absent

Mr. Tom Barnes, California Department of Fish and Game, La Jolla, CA
Dr. Louis Botsford, University of California, Davis, CA

Scientific and Statistical Committee Comments to the Council

SSC Recusals for the April 2010 Meeting.		
SSC Member	Issue	Reason
Mr. Tom Jagielo	Exempted Fishing Permit for Sardine Research	SSC independence, Mr. Jagielo was a Science Advisor on the research team

The following is a compilation of April 2010 SSC reports to the Pacific Fishery Management Council (Council). (Related SSC discussion not included in written comment to the Council is provided in *italicized text*).

Coastal Pelagic Species Management

F.1. Exempted Fishing Permit (EFP) for Aerial Sardine Survey Research

The Scientific and Statistical Committee (SSC) was briefed on updates to the EFP application for the west coast sardine survey in 2010. Applicant responses to a list of five issues raised by the SSC and the Coastal Pelagic Species Management Team (CPSMT) in March were provided to the SSC (Agenda Item F.1.a, Supplemental Attachment 2). Mr. Tom Jagielo and Dr. Doyle Hanan were present to answer questions.

The size distribution of sardines varies latitudinally, with larger fish present in the north, and there may be spatial variation in the relationship between biomass and school surface area. In 2009, only point sets near the Columbia River plume were used to estimate this relationship. The primary issue raised by the SSC both in March and in the present meeting, was the lack of a spatially-stratified series of point-sets in previous work and the lack of a detailed protocol for sufficiently stratifying the sample in 2010.

The SSC concludes that the request for an explicit protocol for establishing spatial distribution of point sets in the summer survey was not met, although the application includes provisions for sampling both north and south of the Columbia River, as well as onshore and offshore. The SSC suggests that an adequate modification of the EFP application would be to require that aerial transects occur before the point sets, and that the point sets reflect the size distribution of schools identified in the transects. The SSC further suggests that adequate spatial stratification would divide the survey into four equally sized areas with no less than 15 percent of point sets allocated to each quadrant, subject to the presence of sardine schools in each quadrant. The SSC recognizes that such stratification may be logistically challenging. Alternative protocols may achieve the same objectives.

The revised EFP application included protocols for the fall pilot project in southern California. The pilot project will evaluate the use of LIDAR (light detection and ranging) as a supplement to photographic methods of aerial assessment of sardines, as well as the ability to detect sardine schools at night and schools at greater depth. The SSC recommends that both point sets and LIDAR detections be stratified across sardine schools of a large range of sizes, so that variation in the surface area/biomass relationship can be adequately evaluated. The SSC was encouraged by the likely involvement of Dr. Churnside in the project, since analysis of the data is dependent upon his involvement.

The SSC finds the EFP for the proposed sardine surveys to have a strong scientific basis, and recommends that it be approved, subject to the inclusion of a detailed study design to spatially stratify the point sets along the lines outlined above. The SSC notes the tight timeline necessary to provide the results from these surveys to the assessment reviews in the fall.

Highly Migratory Species Management

G.4. Critical Habitat Designation for Leatherback Turtles

The National Marine Fisheries Service (NMFS) has a proposed rule to revise the Critical Habitat Designation for leatherback sea turtles, in response to a petition to add areas of the west coast Exclusive Economic Zone (EEZ). Ms. Elizabeth Petras of the Southwest Regional Office presented a summary of the proposal and Dr. Scott Benson of the Southwest Fisheries Science Center was available to answer questions.

Section 7 of the Endangered Species Act prohibits adverse modification or destruction of the “primary constituent elements” (PCEs) of the habitat, which were identified by NMFS as “passage” (i.e., migration behavior) and the primary prey of leatherbacks, the brown sea nettle jellyfish. The Scientific and Statistical Committee (SSC) agrees with the proposed rule that direct or indirect effects of fisheries on these PCEs are not an immediate concern, based on available data. Incidental catch and gear entanglement are designated as “takes” and evaluated under a separate Section 7 impact assessment, so fisheries were not included as a threat to habitat. However, Section 7 consultation is required for any federally permitted actions that may jeopardize a listed species directly or indirectly, even if Critical Habitat has not been designated. The SSC expects little additional impact of the proposed rule on Pacific fisheries.

The SSC noted that the methods used to identify habitat area boundaries and assignment of ratings for conservation value (low, medium, and high) were largely based on expert opinion and were not well documented for each area. Conservation value was based on a relative scale, with areas of high turtle sightings and prey rated “high” and areas with few or no observations rated “low”, but within the “medium” rating, some areas were further stratified based on additional criteria that were not documented (see the table footnote on page 20 of *Revisions of Critical Habitat for Leatherback Sea Turtles – Biological Report, Nov. 2009*).

The SSC received the lengthy economic report too late to provide a thorough review. Nevertheless, the SSC is concerned by the lack of explanation or justification for assignment of “very low” to “high” ratings of potential cost across economic scales. The economic costs in the report are given the ratings in Table 3 of the Federal Register on page 329. The procedure used to assign these ratings is important because those assignments are used to evaluate the tradeoffs between economic costs and conservation ratings at each level. The analysis that compares these ratings (see Table 4 in the Federal Register, page 329) gives a false impression of a strong analytical framework for comparing the economic and conservation ratings, which is not supported in the documentation. A more qualitative discussion that compares the actual median annualized cost to the conservation value rating would provide a more clear and substantiated analysis.

Although the proposed rule does not appear to have immediate impacts on fisheries, it will set a precedent for additional Critical Habitat Designation for leatherback turtles and possibly other protected species. The public comment period for the rule is now open, and the Council may

want to use that opportunity to comment on documentation and methodology concerns that can be addressed in the final ruling.

Highly Migratory Species Management, continued

G.2. Fishery Management Plan – Amendment 2 – Annual Catch Limits

The Highly Migratory Species subcommittee of the Scientific and Statistical Committee (SSC) met with the Highly Migratory Species Management Team (HMSMT) to review and discuss Agenda Item G.2 (Fishery Management Plan Amendment 2 – Annual Catch Limits and Accountability Measures). The full SSC received a report on the subcommittee meeting and further discussed this agenda item with Drs. Stephen Stohs and Suzanne Kohin of the HMSMT. The discussion focused on the material presented in the HMSMT Report (Agenda Item G.2.b); the topics that were the focus of the discussion are indicated in bold.

Stock Classifications as Management Unit Species or Ecosystem Component Species

The HMSMT reviewed the process followed to classify species as Management Unit Species (MUS) or Ecosystem Component (EC) Species. There was a discussion of the criteria used to assign species to the EC category as opposed to being dropped from the HMS management plan. The SSC recommends that these criteria be more explicitly stated in the final decision document and the specific reasons for dropping a species from the HMS management plan be identified (e.g., the species is better covered in another management plan such as the CPS management plan). The SSC endorses the process used by the HMSMT and the stock classifications they have proposed.

Establishing Reference Points for Unassessed Stocks or Stocks Subject to the International Exception

Management reference points for stocks being managed by regional fishery management organizations (RFMOs) were reviewed. A concern was expressed that in the current HMS FMP, sharks are grouped with bluefin tuna and striped marlin based on their vulnerability. This is not reasonable given current understanding of these stocks as shark species are generally thought to be more vulnerable. The SSC recommends that in the FMP amendment, the differences in vulnerability between these two groups be explicitly recognized and considered when establishing Acceptable Biological Catches (ABCs) for these stocks.

There was a general discussion on how the SSC would review and evaluate stock assessment documents produced by other RFMOs and their recommendations for management reference points for HMS stocks falling under the International Exception. It is not clear how the Council and its SSC will participate in these processes and what level of SSC review and interaction would be possible. The SSC requests that the HMSMT summarize the management reference points, and the basis for them, for each of the HMS stocks under the International Exception. The SSC can then evaluate whether these reference points meet the standards specified by the MSA and make recommendations to the Council. The SSC supports the concept of frameworking the control rules but not including hard numbers in the amendment.

The SSC notes that for species with significant movement outside of the USA exclusive economic zone (EEZ) coupled with coverage of the species by an RFMO (e.g., IATTC or WCPFC), the International Exception may be appropriate. However, meeting the criteria for the International Exception does not necessarily mean that the species is actively assessed and managed. For example, conventional and satellite tagging data indicate that shortfin mako sharks move outside of the EEZ regularly. Although technically managed by IATTC, shortfin mako are not assessed on a regular basis due to data limitations and workload issues. The SSC suggests that the nomination of candidate species for the International Exception should consider whether the species is assessed and actively managed by an RFMO.

Methodology for Establishing Reference Points

The SSC notes that it is not a straightforward process to compute Overfishing Limits (OFLs) for many HMS stocks. For example, there will be considerable uncertainty regarding the historical catches for some of the HMS stocks (particularly the shark species) which are found outside of the US EEZ. Moreover, catches of some HMS MUS stocks are under-reported owing to discarding. The SSC recommends that the impact of discarding be taken into account when computing OFLs and assessing whether overfishing is occurring. Recommendations for OFLs for data-poor HMS species must be based on the best available science. The HMSMT should therefore consider all data sources, including catches and catch per unit of effort (CPUE) series, when estimating OFLs. A clear justification for the choices made when computing OFLs must accompany the recommendations to allow the SSC to review OFLs. For example, the OFL for an HMS stock could be based on the highest catch recorded (or an average of the highest catches) if there is evidence that a stock has only been lightly fished historically.

ABCs and Annual Catch Limits (ACLs) will need to be specified for any MUS stocks for which the International Exception does not apply. ABCs are more difficult to estimate than OFLs in principle but ad hoc rules and/or depletion corrected average catch (DCAC) and P* approaches may be possible. The ACL must be less than or equal to the ABC, and the ABC needs to be less than the OFL to account for scientific uncertainty. ABCs can be calculated from OFLs either by multiplying the OFL by a scalar (e.g., 0.5 for the most data-poor stocks) or using a P* approach. The latter could be applied if the OFL is based on the DCAC or DB-SRA methods as these methods lead to probability distributions for the OFL.

More specifically for unassessed, data-poor MUS stocks, the SSC recommends the following hierarchical framework for OFL and ABC (when needed) determination.

1. If stock-wide catches are available, use a DCAC-type approach to estimate stock-wide OFLs and ABCs then proportionally reduce these to determine local (i.e. within the EEZ) reference points.
2. If only local catch time series are available, use local DCAC estimation or average catch over a designated set of years with evaluation of CPUE or other information to inform the years selected. For this case, in particular, it will be important to clearly identify the assumptions supporting local estimation.

Primary Fishery Management Plan Designation

The HMSMT reviewed the criteria used for preliminary designation of the “primary FMP.” For each species/stock in the HMS FMP, either the PFMC HMS FMP or the WPFMC Pelagics FMP would be designated as the primary FMP. The criteria used are partly scientific (e.g., geographic range and stock structure analysis) and partly administrative (e.g., the treaty-based geographical bounds for IATTC and WCPFC management and the current NMFS species assignments among its Science Centers and Regions). With regard to the scientific criteria, it should be recognized that stock structure is not well established for many highly migratory species in the Pacific Ocean. In particular, the species that have yet to be fully assessed (e.g. swordfish) or have been assessed for the first time only recently (e.g. striped marlin) have stock assessments that are based on preliminary stock structure hypotheses. The “best” stock structure hypothesis may change in subsequent assessments. The SSC suggests that whatever agreement is reached regarding the primary FMP among the PFMC, WPFMC, and NMFS be frameworked in a manner that can be easily modified should future work indicate a different stock structure is likely.

Groundfish Management

I.2. Harvest Specifications for 2011-2012 Fisheries Recommendations on OFLs, ABCs, and Revised Rebuilding Plans

Mr. John DeVore briefed the Scientific and Statistical Committee (SSC) on the proposed list of overfishing limits (OFLs) and acceptable biological catch (ABCs) developed by the Groundfish Management Team (GMT). Drs E.J. Dick and Jason Cope outlined a proposed approach for calculating buffers for category 2 and 3 stocks. The SSC also reviewed the outcomes from a conference call among members of the SSC Groundfish Subcommittee, the Groundfish Management Team (GMT), and Council staff on March 17, 2010, which discussed how species can be assigned to categories, as well as control rules and approaches to determining OFLs for category 2 and 3 species.

Assigning stocks to categories

The SSC endorsed the recommendations of the Groundfish Subcommittee regarding species categories. These categories are category 1: data-rich stocks; category 2: data-moderate stocks; and category 3: data-poor stocks (Table 1). The SSC noted that the Council has decided not to use the Ecosystem Component (EC) category at this time.

The categories are divided into several subcategories that reflect various approaches to estimate OFLs. The SSC notes that the categories and subcategories reflect differences in data availability, analytical techniques, and the robustness of assessment outcomes, factors which all relate to the amount of scientific uncertainty and hence the size of the scientific uncertainty buffer to offset ABCs from OFLs. The SSC expects to refine the list of categories and subcategories along with their definitions when new methods for conducting assessments and computing OFLs become available.

The SSC agreed that stocks whose OFLs are estimated using DCAC and DB-SRA methods should be placed into categories 3c and 3d respectively because these methods do not utilize

trend data, but are rather based on historical catch information (coupled with a basic understanding of life history parameters, such as natural mortality and age at maturity). The SSC also agreed that stocks assessed using age/size-based models that were endorsed by a Council Stock Assessment Review (STAR) panel and the SSC would generally be assigned to category 1. However, stocks with category 1 assessment models whose input data and/or model results are highly uncertain should be assigned to category 2d.

The SSC agreed that, in the future, stocks should be assigned to categories and subcategories during the SSC review of assessments endorsed by STAR panels. However, since this is not possible for the present cycle, the SSC reviewed the proposed species categorization. Each stock in the Fishery Management Plan (FMP) was therefore assigned to a category and, where appropriate, a subcategory in Table 2-1a of Attachment 1 of Agenda Item I.2.a.

Review of the proposed OFLs

The SSC recognized the considerable work undertaken this year by the GMT to provide more objective bases for the OFLs. The current list of OFLs is much more clearly linked to an analytical (and replicable) basis which makes technical review of the work much more straightforward. While work still remains, the GMT should be acknowledged for their efforts. The SSC reviewed the proposed OFLs for each stock in Table 2-1a of Attachment 1 of Agenda Item I.2.a, in particular whether stocks should be assigned to category 1 (data-rich stock) or category 2d (a stock with an age-structured stock assessment that is highly uncertain). The SSC made the following changes to the table.

- (1) Lingcod south of 42°N. This stock is assigned to category 2d because the assessment for this area was based on data sets (length distributions and indices) that are in conflict.
- (2) Shortbelly. The SSC agrees that shortbelly is in category 2d because the stock assessment for this species was not reviewed by a Council STAR panel, unlike those for all of the species in category 1. The value for the OFL for this species is currently 50 percent of the ABC/optimum yield (OY). The GMT should contact Dr John Field and attempt to obtain the correct value for the 2011 & 2012 OFLs.
- (3) Cowcod. There are separate entries for cowcod in the Conception and the Monterey areas. Cowcod in the Conception area is in category 2c and not category 2d because the assessment for this area did not estimate annual recruitments. The OFL for the component of the population in Monterey will be based on DCAC or DB-SRA and it will be placed in categories 3c / 3d.
- (4) Greenstriped. This stock is moved from category 1 to category 2d owing to considerable uncertainty regarding the estimate of B_0 and current biomass and extreme sensitivity to assumptions about discard.
- (5) Longspine thornyhead. This stock is moved from category 1 to category 2d because the stock assessment was highly uncertain, a substantial fraction of the stock occurs outside of the survey area, and because there were no survey data for the area south of 34°30'N when the assessment was conducted in 2005.
- (6) Blue rockfish. There are separate entries for blue rockfish off California and Oregon. The population off California is in category 2d, while the OFL for the population off Oregon will have to be determined using historical catches and will be in category 3.
- (7) Gopher rockfish. The population in the south is further sub-divided at Point Conception. The component of the population north of Point Conception is assigned to category 1,

while an OFL for the component south of Point Conception will be based on the application of DCAC or DB-SRA and this component placed in category 3c / 3d.

- (8) Arrowtooth flounder. This stock is moved from category 1 to category 2d owing to the sensitivity of the estimate of OFL to changes to assumptions of the assessment.
- (9) Kelp greenling. Separate entries are provided for kelp greenling off Oregon and Washington. An OFL for the Oregon component of the population will be based on the most recent assessment.

In relation to the “Other Fish” complex, the SSC notes that this complex consists of species with different life history characteristics and depth distribution, many with poor information on historical catches. It was noted that finescale codling in the “Other fish” complex does not have any record of landings on the west coast. It was also noted that there are species of grenadiers and skates that are not included in the Groundfish FMP, but are landed in groundfish fisheries. The GMT has assigned OFLs to some of the species in this complex, but was unable to do so for all of them, including some species which are caught in significant quantities. The SSC recommends re-evaluating the logic for the formation of this complex for the next management cycle and that the OFL for the 2011-2012 management cycle be set to 11,150 (the current OFL for this complex minus the OFL for cabezon off Oregon, which should be removed from the complex).

ABC Control rules for category 2 and 3 (data moderate and data poor) stocks

The buffer defines the difference between the OFL and the ABC. The size of the buffer is determined by two factors, the extent of scientific uncertainty and the Council’s level of risk. Higher levels of stock assessment uncertainty (σ) or greater levels of risk avoidance (P^*) lead to larger buffers between the OFL and the ABC.

The extent of scientific uncertainty for each stock is determined by the SSC while the level of risk (quantified by P^* , the probability of overfishing occurring) is a policy decision which will be made by the Council. Previously, the Council decided that P^* would not be greater than 0.45 and the SSC recommended that the extent of scientific uncertainty for each category 1 (data-rich) stock be quantified using a value for σ which is the greater of 0.36 (the result of a meta-analysis) and the coefficient of variation of the most recent estimate of abundance. The SSC notes that this approach divides the scientific aspects related to setting the ABC (specifying the extent of scientific uncertainty, σ) from the policy decision (specifying the value of P^*). It also notes that $\sigma=0.36$ is the current best estimate of scientific uncertainty, but that it likely underestimates the true extent of uncertainty by an unknown amount. The SSC will continue to refine this estimate.

The SSC agrees that ideally the approach recommended for setting ABCs for category 1 stocks should also be applied to category 2 and 3 stocks. However, there is at present no analysis available for determining the appropriate value of σ to represent scientific uncertainty for stocks in these categories, unlike the situation for category 1 stocks. In the absence of an analysis for category 2 and 3 stocks, the SSC suggests two interim approaches for computing ABCs from OFLs.

- (1) Continue to apply a buffer of 0.25 for category 2 stocks and of 0.5 for category 3 stocks for consistency with current practice until the SSC has developed and applied an

appropriate analytical framework. Use of this approach means that the SSC does not specify a value for σ and the Council does not express its view on risk aversion.

- (2) Set the value of σ for category 2 and 3 stocks to 0.72 and 1.44 respectively, i.e. two and four times the CV for category 1 stocks. The difference between 0.72 and 1.44 corresponds fairly closely to the difference between the current buffers for category 2 and 3 stocks (0.25 versus 0.5) when P^* is in the range 0.3 ~ 0.35. Table 2 shows the relationship between the proposed values for σ and the buffer for a range of values for P^* . Exploration of the results from decision tables for some of the stocks in category 2d also indicates values for σ of approximately 0.72. However, the specific values of 0.72 and 1.44 are not based on a formal analysis of assessment outcomes and could change substantially when the SSC reviews additional analyses.

Irrespective of how ABCs are determined from OFL for 2011-2012, the SSC intends to further examine this issue for the next management cycle.

Partitioning coastwide OFLs north and south of 40°10'N latitude

Dr. E.J. Dick and Mr. John Budrick presented results from different ways of partitioning coastwide OFLs north and south of 40°10' North latitude. Two basic approaches were outlined: (a) using the current split of the OYs and (b) using information on catch by area. There is no recorded basis for the current split of the OYs between areas so the SSC recommends the splits be based on historical catches north and south of 40°10'N. The SSC was presented with three options related to the years to be used to split OFLs: (a) 1983-89, (b) 1993-99, and (c) 1983-89 & 1993-99. There are concerns with all three of the choices given changes over time in fishing practices. For the current management cycle, the SSC recommends using the longer time period. Although this is not the ideal approach (since catches do not necessarily reflect spatial distribution of species), it is considered a reasonable starting point and appropriate for the current management cycle. The use of survey data and/or Essential Fish Habitat suitability maps may provide more reliable information to partition coastwide OFLs. The SSC recommends exploring these approaches for the 2013-2014 management cycle.

Table 1. Proposed definitions of species categories

Category 3: Data poor. OFL derived from historical catch.

- Category 3a. No reliable catch history. No basis for establishing OFL.
- Category 3b. Reliable catches estimates only for recent years. OFL is average catch during a period when stock is considered to be stable and close to BMSY equilibrium on the basis of expert judgment.
- Category 3c. Reliable aggregate catches during period of fishery development and approximate values for natural mortality. Default analytical approach DCAC.
- Category 3d. Reliable annual historical catches and approximate values for natural mortality and age at 50 percent maturity. Default analytical approach DB-SRA.

Category 2: Data moderate. OFL derived from model output (or natural mortality).

- Category 2a. M^* survey biomass assessment (as in Rogers 1996).

- Category 2b. Historical catches, fishery-dependent trend information only. An aggregate population model is fit to the available information.
- Category 2c. Historical catches, survey trend information, or at least one absolute abundance estimate. An aggregate population model is fit to the available information.
- Category 2d. Full age-structured assessment, but results are substantially more uncertain than assessments used in the calculation of the P* buffer. The SSC will provide a rationale for each stock placed in this category. Reasons could include that assessment results are very sensitive to model and data assumptions, or that the assessment has not been updated for many years.

Category 1: Data rich. OFL based on FMSY or FMSY proxy from model output. ABC based on P* buffer.

- Category 1a. Reliable compositional (age and/or size) data sufficient to resolve year-class strength and growth characteristics. Only fishery-dependent trend information available. Age/size structured assessment model.
- Category 1b. As in 1a, but trend information also available from surveys. Age/size structured assessment model.
- Category 1c. Age/size structured assessment model with reliable estimation of the stock-recruit relationship.

Table 2. Relationship between P* and the proportion of OFL for category 1, 2, and 3 stocks based on σ values for 0.36, 0.72 and 1.44.

P*	0.36	0.72	1.44
0.45	95.6%	91.3%	83.4%
0.44	94.7%	89.7%	80.5%
0.43	93.8%	88.1%	77.6%
0.42	93.0%	86.5%	74.8%
0.41	92.1%	84.9%	72.1%
0.40	91.3%	83.3%	69.4%
0.39	90.4%	81.8%	66.9%
0.38	89.6%	80.3%	64.4%
0.37	88.7%	78.7%	62.0%
0.36	87.9%	77.3%	59.7%
0.35	87.0%	75.8%	57.4%
0.34	86.2%	74.3%	55.2%
0.33	85.4%	72.9%	53.1%
0.32	84.5%	71.4%	51.0%
0.31	83.7%	70.0%	49.0%
0.30	82.8%	68.6%	47.0%
0.29	81.9%	67.1%	45.1%
0.28	81.1%	65.7%	43.2%
0.27	80.2%	64.3%	41.4%
0.26	79.3%	62.9%	39.6%
0.25	78.4%	61.5%	37.9%
0.24	77.5%	60.1%	36.2%
0.23	76.6%	58.7%	34.5%
0.22	75.7%	57.4%	32.9%
0.21	74.8%	56.0%	31.3%
0.20	73.9%	54.6%	29.8%
0.19	72.9%	53.1%	28.2%
0.18	71.9%	51.7%	26.8%
0.17	70.9%	50.3%	25.3%
0.16	69.9%	48.9%	23.9%
0.15	68.9%	47.4%	22.5%
0.14	67.8%	45.9%	21.1%
0.13	66.7%	44.4%	19.8%
0.12	65.5%	42.9%	18.4%
0.11	64.3%	41.3%	17.1%
0.10	63.0%	39.7%	15.8%
0.09	61.7%	38.1%	14.5%
0.08	60.3%	36.4%	13.2%
0.07	58.8%	34.6%	11.9%
0.06	57.1%	32.6%	10.7%
0.05	55.3%	30.6%	9.4%

SSC Groundfish Subcommittee
Evaluation of Species Categorizations and OFL Assignments

The Groundfish Subcommittee (GF) of the Scientific and Statistical Committee (SSC) had a conference call on March 17, 2010. The purpose of the conference call was to discuss the species categorization for an April decision on ABCs, recommended ABC control rules and approaches to determine OFLs for category 2 and 3 species. Members of the SSC in attendance included: Vidar Weststad (GF chair), Martin Dorn, Vladlena Gertseva, Tom Jagielo and André Punt. Also, John Devore of PMFC and members of the Groundfish Management Team (GMT), including John Budrick, Jason Cope, E.J. Dick, Joanna Grebel, Robert Jones, Corey Niles, and Sarah Williams, were present.

The group discussed the definitions for the species categories, using a draft proposed by Martin Dorn. The categories were: (a) Category 1; data-rich stocks for which age-structured assessments with resolved recruitment patterns are available, (b), Category 2; data-moderate stocks for which assessments based on aggregate biomass models that fit trend data are available, and (c) Category 3; data-poor stocks for which OFLs are based on historical catch data analyses only (no trend information). The approaches for computing the scientific uncertainty buffer to offset ABCs from OFLs are different for each category of stocks. It was agreed that there is a need to have objective criteria for species categorization. To establish these criteria, each category was divided into several subcategories (as proposed by Dr. Dorn and modified by the group) that reflect various approaches to estimate OFLs. The revised description of categories and subcategories is presented in Attachment 1.

The subcommittee focused on categorization of stocks whose OFLs are estimated using DCAC and DB-SRA methods. It was agreed that such stocks should be placed into Categories 3c and 3d respectively because the DCAC and DB-SRA methods do not utilize trend data, but are rather based on historical catch information (coupled with a basic understanding of life history parameters, such as natural mortality and age at maturity). It was also agreed that stocks assessed with age/size-based models that were endorsed by a PMFC STAR panel and the SSC should generally be assigned to Category 1. The group suggested that there should also be an option of assigning stocks with age-structured assessments that have been endorsed by the SSC but whose input data and/or model results are highly uncertain to Category 2. During the SSC review of assessments endorsed by STAR panels, the SSC should routinely assign stocks to a Category taking account of uncertainty in data and/or model results.

Next, the group went through the list of stock and their proposed OFLs and discussed the justification for the categorization of each stock and its OFL. All EC species were assigned to one of the three categories (using the subcategories as criteria) because the Council decided not to use the EC (Ecosystem Component) category at this time. Four stocks with full age-structured assessments: shortbelly rockfish, blue rockfish, gopher rockfish and starry flounder, were provisionally assigned to Category 2 pending review by the entire SSC. The assessments for these stocks are recognized to be either particularly uncertain (the latter three) or were not reviewed via the STAR process (shortbelly). Stocks whose OFLs were estimated using DB-SRA method were assigned to Category 3d, and those whose OFLs were estimated using historical catch information only were assigned to Category 3b. The table with updated categories for groundfish stocks is provided in Attachment 2.

The group also discussed how best to treat the “Other fish” complex. This complex consists of species with different life history characteristics and depth distribution, many with poor information on historical catches. It was noted that finescale codling in the “Other fish” complex does not have any record of landings on the west coast. It was also noted that there are species of grenadiers and skates that are not included in the Groundfish FMP, but are landed in groundfish fisheries. The Groundfish subcommittee recommends re-evaluating the logic for the formation of this complex for the next management cycle.

Finally, E.J. Dick presented results of catch by area analysis to partition coastwide OFLs north and south of 40° 10' North latitude. Although this is not the ideal approach (since catches do not necessarily reflect spatial distribution of species), it was considered a reasonable starting point and appropriate for the current management cycle. The use of survey data and/or EFH habitat suitability maps may provide more reliable information to partition coastwide OFLs. The Groundfish Subcommittee recommends exploring these approaches, but recognizes that this may not be possible for the 2011-2012 management cycle, due to time constraints.

Salmon Management

H.4. Methodology Review Process for 2010

The Scientific and Statistical Committee (SSC) met with Dr. Robert Kope of the Salmon Technical Team (STT), Dr. Peter Dygert (National Marine Fisheries Service [NMFS]) and Chuck Tracy (Council staff) to identify and discuss possible methodology reviews for 2010. The following items were identified for potential SSC review this fall. The lead entity for each work product is identified at the end of the item.

1. Continued sensitivity analysis of the Fishery Regulation Assessment Model (FRAM)-Model Evaluation Workgroup (MEW).
2. Examination of the potential bias introduced by mark-selective fisheries on Council harvest model estimation of fishery-related mortality for unmarked coho and Chinook-MEW.
3. Oregon coastal natural (OCN) coho abundance predictor-NMFS.
4. Revisions to escapement goals that may be proposed under Amendment 16 for OR coastal Chinook-STT.
5. Evaluation of indicator stock tag groups for Columbia River summer Chinook for incorporation into FRAM-STT.
6. Incorporation of additional Chinook stocks into the FRAM for improved accounting and better overall stock representation-STT.
7. Revisions to Amendment 13 matrix control rules for OCN coho stocks-ODFW.
8. Abundance-based management framework for Lower Columbia River tule fall Chinook-NMFS.

Salmon Management, continued

H.6. Fishery Management Plan – Amendment 16 – Annual Catch Limits

The following summary notes are included for reference only and were not reported to the Council at this meeting.

The SSC reviewed the work to date by the Salmon Amendment Committee on FMP Amendment 16 which is devised to comply with the provisions of the MSA and the revised NSI guidelines. Mr. Peter Dygert, Dr. Robert Kope, and Mr. Chuck Tracy were at the table to discuss work to date. The group noted that Amendment 16 could represent a considerable change from previous salmon management.

The topics to be included in the amendment include:

- 1. Stock classification*
- 2. Control Rules*
- 3. Reference Points*
- 4. Status Determination Criteria*
- 5. Incorporating De Minimis Fishing Provisions into ACL rules*

Stock classification Alternatives

- In the Fishery – Most FMP stocks*
- Ecosystem Component Species*
 - Far North Migrating Stocks*
 - Council fisheries don't affect stocks*
 - Not generally retained*
- Out of the Fishery – Canadian stocks – Council has no authority for managing*

Control Rules – MSY, OFL, ABC

- F Based Alternatives – Model Basis (FRAM, KOHM, SHM)*
- Catch Based Alternatives*
 - incorporate abundance term*
 - additional source of uncertainty*
- Stock Specific Alternatives – Postseason Assessment*

ACL, 40-10 like F-based control rule

- Maximum F = MFMT for OFL, buffer this for ABC*
- Escapement goal – so reduce harvest (ACL) down to escapement goal.*
- Alternatively, ACL could have declining levels of F for de minimis fishing.*
- Stock Complex Alternatives*
 - Quota*
 - Indicator stocks*
 - In season management*
- Individual Stock Alternative*
 - Spawning escapement*
 - F-based*
 - South of Falcon status quo*

Status Determination Criteria

- *MSMT – Overfishing – options*
 - $F > F_{MSY}$
 - $C > OFL$
 - F past three years > 0 and Stock size over past three years less than MSST
- *MSST – Overfished – options*
 - Stock size in one year less than half of S_{MSY}
 - Geometric mean of three years $<$ half of S_{MSY}
 - Three consecutive years $<$ half $S_{MSY} = MSST$
- *Approaching an Overfished Condition*
 - Geometric mean for 2 years plus forecast $<$ MSST
 - Forecast and previous 2 years $<$ MSST
- *Rebuilt*
 - Stock size $>$ S_{MSY} for one year
 - Geometric mean of recent 3 years is $>$ S_{MSY}
 - 3 years greater than S_{MSY} (any three years)

De Minimis Fishing Provisions

- *Control Rule Modification*
- *Exploitation Rate Basis*
 - Total
 - Southern US
 - Council Area
- *Precedents*
 - $< 38\%$ total ER (LCR Tule RER)
 - $< 13\%$ Council Areas ER (KFRC Amendment 15)
 - $< 10\%$ SUS (PSC coho agreement).

There was a recommendation that some simulation work be done to predict likelihood of rules resulting in repeat entry into overfished state in which case F levels/Catch levels should be modified.

Sacramento Fall Chinook is the only stock with no cap on exploitation rate (and also no de minimis fishing provision).

Escapement is a key management goal for salmon, but can we separate forecast from management error? Exceeding a fishing rate is a failure of management, whereas falling below escapement goal may be due to forecast uncertainty, overfishing, or both.

Public Comment

Geoff Shester, Oceana – Mr. Shester noted that SSC and Council work on assessing uncertainty has only focused on uncertainty in biomass estimates and does not address other sources and, is therefore noted as a minimum estimate. These uncertainty estimates are being portrayed as the SSC recommendation on appropriate uncertainty levels, but other sources of uncertainty, such as forecast error are not included. The NSI guidelines also speak to taking ecosystem considerations into account when setting OY/ACL and this is not expressed explicitly. There have been the suggestions that current SSC recommendations on uncertainty include ecosystem

considerations when it seems clear that current SSC recommendations only focus assessment uncertainty.

Mr. Jagielo replied that the current exercise of quantifying assessment uncertainty is only a start and is limited by the available time. This has been clearly reported to the Council and it is envisioned that the Council would take this minimum estimate into consideration when choosing a management strategy and associated risk.

Dr. Heppell added that the ecosystem component is important, yet ill informed and, at this time, would involve policy determinations by the Council.

Adjournment: The SSC adjourned at approximately 5:00 p.m., Sunday, April 11, 2010.

SSC Subcommittee Assignments, April 2010

Salmon	Groundfish	CPS	HMS	Economic	Ecosystem-Based Management
Robert Conrad	Vidar Wespestad	André Punt	Ray Conser	Cindy Thomson	Selina Heppell
Loo Botsford	Loo Botsford	Ray Conser	Robert Conrad	Vlada Gertseva	Ray Conser
Carlos Garza	Ray Conser	Carlos Garza	Selina Heppell	Todd Lee	Martin Dorn
Owen Hamel	Martin Dorn	Owen Hamel	Tom Jagielo	André Punt	Vlada Gertseva
Pete Lawson	Vlada Gertseva	Selina Heppell	André Punt		Pete Lawson
Charlie Petrosky	Owen Hamel	Tom Jagielo	Vidar Wespestad		Todd Lee
	Tom Jagielo				André Punt
	André Punt				Cindy Thomson
	Theresa Tsou				Theresa Tsou

Bold denotes Subcommittee Chairperson

PFMC
07/28/10