

**SUMMARY MINUTES**  
**Scientific and Statistical Committee**

Pacific Fishery Management Council  
Hilton Orange County/Costa Mesa  
3050 Bristol Street  
Costa Mesa, CA 92626  
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**November 3-4, 2010**

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

The meeting was called to order at 8 a.m. on Wednesday, November 3, 2010. Council Executive Director, Dr. Don McIsaac briefed the SSC on priority agenda items.

**Members in Attendance**

Dr. Louis Botsford, University of California, Davis, CA  
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. 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  
Dr. Peter Lawson, National Marine Fisheries Service, Newport, OR  
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**

Dr. Vladlena Gertseva, National Marine Fisheries Service, Newport, OR  
Dr. Owen Hamel, SSC-Vice Chair, National Marine Fisheries Service, Seattle, WA  
Dr. Todd Lee, National Marine Fisheries Service, Seattle, WA

<b>SSC Recusals for the November 2010 Meeting.</b>		
<b>SSC Member</b>	<b>Issue</b>	<b>Reason</b>
Mr. Tom Jagielo	Pacific Sardine Stock Assessment	SSC Independence, Mr. Jagielo served as a science advisor for the West Coast Aerial Sardine Survey.
Dr. Pete Lawson	Salmon Methodology Review, Oregon Coast Natural Coho Abundance Predictor	SSC Independence, Dr. Lawson was a principle investigator for predictor development.
Dr. Robert Conrad	Salmon Methodology Review, 1) Bias in the Estimation of Impacts of Simultaneous Mark-Selective and Non-selective Fisheries on Ocean Salmon, 2) Bias-corrected Estimates of Mortality in Mark-selective Fisheries for Coho Salmon	SSC Independence, Dr. Conrad was a principle investigator for both of these analyses.

**Scientific and Statistical Committee Comments to the Council**

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

***Salmon Management***

F.4. Mitchell Act Hatchery Draft Environmental Impact Statement

The Council requested that the Economics Subcommittee of the Scientific and Statistical Committee (SSC) review the “Draft Environmental Impact Statement (DEIS) to Inform Columbia River Basin Hatchery Operations and the Funding of Mitchell Act Hatchery Programs” for the purpose of responding to two questions:

- Is the methodology describing economic impacts complete and proper, including the use of consistent metrics?
- Are there relevant sources of information omitted from socioeconomic analysis?

Due to the late release of this document, there was insufficient time to set up a Subcommittee meeting prior to this Council meeting. The Chair of the Economics Subcommittee prepared a response to the questions. However, given the size of the DEIS and the complexity of the issues, the SSC did not have adequate time to review the DEIS or the Chair’s response, which is attached to this statement for Council consideration (Appendix A).

**Appendix A** to Agenda Item F.4.b, Supplemental SSC Report on the Mitchell Act Hatchery Draft Environmental Impact Statement (DEIS).

The following comments are offered by the Chair of the SSC Economics Subcommittee regarding two questions posed by the Council regarding the “Draft Environmental Impact Statement to Inform Columbia River Basin Hatchery Operations and the Funding of Mitchell Act Hatchery Programs:”

- Is the methodology describing economic impacts complete and proper, including the use of consistent metrics?
- Are there relevant sources of information omitted from socioeconomic analysis?

The economic analysis in the DEIS includes estimates of regional economic impacts (income and jobs) associated with hatchery operations and commercial and recreational fisheries under each alternative. The DEIS also provides estimates of major costs and benefits associated with each alternative – “costs” meaning the costs associated with hatchery operations and “benefits” measured by the net economic value of commercial and recreational fisheries. Economic impacts and economic costs and benefits are both standard and reasonable ways of comparing the DEIS alternatives.

Comments regarding estimated costs of hatchery program, best management practices (BMPs) and new weir construction, and associated effects on income and jobs are as follows:

- The general approach used to estimate hatchery program costs is reasonable, given available data. Methods used to estimate economic impacts (income and jobs) are also reasonable.
- Further clarification is needed regarding the scope of the BMPs included in alternatives 2-5 and whether all of the BMPs included in those alternatives are also included in the cost estimates. Items such as updating water intake screens, water supply alarms, back-up power generators, National Pollutant Discharge Elimination System (NPDES)-compliant water treatment systems, and fixing water intake structures appear to be included among the BMPs. However, the role of fish passage is less clear. For instance, the DEIS notes that “Several implementation measures would be incorporated under one or more of the alternatives’ implementation scenarios...” and identifies “Update hatchery facilities to allow all salmon and steelhead of all ages to bypass or pass through hatchery-related structures” as one such measure (p 4-17). On the other hand, the Mitchell Act Fish Screens and Fishways Program – which is subject to a separate Congressional appropriation from the Mitchell Act Artificial Production Program – is identified in the DEIS as one of the activities “not considered to be within a reasonable range of funding potential or operational opportunities and that are not, therefore, envisioned within the alternatives in this DEIS” (p 1-13). Appendix J also appears to suggest that fish passage costs are not included in the DEIS – but for a different reason: “because it was determined that they would vary greatly depending on the specific site constraints, total flow requirements, facility size and location and related unforeseeable implementation issues” (DEIS Appendix J, p 8).

- In addition to clarifying which BMPs are included in the DEIS, methods used to derive cost estimates for those BMPs need to be more clearly documented. For instance, if fish passage is included, how were fish passage costs estimated? For BMPs for which the DEIS provides a range of per-unit cost estimates (e.g., \$200K-\$500K for updating water intake screen, \$30K-\$50K for back-up power generator, \$100K-\$1M for NPDES-compliant water treatment system, \$50K-\$1M for fixing water intake structure), which point estimates within these ranges were used to inform the cost estimates contained in the DEIS and why?
- Information regarding the derivation of total cost for new weirs (e.g., cost per weir) appears to be lacking in the DEIS.
- As acknowledged in the DEIS, costs associated with staffing BMPs (other than security staff) and staffing weirs were not estimated. Omission of these costs causes some underestimation of job and income impacts for alternatives 2-5 relative to alternative 1. However, these omissions are not likely to be consequential relative to the magnitude of other costs included in the DEIS.

Comments regarding the analysis of commercial and recreational fishery effects are as follows. These comments pertain to the economic implications of the harvest projections provided in the DEIS. They do not pertain to the harvest projections themselves, which were derived from non-economic models and are, therefore outside the scope of the economic questions posed by the Council to the SSC.

- The analysis of commercial fishery effects focuses on harvest, and the exvessel value, net economic value, and economic impacts (jobs and income) associated with that harvest. The analysis of recreational fishery effects also focuses on harvest, and the number of angler trips, trip expenditures, net economic value, and economic impacts (jobs and income) associated with that harvest. These are all reasonable parameters to use in analyzing economic effects.
- According to Appendix J of the DEIS, “The Research Group Mitchell Act DEIS Appendix Table B-2” provides the basis for almost all of the fishery effects (except harvest). Appendix I of the DEIS (“Draft Socioeconomics Resource Report Submitted by The Research Group to NMFS 2008”) is authored by The Research Group but does not contain a Table B-2. Additional documentation regarding Table B-2 and how it was derived is needed to evaluate the basis of the fisheries analyses.

In summary: Two methodologies are used in the DEIS to describe economic effects of the alternatives: regional economic impact analysis (jobs and income) and cost-benefit analysis (hatchery costs and net economic value to fisheries). Both are appropriate metrics for evaluating the alternatives. The general approach used to estimate hatchery program costs is reasonable, given available data. Methods used to estimate economic impacts (income and jobs) associated with hatchery operations are also reasonable. However, information (data sources, documentation of methods) is incomplete in the following areas: (1) exactly which BMPs are included under alternatives 2-5, (2) methodologies used to estimate BMP costs, (3) methodology used to estimate cost of new weirs, and (4) data sources and methods used to evaluate many of the fishery effects. With regard to (4), the DEIS cites a Table B-2 (produced by The Research Group) as the basis for much of the fisheries analysis. However, review of the fisheries analysis was not possible, as Table B-2 is not contained in the DEIS.

## ***Salmon Management, Continued***

### F.2. Fishery Management Plan (FMP) Amendment 16 – Annual Catch Limits

Mr. Chuck Tracy briefed the SSC on outstanding issues related to Amendment 16. The SSC discussed two related issues: time spans for computing overfishing and rebuilding, and the use of arithmetic versus geometric mean abundances when applying Status Determination Criteria (SDC).

In our September 2010 review of Amendment 16, the SSC recommended “...the SDC be based on three-year geometric means as they will be less subject to random error (noise) in the estimation and evaluation process.” This statement was based on the original one- and three-year options. The arithmetic mean was not suggested at that time.

Salmon abundance often varies widely from year to year. Chinook salmon year-classes are spread over three to five years, while coho salmon have three largely independent brood cycles. Averaging abundance over a three-year period captures abundance patterns on a scale that is biologically appropriate. As the SSC previously stated, it also reduces annual “flip-flops” in status that could result from high interannual variability. The Salmon Amendment Committee (SAC) provided retrospective analysis of several options for SDCs in their August 2010 draft document. The SSC recommends adding these one- and three-year options to the retrospective analysis.

Salmon abundance over time follows a log-normal distribution. The geometric mean is appropriate for describing the most likely value of such distributions. It is most sensitive to low values. For salmon abundance distributions the arithmetic mean will generally be higher than the geometric mean, and more than half the observations will be below the arithmetic mean. High values have most influence on the arithmetic mean.

Choice of which mean to use will affect how often stocks are defined as overfished, and levels needed to be declared recovered, with the geometric mean being more precautionary. A retrospective analysis would aid in understanding the implications of the two means, especially in combination with one-year and three-year time frames.

## ***Salmon Management, continued***

### F.5. 2010 Salmon Methodology Review

The SSC reviewed the SSC Salmon Subcommittee report on the Salmon Methodology Review. The methodology review occurred during a joint session with members of the SSC Salmon Subcommittee, the Salmon Technical Team (STT) and the Model Evaluation Workgroup (MEW) on October 19-20, 2010 in Portland. The review focused on: (1) new investigations into Fishery Regulation Assessment Model (FRAM) bias when there are both mark-selective fisheries and non-selective fisheries in a modeled time step and possible bias-correction methods; (2) new forecast methods for Oregon Coastal natural (OCN) coho salmon abundance (river component only); and (3) evaluation of new indicator coded-wire-tag (CWT) groups for Columbia River summer Chinook salmon to update the Chinook FRAM base period.

## **FRAM Bias and Bias-correction Methods**

Previously, to minimize the impacts of bias in FRAM modeling, the SSC suggested a “30-10” rule which recommended that the FRAM is “suitable for modeling mark-selective fisheries of low intensity, with 'low intensity' provisionally defined as those fisheries with fishery-specific exploitation rates on marked stocks of less than 10 percent and overall selective fishery exploitation rates of less than 30 percent.” Subsequently, Bob Conrad and Henry Yuen have produced two reports to further define the problem and recommend solutions (Agenda Items F.5.a, Attachments 1 and 2).

The most striking result of these analyses was that operating mark-selective fisheries simultaneously with a non-selective fishery introduces bias in the non-selective fishery impact estimate, which was unbiased in the single fishery case. This is because the mark-selective fishery selectively removes marked fish, so the pool of fish the non-selective fishery is operating on has a higher proportion of unmarked fish than assumed by any of the current management models. As mark-selective fisheries get more intense the differences and biases increase exponentially. Operating fisheries simultaneously also increases the bias in the mark-selective fisheries, because the stock proportions are changing more rapidly than they would with only a single fishery.

The SSC concludes that while progress was made in defining the potential impacts of bias, several issues still need to be addressed before bias correction can be implemented in FRAM:

- The fundamental problem is that the best bias-correction methods need, as input, the total number of fish of all stocks available to the fishery. FRAM models each stock as a single pool, and does not distribute stocks by area.
- Non-retention fisheries, drop-off mortalities, and mark-recognition errors are not included in the proposed bias-correction methods. It is not clear that these factors have enough influence on final estimates to warrant the extra complexity they would introduce into the modeling.
- The “30-10” rule needs further clarification and interpretation in order to be implemented. The SSC will consult with the MEW and STT to help develop a way to evaluate fishery options for compliance with this rule during pre-season planning.

These issues should remain a high priority in the next year so that bias-correction methods can be implemented.

## **OCN Coho Abundance Forecast Models**

Dr. Pete Lawson summarized the work done on developing a new forecast model for Oregon Coastal Natural (OCN) coho (river component) (Agenda Item F.5.a, Attachment 3). After evaluating numerous possible models, the authors decided upon nine models with the Pacific Decadal Oscillation (PDO) and one other variable, and nine models with the PDO and two other variables, as well as ensemble means of six of the predictors from both the two-variable and three-variable models as the most promising.

The SSC recommends that the three-variable ensemble mean form the basis for predictions for 2011 management.

## **Columbia River Summer Chinook Stock Representation in Chinook FRAM Base Period**

Mr. Larrie LaVoy presented an evaluation of the effect of adding new out-of-base period CWT codes to the present tag codes used to represent Columbia River summer Chinook in the FRAM (Agenda Item F.5.a, Attachment 3).

The SSC agrees that incorporation of the proposed additional Columbia River summer Chinook CWT groups into the base period improves FRAM's exploitation rate analysis for Council fisheries. The proposed revisions provide for an increased sample size of CWT recoveries from more recent brood years, and would better represent the life history strategies of the stock's current hatchery and natural production.

The SSC supports the recommendation to incorporate the proposed additional CWT groups into the FRAM base period for 2011 management.

### ***Ecosystem-Based Management***

#### **D.1. Ecosystem Science Information Session**

*Dr. Pat Livingston, Director of the Alaska Fisheries Science Center's (AFSC) Resource Ecology and Fisheries Management Division and Chair of the North Pacific Fishery Management Council (NPFMC), provided an overview of ecosystem science matters at the AFSC and how that science is presented to and used by the NPFMC. Topics covered included the relationship between the AFSC and the NPFMC, the annual Ecosystem SAFE document, and the Aleutian Islands Fishery Ecosystem Plan. Dr. Livingston provided a similar presentation to the Council under Agenda Item D.1. Both sessions were informational and the SSC did not provide a statement to the Council.*

### ***Groundfish Management***

#### **H.1. Initial Consideration of Revisions to the Groundfish Biennial Management Process**

The SSC was briefed on this issue by Ms. Kelly Ames, who led the group through a white paper on possible revisions to the groundfish biennial specifications process. The workload associated with the biennial process has increased substantially, particularly in the 2011-2012 biennial cycle. In evaluating workload demands of the process, it will be important to distinguish between the demands that were due to the novel aspects of 2011-2012 biennial cycle, such as developing and implementing an overfishing limit (OFL)/acceptable biological catch (ABC)/annual catch limit (ACL) framework, and those which are likely to occur in every cycle.

The SSC is actively involved in the groundfish harvest specification process. Some issues of relevance to the SSC include: 1) how and when science is introduced into the process, 2) how stock assessments are reviewed and approved by the Council, 3) when in the process species complexes will be evaluated, and 4) how and when socio-economic analyses be reviewed. A primary recommendation of the white paper is that a task force should be created to review the advisory bodies' responsibilities and resources and to consider ways to improve the process. If requested by the Council, the SSC will nominate one or more individuals to participate in the task force, and the SSC is ready to contribute in other ways as needed.

The SSC also reviewed the Stock Assessment Review (STAR) Panel schedule for the upcoming biennial cycle. It was noted that the STAR Panel for data poor species will need additional attention at the planning stages to be fully successful. An agenda for this meeting should be developed that clearly identifies the objectives of the meeting. Analysts will need to be identified to prepare papers that address those objectives. The primary objective of the STAR Panel is to review DCAC and DB-SRA methods used to derive OFLs and ACLs for data-poor stocks (Category 3 stocks). However, scientists at the Northwest Fisheries Science Center and the Southwest Fisheries Science Center have been working on improvements to those methodologies, and the SSC recommends that the data-poor STAR Panel devote part of the agenda to reviewing new methods for data-limited stocks. A workshop prior to the meeting may be useful to identify a few promising methods that can be thoroughly reviewed at the STAR Panel.

Since the focus of the STAR Panel is on methods and data inputs, application of approved methods to data-limited stocks will need to occur after the STAR Panel, and be reviewed at a later meeting. The SSC recommends that the SSC groundfish subcommittee review these results during its meeting in June to review update assessments. The meeting may need to be extended by one or two days to accomplish this review.

### ***Coastal Pelagic Species Management***

#### **I.2. Pacific Sardine Assessment and 2011 CPS Management Measures**

The SSC reviewed and discussed the assessment and resulting OFLs and acceptable biological catches (ABCs) for Pacific sardine, and the OFLs and ABCs for monitored stocks. Mr. Tom Jagielo presented the 2010 aerial survey results. Dr. Kevin Hill, the lead member of the Stock Assessment Team (STAT), presented the results of the sardine stock assessment update. Dr. André Punt provided a summary of the review conducted on October 5-6, 2010 by members of the SSC Coastal Pelagic Species Subcommittee in a joint session with members of the CPS Management Team (CPSMT) and the CPS Advisory Subpanel (CPSAS). Mr. Greg Krutzikowsky presented the CPSMT's analysis and recommendations for OFLs and ABCs for monitored species, focusing on northern subpopulation of Northern anchovy.

The sardine assessment was an update to one that had undergone a full STAR in 2009. Updates are appropriate in situations where no alterations to a stock assessment model have occurred, other than to incorporate recent data from sources already used in the full assessment. In this case, the newly incorporated data included updated catch data coastwide, length composition data for all regions except Ensenada, the 2010 spawning stock biomass index (DEPM), and the 2010 aerial survey estimate. In addition, the assessment update included a new estimate of the coefficient of variation (CV) for the 2009 aerial survey, based on a corrected analysis requested by the 2009 STAR Panel.

As specified in the "2009 Terms of Reference for Coastal Pelagic Species Stock Assessment Review Process," the review focused on two central questions: (1) did the assessment carry forward its fundamental structure from a model that was previously reviewed and endorsed by a STAR Panel, and (2) are the new input data and model results sufficiently consistent with previous data and results that the updated assessment can form the basis for Council decision-making. The assessment model presented (denoted "10w" in the assessment document) satisfies the criteria for assessment updates and the SSC recommends adoption of it as the best available



science for the management of Pacific sardine in 2011.

The estimated biomass of 537,173 (ages 1+, mt), an  $F_{MSY}$  of 0.1985 based on a relationship between temperature and  $F_{MSY}$ , and an estimated distribution of 87 percent of the stock in U.S. waters lead to an OFL (U.S. only) for 2011 of 92,767 mt. The SSC has recommended that scientific uncertainty ( $\sigma$ ) be set to the maximum of the CV of the biomass estimate for the most recent year or a default value of 0.36. The model CV for 2010 sardine biomass was 0.31; therefore scientific uncertainty ( $\sigma$ ) was set to the default value. The Amendment 13 ABC buffer depends on the probability of overfishing level determined by the Council ( $P^*$ ). The following table shows how the ABC varies according to  $P^*$ :

Table 1. Allowable Biological Catch estimates for an illustrative range of probability of overfishing ( $P^*$ ) values.

<b><i>OFL=92,767mt</i></b>	<b><i>P*=0.5</i></b>	<b><i>P*=0.45</i></b>	<b><i>P*=0.4</i></b>	<b><i>P*=0.3</i></b>	<b><i>P*=0.2</i></b>
BUFFER	1.0	0.956	0.913	0.828	0.739
Allowable Biological Catch (ABC, mt)	92,767	88,664	84,681	76,808	68,519

Note: the selected value of  $P^*$  must be less than 0.5 to assure that the  $ABC < OFL$

The SSC noted a number of aspects of the assessment that the Council may wish to consider when choosing a  $P^*$  for sardine and setting harvest specifications:

- There is a need to re-evaluate the assumption that selectivity for the aerial survey in the northern region is dome-shaped but the selectivity for the fishery in the same area is asymptotic. Assuming that survey selectivity is asymptotic and that survey catchability ( $q$ ) is 1.0 leads to a more pessimistic appraisal of stock status. Changing the selectivity pattern for the survey selectivity is, however, outside of the CPS Terms of Reference for assessment updates and should be considered during the next full assessment in fall 2011.
- The estimate of absolute biomass from the assessment is sensitive to how the aerial survey data are included in the assessment.
- All model configurations examined in the assessment indicate a declining trend in abundance over recent years. Due to recent low recruitment, this decline is likely to continue.

The SSC also recommends that the full assessment in 2011 should examine how the CV for the 2009 survey is estimated based on results from the 2010 aerial survey and those of a 2011 aerial survey, if such a survey takes place. In addition, the 2011 assessment should examine the assumption that natural mortality,  $M$ , is constant and equal to  $0.4yr^{-1}$ .

## OFLs and ABCs for Monitored Species

Reference points for monitored CPS stocks are difficult to determine due to limited data to estimate biomass and productivity. The northern subpopulation of the northern anchovy is currently lightly fished, with inconsistent effort, making the time series of catch an unreliable indicator of stock status. The CPSMT compiled all the scientific information on northern anchovy and found only two estimates of biomass: egg and larval production estimates from the 1970s and a recent acoustic survey by researchers at the Southwest Fisheries Science Center. The average of these two estimates is approximately 130,000 mt. Following considerable discussion, the SSC recommended that the OFL be set by multiplying the biomass estimate of 130,000 mt by 0.3, the  $F_{MSY}$  value for Pacific mackerel. This was considered appropriate because anchovy are likely to be as productive as Pacific mackerel. With the established uncertainty buffer of 75 percent, this gives an OFL of 39,000 mt and an ABC of 9,750 mt. These estimates are uncertain because productivity is poorly known, the abundance estimates are dated, and the acoustic survey methodology has yet to be reviewed (see Item I.3). This OFL and ABC should be updated when new biomass estimates or information on productivity become available.

The SSC recommends the OFLs and ABCs developed by the CPSMT advice for the other monitored stocks (Table 2). The OFL and ABC for market squid is the  $F_{MSY}$  proxy of  $\geq 30\%$  egg escapement. Since this a fishing mortality rate, and not an annual catch amount, as required by NMFS guidelines, the SSC requests that the CPSMT provide justification or further analysis showing why it is considered appropriate. In addition, the ABC was set equal to the OFL, which is allowed under NMFS guidelines, but justification or further analysis is required to show why scientific uncertainty does not need to be taken into account when setting the ABC.

The SSC wishes to acknowledge the solid work done by the CPSMT and the Pacific Sardine Assessment Team.

Table 2. OFL and ABC for CPS Monitored species in U.S. waters.

Stock	OFL	ABC
Jack Mackerel	126,000 mt	31,000 mt
Northern Anchovy, Central Population	100,000 mt	25,000 mt
Market Squid	$F_{MSY}$ proxy resulting in Egg Esc $\geq 30\%$	$F_{MSY}$ proxy resulting in Egg Esc $\geq 30\%$
Northern Anchovy, Northern Population	39,000 mt	9,750 mt

## *Coastal Pelagic Species Management, continued*

### I.3. Terms of Reference for Stock Assessment and Methodology Reviews

The Scientific and Statistical Committee (SSC) addressed two issues under this agenda item: 1) it identified a list of potential methods to be reviewed at the methodology reviews scheduled for 2011, and 2) it provided a final review of the Terms of Reference (TOR) for the coastal pelagic species (CPS) stock assessments and methodology reviews.

#### **Potential methods for review during 2011**

Three proposals were presented to the SSC for consideration for methodology review during 2011: 1) the use of satellite imagery during aerial photographic surveys, 2) the use of acoustic and (associated trawl) surveys for abundance estimation, and 3) calibration of aerial photographic surveys using lidar and acoustics. A trawl survey for Pacific sardine in Canadian waters had originally been mentioned as potentially being reviewed for use in the September 2011 assessment. However, no proposal related to this survey was presented to the SSC. The SSC considered what information would be available for a Panel to review, and how the methodology could be used in stock assessments and when specifying overfishing limits.

##### *(1) Methodology Panel 1 (early 2011)*

The SSC recommends that this Panel focus on reviewing the coastwide acoustic (and associated trawl) surveys conducted by the Southwest Fisheries Science Center (SWFSC) in 2006, 2008, and 2010. These surveys have the potential to provide estimates of abundance for Pacific sardine, jack mackerel, Northern anchovy, and Pacific mackerel. This Panel should also allocate time to provide recommendations for how a pilot study related to the use of satellite imagery could be conducted. The SSC considers the use of satellite imagery as being sufficiently promising that time spent on this topic would be beneficial. However, this methodology is not currently sufficiently well developed that results could be included in the September 2011 assessment of Pacific sardine. Experts in satellite imagery and analysis would be members of the Review Panel.

##### *(2) Methodology Panel 2 (May 2011)*

The SSC notes that there is an opportunity to conduct a methodology review in parallel with the STAR Panel for Pacific mackerel and suggests that this review consider the aerial photographic surveys being conducted off southern California at present. Analysis of the data from these surveys will not be completed by the first methodology panel. Delaying the review until May 2011 should allow sufficient time for initial analyses to be conducted.

The SSC re-emphasizes the importance of the availability of complete documentation and data during the methodology reviews to allow a thorough review of the methodologies and to permit analyses to be conducted during the Panel meeting. Following Council decisions regarding which methodology will be reviewed during 2011, the chair of the SSC CPS Subcommittee will coordinate with Council staff, SWFSC staff and the proponents of the various methodologies to organize agendas, and arrange SSC members of the Panel.

## Terms of Reference for CPS

All remaining issues relating to the TORs for CPS stock assessment review process and methodology review have been resolved between the SSC and the Coastal Pelagic Species Management Team (CPSMT). In the stock assessment TOR, the present draft includes all changes, specifically language relating to the qualifications of review panel members, the procedure for bringing forward ecological considerations, and review of harvest control rules. The SSC endorses these changes.

Changes to the methodology review TOR were agreed between the SSC and the CPSMT, but the document has not yet been updated. The following outlines the issues that were resolved and changes that will be made. The SSC also endorses these changes.

- Methodological reviews are appropriate when a major new data source is introduced into a stock assessment or when a major change in the stock assessment modeling is contemplated. In both cases, a methodological review is needed when the change(s) from how assessments have been conducted in the past are deemed to be more than what a STAR Panel can reasonably be expected to handle. For example, the introduction of a new survey will generally require a methodological review; as will a change to a new stock assessment model platform. However, changes to the structure of a previously reviewed assessment model (e.g., changes in selectivity year-blocking) fall within the scope of what a STAR Panel would be expected to review as part of its normal activities. *This change will be addressed by removing c) on page 3, next to last paragraph.*
- Some aspects of changes to the control rules could also be considered by a methodological review. In this case, however, care must be taken to separate the scientific analysis supporting the change (e.g. the structure and technical aspects of simulation studies used to compare a revised control rule against the *status quo*) and the management objectives used to measure performance (e.g. minimize year-to-year catch variance, maximize long-term average catch, etc.). The former are amenable to methodological review (provided adequate background analyses have been completed), but the latter are management decisions – not well suited to a methodological review. *This paragraph will be included above the last paragraph on page 3.*

### ***Coastal Pelagic Species Management, continued***

#### I.4. Essential Fish Habitat – Five Year Review

Mr. Kerry Griffin summarized the CPS EFH five-year review process, along with the options considered for possible amendment to the CPS FMP. The CPSMT review included a literature review on the distribution and ocean habitat characteristics for CPS species, the possibility of a distinct EFH designation for market squid (currently grouped with fish species) based on identification of benthic spawning grounds, and identification of broad-scale threats to EFH that were not included in the previous EFH designation for CPS (climate change and ocean acidification). The CPSMT recommends that the Stock Assessment and Fishery Evaluation be expanded to include the new information, but no changes be made in EFH designation for CPS. The SSC concurs with the CPSMT recommendations.

However, the SSC notes that market squid may not be dealt with effectively in the current EFH FMP because – unlike the other CPS – successful squid spawning is dependent on the benthic habitat. This is unavoidable at present because the location and quantity of the benthic habitat used for squid spawning is unknown. The SSC notes that recent research (yet to be reviewed) may considerably improve our understanding of the market squid spawning habitat, and may be incorporated in the next review of EFH designation for CPS.

**Adjournment:** The SSC adjourned at approximately 6:00 p.m., Thursday, November 4, 2010.

### SSC Subcommittee Assignments, November 2010

<b>Salmon</b>	<b>Groundfish</b>	<b>CPS</b>	<b>HMS</b>	<b>Economic</b>	<b>Ecosystem-Based Management</b>
<b>Robert Conrad</b>	<b>Vidar Wespestad</b>	<b>André Punt</b>	<b>Ray Conser</b>	<b>Cindy Thomson</b>	<b>Selina Heppell</b>
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
Meisha Key	Vlada Gertseva	Selina Heppell	André Punt		Pete Lawson
Pete Lawson	Owen Hamel	Tom Jagielo	Vidar Wespestad		Todd Lee
Charlie Petrosky	Tom Jagielo	Meisha Key			André Punt
	André Punt				Cindy Thomson
	Theresa Tsou				Theresa Tsou

**Bold** denotes Subcommittee Chairperson