

DRAFT SUMMARY MINUTES
Scientific and Statistical Committee

Pacific Fishery Management Council
Sheraton Tacoma Hotel
Main Hall B
1320 Broadway Plaza
Tacoma, WA 98402
253-572-3200
April 4-5, 2005

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

The meeting was called to order at 8 a.m. Dr. Don McIsaac briefed the SSC on priority agenda items.

Subcommittee assignments for 2005 are detailed in the table at the end of this document.

Members in Attendance

Mr. Tom Barnes, California Department on Fish and Game, La Jolla, CA
Mr. Steve Berkeley, University of California, Santa Cruz, CA
Mr. Robert Conrad, Northwest Indian Fisheries Commission, Olympia, WA
Dr. Ramon Conser, National Marine Fisheries Service, La Jolla, CA
Dr. Michael Dalton, California State University, Monterey Bay, CA
Dr. Martin Dorn, National Marine Fisheries Service, Seattle, WA
Dr. Kevin Hill, National Marine Fisheries Service, La Jolla, CA
Mr. Tom Jagielo, Washington Department of Fish and Wildlife, Olympia, WA
Dr. Peter Lawson, National Marine Fisheries Service, Newport, OR
Dr. Han-Lin Lai, National Marine Fisheries Service, Seattle, WA
Dr. André Punt, University of Washington, Seattle, WA (Monday only)
Dr. Hans Radtke, Yachats, OR
Dr. Stephen Ralston, National Marine Fisheries Service, Santa Cruz, CA
Dr. David Sampson, Oregon State University, Newport, OR
Ms. Cynthia Thomson, National Marine Fisheries Service, Santa Cruz, CA

Members Absent

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

Scientific and Statistical Committee Comments to the Council

The following is a compilation of March 2005 SSC reports to the Council. (Related SSC discussion not included in written comment to the Council is provided in italicized text).

Groundfish Management

B.1. Vermilion Rockfish Stock Assessment Status

At the March Council meeting, the SSC reviewed information provided by Dr. Alec MacCall summarizing previously unavailable 1970's California commercial passenger fishing vessel size composition data for vermilion rockfish. Dr. MacCall reported that these new data now make a conventional length-based assessment of vermilion rockfish feasible and are likely to produce results that can be used for fishery management. The SSC concurs and recommends that a full stock assessment be attempted.

For species not previously assessed, it is often not possible to know in advance if a full stock assessment will be feasible. Once a decision is made to conduct a stock assessment, the assessment should be developed to the extent possible and presented to the Stock Assessment Review (STAR) Panel for evaluation. Even analyses that do not result in a full stock assessment will produce a data summary useful for management and identify data gaps that need to be filled to develop a full assessment. The decision on whether or not the assessment is adequate for management should be made by the STAR Panel and, if necessary, the SSC.

Salmon Management

C.1. Identification of Stocks Not Meeting Conservation Objectives

Mr. Dell Simmons reported to the SSC on salmon stocks not meeting escapement objectives. Three stocks failed to meet conservation objectives in 2004: Klamath fall chinook, Queets River spring/summer chinook and Quillayute spring/summer chinook. The Queets stock also failed to meet its objective in 2003. The Queets and Quillayute stocks are exceptions to the Council's overfishing criteria because estimated harvest in Council fisheries is less than 5%.

This is the first year since 1999 that Klamath fall chinook have failed to meet the escapement floor of 35,000 natural spawners. The SSC notes that the target escapement for 2005 is 35,000 spawners (i.e.; the floor). If the target is the floor there is a 50% chance of failing to achieve the escapement objective for a second consecutive year.

C.3. Methodology Review Process and Preliminary Topic Selection for 2005

The SSC met with Mr. Dell Simmons and other members of the STT to identify, discuss, and prioritize methodology reviews for 2005. Current issues include three unresolved items from 2004 and two new items. The SSC places highest priority on the first two items below.

Chinook and Coho Fishery Regulation Assessment Model Documentation. The Model Evaluation Workgroup (MEW) is completing detailed documentation of the Fishery Regulation Assessment Model (FRAM). In April 2004 the SSC advised that this item be given highest priority for review in 2004. Again, the SSC recommends that the FRAM documentation be the highest priority item for 2005. This is a necessary prerequisite for review of the model.

FRAM Validation/Calibration Exercise. As part of its routine review of the chinook FRAM, the STT during 2005 will develop estimates of base-period data for new fish stocks (e.g., Sacramento fall chinook) and calibrate and validate the revised model. The SSC requests the STT include in the FRAM documentation a technical description of the calibration/validation process and results from its application in 2005.

Oregon Coastal Natural Management Matrix. The Oregon Department of Fish and Wildlife is developing a technical appendix to the Oregon Coastal Natural Work Group matrix. The SSC is prepared to review this work at the November Council meeting as a Technical Amendment to the fishery management plan.

Klamath Ocean Harvest Model - Contact Rates and Catch Projections. Contact rates for Klamath River fall chinook were much higher in 2004 than previously observed, and this stock will significantly constrain several Council salmon fisheries in 2005. The SSC understands that documentation of model performance in 2004 is being prepared. An exploration of potential factors that led to the unusual Klamath contact rates in 2004 could help prevent a recurrence.

Columbia River Fall Chinook Ocean Abundance Predictors. The SSC was told that ocean abundance predictors for Columbia River fall chinook are likely to be available for review in 2005.

SSC Administrative Matters, continued

A.4. June SSC Agenda Review

The SSC requested a draft of the June 2005 SSC agenda for review at the April meeting. This is in response to the potential for review of up to eight groundfish stock assessments in addition to the SSC's regular agenda. The draft agenda assumed that all assessments would be ready for SSC review even though three of the assessments will be reviewed by a STAR panel the week of May 16, one week before the Briefing Book deadline for the June Council meeting. The draft agenda represents an ambitious plan and requires a three day meeting of the SSC.

The SSC provided recommendations on ways to streamline the agenda. The meeting will remain a three day meeting and the SSC suggested ways to prioritize the workload. The groundfish stock assessments will be order according to anticipated difficulty in review based on criteria such as species assessed for the first time, or those assessments for overfished species. One assessment

update as given a low priority as it will likely require less time to review and approve.

Groundfish Management, continued

B.4. Terms of Reference for Groundfish Rebuilding Plan Analytical Review

Since the last Council meeting, members of the SSC Groundfish Subcommittee have revised the SSC Terms of Reference for Groundfish Rebuilding Analyses (Agenda Item B.4.a, Supplemental SSC Terms of Reference, April 2005). The draft version of the document, which revises the guidelines in a number of important ways, was reviewed by the SSC. Some areas of significant revision include:

1. A more explicit procedure for determining the overfished, minimum stock size threshold is provided, (i.e., the maximum likelihood estimate of depletion or the maximum of the posterior density function).
2. Rebuilding projections based on a spawner-recruit curve estimated from a stock assessment are given equal standing with projections based on re-sampling of year-specific estimates of recruitment.
3. Terminology and notation is revised to be consistent with language used in amendments to the groundfish fishery management plan (FMP).
4. Additional requirements to include certain reporting elements requested by the Groundfish Management Team (GMT) are included (e.g., the estimate of P_{MAX} at $F=0$; see Agenda Item B.4.a, Attachment 1, April 2005: Groundfish Management Team Report on Terms of Reference for Groundfish Rebuilding Plan Review).
5. A section on Evaluating Progress Towards Rebuilding is included.
6. Decision tables to highlight the implications to management of model uncertainty are encouraged.

Based on its discussion of the draft document, the SSC endorses adoption of the revised guidelines. Notwithstanding that endorsement, the following recommendations were developed after some discussion.

1. $B_{40\%}$ should be maintained as the rebuilding target (B_{MSY} proxy) until a workshop can be convened to evaluate possible redefinition of biomass-based targets and thresholds that are in use by the Council. Even so, it is desirable to compare virgin biomass (B_0) estimated from the stock assessment model and from the rebuilding software to evaluate the consistency of these estimates.
2. Under Section 7 (Evaluating Progress Toward Rebuilding) the second paragraph and second set of bullet points should be deleted until more definitive progress has been made on establishing the Council's policy on this subject. A joint meeting (Council, SSC, Groundfish Advisory Subpanel [GAP], and GMT) scheduled for the June meeting should advance this issue forward.

3. Section 9 (The Consequences of Spatial Structure) should be deleted. The SSC recognizes that there often is a need to spatially partition an optimum yield (OY), and stock assessment results are frequently insufficient to do so. This difficulty, however, is not unique to species under rebuilding plans, but pertains to healthy stocks as well. To help solve this problem, the SSC agreed to review the analytical approaches the GMT has used to spatially distribute an OY.
4. An example presentation of the required documentation (Section 10) would be useful to analysts conducting rebuilding analysis.
5. The SSC's Groundfish Subcommittee agreed to complete these revisions and to provide the revised document to the Council within the next two weeks.

The SSC also examined "SSC Default Rebuilding Analysis – Technical specifications and User Manual (Version 2.8, January 2005)" by Dr. Andre Punt. This document describes in detail the software that has been used to forecast rebuilding for virtually all the Council's overfished stocks. The last time the software was reviewed by the SSC was in 2002, and a number of enhancements have been implemented to the program since that time. Consequently, the SSC reviewed the more recent changes (i.e., version 2.2 onwards) and offers the following two suggestions/recommendations.

1. As part of the calculations the program should determine the median extent of rebuilding that is expected to occur by T_{MAX} .
2. Better documentation is needed concerning how results of an Markov Chain Monte Carlo (MCMC) analysis are incorporated into rebuilding projections. The SSC also highlighted the importance of stock assessment authors ensuring that an MCMC has converged before utilizing those results in a rebuilding analysis.

The software package developed by Dr. Punt is a powerful tool with which to conduct stock projections, and the SSC continues to endorse its use in rebuilding analyses used by the Council.

Coastal Pelagic Species Management

F.2. Fishery Management Plan Amendment 11--Sardine Allocation

Dr. Sam Herrick presented results from an economic analysis of the preliminary alternatives in "Allocation of the Pacific Sardine Harvest Guideline." The economic analysis projects differences among alternatives in processor revenues net of variable costs. The five-year projections are based on monthly landings in 2004 for each area in the analysis: Southern California, Northern California, and the Pacific Northwest.

The economic analysis assumes that monthly landings increase by 10% per year for each area. Dr. Herrick reported that 10% per year was the "expected" value of participants at a meeting of the Coastal Pelagic Species Management Team in February 2005, but this value appears not to have an empirical basis. Discussion by the SSC identified several factors that could affect the 10% value, including changes in market conditions, changes in climate, changes in stock abundance, and the overall harvest guideline or availability of quota. Therefore, the SSC recommends sensitivity analysis for this value, both by area and season. The SSC also noted the implications of projected landings for salmon bycatch, but this topic was not part of the presentation, and not formally discussed. Monthly landings were projected under low, medium, and high harvest guidelines, summarized annually by sector, and were used to identify each area:

- Shortfalls in landings in metric tons.
- Months with shortfalls.
- Months with zero allocation following months with shortfalls.

Evaluation was done using comparisons of estimated processor revenues net of variable costs, which was defined in the analysis as producer surplus. These comparisons are based on several restrictive assumptions for processors. As stated above, a sensitivity analysis is recommended to explore the effects of the following assumptions on the outcome of the analyses:

- Constant product prices, product mixes, and unit costs for variable inputs (e.g. energy, ice, ex-vessel prices for sardines) over the five-year projections.
- Perfectly competitive markets.
- Capital costs are not affected by any of the factors in the economic analysis including assumed growth in landings, specifically the emerging Pacific Northwest sector of the sardine fishery.

Data for costs and revenues were taken from a sample of processors in each area. While an attempt was made to survey "large" processors, the representativeness or coverage of the sample in each area is unknown. The SSC notes the survey methodology and data would benefit from additional review by the SSC and coastal pelagic species advisory bodies. In addition, the SSC has concerns about several aspects of the economic analysis including:

- The treatment of capital costs, such as buildings and equipment, as fixed over the five-year projections.
- The assumed independence of variable costs and product prices from the scale of production, for example 10% growth per year.

Capital costs could vary among areas and alternatives. Current processing capacity may be sufficient to accommodate the assumptions of projected growth in each area of the analysis, but the SSC recommends further analysis. Regarding independence from the scale of production, the SSC recommends that various assumptions in the economic analysis be checked for consistency with assumptions of the market equilibrium model that is being used as an analytical framework. The SSC also recommends that extreme cases in the analysis receive further attention, such as those associated with the low harvest guideline, or alternatives that allocate substantially more quota to the northern area.

The SSC encourages further economic analysis to evaluate effects of these alternatives on income and employment in fishing communities. To improve this economic analysis for decision-making, the SSC recommends:

1. The survey methodology and data be documented and reviewed.
2. Sensitivity analysis be conducted for assumptions about growth and capital costs in each area under different alternatives.

If a review of the survey data cannot be done before the June Council meeting, the SSC recommends using only the projected effects on landings and ex-vessel revenues from the economic analysis of alternatives.

SSC Administrative Matters, continued

A.7. Groundfish Essential Fish Habitat (EFH) Environmental Impact Statement (EIS)

The SSC statement on the Groundfish EFH EIS was developed over several SSC meetings. The following statement is a culmination of SSC deliberations and was drafted, reviewed, and approved by the SSC between the April 2005 meeting and the June 2005 meeting.

At the March 2005 meeting, the SSC heard an update from Mr. Steve Copps (NMFS) on recent progress in preparing the groundfish EIS for EFH. The updated draft EIS document was distributed in March for further consideration at the April Council meeting. He noted that the present draft of the EIS is substantially changed and addresses many of the concerns expressed previously by the SSC.

Also at the March 2005 meeting, the SSC reviewed the Oceana Methodology for identifying areas of EFH that would be closed to bottom trawling and listened to presentations by Jim Ayers and Jon Warrenchuck (Oceana), and Geoff Shester (Stanford). Oceana's stated objective for EFH is to protect habitat while maintaining vibrant fisheries. The Oceana alternative is included as one of the alternatives in the draft EIS. The council included the Oceana alternative as preliminary preferred Alternative number 12.

The Oceana approach considers coral and sponge habitats to be of particular importance to groundfish and referred to the EFH final rule, which states that it is not appropriate to require

definitive proof of a link between fishing impacts to EFH and reduced stock productivity before Councils can take action to minimize adverse fishing impacts to EFH to the extent practicable.

The Oceana alternative seeks to establish an open trawling area by subtracting the area to be protected from the total fishing area, effectively freezing the bottom trawl footprint. Trawl logbook data from 2000-2003 were used to establish the proposed bottom trawl footprint. Areas within the proposed bottom trawl footprint were identified as areas of EFH that would be closed to bottom trawling based on 5 criteria. Observer data were not explicitly used to identify biogenic habitat, rather they were used to corroborate determinations from other sources. Approximately 14,000 km² of 90,000 km² within the bottom trawl footprint were identified as areas of EFH that would be closed to bottom trawling.

Oceana used multiple criteria to evaluate areas for closure, not just records of structure-forming invertebrates from trawl and submersible surveys. These additional criteria included; 1) a database of areas considered untrawlable during the shelf survey, 2) substrate characteristics (hard bottom habitat, including rocky ridges and rocky slopes), 3) bathymetric features (canyons, gullies and seamounts), and 4) areas with high habitat suitability from the EFH analysis. Areas labeled biogenic in the Ocean alternative were identified primarily from records of structure-forming invertebrates.

At the March meeting a considerable amount of SSC discussion focused on what criteria were used to define areas to be closed to fishing. The SSC noted that trawl survey data are not adequate to formulate a comprehensive model of coral and sponge distribution. An analysis of the density of positive trawl samples (for invertebrates) was used as a basis for drawing polygons enclosing discrete areas. The SSC noted that the analysis, because it is an analysis of positive tows only, is probably not the best metric of habitat forming invertebrate distribution; a presence/absence analysis may be more robust. It is clear that groundfish trawl surveys are not the ideal tool for sampling invertebrate distribution and abundance.

Observer data from bottom trawl fishing vessels, aggregated in blocks, were also analyzed as a secondary data source. Oceana reported that these data corroborated the trawl survey analysis and recommended increased observer coverage to document invertebrate distribution. The SSC noted that increased observer coverage may not be the solution. Special studies are essential to further understand the biogenic structure and its linkage to groundfish production.

Oceana indicated to the SSC its expectation that the Council would provide an analysis of long-term economic benefits of their alternative in the Draft EFH EIS. The SSC notes that such analysis is not feasible without more definitive information on long-term effects of habitat protection on fishery yield.

At the April meeting of the SSC, discussion on EFH again focused on the Oceana methodology. The SSC noted that, while Oceana's work is a good start in beginning the process to identify locations where biogenic habitats may exist, much work is needed to produce reliable and detailed maps showing the spatial distribution of biogenic habitats.

The SSC recommends new, scientifically designed surveys be developed to explicitly assess EFH. Such surveys could employ new technologies utilizing undersea quantitative video deployed on

Autonomous Underwater Vehicles (AUV's), Remote Operated Vehicles (ROV's), and manned submersibles.

The SSC recommends that the Council explore an adaptive approach as it enters into the realm of spatial fisheries management. If planned carefully, incremental gains in knowledge could follow from studies designed to evaluate the effects of fishing (and not fishing) on a habitat-specific basis.

In conclusion:

1. There remains scientific uncertainty as to whether or not sponge and corals are essential fish habitat for the species in the groundfish FMP, but they are longlived and undoubtedly easily damaged by bottom trawling.
2. Trawls were not designed to sample sponge and coral organisms.
3. The NMFS groundfish trawl survey was not designed to identify or sample sponge and coral habitat.
4. Trawl fishery data may not adequately identify biogenic habitat.
5. Given these caveats and data limitations, the SSC considers the Oceana methodology to be a reasonable first attempt at identifying invertebrate distributions. However, the SSC cautions that if this approach is used to designate EFH these designations should be reviewed and modified, if necessary, as data from more appropriate surveys become available.
6. The SSC will incorporate research and data needs with regard to groundfish EFH into the next update of the Council's Research and Data Needs document.

Public Comment

None.

Adjournment B The SSC adjourned at approximately 4 p.m., Tuesday, April 5, 2005.

PFMC
05/31/05

SSC Subcommittee Assignments for 2005

Salmon	Groundfish	CPS	HMS	Economic	Marine Reserves
Alan Byrne	Steve Berkeley	Tom Barnes	Tom Barnes	Michael Dalton	Tom Barnes
Robert Conrad	Ray Conser	Alan Byrne	Steve Berkeley	Han-Lin Lai	Steve Berkeley
Kevin Hill	Michael Dalton	Michael Dalton	Alan Byrne	Hans Radtke	Michael Dalton
Pete Lawson	Martin Dorn	Ray Conser	Robert Conrad	Cynthia Thomson	Martin Dorn
Hans Radtke	Tom Jagielo	Tom Jagielo	Ray Conser	David Sampson	Tom Jagielo
David Sampson	Han-Lin Lai	André Punt	Kevin Hill		Pete Lawson
	André Punt		André Punt		André Punt
	Steve Ralston		Hans Radtke		Steve Ralston
	David Sampson				Cynthia Thomson

Bold denotes Subcommittee Chairperson