SUMMARY MINUTES
Scientific and Statistical Committee

Pacific Fishery Management Council
Crowne Plaza Hotel
Syracuse Room
1221 Chess Drive
Foster City, CA 94404
(650) 570-5700
October 28-29, 2002

Call to Order

The meeting was called to order at 8 a.m. Dr. Donald McIsaac briefed the Scientific and Statistical Committee (SSC) on priority agenda items.

Members in Attendance

Mr. Alan Byrne, Idaho Department of Fish and Game, Nampa, ID
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. Robert Francis, University of Washington, Seattle, WA
Dr. Kevin Hill, California Department of Fish and Game, La Jolla, CA
Mr. Tom Jagielo, Washington Department of Fish and Wildlife, Olympia, WA
Dr. Peter Lawson, National Marine Fisheries Service, Newport, OR
Dr. Stephen Ralston, National Marine Fisheries Service, Santa Cruz, CA
Dr. André Punt, University of Washington, Seattle, WA
Ms. Cynthia Thomson, National Marine Fisheries Service, Santa Cruz, CA
Dr. Shijie Zhou, Oregon Department of Fish and Wildlife, Portland, OR

Members Absent

Dr. Brian Allee, Northwest Power Planning Council, Portland, OR
Dr. Martin Dorn, National Marine Fisheries Service, Seattle, WA

Scientific and Statistical Committee Comments to the Council

The following text contains SSC comments to the Council. (Related SSC discussion not included in written reports to the Council is provided in italicized text.)

Salmon Management

C. 4. SSC Methodology Review Report

Mr. Jim Packer and Mr. Larrie LaVoy of the Washington Department of Fish and Wildlife (WDFW) presented a progress report to a joint meeting of the SSC Salmon Subcommittee and the Salmon Technical Team (STT) on modifications to the chinook Fishery Regulation Assessment Model (FRAM). This meeting was held on October 15, 2002 in Portland. Their report described two important changes to the model for the 2003 management season:

1. Chinook FRAM has been recalibrated, and the period for model validation runs has been expanded.
2. Chinook FRAM has been changed to accommodate the modeling of mark-selective fisheries.

Model Recalibration and Validation

The chinook FRAM recalibration changes include:

- Extending the database used for model calibration to include 1997-2000 return year data.
- Moving some out-of-base period stocks back into the base year period.
- Adding a White River Hatchery yearling stock to the coded-wire tag data used by the FRAM model.

In addition, catches for the period 1983-2000 were updated and new "validation" model runs were produced for this period. All these changes should improve the model.

Changes to Accommodate Mark-Selective Fisheries

As was done previously for coho FRAM, the capability for each stock in the model to have both marked (adipose fin clipped) and unmarked components was added. The same selective fisheries algorithms used in the coho FRAM were implemented in chinook FRAM. These algorithms calculate impacts in mark-selective fisheries following the recommendations of the Selective Fishery Evaluation Committee of the Pacific Salmon Commission. They are based on four user-defined parameters: release mortality rate, marked fish recognition error, unmarked fish recognition error, and drop-off mortality rate. The program estimates encounters in the selective fishery as the number of fish that would have been landed without mark-selective regulations. Mortalities of unmarked fish are estimated based upon the user-defined parameters applied to the estimated encounters. A special selective fishery report has been developed to summarize all stock impacts for each fishery.

The chinook FRAM is considerably more complex than the coho FRAM, because:

- Chinook FRAM is a multiple-age model while coho FRAM is a single-age model.
- Chinook FRAM incorporates a growth algorithm that is applied to sub-legal fish.
- Chinook FRAM calculates "shaker" mortality for sub-legal sized fish.

The most important task yet to be completed before chinook FRAM potentially could be used to evaluate salmon fishery proposals which include mark-selective fisheries for 2003 is modification to the terminal area management modules (TAMMs). The TAMMs need to be changed to accept marked and unmarked estimates of abundance by stock and separately estimate impacts for these marked and unmarked components. This work is on-going and should be completed in January 2003.

A continuing problem with both the coho and chinook FRAMs is the lack of documentation and validation for these models. There is a need to document how each model works (model algorithms, data inputs, model assumptions, etc.) and how the models are used (model recalibration, model validation, etc.). With the continued lack of documentation, the viability of both models could be threatened by the departure of one or two key people with the most complete understanding of all model aspects.

Conclusions and Recommendations

The SSC has the following conclusions and recommendations concerning the modified chinook FRAM and its use in the 2003 management process:

1. The material presented to the review group indicated that the modified chinook FRAM is capable of duplicating the results of the previous version of the model in the absence of mark-selective fisheries. Therefore, the modified FRAM can be used to assess impacts if mark-selective fisheries are not under consideration and the changes to the TAMMs described above are made.
2. The SSC cannot evaluate the model as a tool for assessing mark-selective fisheries, because of the lack of written documentation and appropriate model validation. Therefore, the SSC cannot support the use of the modified chinook FRAM to evaluate mark-selective fishery proposals in 2003.
3. If the Council chooses to use the modified chinook FRAM to evaluate mark-selective fishery proposals in 2003, the SSC supports the STT recommendation to establish buffers for management targets to compensate for the increased bias and uncertainty of model estimates (Exhibit C.4.c Supplemental STT Report).
4. As has been recommended in previous SSC statements on the FRAM models, Model Evaluation Subgroups should be formed for both the coho and chinook FRAMs. These groups should have

participants from all interested agencies. The purpose of these groups would be to:

- Increase the number of people who understand the model, can run the model, and make changes to the model, so the departure of any single person does not disrupt the viability of the FRAMs.
- Propose changes to the model which would improve the model for its intended management purposes.
- Validate the current model.
- Review and validate any changes to the model.
- Conduct postseason evaluations of model performance.
- Conduct a sensitivity analysis of model outputs to specific model inputs.

Model documentation is required for the SSC to identify the specific issues related to the model that need detailed review. Review is necessary to identify the strengths and weaknesses of the chinook FRAM in relation to Council-managed fisheries. A detailed review should occur in 2003, prior to the use of the model in 2004.

Groundfish Management

G. 4. Stock Assessment Review (STAR) Panel Process – Review of 2002 and Planning for 2003

The SSC met jointly with the Groundfish Management Team (GMT) and the Groundfish Advisory Subpanel (GAP) to review the 2002 STAR process and to discuss planning for the 2003 process. Afterwards, the SSC reconvened and continued discussion on this agenda item. Dr. Elizabeth Clarke presented the 2003 STAR process schedule to the joint meeting, and along with Dr. Richard Methot, participated in the SSC discussions.

With regard to 2002, the STAR process appears to have worked well for the most part. Assessments were completed, reviewed, and provided to the joint GMT/SSC Groundfish Subcommittee meeting in accordance with the agreed-upon schedule. Some improvement is needed in completing stock assessment documents in advance (2 weeks) of the STAR panel meetings to ensure all reviewers have adequate time to read documents prior to the start of their respective panel meeting.

The process fell somewhat short of expectations with respect to the yelloweye rockfish stock assessment. The initial stock assessment was revised in a rapid manner between June and September. The SSC recommends that stock assessments not be revised outside of the normal assessment cycle in future years.

With regard to the 2003 STAR process, the SSC has the following specific recommendations:

1. The Star Terms of Reference (ToR) should be distributed to all concerned well in advance of the start of the 2003 process (January 2003). All stock assessment team (STAT) members and STAR panel members should re-read and adhere closely to the ToR.

2. Final dates for all STAR panels should be established as soon possible, but not later than November 2002.

3. A single STAR panel should not review more than two full stock assessments within the usual five-day meeting period.

4. In order to assist STAT members in completing their documents on time, the ToR should distinguish between sections of the document that must be completed prior to the document submission deadline, and those sections that could be completed after the STAR panel meeting. The SSC Groundfish Subcommittee will work with the stock assessment coordinator in modifying the ToR accordingly.

5. The section of the ToR regarding uncertainty requires modification. It appears the requirement that STAR panels present the "full range of uncertainty" in assessment results, as used in the ToR, has been

generally misunderstood. Revised ToR should distinguish among the various components of

uncertainty to include:

a. Uncertainty in estimates of recruitment and/or other key model parameters.
b. Uncertainty in the estimates of stock numbers and demographics at the end of the assessment period (i.e., the starting point for projections).
c. Uncertainty in selection of the proper model structure for the stock assessment.

When multiple results reflecting differences in model structure are brought forward by STAR panels, some comment on the relative likelihood of each model (or state of nature) should be provided. Rough probabilities associated with each state of nature are suggested, but even more qualitative comments on these likelihoods would be helpful in moving the assessment results through the management process.

Finally, the SSC is concerned that the current STAR process may not be capable of providing good scientific review under the various multi-year management proposals under consideration by the Council. Conducting perhaps 25 stock assessments in each of the "on" years is likely to overwhelm the current STAR process with concomitant degradation in the scientific foundation for groundfish management under the revised fishery management plan (FMP). Other processes for stock assessment review may be feasible (e.g., the stock assessment workshop environment used in other parts of the U.S., as well as in some international fora). However, additional resources (both people and money) will be needed to implement any such alternative review process.

G. 5. Amendment 17 – Multi-Year Management

Amendment 17 to the Pacific Coast Groundfish Fishery Management Plan (FMP) (Exhibit G.5, Attachment 1) offers four options, in addition to the status quo, to change the Council's process for setting groundfish specifications and management measures from an annual to a biennial cycle. The Council initiated this FMP amendment to: (1) allow for a new legally mandated, five-month notice and comment period and (2) to reduce workload by streamlining the specifications process. Moving to a biennial process is likely to have both favorable and unfavorable consequences, many of which are difficult to foresee. Of foremost concern to the SSC are the potential impacts to the quality of the scientific information the Council uses in its decision-making process.

This subject has been commented upon previously by the SSC (see Exhibit A.5, April 2002 Council Minutes, pp. 42-43). The SSC reiterates that it is most important to base management advice on results from stock assessments that use the most recent data. However, across the four biennial options considered, there is a substantial range in the timeliness of the scientific information that will be used to manage the groundfish fishery. Alternative 5 provides the most current information and is, therefore, the option preferred by the SSC.
It would be useful to evaluate the implications of setting groundfish acceptable biological catches for a number of years into the future based on survey data that are several years old. To some degree this is a feature of the current annual management cycle. However, it will likely be exacerbated under a biennial system, and this will increase the level of uncertainty in the scientific advice the Council receives.

G. 6. Exempted Fishing Permits (EFPs): Update and New Proposals

Exempted fishing permits (EFPs) allow fishing activities that would otherwise be prohibited. The SSC notes that EFPs should be consistent with the goals and objectives of the Groundfish Strategic Plan. The Council has discussed the possibility of the GMT developing guidelines for EFP applications. If the GMT develops guidelines for evaluating EFPs, the SSC is willing to help the GMT to define the scientific aspects of these guidelines.

G. 10. Further Refinement of Amendment 16 - Rebuilding Plans

Mr. Jim Seger updated the SSC on the current status of Amendment 16 options for the groundfish fishery management plan (FMP) to ensure that rebuilding plans for overfished stocks comply with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

The SSC identified Issues 1, 2, and 3 from Sec. 2.1 of Attachment 1 of Exhibit G.10 to be the most relevant to its discussion:

Issue 1: The form and required elements of rebuilding plans.

Issue 2: The process for periodically reviewing rebuilding plans.

Issue 3: Defining events or standards that would trigger revision of a rebuilding plan.

Under Issue 1, Option 1b would require that specified elements of rebuilding plans be incorporated into the FMP by amendment, including numerical values for the rebuilding parameters: T_{MIN}, T_{MAX}, T_{TARGET}, and P_{MAX}.

As indicated in the Supplemental SSC Reports on items C.5.b from June 2002, and C.7.b from September 2002, the SSC recommends a more flexible approach be taken with respect to the specified elements of rebuilding plans than what currently appears in Option 1b.

Because the rebuilding analyses are complex, a natural tendency may be to specify numerical values for the rebuilding parameters in the FMP. This fixed approach could create a false sense of precision, and substantial administrative costs will likely be incurred as many rebuilding parameter values are updated during the normal flow of scientific information into the management process. For example, consider the recent situation with bocaccio. Results from the most recent Bocaccio Rebuilding Analysis indicate that under the SSC's Guidelines for Rebuilding Overfished Stocks, bocaccio fails to rebuild by T_{MAX} with 50% probability, even with zero fishing mortality. This unusual result stems from an update of the original bocaccio rebuilding analysis, and is explained by two unfavorable events that occurred since the original work, (1) The 1999 year-class is not considered to be as strong as previously believed, and (2) landings over the last three years were much greater than the Optimum Yield (OY) in each of those years. As new information about the strength of the 1999 year-class became available from the latest bocaccio stock assessment, the numerical values of rebuilding parameters were updated, leading to the result that bocaccio will not rebuild by T_{MAX} with 50% probability.

Therefore, the SSC recommends that only one of the rebuilding parameters should be numerically specified. After careful discussion, the SSC concluded that P_{MAX} is the most logical candidate for numerical specification by fishery managers. The specified value of P_{MAX} is constrained to be at least 50%, though a more conservative choice may be preferable. All other rebuilding parameters, including T_{MIN} and T_{MAX}, can be derived using scientific information from stock assessments, formulas, or algorithms from the SSC Terms of Reference for Groundfish Rebuilding Analyses (e.g., Exhibit F.7, April 2001).

The SSC recommends Option 1b be revised to read: "For each overfished species, the FMP would be amended to specify a numerical value for P_{MAX}, the probability of rebuilding within T_{MAX}. All other rebuilding parameters would be described by an algorithm or formula in the FMP."

The SSC also discussed options under Issue 2 for periodically reviewing rebuilding plans. The SSC suggests that timing of reviews be closely aligned with stock assessments for the overfished stocks and recommends Option 2b.

Issue 3 for evaluating rebuilding progress would be resolved by the flexible specification in the revision of Option 1b. In a routine situation, such as canary rockfish in the 2003 fishery, OY would be adjusted to ensure rebuilding of the stock according to the specified P_{MAX}. Otherwise, like the situation with bocaccio this year, progress would be inadequate, and the rebuilding plan would be amended.

G. 11. Planning for Bycatch and B_0/Maximum Sustainable Yield Workshops

The SSC and Northwest Fisheries Science Center (NWFSC) will organize a three-day bycatch workshop in the last week of January in Seattle, Washington. The objectives of this workshop are to review the methodological aspects of the bycatch model currently developed by Dr. Jim Hastie and how the new observer data will be applied in the model. The chair of the SSC Economics Subcommittee will chair the workshop and coordinate with NWFSC to develop the terms of reference. The panel will include representatives from the SSC, Groundfish Management Team, and Groundfish Advisory Subpanel, as well as independent experts.

Considering time constraints, the SSC recommends deferring the B_0/MSY workshop to an "off" year under the future multi-year management process.

Coastal Pelagic Species Management

F. 2. Pacific Sardine Stock Assessment and Harvest Guideline for 2003

Dr. Ramon Conser presented the results of the Pacific sardine stock assessment and harvest guideline (HG) for 2003. The assessment model and data analysis are similar to those used in previous years. The analysis included the most recent fishery and survey data. The 2002 sardine stock biomass estimate is approximately one million mt, and the recommended HG is 110,908 mt. The SSC endorses the use of this HG for the 2003 Pacific sardine fishery. The 2003 HG is slightly lower than the 2002 HG. However, the actual landings in recent years have been less than the HG, and it is expected the 2003 fishery landings will not be constrained by this reduction in HG. Dr. Conser noted that in future years, however, U.S. fisheries may be constrained by Council HG's if, (1) sea-surface temperature continues to decline – invoking a reduction in the exploitation rate as specified in the FMP's environmentally-based harvest control rule and/or (2) the U.S. sardine fisheries continue to grow at rates of increase comparable to those observed over the last few years. In addition, when viewed on a stock-wide basis, an increase in Mexican harvest to its historic level may affect the U.S. fishery.

A new sardine model and assessment are needed that more thoroughly incorporate the expansion of sardine from its core area (central California through Baja California, Mexico) northward to include Oregon, Washington, and British Columbia, Canada. In December 2002, the Third Trinational Sardine Forum will meet in San Pedro, California. This forum will encourage continuing work on assembling a coastwide sardine database that could be used in a new stock assessment. Fishery independent surveys (as well as continued fishery sampling) from Oregon, Washington, and British Columbia are needed to support new model development. The SSC recommends that funding be secured to conduct simultaneous surveys off Oregon/Washington and the traditional survey area off central/southern California.

The sardine assessment should undergo a STAR panel review in conjunction with the Pacific mackerel assessment in September 2003. The STAR panel would review new model development using data through 2002. The new sardine and revised mackerel models could then be used to establish HGs for the respective 2004 fishing seasons. The SSC will develop terms of reference for the coastal pelagic species STAR panel review for Council consideration at its March 2003 meeting.

Other Matters

A. 4. Ecotrust/Pacific Marine Conservation Council
Groundfish Fleet Reduction Project – Informational Presentation

A. 5. Ecosystem Considerations – Northern California Current Ecosystem

These two presentations were provided to the SSC for their information. No recommendations were made to the Council about either item.

Public Comment

Mr. Guy Grundmeier provided comments to the SSC. He noted the critical need for inclusion of local knowledge into the science and management process. He expressed concern with the information presented by Ecotrust and opined that more "hard" data was needed, and fishing communities are willing to work with NMFS in this regard. He also opined that marine mammal impacts on West Coast fisheries was a major issue that was not be considered in science or management.

Adjournment

The SSC adjourned at approximately 5:30 P.M., Tuesday, October 29, 2002.

Research and Data Needs

From March 2002 –

Coho Fishery Regulation and Assessment Model needs documentation, postseason review, evaluation and validation. It might be useful to establish model evaluation committees. Need estimates of abundance in addition to preseason forecasts.

SSC may need to further define the requirements for model "validation."

Need review of coded-wire tag data.

Research recommendations from the market squid STAR Panel should be incorporated into Research and Data Needs document. Note recommendation for 2004 squid STAR Panel.

PFMC
02/20/02

SSC Subcommittee Assignments for 2002

Salmon	Groundfish	CPS	HMS	Economic	Marine Reserves
Brian Allee	Ray Conser	Michael Dalton	Alan Byrne	Michael Dalton, Chair	Ray Conser
Alan Byrne	Michael Dalton	Alan Byrne	Robert Conrad	Martin Dorn	Michael Dalton
Robert Conrad	Martin Dorn	Ray Conser	Ray Conser	Han-Lin Lai	Martin Dorn
Kevin Hill	Robert Francis	Robert Francis, Chair	Kevin Hill, Chair	Cynthia Thomson	Tom Jagielo
Pete Lawson, Chair	Tom Jagielo	Tom Jagielo	Andre' Punt		Pete Lawson
Shijie Zhou	Han-Lin Lai	Andre' Punt	Cynthia Thomson		Andre' Punt
	Andre' Punt	Shijie Zhou			Steve Ralston
	Steve Ralston, Chair				Cynthia Thomson, Chair