

# **SUMMARY MINUTES**

## **Scientific and Statistical Committee**

Pacific Fishery Management Council  
Crowne Plaza Hotel  
Drake I Room  
1221 Chess Drive  
Foster City, CA 94404  
650-570-5700

**September 11-12, 2006**

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

The meeting was called to order at 8 a.m. Dr. Donald McIsaac briefed the SSC on priority agenda items. Dr. McIsaac notified the SSC of a request for the SSC to discuss the data to be used in the updated yelloweye rockfish assessment scheduled to be complete in 2007 by the Washington Department of Fish and Wildlife (WDFW). The SSC scheduled a brief discussion of the matter immediately following the closed session.

Dr. Kevin Hill announced that this meeting will be his last as an SSC member. Dr. Hill stated he will continue his work on the Coastal Pelagic Species Management Team and looks forward to working with the SSC in this capacity in the future. Dr. Ramon Conser will replace Dr. Hill in the National Marine Fisheries Service, Southwest Fisheries Science Center seat leaving his current At-Large seat vacant. The SSC thanked Dr. Hill for more than eight years of service on the SSC including his service as SSC Chair in 2004-2005.

Subcommittee assignments for 2006 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. Robert Conrad, Northwest Indian Fisheries Commission, Olympia, WA  
Dr. Michael Dalton, California State University, Monterey Bay, CA  
Dr. Martin Dorn, National Marine Fisheries Service, Seattle, WA  
Dr. Owen Hamel, 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. André Punt, University of Washington, Seattle, WA  
Dr. Hans Radtke, Yachats, OR  
Dr. Steven 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. Steve Berkeley, University of California, Santa Cruz, CA  
Dr. Ramon Conser, National Marine Fisheries Service, La Jolla, CA

## Scientific and Statistical Committee Comments to the Council

The following is a compilation of June 2006 SSC reports to the Council. (Related SSC discussion not included in written comment to the Council is provided in *italicized text*).

### Council Administrative Matters

#### B.5 Appointments to Advisory Bodies, Standing Committees, and Other Forums for the 2007-2009 Term, Including any Necessary Changes to Council Operating Procedures

There are two areas of expertise that the Scientific and Statistical Committee (SSC) currently lacks that may be important to the SSC in the future:

1. fisheries sociology/anthropology, and
2. fisheries oceanography.

Informational Report 3, “Social Science in the Pacific Fishery Management Council Process”, submitted to the Council at this meeting provides reasons for considering the appointment of a fisheries sociologist/anthropologist to the SSC. The fisheries sociologist should have the expertise needed to evaluate the effects of management changes on fishing communities. A fisheries oceanographer would be a valuable addition to the SSC as ecosystem-based management concepts are increasingly considered by the Council in its management process.

The current staffing level (number of seats) and composition of the SSC meets its present needs with regards to expertise and work load. Replacing existing seats with the requested new positions would impact the SSC’s ability to deal with its annual work load of groundfish and salmon issues. Therefore, we request that two new at-large seats on the SSC be created. This addition of seats would require a change to the Council Operating Procedures for the SSC.

Finally, with the departure of Dr. Kevin Hill and Mr. Alan Byrne from the SSC, the SSC notes that its salmon expertise will be reduced. Replacing this expertise should be considered when deciding upon appointments to the SSC.

### ***SSC Administrative Matters***

#### Notes on WDFW request to allow use of catch and effort data from halibut trips in the 2007 yelloweye rockfish stock assessment update

*The SSC was briefed by Mr. Brian Culver about concerns that WDFW has raised about the use of recreational CPUE data in the yelloweye rockfish stock assessment update that will be completed next year (see Agenda Item C.1.B, Supplemental WDFW Report, September 2006). Specifically, the last stock assessment restricted State of Washington CPUE calculations to bottom-fish-only (BOF) fishing trips and excluded those trips that targeted halibut, although both BOF and halibut trips were used in generating CPUE statistics for the State of Oregon. Due to severe impacts from the very restrictive management regime that is needed to recover the yelloweye rockfish stock, WDFW*

has suggested that “the stock assessment team consider adding Washington recreational catch-per-unit-of-effort (CPUE) data from halibut trips.”

*After discussing this issue at some length the SSC concluded that it would be inadvisable to alter the data in the manner suggested by WDFW as part of a stock assessment update, which has very stringent requirements that the SSC is reluctant to relax. Specifically, the recently adopted Terms of Reference for Groundfish Stock Assessments stipulates that to qualify as an update “a stock assessment must carry forward its fundamental structure from a model that was previously reviewed and endorsed by a STAR panel. In practice this means similarity in: (a) the particular sources of data used, (b) the analytical methods used to summarize data prior to input to the model.” Instead, as a potential solution to this problem, it was decided that the STAT team should proceed by: (1) preparing a stock assessment update that adheres to the existing Terms of Reference, (2) conduct a sensitivity run of the base model that incorporates the altered CPUE time series that includes halibut trips, and (3) presents those findings to the SSC groundfish subcommittee during its review of stock assessment updates that is tentatively scheduled to follow the June 2007 meeting. Depending on the results of the sensitivity run, as well as on whatever other competing demands arise during the course of the 5 STAR panels that are planned for the spring/summer of 2007, the groundfish subcommittee may elect to refer the issue to the “mop-up” panel for more thorough evaluation.*

### ***Pacific Halibut Management***

#### **G.2. Pacific Halibut Bycatch Estimate for International Pacific Halibut Commission Adoption**

Dr. Jim Hastie (NWFSC) briefed the Scientific and Statistical Committee (SSC) on estimates of halibut bycatch for 2005 as described in the report by Wallace and Hastie (August 2006). Estimated total halibut discard mortality increased by 46 percent from 2004 to 2005. The increase may be an unintended consequence of liberalized trip limits and expanded fishing opportunities shoreward of the Rockfish Conservation Area (RCA) that were made possible in 2005 by mandatory use of selective flatfish gear. Although total trawl effort increased by only 5%, trawl effort inside 150 fm increased by almost 50 percent. The SSC endorses the use of the report’s bycatch estimates in evaluating the impact of Council-managed fisheries on the Pacific halibut stock.

Halibut bycatch varies by season, depth, latitude, and the proportion of arrowtooth flounder in the catch. Halibut bycatch rates were estimated by strata defined by these factors. Further analyses should be based on strata definitions that also reflect prevailing spatial management measures. For example, seasonal changes in the shoreward limit of the RCA would provide a basis for corresponding seasonal strata for bycatch estimation. The SSC again requests that 1) variance estimates of total bycatch be provided, and 2) observer data for other Council-managed fisheries be evaluated. In particular, halibut bycatch estimates for the fixed gear fleet should be considered.

The SSC has reviewed the Pacific halibut bycatch report each year now for several years. If estimation methods continue to be routine, additional review by the SSC may not be needed.

## ***Highly Migratory Species Management***

### E.2. NMFS Report - SSC review of Yellowfin Tuna Stock Status Report

Dr Mark Maunder (Inter-American Tropical Tuna Commission) briefed the SSC on the stock assessment conducted for yellowfin tuna in the Eastern Tropical Pacific. The results in document E.2.a, Attachment 6 are slightly different from those presented to the SSC. The SSC reviewed the assessment, noting that there is currently no Terms of Reference document for HMS stock assessments. The report on the yellowfin tuna stock assessment, however, includes most of the information typically included in a stock assessment report used for Council decision-making and hence could be reviewed by the SSC. Based on its review of the assessment, the SSC endorses the assessment, and its use for status-determination purposes.

The SSC notes that the stock assessment is not spatially-structured although the length-frequency of yellowfin catches differ spatially, and by gear-type. The SSC is unclear whether the impact of not having a spatially-explicit model is substantial, but recommends that this issue be examined as part of future assessments.

The assessment indicates that the stock has been relatively stable since 1984. For the base-case assessment, the stock is estimated to be close to  $B_{MSY}$  with a fishing intensity slightly above  $F_{MSY}$ , i.e. under the base-case assessment overfishing is occurring, but the stock is not in an overfished state. The base-case assessment assumes that recruitment is independent of spawning biomass (i.e. steepness equals one). The extent to which fishing intensity exceeds  $F_{MSY}$  depends on the relationship between spawning biomass and recruitment; the lower the value of steepness, the greater the implied extent of overfishing. Dr Maunder noted that steepness for yellowfin tuna was unlikely to be one, but that it was also unlikely to be much lower than one.

The recruitment used in the calculation of  $B_{MSY}$  is the average over the entire period considered in the assessment. However, Dr Maunder noted that the results of the assessment are consistent with a change in average recruitment in about 1984. The value of  $B_{MSY}$  would have been higher had it been based on recent (post-1983) recruitment. The SSC was not able to determine whether the stock would be estimated to be currently below  $B_{MSY}$  had  $B_{MSY}$  been defined this way.

Finally, the SSC notes that, at present, very few US-flagged vessels operate in the commercial fishery for yellowfin tuna and hence that multi-national management arrangements are needed to stop overfishing.

#### *Suggested issues to investigate:*

- *The double-domed selection curves seem unrealistic. The reasons why the model estimates such selection patterns should be determined.*
- *The data for each fleet should be summarized in a tabular format.*
- *The impact of ignoring spatial-structure when conducting assessments of yellowfin tuna should be examined.*
- *The results of the assessment are likely to depend critically on the assumption that growth is time-invariant. The evidence for, and implications of, time-varying growth should be examined.*

- *There should be an Investigation of a sex-structured population dynamics model fitted to data on sex-specific length-frequency (if available).*
- *Future assessments should examine the reasons for, and implications of, the apparent cohorts in the length-frequency data that the model is unable to capture.*

## **Groundfish Management**

### C.7. Trawl Individual Quotas—Stage I Alternatives and Progress Report on Stage II

Jim Seger (Pacific Fishery Management Council [PFMC]) and Marcus Hartley (Northern Economics Inc.) briefed the Scientific and Statistical Committee (SSC) on the status of Stage I of the Trawl Individual Quota (TIQ) Program Analysis and provided an update of the plan of work for Stage II.

The SSC provided some specific comments on the Stage I document during the June 2006 PFMC meeting (see attached SSC Statement). These comments remain germane as the analysis moves toward Stage II. The SSC has several additional comments on the Stage I document and the presentation by Seger and Hartley.

- Some simplification of the alternatives has been accomplished. However, the links between the performance measures, the management regime alternatives, and the program goals are not clear.
- Although the implementation of a TIQ or a permit stacking program is not anticipated to have a marked impact on the likely status and trends of groundfish stocks, changes to the spatial distribution of catch may have biological implications. The SSC notes that existing analytical tools (e.g., stock assessments and rebuilding analyses) could be used to assess the effects of the different programs.
- The Stage II analysis will assume constant 2005 prices of affected species. Other TIQ programs (e.g., in Alaska) have resulted in changes to ex-vessel as well as market prices. Therefore, some sensitivity analysis of possible price changes should be undertaken. If such analyses are not possible, the document should at least include a discussion of price changes experienced in other programs that may be relevant, and whether similar changes might be expected.
- Accumulation leading to concentration of quota shares and/or market power is a real risk of any TIQ program. Information on ownership of vessels and processing plants is available through public and NMFS sources. The amount of present and potential concentration should be included in the analysis.
- The impact of TIQ programs on catches of overfished species is proposed to be analyzed by assuming that between 25% and 50% of the tows with the highest bycatch rates are eliminated. The justification for this range is not provided and use of an unduly high percentage may lead to overly optimistic expectations. Lower values for the reduction in

bycatch of overfished species should be included in the analysis unless evidence in support of the lower end of the current range can be provided, for example from other ITQ programs.

Finally, the SSC wishes to restate that the complexity of the efficiency and equity trade-offs which are likely to occur in any ITQ program may lead to unforeseen consequences. A range of estimates for the potential efficiency gains (i.e. benefits) and costs of implementing should be available to inform the Council after the analysis proposed in the Stage I Draft document is complete.

### ***SSC Administrative Matters, continued***

#### **A.4. Ecosystem-Based Management**

*There were no Briefing Book materials on this item and there will be no SSC statement to the Council on this subject at this meeting. To set the context for our discussions of ecosystem-based fishery management (EBFM) Mike Burner informed the SSC that the Council in June had charged the SSC with conducting a literature review of EBFM and had requested a joint meeting of the SSC and Habitat Committee to discuss EBFM and possible strategies for its implementation. To date the SSC's Ecosystem-based Management Subcommittee has not met to discuss approaches to EBFM that might be appropriate for the Council's consideration. In general there does not appear to be any general consensus among the SSC members regarding EBFM and what it might entail.*

*To generate some forward progress on the topic of EBFM, the SSC received presentations from Steve Ralston on "Recent results of NMFS midwater trawl surveys off the US West Coast", which showed changing patterns of abundance and latitudinal distribution of ten young-of-year rockfish species, and from Dr. Frank Schwing (SWFSC, Environmental Research Division Director) on "Recent oceanographic and ecosystem considerations off the US West Coast", which showed changing biological signals (e.g., abundance of forage fish and krill) and physical processes (e.g., timing of the spring transition, cumulative upwelling, El Niño-like conditions without any El Niño event). Together these two presentations suggest that there have been important system-wide changes in the productivity of the California Current System that almost certainly will have impacts on commercially important fish species managed by the Council.*

*Subsequent to the presentations the following points were brought up during SSC discussions:*

- *Relative to the traditional single-stock approach to assessment and management, an EBFM approach would take a more integrated view of how biological and physical factors influence individual fish stocks.*
- *Currently there are some Council examples of incorporating environmental variables in management actions (sardine harvest control rule) or stock assessments (environmental driver of recruitment deviations in the sablefish assessment).*
- *The issue for stock assessments is whether adding environmental data will increase the information content or the noise. How does one evaluate this?*

- *If stock productivity is governed by measurable environmental variations, then these environmental variables may need to be considered explicitly in management reference points (e.g.,  $B_0$ ,  $B_{MSY}$ ). What is  $B_{MSY}$  in the context of EBFM?*
- *Having available a suite of environmental variables or trends in multiple species provides a broader context for viewing the results of single-species assessments.*
- *Synchrony in recruitment deviations from different assessments may provide indications of shared ecosystem influences, and may provide data that could inform new stock assessments.*
- *It may be possible to use information on stock assemblages to infer likely changes in unassessed or data-poor stocks.*
- *Fundamental impediment to EBFM is deciding on appropriate management objectives. What mechanism is there to evaluate trade-offs between competing goals?*
- *The process of developing EBFM will be evolutionary. Education of the Council and its advisory bodies would be very useful at moving things forward.*
- *The Council should take a broader view of EBFM than just the context of the individual FMPs. EBFM should explore issues that cut across the traditional FMP categories.*

### ***Council Administrative Matters, continued***

#### **B1. Future Council Meeting Agenda Planning**

In June, the Council requested that the Scientific and Statistic Committee (SSC) and Habitat Committee (HC) compile information on possible ecosystem-based approaches to management. The SSC welcomes future interaction with the HC and recommends that during the November meeting the Council and its advisory bodies receive a briefing on the paper "Ecosystem based fisheries management: some practical suggestions", by Marasco, Goodman, Grimes, Lawson, Punt, and Quinn. Two of the authors, who are members of the SSC (Drs Pete Lawson and Andre Punt), could provide the Council with a presentation on the paper.

During its September meeting, the SSC received two presentations regarding environmental conditions off the West Coast. Dr. Steve Ralston of the Southwest Fisheries Science Center (SWFSC) presented "Recent results of NMFS midwater trawl surveys off the US West Coast", which showed changing patterns of abundance and latitudinal distribution of ten young-of-year rockfish species. Dr. Frank Schwing (SWFSC) presented "Recent oceanographic and ecosystem considerations off the US West Coast", which showed changing biological signals (e.g., abundance of forage fish and krill) and physical processes in the ocean (e.g., timing of the spring transition, cumulative upwelling, El Nino-like conditions without any El Nino event). Together, these two presentations provide evidence of important recent changes in ocean conditions. The SSC recommends that the Council and its advisory bodies hear these presentations during the November meeting.

The SSC further recommends that the Council schedule a two-meeting process during November and March to review and approve the Coastal Pelagic Species (CPS) Stock Assessment Review STAR (STAR) process Terms of Reference. This schedule would precede two CPS STAR Panels

scheduled for 2007.

### ***SSC Administrative Matters, continued***

#### **A7. Off-Year Science Workshop Planning**

*Under this agenda item, the SSC discussed three topics: 1) the status of preparation for the Bzero workshop to be held in December, 2) Observations by SSC members who attended the recent RecFIN Data workshop, and 3) Plans for the upcoming NWFSC Trawl Survey workshop in late October.*

#### ***Bzero Workshop***

*Dr. Martin Dorn presented an overview of the draft Terms of Reference developed for the Bzero workshop. They are:*

- 1. Evaluate the performance of the 40-10 harvest policy for stocks with different life history and stock-recruit patterns.*
- 2. Evaluate alternative methods to estimate Bzero and BMSY proxies and provide recommendations on their use.*
- 3. Provide recommendations on the use of priors for key assessment parameters in stock assessment models. Parameter for which priors could potentially be useful include natural mortality, stock-recruit steepness, survey catchability, and recruitment variability.*

*A preliminary list of talks and papers to be presented at the workshop was discussed. To date, they are:*

- *Melissa Haltuch, Andre Punt, Martin Dorn: Simulation testing alternative estimators of unfished stock size*
- *Michael Schirripa: Simulation testing estimators of sablefish biomass reference levels under decadal environmental variability*
- *Alec MacCall and John Field: Comparison of dynamic and static estimates of Bzero and stock depletion*
- *Owen Hamel: Advice on priors for natural mortality*
- *Martin Dorn: Advice on priors for stock-recruit steepness*
- *Martin Dorn: Review of methods of estimating biomass reference points used in harvest control rules employed by US Fisheries Management Councils*

*Also discussed were options for pursuing publication of the papers submitted to the workshop. It was noted that participation of contributors from Australia and the North Pacific Fishery Management Council venues would be beneficial, due to the use of similar management control rules in those areas. It was agreed that, to get the most out of the workshop, all participants would need to conduct pre-meeting work, and they would need to come to the workshop with finished work products.*

#### ***RecFIN Data Workshop***

*Several SSC members attended the recent workshop which was held to review RecFIN data. The meeting was attended by a wide variety of interested managers, scientists, and others, and thus was not a deep technical review sufficient to address some of the SSC's concerns about data quality, timeliness, access to data, and review. Ms. Cindy Thomson has taken the lead on drafting an SSC report on this issue for the November council meeting. Ms Thomson noted that the draft report will also address recommendations made by the NRC review of MRFSS.*

### ***NWFSC Trawl Survey Workshop***

*This workshop is scheduled for late October/ early November. Jim Hastie noted that a draft Terms of Reference document was in preparation but not yet available for review. Questions discussed were 1) Should assessments classified as updates be permitted to use indices of abundance derived from the new NWFSC survey? 2) What is the role of case studies (e.g. for English sole) at the workshop?, and 3) What is the best way to address linking the "old survey" data to the "new" survey data in stock assessments?*

### ***Council Administrative Matters, continued***

#### **B.6. Updated Research and Data Needs**

The Scientific and Statistical Committee (SSC) had its first opportunity at this meeting to discuss the draft 2006-2008 Research and Data Needs document (Agenda Item B.6.a, Attachment 1) in its entirety. In addition to minor editorial changes, the SSC has made one substantive change to the document: the addition of Section 3.3 pertaining to emerging issues for salmon.

Given the abbreviated time frame for preparation of this document, the SSC requests that it be allowed to make additional changes to the document after the September Council meeting for inclusion in the public review draft. Specifically, the SSC would like to re-organize Section 5.0 (Highly Migratory Species) to better highlight the distinction between continuing and high priority issues, expand Section 5.3.1 to identify high priority needs for sharks, and add a new section for swordfish (including sea turtle bycatch). The SSC would also like to expand Section 4.0 (Coastal Pelagic Species) to include a discussion of progress to date on high priority issues relevant to Pacific sardine, Pacific mackerel and market squid.

The SSC requests that suggestions from other advisory bodies regarding Research and Data Needs be submitted to the Council in the form of specific wording changes to the document. This will facilitate timely completion of the document and ensure that advisory body comments are accurately captured. Also, the SSC has added a placeholder at the beginning of Section 6.3 for inclusion of additional social science information needs as discussed in the Council's July 2005 report *Social Science in the Pacific Fishery Management Council Process*. The SSC requests assistance from Council staff to ensure that Section 6.3 adequately captures the content of the July 2005 report.

Once these changes have been incorporated, the SSC approves the 2006-2008 Research and Data Needs for public review.

## *Salmon Management*

### H.1. Salmon Methodology Review

The Scientific and Statistical Committee (SSC) met with Mr. Larrie LaVoy (Model Evaluation Workgroup) and Mr. Chuck Tracy to identify items for review by the SSC Salmon Subcommittee at its October meeting. The following items were identified as ready for review:

- Chinook and Coho Fishery Regulation Assessment Model (FRAM) Documentation;
- Columbia River fall Chinook ocean abundance forecast;
- experimental design for near-shore commercial test fisheries.

The SSC Salmon Subcommittee will review these products in October prior to the full SSC meeting in November. As always, the SSC requires good documentation and ample review time to make efficient use of the SSC Salmon Subcommittee's time. Materials to be reviewed should be submitted at least two weeks prior to the scheduled review. Agencies should be responsible for ensuring that materials submitted to the SSC are technically sound, comprehensive, clearly documented, and identified by author.

### H.2. FMP Amendment 15 (de minimis fisheries)

Ray Beamesderfer presented the analytical work undertaken to date for evaluating the biological effects of the various alternatives for *de minimis* fisheries on Klamath River fall Chinook salmon. Other members of the team presented economic analyses. The Scientific and Statistical Committee (SSC) commends the team for the amount of work accomplished since the last Council meeting, but notes that the work is not yet complete.

The general biological analysis approach is to define a range of options and then simulate the outcome of these management measures. These options included *de minimis* age-4 ocean impact rates of 16, 10, 5 and 2.5 percent as well as a sliding scale alternative. An alternative approach taken was to define the proportion of years in which to exceed the target, and then find a rate that achieves that goal. The larger the constant *de minimis* rate, the more often *de minimis* fisheries occur, and whenever *de minimis* fisheries occur, the projected post-fishing natural spawner escapement is less than 35,000.

The base model presented was roughly equivalent to Model 2 of the "Klamath River Fall Chinook Stock-Recruitment Analysis" report, as was suggested by the SSC at the June 2006 Council meeting, although there were some analysis errors which need to be addressed. Random changes and trends in in-river survivorship should be included in simulations, which will allow consideration of future changes in the state of the Klamath River basin.

The current analysis adequately models the difference between management action and implementation, i.e. target F and actual F, although including autocorrelation in this relationship would lead to more realistic results. Accounting for errors in preseason abundance estimation when setting target F would further increase the realism of the simulations.

The hindcast analysis does not include dynamics and therefore does not reflect the full effect of changes in management strategies. For this reason the utility of this analysis is limited to a lower bound estimate of the frequency of *de minimis* fisheries which would have occurred under different management regimes.

The modeling exercise used to analyze the alternatives does not capture all the important issues. For example, the Klamath fall Chinook stock consists of several smaller populations, and low composite spawning escapement could lead to localized extinction and/or damage to long-term productivity due to inbreeding depression. Even with the introduction of depensation, the Ricker stock-recruit model may underestimate threats to the stock. For example, with the model it is impossible for the stock to go to extinction. Nor does the model reflect differences in fecundity with spawner age. The sensitivity analysis presented to the SSC consisted of one “pessimistic” alternative with a combination of factors which appears unrealistic. More realistic sensitivity analyses should be undertaken including such issues as changes in freshwater production and a stronger form of depensation.

The economic analysis would be made more clear by improved organization and should include analysis and some discussion of short-term vs. long term trade-offs. The SSC reiterates that this analytical approach is adequate for the comparison of the various alternatives, although the absolute numbers arrived at will be highly dependent upon the model assumptions. Given these concerns, at present only relative comparisons and outputs should be emphasized.

#### **Public Comment**

None.

**Adjournment:** The SSC adjourned at approximately 5 p.m., Tuesday, September 12, 2006.

PFMC  
10/24/06

## SSC Subcommittee Assignments for 2006

<b>Salmon</b>	<b>Groundfish</b>	<b>CPS</b>	<b>HMS</b>	<b>Economic</b>	<b>Ecosystem-Based Management</b>
Robert Conrad	Steve Berkeley	<b>Tom Barnes</b>	Tom Barnes	<b>Michael Dalton</b>	Tom Barnes
Owen Hamel	Ray Conser	Michael Dalton	Steve Berkeley	Hans Radtke	<b>Steve Berkeley</b>
Kevin Hill	Michael Dalton	Ray Conser	Robert Conrad	Cynthia Thomson	Michael Dalton
<b>Pete Lawson</b>	<b>Martin Dorn</b>	Tom Jagielo	<b>Ray Conser</b>	David Sampson	Martin Dorn
Hans Radtke	Owen Hamel	André Punt	Kevin Hill		Tom Jagielo
David Sampson	Tom Jagielo	Steve Ralston	André Punt		Pete Lawson
	André Punt		Hans Radtke		André Punt
	Steve Ralston				Steve Ralston
	David Sampson				Cynthia Thomson

**Bold** denotes Subcommittee Chairperson