

SUMMARY MINUTES

Scientific and Statistical Committee

Pacific Fishery Management Council
Doubletree Hotel
California Ballroom 2
2001 Point West Way
Sacramento, CA 95815
916-929-8855

April 3-4, 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 addressed Agenda Item E.2 regarding salmon management measures and specifically requested the SSC review Agenda Item E.2.b, Supplemental NMFS Report 2, a letter to the Pacific Fishery Management Council (Council) Chair including a report titled “*Comments on the Klamath River Fall-Run Chinook Salmon Fisheries Management Plan Escapement Floor*” dated March 31, 2006 from Mr. Robert Lohn and Mr. Rodney McInnis, NMFS Northwest and Southwest Regional Administrators respectively. Dr. McIsaac noted the timing of the report was not conducive to a thorough SSC review but, due to the importance of the matter, he requested the SSC make it a priority matter. As part of the review, Dr. McIsaac asked the SSC to answer the following questions regarding the NMFS Report:

1. Does the report appear neutrally objective, or biased/pre-disposed towards a priori objective?
Note: The report states the age-4 harvest rate has been underestimated in recent years but does not mention model corrections in March 2006 by the STT to address this issue.
2. Is it a valid assumption that $\log(R | S,s)$ is a normally distributed random variable?
3. Have the calculations in the report been performed properly?
4. Is it proper to use the single worst ocean survival scenario to evaluate the probability of the poorest recruitment ever from the 2006 brood year?
5. What would this probability be if the poor ocean survival input was:
 - (a) an average of poor ocean survival years and/or
 - (b) a cluster of poor ocean survival years as determined by the SSC.

The results of the SSC review are contained in Agenda Item E.2.c, Supplemental SSC report which can be found on the next page of these summary minutes.

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. Steve Berkeley, University of California, Santa Cruz, CA
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. Martin Dorn, National Marine Fisheries Service, Seattle, WA
Dr. Owen Hamel, National Marine Fisheries Service, Seattle, WA
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 - Monday Only
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

Dr. Kevin Hill, National Marine Fisheries Service, La Jolla, CA

Scientific and Statistical Committee Comments to the Council

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

Salmon Management

E.1. Identification of Stocks Not Meeting Conservation Objectives

Because there are no non-exempted salmon stocks that have failed to meet their conservation objectives and to allow additional time for Agenda Item E.2 the SSC held a limited discussion of this matter and did not draft a statement.

E.2. Tentative Adoption of 2006 Ocean Salmon Management Measures for Analysis

Dr. John Stein summarized for the Scientific and Statistical Committee (SSC) the document "Comments on the Klamath River Fall-Run Chinook Salmon Fisheries Management Plan Escapement Floor." It was prepared primarily by biologists from the Northwest and Southwest Fisheries Science Centers who are not directly involved with the Council process and, as such, represents an outsiders' look at the Klamath fishery management situation. The impression of the SSC was that the document was prepared quickly and, as a result, was uneven in its coverage, leaving opportunities for further analysis and integration. However, the document provides considerable background material and discusses diversity, disease, hatcheries, forecast and model uncertainty, offers a risk assessment, and discusses expectations for 2007 and 2008.

A major focus of the SSC discussion, in response to guidance from the Council, was on the risk assessment. First, this report is one of the few presentations we have seen of uncertainty relative to proposed salmon harvest regimes. We commend the report authors for taking this first step and hope to see similar statistics for a broader range of salmon stocks and fisheries in the future. The SSC replicated the stock-recruit analysis (Salmon Technical Team Model 2) and risk analysis, and found them to be technically correct. However, the analysis presented in the report was incomplete, and deserves a fuller treatment. The intention of the risk analysis, based on the stock-recruit model, was to put boundaries on possible outcomes of the three fishery options under consideration for 2006. To do this the authors chose as a benchmark the lowest historical recruitment, under conditions of the mean and the lowest observed early-life survival rates. Because the lowest observed survival rate value (for the 1989 brood-year) was 6-fold lower than the next lowest, the SSC considers use of this parameter value as being unnecessarily pessimistic. This may be balanced by the use of the lowest historical recruitment, which is a low standard for assessing risk to the populations.

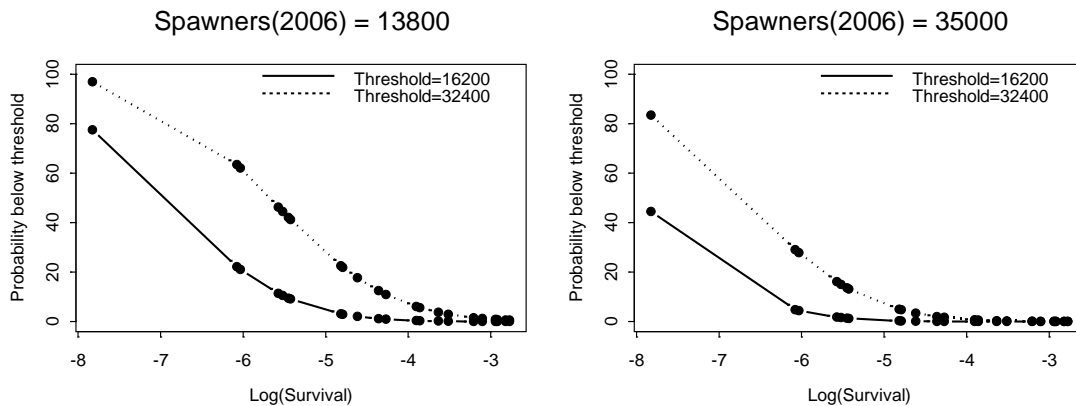


Figure 1. The relationship between risk (the probability of being below two recruitment thresholds, 16,200 and double that amount, or 32,400) is shown as a function of the survival rate for two spawner escapement levels, the escapement floor (right panel) and the Option 1 projected escapement (13,800, left panel). The large dots show observed levels of early-life survival.

The SSC explored the effects on risk of the chosen recruitment threshold and the number of parental spawners, where risk is expressed as the probability of being below the threshold over the range of observed survival rates (Figure 1). The left-most point on the solid line in the left panel corresponds to the most pessimistic early-life survival rate in the report. Risk in this scenario drops rapidly with increasing survival rate. Doubling the recruitment threshold (the dotted line) results in a considerable increase in risk, which stays high over a wider range of survival rates. The right-hand panel shows that the risks are lower if the parental spawning escapement remains at the current floor, compared with the escapement projected for Option 1.

Diagnostic plots of the residuals from the stock-recruit model suggest possible violation of the assumption that the logarithm of recruits-per-spawner follows a normal distribution. The implications of this to the risk analysis results are unclear beyond the additional uncertainty involved.

The population structure and biological diversity issue was of interest to the SSC. It appears, from the presentation in the report, that Klamath River Fall Chinook are made up of several distinct

populations and that several of these populations had spawner escapements in 2004 that raise conservation concerns. The document points out the issue of inbreeding depression (reduced survival due to lack of genetic diversity) and demographic risk (chance events that, at low population size, can cause a population to disappear). There was also concern that the presence of large numbers of hatchery fish in the basin could be masking declines of wild spawners. The report does not attempt to assign risk levels to wild populations based on genetic or demographic effects of low escapements. The problems appear to be real, but it was not clear to the SSC how the aggregate 35,000 fish escapement floor is connected to the status of the separate populations. Smaller populations would be at greater risk if lower escapements were allowed.

The Summary and Conclusions of the report includes a discussion of expectations for the future. The current problem in the Klamath River is attributed, partly, to recent low flows and high water temperatures. These conditions persisted through 2004, affecting survival for fish that will return in 2006 – 2008. Additional pressure has been placed on the stock by recent ocean exploitation rates that were higher than expected due to unusual distributions of fish that resulted in anomalously high contact rates. Even with improved flows in the Klamath, the first return year with the potential for substantially higher escapement is 2009.

The situation in the Klamath River is dire. The risk to the fish is that several consecutive years of very low escapements may reduce the stock diversity, productivity, and resilience, potentially leading to greater problems in the future.

Groundfish Management

F.3 Stock Assessment Planning for the 2009-2010 Fishing Season

The Scientific and Statistical Committee (SSC) met with Dr. Elizabeth Clarke of the National Marine Fisheries Service (NMFS), who briefed members on efforts to plan for a new set of groundfish stock assessments that are scheduled for completion and review next year (2007), which will form the basis of new groundfish management measures beginning January 1, 2009. Initial discussion focused on material presented in Agenda Item F.3.b, Attachment 1, “Possible schedule for West Coast groundfish assessments in 2007 and beyond.” Early planning for this work is essential in order to insure that adequate reviews can be scheduled and completed next year, because it is generally acknowledged that conducting the reviews was the primary limiting factor in the Council’s groundfish stock assessment process last year.

Dr. Clarke noted that at the March meeting, the Council decided to change sablefish from an update to a full assessment, requiring a STAR Panel review. To accommodate the decision on sablefish, and given the limited number of slots available at STAR Panels, petrale sole was “demoted” to an update. However, the SSC recommends that, given the problems encountered with petrale sole age data in 2005 and other issues, it is not worth doing a new assessment of the stock unless it is a full assessment. To allow for that possibility, within the context of the schedule laid out in Agenda Item F.3.b, Attachment 1, the SSC suggested moving English sole to the 2007 “update” slot currently occupied by petrale sole and moving petrale sole to the 2009 English sole “full” assessment slot.

The question of how and why stocks are selected to be assessed has been previously considered by the SSC and was again the subject of some discussion. To facilitate this process, the SSC

recommends that a set of criteria be established, that may include such factors as: (1) economic importance, (2) overfished status, (3) demographic sensitivity, (4) time elapsed since the last assessment, etc. To initiate the development of such criteria, the SSC recommends that the groundfish subcommittee engage in preliminary discussions with the NMFS stock assessment coordinator, Council staff, the Groundfish Management Team (GMT), and the Groundfish Advisory Subpanel (GAP) to begin scoping the issue. As an example, the SSC questions the relative importance of requiring assessments to be no older than five years, if the requirement precludes working on stocks that have never been assessed.

The SSC discussed the increasing difficulty of meeting the competing demands facing the Council with respect to completing more and better assessments. The STAR process that is reserved for full assessments is a thorough independent peer review, but it is expensive in terms of people's time and money. Shifting fully developed, stable models to an update mode will relieve some of the strain on the system. There are, however, many stocks that are quite data poor, and which are unlikely to be suitable candidates for assessment using the sophisticated methods practiced by analysts supporting the Council. Given this conundrum, the SSC recommends that lower tier trend analyses be developed for use by the Council in managing data-poor West Coast groundfish stocks. To function effectively, harvest control rules for these stocks will need to be developed and adopted by the Council, as results from a trend analysis do not fit conveniently into the 40:10 harvest policy. Still, to solve what the SSC perceives as a growing problem in scheduling groundfish stock assessments and obtaining adequate review, developing some simpler approaches seems highly desirable.

The SSC also reviewed and made its final edits to the terms of reference for groundfish stock assessments and review process (Agenda Item F.3.c, Supplemental Attachment 2), all of which were relatively minor with the following exceptions. The SSC notes that an attempt has been made to strengthen the role of the GAP and GMT representatives on STAR Panels, but to maintain the separation between science and management with respect to panel membership. That has been accomplished by adding language to the Terms of Reference requiring that STAR Panel reports include a discussion of disagreements between the STAR Panel and the GAP and/or GMT representatives. Likewise, the Stock Assessment Team will be required to report in the assessment document the outcome of consultations with the GAP member regarding the use of various data sources in the stock assessment. In addition, the document was edited to explicitly state that only two full stock assessments should be reviewed at a STAR Panel.

F.3 Notes

The NMFS stock assessment coordinator (Liz Clarke) reported that due to budgetary problems only 2 reviewers could be funded to attend STAR panels, which would necessitate lowering the N+2 rule to N+1. Members of the SSC were not convinced that fewer reviewers was a good idea and recommended that the N+2 rule be maintained. Liz Clarke also indicated that funding issues may impact the aging laboratory at the NWFSC Newport facility.

Yelloweye rockfish is listed as an update in 2007, although there has been a suggestion that a full assessment should be conducted. It is unclear when that could be accomplished (2007 or 2009) and what new data sources could be included in the analysis.

The stock assessment TOR include a requirement to report reference points, which should be based on the proxy values for B_{msy} and F_{msy} (e.g., $B_{40\%}$ and $F_{50\%}$ for rockfish), not values estimated from the spawner-recruit curve. However, it is true that a disconnect exists between invoking this standard and using the spawner-recruit curve in a rebuilding analysis. This discrepancy could benefit from thinking developed at the “ B_0 ” workshop.

Groundfish Management, continued

F.1 Management Specifications for 2007-2008 Fisheries

Under this agenda item, the Scientific and Statistical Committee (SSC) was briefed by (1) Mr. John DeVore (Council Staff) on the final groundfish acceptable biological catches (ABCs) and optimum yields (OYs) for 2007-2008 and on the preliminary revised rebuilding plans; and (2) Dr. Steve Freese (NMFS) and Mr. Merrick Burden (NMFS) on the socioeconomic analysis review. These topics were discussed separately.

(1) Final ABCs and OYs for 2007-2008 and Preliminary Revised Rebuilding Plans

Whenever a “ramp-down” strategy is used for setting the OYs in a rebuilding plan (e.g. yelloweye rockfish), care should be taken to ensure that the resulting annual F s during the ramp-down period are maintained at or below the F_{MSY} overfishing threshold. Tables showing the rebuilding alternatives for each stock (such as those found in Agenda Item F.1.a, Attachment 3) should be amended to display the respective F s and spawning biomass per recruits (SPRs). Also of interest but of lesser importance, the F or catch associated with the 40-10 rule could be added as well. Beyond the criterion of maintaining $F < F_{MSY}$, the SSC views the ramp-down strategy as a Council policy call that entails some increased, but unquantified level of risk.

(2) Socioeconomic Analysis Review

An earlier version of this analysis was reviewed by the SSC in June 2005. Typically, catch reductions are needed in order to rebuild overfished stocks. Rather than simply reducing tonnage proportionally among commercial fishery sectors, the socioeconomic analysis evaluates the trade-off between forgone ex-vessel revenue and reduced bycatch of each overfished stock for various commercial fishery sectors. In addition to this trade-off analysis, the authors provide additional analyses pertaining to the relative impacts of each region and fishing sector on overfished stocks and the relative impacts of restrictions on bycatch of overfished stocks on each port within each region. Given the flexibility of the analysis, it should prove quite useful in the Council’s deliberative processes. The SSC suggests, however, that future work include recreational fisheries data to the extent possible and that if practical, other measure of fishery effects (e.g. personal income impacts) be incorporated into the trade-off analysis.

For an overfished stock, time-to-recovery appears to be the major focus of the fishery management plan amendment. As such, it would be useful to have time-to-recovery as the response variable rather than – or in addition to – overfished species catch, e.g. as in Figures 1-10 in Agenda Item F.1.a, Attachment 4. Further, operationally linking the projection model (used for rebuilding analysis) and the bycatch model would help to better gauge the long-term vs. short-term trade-offs associated with the various management alternatives.

Finally, it was noted that the database used for the socioeconomic analysis reflects catch ratios for various sectors of the fishery that were more or less constant for many years, e.g. the ratio of catch from the open-access vs. limited-entry commercial sectors. However, alternatives in rebuilding plans do not need be constrained to the same ratios. Care should be taken to ensure that the ratios used in rebuilding plans are similar to those used in the socioeconomic analyses.

F.1 Notes

As used in F.1.a Attachment 3, the definition of T_{min} appears to have changed from previous usage. Instead of fixing the reference year (i.e. the year when NMFS declared overfishing), Attachment 3 appears to move the reference year to current time. This latter concept (time from the present needed to rebuild with $F=0$) is useful but should be designated with another term or acronym to avoid confusion with the already well-established T_{min} (time from the reference year needed to rebuild with $F=0$). After consultation with Mr. John DeVore (Council Staff), it appears that while some T_{min} values in Attachment 3 may be incorrect, correct values were used in all rebuilding runs and the bottom-line OYs are correct. Attachment 3 will be revised with labeling that clearly distinguishes the rebuilding time concepts.

It was further noted that T_{max} should to be fixed; otherwise a moving window results and the potential costs of a ramp-down strategy (e.g. longer rebuilding time) will not be fully evident.

Salmon Management

E.3. Methodology Review Process and Preliminary Topic Selection for 2006

The Scientific and Statistical Committee (SSC) met with Mr. Dell Simmons and other members of the Salmon Technical Team (STT) to identify and discuss methodology reviews for 2006. Five items were identified that for potential SSC review this fall. The review is tentatively scheduled for the second week in September 2006.

Chinook and Coho Fishery Regulation Assessment Model Documentation. The Model Evaluation Workgroup (MEW) is completing documentation of the Fishery Regulation Assessment Model (FRAM). The MEW is expected to complete, by the June Council meeting: (1) an overview of FRAM, (2) a detailed FRAM document which contains all algorithms used in the models, (3) a user's manual, and (4) the documentation of the base period data used in the Chinook and Coho FRAM.

Columbia River Ocean Abundance Forecast Methodology. The SSC reviewed a preliminary report in October 2005 and recommended that a preferred model and data set be selected. The MEW has since responded to this request and is preparing an evaluation of the model's performance for the SSC.

Coweeman Exploitation Rate. The Coweeman exploitation rate has been much higher than forecasted in the annual Preseason Report III. The STT has made modifications to correct this bias in its forecast and has requested that the SSC review these modifications.

Oregon Coastal Natural (OCN) Predictor Methodology. A revision has been proposed to the methodology for predicting the OCN ocean abundance.

Klamath Ocean Harvest Model - Contact Rates and Catch Projections. Contact rates for Klamath River fall Chinook were much higher in 2004 and 2005 than previously observed and this stock will significantly constrain several Council salmon fisheries in 2006. An exploration of potential factors that led to the unusual Klamath contact rates in 2004 and 2005 could help prevent a recurrence.

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.

SSC Administrative Matters

A.6 Ecosystem-based management subcommittee planning discussion

At the March SSC meeting, the SSC decided to rename its marine reserves subcommittee the ecosystem-based management subcommittee. This change was implemented to broaden the purview of the subcommittee in anticipation of a wider range of ecosystem-related issues that are likely to come before the SSC (and the Council). Steve Berkeley volunteered to chair the newly-renamed subcommittee.

The SSC discussed the potential role of the subcommittee, particularly in increasing the Council's and advisory bodies' awareness of ecosystem issues. The ecosystem approach to management is a top NOAA priority, and draft versions of the Magnuson-Stevens reauthorization act contain provisions for more extensive consideration of ecosystem impacts in fisheries management. The following is a summary of SSC discussion on this issue:

- *Most of the other regional councils are much further along than the Pacific Council in developing an ecosystem-based approach to fisheries management. Four regional councils (primarily on the East Coast) have received funding to develop demonstration Fisheries Ecosystem Plans (FEP).*
- *The SSC examined the FMPs for the Gulf of Alaska and the Bering Sea prepared for the North Pacific Council. The SSC also examined the Report to Congress on Ecosystem-Based Fishery Management. The SSC reviewed the steps in developing of a Fishery Ecosystem Plan recommended by the Report to Congress. Although some elements of an FEP for the Council-managed fisheries already exist (e.g., a food web model), preparing a complete FEP would require significant effort, and would not be possible using available resources. At present, there is no mandate for the Council to prepare a FEP.*

- *There was concern that the Report to Congress on Ecosystem-Based Fishery Management (published in 1999) may already be out of date, given research and policy advances in the intervening years, particularly in the development of ecosystem indicators. There is an effort underway by another select panel to provide advice to NOAA on implementing an ecosystem approach, chaired by Dr David Fluharty. The panel report is expected to be published shortly.*
- *Annual ecosystem status reports are included in the North Pacific SAFE, and are used to highlight ecosystem issues. Nevertheless, managers and scientific advisors are still struggling with how to use this information in decision-making.*
- *Although the Pacific Council has not been comprehensive in applying an ecosystem approach, in some areas the Council has been in the forefront. Harvest control rules for coastal pelagic species explicitly take into account the foraging needs of other species in the ecosystem, and are designed to perform well in the face of environmental variability. The Pacific Council recently adopted an Essential Fish Habitat (EFH) amendment that provides extensive protection to sensitive habitats. The Council has been deeply involved in marine reserve issues in Channel Island National Marine Sanctuary, and recently instituted a ban on krill harvest to protect forage for council-managed fish stocks. All of these are widely recognized as components of the ecosystem approach.*
- *The State of California is moving forward with an ecosystem approach in its nearshore management plan, which includes precautionary harvest limits and a network of marine reserves.*
- *The SSC considered that one the most promising avenues for increasing the awareness of ecosystem issues is by means of annual (or biennial) “state of the ecosystem” reports for the California Current ecosystem. NMFS scientists doing ecosystem and ocean/climate research are not currently involved in the Council process, and have keen interest in demonstrating the relevance of their research to NOAA’s goal to further the ecosystem approach to management. Therefore, it is unlikely that preparation of an annual ecosystem report would require significant Council resources.*
- *Council staff suggested that the September Council agenda could accommodate a session on ecosystem-based fisheries management to give the subcommittee guidance on how best to proceed. Should the Council want to further pursue ecosystem-based fishery management, a formal request to NMFS or NOAA for an ecosystem status report would help to initiate planning and align resources.*

A.7 Research and Data Needs - 2006 Council Process

- 1) *Mike Burner will compile recent research and data needs items from council documents (e.g. groundfish STAR Panel reports) for SSC review at the June council meeting.*
- 2) *The respective SSC subcommittees will review the existing Research and Data Needs document, editing the content and structure for current relevancy (mainly to delete items no longer applicable) and will bring the edited document to the June council meeting for SSC discussion.*

- 3) *At the June council meeting, the SSC will review the content and structure of the Research and Data needs document, in light of the work completed under items 1 and 2, above.*
- 4) *After the June SSC meeting discussion, a revised draft "straw-man" document will be forwarded to the other council advisory bodies for input and review.*

After the SSC meeting Mr. Burner discussed the matter with Council staff and emailed a revised approach as follows:

It would be advantageous to complete the document in time for December distribution. This would allow the document to potentially serve as Council guidance on both near-term and long-term budget considerations. It would be better to revise and streamline the document for a December delivery than to work on a document with a broader scope for completion in the spring of 2007. To save time, perhaps the scope of the document could be changed from a comprehensive review of all research and data needs to a listing of the highest priority needs. Also, the SSC suggestion to bring pertinent sections of the economic data plan document into a single research and data needs document could be a good one, but with the short time frame, it may be better to revise that document in the next cycle. A new section on HMS will be needed.

- *SSC subcommittee chairs function as (or identify) lead roles to review the existing document for relevant research and data needs with the goal of identifying the highest priority needs from each FMP as well as sections for ecosystem issues and economics. I would ask that SSC members broaden their search from the existing document in this endeavor.*
- *I will locate and summarize what existing sources I can for the June SSC mailing.*
- *Available draft documents and/or priority lists to be submitted to me by May 24 for the June SSC mailing.*
- *June SSC meeting discussions to determine the content and format of the draft or straw-man document.*
- *After June Council staff will compile the high priority needs and document suggestions into a first draft for distribution and review by the Council and advisory bodies in September.*
- *Final advisory statements and Council action would occur at the November meeting.*
- *A final (if abbreviated) document would be distributed as appropriate in December.*
- *Anticipate a more complete process in the next "science off-year", 2008.*

Public Comment

None.

Adjournment: The SSC adjourned at approximately 4 p.m., Tuesday, April 4, 2006.

PFMC
05/23/06

SSC Subcommittee Assignments for 2006

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

Bold denotes Subcommittee Chairperson