

SUMMARY MINUTES

Scientific and Statistical Committee

Pacific Fishery Management Council
Doubletree Hotel - Columbia River
Umatilla Room
1401 N Hayden Island Drive
Portland, OR 97217
June 26 - 28, 2000

Call to Order

The meeting was called to order at 8 A.M. by Chair Cynthia Thomson. Dr. Don McIsaac, Executive Director, provided some opening comments and noted for the Scientific and Statistical Committee (SSC) the key issues where the Council would look to the SSC for guidance: Default Harvest Rate Policy, Rebuilding Plans for Canary Rockfish and Cowcod, Amendment 9 to the Coastal Pelagic Species Fishery Management Plan, Pacific Mackerel Stock Assessment and Harvest Guideline, Research and Data Needs Document, and Process for Technical Review and Monitoring of Rebuilding Plans. Dr. McIsaac also noted that SSC input on the groundfish strategic plan and marine reserves documents would be important for the Council.

The agenda was approved.

Members in Attendance

Mr. Alan Byrne, Idaho Department of Fish and Game, Nampa, ID
Dr. Ramon Conser, National Marine Fisheries Service, La Jolla, CA
Dr. Robert Francis, University of Washington, Seattle, WA
Dr. Susan Hanna, Oregon State University, Corvallis, OR
Dr. Kevin Hill, California Department of Fish and Game, La Jolla, CA
Mr. Tom Jagielo, Washington Department of Fish and Wildlife, Olympia, WA
Dr. Gary Stauffer, National Marine Fisheries Service, Seattle, WA
Dr. Gilbert Sylvia, Hatfield Marine Science Center, Newport, OR
Ms. Cynthia Thomson, National Marine Fisheries Service, Santa Cruz, CA
Dr. Shijie Zhou, Oregon Department of Fish and Wildlife, Portland, OR

Members Absent

Mr. Robert Conrad, Northwest Indian Fisheries Commission, Olympia, WA
Dr. Peter Lawson, National Marine Fisheries Service, Newport, OR
Dr. Stephen Ralston, National Marine Fisheries Service, Tiburon, CA
Dr. Richard Young, Crescent City, CA

Scientific and Statistical Committee Comments to the Council

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

Salmon Management

Clarification of Methodological Bias

At the Council's April meeting, the SSC informed the Council it had received comment on possible biases in the new chinook Fishery Regulation Assessment Model (FRAM). During comment, three specific areas of concern were identified, and the SSC noted these areas in its report to the Council. The purpose of noting the specific areas of concern was to ensure that when the model is reviewed the concerns are evaluated. To this point, the SSC has not received enough information to evaluate whether or not the concerns are warranted. In its comments to the Council, the SSC noted a review of the new model should include, but not be limited to, these items. The SSC is aware the Council deals regularly with issues of both the actual performance of scientific models and the public perception of the performance of the models. The SSC's comments were intended to ensure both these aspects of model performance are addressed.

Salmon Methodology Reviews

During the April 2000 Council meeting, the SSC identified a list of harvest and abundance predictor models for potential review. The SSC is prepared to begin reviewing models this fall, as prioritized by the Council. The documentation of the models selected for initial review should be received by September 29, 2000 to ensure the results of the review are available to the Council at the November 2000 meeting.

The Council sent a letter on June 2, 2000 to tribal, state, and federal agencies asking them to prioritize the preseason salmon abundance forecast methodologies for SSC review. The SSC encourages agencies to respond to this letter. The response from Mr. William Robinson, National Marine Fisheries Service (NMFS), contained the type of information requested by the Council.

Marine Reserves

The SSC was briefed by Mr. Jim Seger of Council staff and Dr. Richard Parrish of the National Marine Fisheries Service on the Draft Phase I Technical Analysis Report "Marine Reserves to Supplement Management of West Coast Groundfish Resources" (Attachment C.1. a.).

The technical report is a conceptual evaluation of the potential role for marine reserves in West Coast fishery management. The authors have responded to many of the review comments and questions raised by the SSC in its September 1999 statement and have developed a comprehensive treatment of the issues surrounding marine reserves.

The report raises several important points about marine reserves and fishery management:

There is a great deal of uncertainty about how marine reserves will contribute to West Coast fishery management.

Because of this uncertainty, monitoring and evaluating the impact of marine reserves will be an important component of their use.

The Council has authority to establish marine reserves for only those species managed under an FMP.

The Council has direct control over fishing, but will have limited consultative authority over nonfishing factors that will affect the performance of marine reserves.

Council Action

The SSC finds the objectives and options contained in the Phase I report, although very broad, are sufficient for a conceptual review. We recommend the Council adopt the report for public review. We also recommend the Council proceed to Phase II to analyze options.

Phase II – Considerations

The SSC identified a number of additional issues that will be important to consider if the Council decides to proceed to Phase II. These issues pertain to the objectives and options for marine reserves and are presented as guidance to the authors of the analysis documents.

1. Objectives

The objectives for marine reserves will determine their scale and the choice of regulations controlling their use. For example, reserves established to preserve unique areas of habitat will be smaller than those established to achieve stock rebuilding or broad ecosystem benefits for multiple species.

To track progress toward meeting objectives, marine reserves will have to be monitored under controlled experimental conditions. Because marine reserves will not produce fishery-dependent data (catch and catch-at-age), fishery-independent surveys will have to be conducted in closed areas. If marine reserves are a significant component of a stock rebuilding plan, evaluation may be required at two-year intervals.

Monitoring and evaluation will require enhanced data collection and additional staff time. The cost of

funding these activities should be explicitly considered in the evaluation of management options. The environment of limited funding means that there will be tradeoffs between alternative actions, for example monitoring marine reserves versus enhanced data collection to support "status quo" activities such as stock assessments. The issue is where the biggest payoff is likely to be.

2. Development of Options

Allocation issues need to be addressed explicitly when various options are developed and analyzed. The scale, siting, and rules governing marine reserves allocate fish and fishing opportunities among recreational and commercial fisheries, gear types, and fishing communities.

The impact of marine reserves will not be measurable in the short term. The relatively rapid recovery rates observed for haddock and cod in New England should not be expected for West Coast rockfish, because the species have very different life histories. Marine reserves will require a long-term commitment of management, enforcement, and research.

It is important to acknowledge marine reserves will not substitute for fishery regulations outside the reserve area. Additional fishing restrictions may be required outside the reserve area to prevent concentrations of fishing effort that could lead to localized depletions, habitat damage, and conflicts.

Defining more specific objectives for marine reserves will help analysts conduct a comprehensive comparison of alternative designs, locations, and regulations. The analysis of options should specifically address the objectives and should include a comparison of the cost effectiveness of marine reserves versus alternative methods (including combinations of marine reserves and alternative methods) of achieving the objectives. Alternatives include other management tools as well as doing a better job at the "status quo."

Groundfish Management

Stock Assessment Priorities for 2001

Ms. Cyreis Schmitt, NMFS, presented a list of species proposed for stock assessment in 2001. The stocks proposed for assessment are: sablefish, shortspine thornyhead, black rockfish (south), silvergrey, Dover sole, and cabezon. Depending on available staff resources yelloweye and the "remaining" rockfishes complex may be assessed. The SSC views the assessment for sablefish, shortspine thornyhead, and Dover sole the most important. Given the information made available to the SSC, we were unable to rank the relative importance of the remaining five stocks. The SSC notes the scheduled 2001 assessment of arrowtooth, English sole, blackgill, chilipepper, longspine thornyhead, and shortbelly were postponed. The SSC recommends criteria be developed to select stocks for assessment and the assessment schedule be planned several years in advance. A longer lead time will allow agencies to prepare databases and collect information for the assessment. Useful assessment criteria the SSC discussed were: the stock's value to the fishery, a weak stock that may constrain fisheries in mixed stock fishery, and compelling evidence that a stock is in decline (or increase).

The SSC disagrees with the recommendation to delay the Pacific whiting assessment in 2002. The delay will prevent the Council from using the 2001 triennial survey results until it sets quotas for the 2003 fishery. The SSC recommends that the 2002 assessment begin when data from the 2001 triennial survey become available, so the Council can use the results when setting quotas for the 2002 fishery. In 1999, this accelerated schedule was compatible with the Canadian system allowing a joint assessment and review.

Process for Technical Review and Monitoring of Rebuilding Plans

Ms. Cyreis Schmitt of NMFS briefed the SSC on a preliminary schedule and process for technical review and monitoring of groundfish stock rebuilding plans. Ms. Schmitt requested the SSC comment on proposed process and asked for further SSC contribution to development and implementation.

In reviewing the proposed schedule, the SSC suggested the timeline be modified to expedite preparation of rebuilding analyses soon after it is apparent a stock is in an overfished condition, rather than waiting for NMFS to declare the stock overfished the following January. It is probably not feasible to devote adequate time to rebuilding analyses during the regular one-week Stock Assessment Review (STAR) Panel review of the stock assessment. In order to maintain the momentum of the modeling process, the Council should direct Stock Assessment Teams (STAT) teams to draft rebuilding analyses immediately following completion of the assessments (i.e., mid to late summer) for review at the September Council meeting. The Council should direct the Terms of Reference be modified to reflect this procedure.

The SSC will take lead responsibility for modifying the STAT/STAR Terms of Reference to include guidance for rebuilding plans. The revised documents will include methodological standards (parameters, analyses, and uncertainties), triggers for future full assessment, an outline for the document, and schedule for completion. The SSC's Groundfish Subcommittee will begin drafting the Terms of Reference after the September 2000 meeting for review at the March 2001 Council meeting.

This year, and potentially next year, the SSC should plan to provide review of draft rebuilding analyses. For the long term, the Council should consider whether to incorporate review of rebuilding analyses into the current STAR process or to develop an alternative review process. One such alternative could include a separate panel dedicated to review of all rebuilding analyses in any given year. This may allow for more standardized treatment of the process, avoiding potential implementation delays due to technical errors or other inadequacies. Phase-in of the chosen review process could potentially begin as early as March 2001, but Council scheduling and staff availability must also be considered. We would anticipate, under any review process, drafting of the full rebuilding plan would follow the overfishing declaration by NMFS in January.

Once a stock is in rebuilding mode, the rebuilding process can be monitored using a combination of annual stock assessment and fishery evaluation (SAFE) document updates on recent catch and biological data, in combination with full stock assessments conducted at three year intervals. The SSC suggests annual SAFE reports include a thorough description of any new data collection efforts, data improvements, and research and data needs.

Default Maximum Sustainable Yield (MSY) Fishing Rate within the Harvest Rate Policy

The SSC reviewed the Groundfish Harvest Rate Policy Workshop Report (Attachment D.13.a.). The report (1) summarizes the scientific and management background of the harvest proxy issue, (2) explains some areas of common confusion, and (3) recommends default, risk-neutral proxies for F_{MSY} . The SSC fully agrees with the findings and recommendations of the Report, and recommends that the Council adopt the following risk-neutral proxies of F_{MSY} :

Sebastes and Sebastolobus	F50%
Pacific whiting	F40%
Flatfishes	F40%
Other groundfish	F45%
"Remaining Rockfish"	0.75 M

In addition, the SSC prepared a report, Supplemental SSC Report D.13.(2)., that summarizes the workshop's findings, discusses the findings with respect to precautionary management, and provides some implementation recommendations to the Council. This SSC report, designed to complement the workshop report, also addresses the Council's request for clarification on where and when precautionary adjustments are made in the stock assessment/management process as well as background information for many of the Council's questions to the SSC regarding F_{MSY} harvest rate considerations.

The Council's specific questions (Attachment D.13.b.) are addressed below:

1. Does the SSC agree with the findings/recommendations of the Panel?

The SSC fully agrees with the findings and recommendations of the Panel.

■ *Does the SSC agree with the point estimates of F_{MSY} ?*

Yes. However, it is important to keep in mind these are not point estimates of F_{MSY} for a single species, but rather proxies for species groups. See SSC Report for more detail.

■ *Are these estimated values risk-neutral (e.g., is there an equal probability that the true value is above or below the point estimate)?*

Yes. The terms of reference for the Panel specifically called for the Panel to develop risk-neutral proxies for species categories.

■ *Can one quantitatively describe the variability and uncertainty distribution around the point estimates? If so, please describe.*

No, as described above, these are not point estimates in the statistical sense for a particular species (i.e., they are not accompanied by formal statistical distributions and error bars). However, the workshop Panel and the SSC have recommend that for the relatively data-rich stock assessments, F_{MSY} estimates be derived as a part of the assessment instead of using proxies. The Council should expect to see such statistical estimates in the near future, accompanied by quantitative measures of variability and uncertainty.

2. *How should the recommendations be implemented?*

The SSC recognizes the implementation difficulties involved in constructing management measures that conform to the new FMSY proxies. The SSC suggests it may be reasonable to implement the new proxies for some stocks immediately while delaying implementation for others. The following criteria is suggested:

- Stocks for which current spawning stock biomass (SSB) is less than B40%: implement now (i.e., Option 2a as described in Attachment D.13.b.).
- Stocks for which current SSB is greater than or equal to B40%: implement after the next stock assessment (i.e., Option 2c as described in Attachment D.13.b.)

3. *What precautionary adjustments have already been taken and what are additional quantitatively-based options?*

■ *What precautionary adjustments are already taken in the management process?*

All components of the stock assessment process are designed to be risk-neutral (i.e., no precautionary adjustments are made during the process of estimating current stock size, fishing mortality rates, etc.) (see STAR Panel and STAT Team terms of reference). The Council's determination of acceptable biological catch (ABC) is also risk-neutral. Some aspects of the precautionary approach are incorporated into the Council's optimum yield (OY) determination, e.g., application of the "40-10" control rule. Other aspects of the precautionary approach, involving additional precautionary adjustment when uncertainty is large, are not generally a part of Council management, but may be in the future (see Supplemental SSC Report D.13.(2)., page 3 for suggestions on moving the process in this direction).

■ *In the third paragraph of the attached April SSC statement, two reasons are cited to warrant precaution in applying target F values for the fishery. For number 1, is there information on the range of average productivity for species within any complex managed by the Council? For number 2, can the chance of exceeding, and conversely not reaching, the true F_{MSY} be quantitatively or qualitatively be assessed?*

The paragraph referenced from the April SSC statement was only intended to clarify for the Council that the Workshop Panel's F_{MSY} proxies were risk-neutral, and did not reflect any precautionary adjustment. The Council's questions, immediately above, are addressed under Item 1 on page 2 of this report.

4. *Definitions of key words related to default harvest rates.*

See the glossary in Appendix C of Supplemental SSC Report D.13.(2).

Canary Rockfish Rebuilding Plan Development

Dr. Richard Methot of NMFS presented preliminary findings from a working report which estimates rebuilding rates for canary rockfish in the northern area (Columbia and U.S. Vancouver International North Pacific Fishery Commission areas). The SSC provided Dr. Methot with suggestions we would like to see incorporated in the analysis when we re-evaluate it in September. Although the current analysis is preliminary, it is, nevertheless, clear that rebuilding will take decades, even if catches are negligible.

SSC Comments on the Preliminary Canary Rockfish Rebuilding Analysis

July 2000

At the June SSC meeting, Dr. Richard Methot presented preliminary findings from a working report "Rebuilding Analysis for Canary Rockfish" by Methot and Crone (dated 6/19/2000), which estimates rebuilding rates for canary rockfish in the northern area (Columbia and U.S. Vancouver INPFC areas). Consistent with the 1999 canary rockfish stock assessment, the rebuilding analysis considers two equally-likely alternative models to explain the low incidence of old females in the fishery samples. Namely, that older females are not commonly taken by the fishery due to [1] increasing natural mortality for older females with asymptotic fishery selectivity; or [2] due to dome shaped selectivity for females with constant natural mortality. However, the rebuilding analysis departs from the 1999 STAR Panel approved canary assessment in two ways:

[i] It was discovered that the canary maturity schedule had been incorrectly specified in the assessment, and this was corrected for the rebuilding analysis.

[ii] The 1999 stock assessment made no assumptions regarding a spawner-recruit relationship for canary (i.e. the assessment model did not employ any spawner-recruit relationship in estimating stock condition). In the rebuilding analysis, however, a Beverton-Holt spawner-recruit relationship was assumed to be appropriate for canary, the assessment model was modified to include the relationship, and the assessment model parameters were re-estimated.

While [i], above, appears to be reasonable, the SSC is concerned that [ii], above, results in a situation where the foundation for the rebuilding plan (i.e. the canary stock condition on Jan. 1, 1999) differs from the foundation established by the 1999 STAR Panel approved canary assessment. The SSC strongly recommends that the rebuilding analysis begin with the foundation established by the 1999 STAR Panel approved assessment (with allowance for the corrected maturity schedule only).

Separate and apart from the issue of the appropriate foundation for the rebuilding analysis (above), the SSC notes that the stock projections used in canary rebuilding analysis rely heavily on recruitment levels generated by a Beverton-Holt stock-recruitment relationship rather than recruitment levels or R/SSB ratios estimated by the 1999 assessment model. This is a departure from the methods used in the current Council approved west coast groundfish rebuilding plans, i.e. the rebuilding plans for lingcod, bocaccio, and Pacific ocean perch. While the SSC encourages rebuilding analysts to explore alternative methods, greater justification and documentation is necessary before these alternatives can be evaluated. In particular, comparative analysis with the more standard approaches and should be an integral part of the analysis and its presentation. In addition, it may be useful to compare rebuilding scenarios under "low productivity" versus "high productivity" regimes by resampling recruits (as estimated in the assessment) from most recent years (1987-97 "pessimistic") relative to recruits from the early years (1967-77 "optimistic").

The SSC looks forward to reviewing a completed analysis that includes thorough documentation, a foundation consistent with the 1999 STAR Panel approved assessment, a rebuilding analysis using stock size and recruitment estimates from the assessment model, and a rebuilding analysis for canary rockfish in the southern region.

Cowcod Rebuilding Plan Development

The SSC reviewed a draft cowcod rebuilding analysis prepared by Dr. John Butler of NMFS and Mr. Tom Barnes of the California Department of Fish and Game (CDFG). The SSC provided advice to the authors regarding changes to the analysis that we would like to see in September. The current draft analysis indicates rebuilding will take many decades, even with very small catches.

SSC Comments on the Preliminary Cowcod Rebuilding Analysis

August 2000

At the June SSC meeting, Dr. John Butler presented preliminary findings from a working report "Cowcod Rebuilding" by Butler and Barnes (dated 6/14/2000), which estimates rebuilding rates for cowcod in the INPFC Conception area. The cowcod rebuilding analysis used the 1999 STAR Panel approved assessment (Butler et al. 1999) as the foundation for population projections into future years. The Butler et al. assessment indicated that the 1998 spawning stock biomass had fallen below 10% of the unfished state. Consistent with the assessment results, the Council imposed a significant reduction in the harvest rate for 2000. Despite a significant catch reduction in 2000 (and future years), a lengthy rebuilding period is anticipated for cowcod due to its lengthy mean generation time (37 y), slow growth rate, and limited reproduction potential in the near term given the current population demographics.

Overall the SSC found the cowcod rebuilding analysis to be well done and concurred with the general conclusion that even with small annual catches, the cowcod rebuilding period will be lengthy. However, the SSC suggests that a more complete description of some aspects of the approach and better rationale for some decisions made in conducting the analysis would provide readers of the report with a better understanding of the cowcod rebuilding analysis. More specifically:

[1] A delay-difference model was used for the stock assessment but surplus production dynamics were employed for the projections. The rationale for the change was discussed to the SSC's satisfaction during the June meeting, but needs to be provided in the report as well.

[2] The projections were based on logistic population growth, assuming the Malthusian rate constant is stochastic, with annual variations drawn from a lognormal distribution. However, the observed distribution of "r" values shows a high degree of autocorrelation. The SSC suggested that the autocorrelation could be accounted for explicitly in the projections. Discussions at the June meeting indicated that this had been done in trial runs and had no effect on the median time to rebuild or on the probability of success. But again, these results should be described in the report.

[3] In the Mean Generation Time section of the report, it is stated that “we used 75 y as the maximum age for cowcod and estimated mean generation time at 37 yr.” Results presented in Figure 2, on the other hand, show that spawning output calculations were carried out to at least an age of 100 yr. Presumably, mean generation time was calculated as the weighted mean age of spawning from the distribution shown in Figure 2, in which case the maximum age must have been greater than 75 yr. It would clarify matters if the actual life table that was used to create Figure 2 was included in the report.

[4] For each of the 3 sub-tables in Table 1, it would be helpful to provide an additional table entry showing the F, Catch, and Median Time associated with a 60% probability of success. As an approximation, even a line entry based on linear interpolation would be useful.

[5] In Introduction paragraph on the first page, it is stated that “Fishable biomass is similar to spawning biomass because cowcod are recruited to the fishery at the size of first maturity.” However, data presented in the 1999 stock assessment (Butler et al., Table 11) clearly show the A50 associated with the maturity ogive to be some 3-5 years greater than the A50 associated with the selectivity ogive. Discussion during the June SSC meeting indicated that while this is true, the use of a delay-difference model, in which only two age groups are modeled – recruits and everything else – does not allow for any better resolution than fishable biomass. Given the demographic limitations of the model, it is perhaps better to say that cowcod spawning biomass will always be somewhat less than fishable biomass but for the purposes of the rebuilding analysis, they are assumed to be approximately equal.

The SSC looks forward to reviewing the final cowcod rebuilding analysis report. However for the purposes of exploring various management options, the Table 1 estimates of allowable catches, median rebuilding times, and probability of successful rebuilding within the maximum allowable time period for various levels of the fishing mortality rate (selected by the Council) can be used by the Council’s Ad-hoc Allocation Committee.

Strategic Plan

Ms. Debra Nudelman briefed the SSC on the draft groundfish strategic plan. SSC members also attended the Ad-Hoc Groundfish Strategic Plan Development Committee’s public briefing on Tuesday evening.

In the evening session, Ms. Nudelman indicated “the purpose of the strategic plan is to guide the future management of the groundfish fishery, including the development of plan amendments, regulations and other actions as needed.” The SSC recommends this critical point appear in both the Executive Summary and the introductory section of the plan. In addition, to highlight the importance of maintaining this explicit linkage between the strategic plan and future groundfish management actions, the SSC recommends an additional bullet be added to the section of the plan entitled “Strategic Plan Goals for Council Process” (page 16 of the Executive Summary and page 66 of the Draft Strategic Plan), as follows:

“To ensure all plan amendments, regulations, and other management actions considered by the Council are routinely evaluated in terms of progress toward achieving the Strategic Plan.”

The draft strategic plan is a thoughtful and well-written document. It provides explicit goals and includes a comprehensive range of issues and strategies for groundfish management. In terms of scope and general content, the SSC considers the document to be ready for public review. The Ad-Hoc Groundfish Strategic Plan Development Committee indicated in the evening session it will be soliciting additional input regarding the plan from Council advisory committees, as well as the public, this summer. The SSC intends to provide more detailed comments regarding the plan within that time frame.

Council Administrative Matters

Research and Data Needs Document

This item was delayed until the November meeting.

Coastal Pelagic Species Management

Pacific Mackerel Harvest Guideline and Other Specifications for 2001

Dr. Kevin Hill of CDFG presented the SSC with a summary of the status of the Pacific mackerel resource in 1999 and recommendations for the fishery in 2000-2001.

Evidence from model estimates of biomass indicate the population is in a downward trend. Recruitments have been low for nearly 20 years, and the downward trend in abundance is expected to continue as long as present environmental conditions persist. Harvest guidelines (HGs) were derived from a formula specified in the coastal pelagic species (CPS) fishery management plan. If the formula performs as expected, the HG will allow for stock rebuilding, depending on environmental conditions. Based on our summary review, the SSC supports the Coastal Pelagic Species Management Team's (CPSMT) recommendation regarding the 2000-2001 HG.

The SSC also discussed the utility of establishing a formal outside review process for CPS stock assessments. The SSC recommends the agencies and CPSMT consider developing a set of options that describe how such a review process could be implemented. The process would not necessarily need to be modeled after the relatively intensive STAR Panel process used for groundfish. The process might, for example, involve the periodic assembly of an outside review panel to review modeling procedures for multiple CPS species at the same time, rather than an annual stock assessment review cycle.

Status of CPS Fishery Management Plan (FMP) Amendments for Bycatch and Market Squid MSY, Acceptable Biological Catch, and Tribal Fishing Rights

Mr. Jim Morgan of NMFS, Southwest Region, briefed the SSC on Amendment 9 to the Coastal Pelagic Species Fishery Management Plan. Ms. Marcie Yaremko of the CDFG provided the SSC with a detailed briefing on Section 5 of the amendment pertaining to ABC and MSY for market squid. The SSC discussion focused largely on Section 5.

In March 2000, the SSC recommended the CPSMT consider expanding the squid MSY proxy to reflect the presence of squid in unfished spawning areas. At this meeting, the SSC was provided with a number of MSY proxy options that incorporate this expansion. The geographic expansion was based on a number of assumptions (e.g., equal productivity among block areas, limited geographic migration of squid) that the SSC could not definitively evaluate on the basis of available information. In March 2000, the SSC also supported the CPSMT's recommendation to set ABC equal to MSY. The SSC's March recommendations regarding geographic expansion of the MSY proxy and setting ABC equal to MSY both presumed the existence of management controls such as squid refugia areas. The SSC recommends the CPSMT include information regarding existing squid management measures (including refugia areas) in the current draft document before it goes out for public review.

In addition to the ABC=MSY option, Amendment 9 includes three other options that involve setting ABC less than the MSY proxy. Because squid are short-lived and highly variable in abundance from one year to the next, the SSC does not consider it appropriate to base annual ABC on MSY. However, the SSC understands the need for the CPSMT to do this to meet regulatory requirements.

The CPSMT has made a credible effort to deal with the information and regulatory constraints that it faced in addressing issues related to MSY and ABC. The SSC considers Amendment 9 to include a reasonable range of ABC and MSY options for public review.

Administrative and Other Matters

Review of Halibut Bycatch Estimates

The SSC at the June meeting reviewed the work in progress being developed by NMFS, Northwest Fisheries Science Center (NWFSC) to develop meaningful strata for a new estimator of halibut bycatch mortality estimate for International Pacific Halibut Commission (IPHC) management area 2C. This new estimator will use halibut interception rates for the bottom trawl fishery from the new database generated by the new Oregon observer project. The estimator will be modeled after the model developed by Pikitch et al. (1998). Mr. John Wallace and Ms. Cyreis Schmitt from FRAM/NWFSC presented their results of their stratification evaluation using data from the Oregon observer data and the Enhanced Data Cooperative Program. The following comments attempt to summarize the SSC discussion with Mr. Wallace and Ms. Schmitt for their consideration.

The purposes of updating the estimates of halibut bycatch interception rates is two fold. First, an updated estimate of halibut bycatch mortality using the most recent changes in the amount effort resulting from the reductions in ABCs, trip limits, and limited entry permits is needed for the management and quota setting by IPHC for halibut in Area 2A using the new interception rates from the Oregon observer program. Second, a comparison is needed of interception rates from the mid-1980s updated for changes in halibut densities using the NMFS triennial bottom trawl survey with the rates estimated from the new observer data. This later is important for evaluating the mortality estimates for the years in the early to mid-1990s.

It would be nice to have the new observer data stratified also by the same categories as the Pikitch analysis so that direct comparison can be made for the two data sets as modified by the results of the triennial survey.

With respect to the new strata definitions, SSC members expressed the follow thoughts:

- Latitudinal strata boundaries seem appropriate. One idea would be to further collapse the data into few latitudinal strata by combining the two northern areas or the 2 areas between 42.6 and 47.6 deg. The first option would approximately double the sample size in the northern strata. A second idea would be to end the southern boundary at the Oregon/California border. The concern here is whether the California trawl effort data will be available in time for updating the bycatch mortality by the time the report is to delivered to the Commission. This problem will also result in an underestimate of the total effort for the southern Oregon coast at least. The potential bias though should be small given the low density of halibut in these southern areas.*
- Depth strata boundaries. The 100 fathom boundary may be too shallow based on the data in Figure 5. A better value might be more like 120 fathoms. The main disadvantage of this is that the 100 fathom curve is a pretty good proxy for the demarcation of shelf and slope.*
- Seasonal strata boundaries are supported by the data. It is surprising that the interception rates for January thru March have a similar magnitude as the summer months. Halibut are suppose to be undergoing spawning on more northerly spawning beds at that time. Would the winter interceptions be primarily juvenile halibut or is there spawning taking place off Oregon and Washington?*
- Stratification on arrowtooth flounder catch rates could be problematic for year previous to the Oregon observer sampling and future years. The catch of arrowtooth flounder is likely correlated with halibut, because of the strongly overlapping distribution during the non-spawning months and because their highest densities coincide off the northern Washington Coast. The Pikitch analysis stratified by 3 or 4 fishing strategies. The arrowtooth strata and the depth strata replace the Pikitch strategies strata. The concern is will the relationship hold into the future or apply to the past. What happens to the correlation if arrowtooth densities change differently than halibut densities? Do arrowtooth have the same inshore distribution as halibut? Can the arrowtooth strata be dropped for areas off Oregon? Again the concern is too many strata result in too small of a sample size per cell so that distribution of halibut interception rates are highly skewed resulting in asymmetrical confidence intervals.*

- *Whatever strata categories are selected, they must (obviously) be coordinated with Mr. Mark Saelens of ODFW so that his summaries of trawl effort are consistent with your strata.*

Public Comment

Dr. Joshua Sladek-Nowlis, Center for Marine Conservation, testified about the CPSMT approach for determining an MSY proxy and ABC for market squid. He provided an alternative means to determine MSY and ABC.

Adjournment

The SSC adjourned at approximately 3:30 P.M., Wednesday, June 28, 2000.

PFMC

08/25/00

