North Pacific Fishery Management Council

Richard B. Lauber, Chairman
Clarence G. Pautzke, Executive Director

605 West 4th Avenue
Anchorage, Alaska 99501

Mailing Address: P.O. Box 103136
Anchorage, Alaska 99510

Telephone: (907) 271-2809
FAX: (907) 271-2817

Certified: Mark Benduka
Date: 4-7-94

MINUTES
Scientific and Statistical Committee
January 10-12, 1994

The Scientific and Statistical Committee of the North Pacific Fishery Management Council met January 10-12, 1994 at the Anchorage Hilton. All members were present except Dan Huppert and Marc Miller:

Terrance Quinn, Chair	Keith Criddle, Vice-Chair
Doug Eggers	Susan Hills
Rich Marasco	Phil Rigby
Albert Tyler	Jack Tagart, Admin. Assistant
Harold Weeks	Jim Balsiger, Alternate for Aron

ELECTION OF OFFICERS

Dr. Terry Quinn was elected to his fourth term as Chair/Co-chair and Dr. Keith Criddle to his first term as Vice-Chair.

B-1(b) STELLER SEA LIONS

The objective of the PVA model for Steller sea lions was to determine a time frame for the population to reach a defined extinction level of 10 animals, given the current rate of decline. The model is based on exponential decline functions and as such does not include such elements as feedback mechanisms, changing environmental conditions or density dependent relationships, which might alter the trend. The model was not constructed to predict future population levels, but only to project current population trends into the future. Until scientists can better determine whether the current rate of decline will continue in the future, future population trends cannot be forecast with confidence.

C-1(a) COMPREHENSIVE RATIONALIZATION PROGRAM (CRP)

Council staff presented a review of progress on the CRP analysis. Matt Berman assisted council staff in presenting an update on progress in the development of the linear programming (LP) model to be used in the CRP analysis. The SSC also heard public testimony concerning the CRP from David Allison, Paul Seaton, Bob Childers, Scott Matulich, John Gauvin, Dave Fraser, Paul McGregor, Laura

Jensen, Mark Lundsten, Thorn Smith, Vince Curry, Rob Gudmundson, Arni Thomson, and Bob Mikol. Our comments are organized to correspond with the four action items identified under agenda item C-1(a).

1. Using Retained vs. Total Catch as a Basis for Allocating Quota Shares

Issues related to retained vs. total catch are discussed relevant to two different objectives. One objective is to distribute the initial allocation of quota share (QS) in such a way that it allows prosecution of the fisheries while minimizing the need to sell or trade shares at the onset of ITQ management. This objective (objective 1) is motivated by a desire to constrain costs to prosecute the current target fisheries. An alternative objective (objective 2) is to fairly and equitably determine the actual total catch history of individual vessels, thus providing all participants full credit for all fishery removals over the qualifying time periods whatever they may be.

The SSC believes that quota shares should be administered on the basis of total catch rather than retained catch. However, there are allocational aspects to any initial distribution if total catch is used as the basis for the allocation. The catch records for various sectors of the fishery are variably precise with respect to total catch. All sectors, with the possible exceptions of joint ventures, have records of retained catch. Only the observed segments of the fleet have records on total catch. Consequently, regardless of the objective pursued, total catch has to be estimated for some sectors of the fishery.

Total catch can be computed from the ratio of target to incidental catch, as measured from observed landings, and the best estimate of retained catch for each vessel. While these data sets may be sufficient to estimate the quantity of incidental catch needed to initiate a fishery under objective 1; the estimates of incidental catch are unlikely to be a realistic reflection of historic removals under objective 2.

There are no alternative data sets available to derive unbiased ratio estimates of incidental catch for relevant harvest sectors. Given the data at hand, any estimate of these removals will lack scientific justification and hence will be controversial. The Council may wish to appoint an industry group to provide direction on how to proceed.

2. Processor Considerations

Numerous factors can and will be considered in determining who receives initial share allocations. It's important to recognize that access control will affect wealth, the worth of assets, in both the harvesting and processing sectors. Under a harvester-shareholder-only ITQ system, wealth is foregone by, for example, recent entrants not qualifying for an initial allocation and qualified active participants if their holdings are diluted by liberal qualification standards. Loss of wealth can also occur in the processing sector especially if capital doesn't have alternative uses. In this situation, some processors would be willing to bid the price of raw fish up until they cover only average variable costs. This willingness to pay higher raw fish prices results in redistribution of wealth from processors to harvester shareholders. The degree to which this will occur is difficult to predict, *a priori*, because of lack of information on alternative uses of capital and the relative bargaining power of individual processors and harvesters. However, it recognizes that the potential for redistribution does exist.

Because of the ability of quota share systems to affect the worth of assets, Matulich and other economists argue that worth of assets in both the harvesting and processing sectors should be considered in the initial distribution. A 2-pie initial allocation of separate catching and processing

quota shares or harvesting quota shares allocated to harvesters, catcher processors, and onshore processors are two examples of initial allocations that recognize that the worth of assets will be affected by access control and that there is a potential for redistribution. If the Council is concerned about redistribution between the harvesting and processing sectors, then it would be appropriate to consider those alternatives in the analysis.

Lastly, the SSC notes that each alternative and its associated initial allocations will have a unique set of costs and benefits. We believe that it is not possible to discriminate between initial allocations or among options within an alternative on the basis of net benefits. This is due to uncertainties associated with: (1) data utilized in various analyses and (2) adjustments that shareholders will make after ITQ implementation.

3. Breadth of Alternatives and Feasibility of Analysis Schedule

(a) Adding or Eliminating Alternatives

The SSC heard extensive public testimony in support of and in opposition to the current set of identified alternatives, and additional alternatives. Four additional alternatives were suggested during public testimony: Auctioned IFQs, Processor IFQs, fixed inshore-offshore IFQs, and "traditional" management measures coupled with a harvest priority incentive system. Under the Magnuson Act, the Council is charged with multiple objectives. The goal of maximizing monetary benefits to the nation is better accomplished under an IFQ system than under a license limitation system, although the Council may wish to consider other types of benefits. The guiding principle in adding or eliminating alternatives to be considered in the CRP analysis should be whether they address the issues identified in the Council's problem statement.

(b) Feasibility of Current Schedule

The SSC considers the revised schedule (described on page 5 of the CRP action memo) for the data compilations and analyses required for CRP to be realistic. Nevertheless, we encourage the Council to carefully examine the current and proposed alternatives to ensure that staff resources are focused solely on those alternatives that are policy relevant. Changes in the list of alternatives may necessitate renegotiation of the Social Impact Assessment contract.

(c) Methodological Issues

Council staff indicated that compilation of the data required for the socioeconomic analyses is proceeding on schedule. The SSC heard public testimony regarding the "focus group" approach adopted by AFSC staff to develop representative vessel profiles. Although there was concern that industry members might be reluctant to reveal information about their operating costs in a focus group setting, the alternative to focus group interviews is a formal survey. The development, OMB approval, administration, and evaluation of a formal survey cannot be accomplished in the time frame adopted by the Council for the CPR analysis. Moreover, experience with the inshore-offshore survey does not lead us to be confident that the resulting vessel profiles would be more valid than those developed through focus group interviews. The lack of accurate detailed statistical data on vessel operating characteristics and costs is not unique to the Council fisheries. It is a problem that contributes to the difficulty of analyzing the economics of fisheries throughout the U.S. and worldwide. However, as long as all members of industry are provided with the opportunity to either participate in the focus group sessions or to comment on the resulting representative vessel profiles, the information will be suitable for use in the socioeconomic analyses. Industry members need to be

provided with the opportunity to consider the representative vessel descriptions before the cost and performance data are used to parameterize the LP model.

Members of the SSC economics subcommittee have reviewed and commented on some of the components of the CRP economics research plan. The materials provided by Council staff and by ISER satisfy the SSC's request for more detailed description and theoretical motivation for the modeling approaches to be undertaken in the North Pacific Fisheries Optimization Model (LP) and in the Economic Base model (EBM).

Motivation for the LP model has been considerably improved. However, the SSC remains concerned that the results of the LP model be interpreted with caution. Linear programming models are very useful for identifying small differences in the relative profitability of different economic activities. As such, they are excellent tools for planning production, manufacturing, and scheduling operations. LP models are not designed to predict how production operations will change when the explicit and implicit costs of production change. It is certain that the manner of organizing production will change following changes in technology and changes in the regulatory environment in which the fishery operates. In other words, those fleet segments that are the most profitable under the current management system may not be the segments that are most profitable under alternative management systems. The LP model, as presently contemplated, is suitable for demonstrating the correct direction of change in the overall net benefits to the nation of a change from the status quo to an alternative management regime. Changes from the status quo management can be expected to change the costs of catching fish and change ex-vessel and secondary market prices for fish products. Consequently, the LP model cannot provide an accurate estimate of the longrun total net national benefits of alternative management systems. Transition of the fishery from the status quo towards the longrun dynamic equilibrium will be slowed by the presence of fixed capital assets that have few alternative uses. In other words, the fleet composition would not be expected to instantaneously shift to the LP solution even if ex-vessel prices and operating costs were unchanged post-implementation.

The SSC has not received final manuscripts describing the Economic Base (EBM) or input-output (IO) models. The draft EBM manuscript provided to the SSC in December was nearly complete. Although members of the SSC's economics subcommittee have suggested that the author provide some additional clarification, it is not expected to lead to any modification of the models. Statistics describing model performance indicate that the models are sufficiently reliable to be used in the CRP analysis.

4. Post 1995 Management

Under the revised schedule for analysis, it seems likely that the current Inshore-Offshore fixed allocation will sunset prior to implementation the CRP. Implementation of the Inshore-Offshore allocation changed the value of assets in the offshore and onshore sectors. Lapse of the Inshore-Offshore allocation can be expected to again change asset values. Alternative CRP management measures will similarly affect the value of assets invested in the various sectors of the fishery.

C-1(b) TOTAL WEIGHT MEASUREMENT

The SSC received a report from Sally Bibb on the NMFS analysis of methods to measure total weight of species caught. The central issue which needs to be addressed is the level of accuracy needed to manage and enforce multiple, distinct species quotas at the level of individual harvesters. At the present time, there appears to be no technique providing sufficient accuracy for enforcement of multi-species ITQ's other than weighing all components of catch. Implementation of a multi-species

management regime will require weighing all catch components. The SSC notes that this requirement will represent significant economic and allocative impacts to various fleet components. These issues need to be addressed in the CRP analysis.

C-1(c) PROPOSED PLAN AMENDMENT

Given the problems with economic cost data mentioned above, the SSC believes that an amendment to the groundfish data plan is needed. Analysis of the monetary benefits of plan amendments has been and continues to be crippled by the lack of accurate data regarding the costs and performance characteristics of fishing operations. Surveys and focus group interviews are a poor substitute for a comprehensive database. The SSC urges the Council to prepare an amendment requiring annual submission of cost and performance data for all sectors of the fishing industry. These data will enable Council and Center staff to predict the local, regional, and national impacts of proposed plan amendments with much greater accuracy.

C-2 HALIBUT MANAGEMENT

Council staff summarized contents of the Environmental Assessment and Regulatory Impact Review/Initial Regulatory Flexibility Analysis for the IPHC Area 4B management proposal submitted by the Atka Fishermen's Association. The SSC notes that the alternatives under consideration were analyzed appropriately within limits of available data. The summary on page 2 gives good account of the merits and drawbacks of the various alternatives. The SSC has no preferred alternative.

C-4 RESEARCH PRIORITIES

The SSC reviewed research recommendations made by the groundfish and crab teams. The SSC drew from these and last year's Research Priorities in developing this year's list. The SSC emphasizes that this selection of projects is in addition to the ongoing NMFS programs. There is no suggestion that programs NMFS considers as baseline work should be curtailed. The SSC requests 2 or 3 pages of comment on research progress from agencies responding to these priorities. It would be useful to have this report prior to the January, 1995 SSC meeting.

A. Critical Assessment Problems

1. Rockfish. There is a general need for better assessment data, particularly investigation of stock structure and biological variables. These activities are included in the AFSC Rockfish Research Plan.

2. Walleye pollock. There is a continuing need for research on stock structure as it relates to assessment. Also, an age-structured analysis of the Aleutian Island stock should be done. An age structure analysis has not yet been presented, though requests were previously made. Assessment of the status of the Gulf of Alaska resource is critically dependent upon results of resource surveys. Currently, these surveys are conducted every three years. The usefulness of various ways of supplementing the triennial survey data should be evaluated.

3. Crab research. Research should be expanded on handling mortality, stock structure and life history parameters.

4. Age- and length-structured assessments: These assessments integrate several data sources using some weighing scheme. Little research has gone into evaluation of different weighing schemes, although the weight can have a large effect on the assessment results. Research is needed on which weighting schemes are robust to uncertainties among the different data sources.

5. Maturity data are lacking and will be required for application of the stock synthesis model, and determination of ABC and overfishing on the following: Pacific cod, Dover sole, other flatfish, sablefish.

The SSC notes also that additional studies are needed on ageing techniques and age validation of several species. Stock identification research should be conducted on Atka mackerel, walleye pollock, POP and other rockfish.

B. Improved stock surveys

1. Improvements in surveys can sometimes be made without great increase in cost. Rockfish, Atka mackerel, and pollock surveys are in the category for which improved statistical sampling design may result in improved data.

2. Calibrations should be carried out between the two longline surveys for sablefish, and between trawl survey data and longline survey data.

3. Explore the possibility of fishing surveys by organizing joint agency and commercial fishing effort.

4. Increased emphasis should be put on deepwater longline surveys for Greenland turbot, and also thornyheads.

5. Develop a new trawl/pot survey for Bering Sea crab complimentary to the existing Bering Sea crab/groundfish survey. There are many problems with the current survey's ability to assess crab, since the surveys were designed primarily to assess groundfish. These problems can be addressed with a separate survey designed to assess crab. The new survey will enable the use of gear designed to assess crabs, provide the ability to assess stocks currently not surveyed (i.e., stocks associated with the Alaska Peninsula and Aleutian Island areas), expand surveys for stocks that are currently incompletely assessed (Island stocks and Norton Sound), and complement current surveys of red king crab, Bairdi crab, and Opilio crabs by providing estimates of catchability for these species.

6. There is need to verify longline survey abundance indices with direct observation.

C. Expanded Ecosystem Studies

1. Because of the importance of marine mammal and seabird considerations in fisheries management, further studies are needed on interactions among fisheries, marine mammals, and seabird populations. In particular relationships should be explored between oceanographic conditions and feeding conditions in relation to animal condition and health. Research should be done on age-specific mortality. Effort is

needed on status of stocks and distribution of forage fishes, such as capelin, eulachon, and sand lance.

2. Trophic dynamics research should be undertaken on the relationships among critical species, e.g. Pacific cod and its prey (shrimp and crabs); and particularly the possibility that the large arrowtooth flounder stocks may interfere with the productivity of more valuable species. There may also be a linkage between population increases of arrowtooth flounder and pinniped declines due to competition for prey.

3. Groups of species in the rockfish and flatfish families are now managed as "species complexes." Research should be expanded on the question of biological linkages among the components of "species complexes" that justify this management approach. Further, are there other, unidentified groups of species that are ecologically related and could be managed as a unit? Assemblage management has to be evaluated to determine its ecological validity.

D. Socioeconomic research

1. There is a critical need for the development and continued maintenance of basic economic information databases on the fisheries of GOA and BS/AI. This information is required for establishing a baseline to be used in the evaluation of the impacts of alternative management measures (see SSC recommendation in section C-1(a) of these minutes). At a minimum there is a need for reliable information on:

   (a) the cost and revenues of fishing operations,
   (b) the nature, magnitude and location of where goods and services are purchased,
   (c) the nature of markets for various fish products,
   (d) ownership of fishing and processing operations,
   (e) and the nature of relationships between harvesting and processing sectors.

2. Research pertinent to assessment of the social impacts of actions contemplated by the Council include:

   (a) Social Assessments: Selected community and industry assessments should be conducted to establish baseline conditions underlying social problems identified by, the Council and the Advisory Panel. As appropriate, these projects can be extended to generate time series information.

   (b) Social Impacts: Social impact and policy research should be conducted regarding the identification and potential effects of alternative management actions.

E. Bycatch problems

1. Gear research should be expanded on methods of reducing bycatch, and fishing gear design that would make fishing methods more selective. Trawl mesh experiments are one area of promise, but gear design engineering and biology should be conducted within the broadest and most imaginative context.

2. A better quantification of discard mortality rates of Pacific halibut is needed.

3. Fisheries catch and effort data should be reviewed to determine whether selected time/area closures could reduce bycatch.

F. Alaska Fishery Monitoring

1. An analysis of the utility of fishery logbook information should be conducted.

2. Observer data would be more credible in stock assessments if NMFS were authorized to determine the dates and localities for observer coverage of vessels in the 30% coverage category. More meaningful analysis could then be pursued.

D-1 NORTON SOUND CRAB

The SSC reviewed the EA/RIR/IRFA for area registration in the Norton Sound red king crab fishery. The analysts have addressed the issues identified in our December 1993 minutes by conducting additional analyses assuming that large and small vessels faced identical prices. In addition, the analysts have provided a more detailed discussion of management and enforcement costs under the different alternatives.

The SSC agrees with the summary and conclusion section of the draft document that there are major differences between alternatives regarding who will participate in the fishery. Under Alternative 2, the fishery is likely to be prosecuted over a relatively long season by small locally-based vessels. Under either the status quo or Alternative 3, large Bering Sea crab vessels are likely to take the GHL in a short season of a few days.

Costs to manage the fishery are likely to be less under the superexclusive regime of Alternative 2. This fishery would be managed by existing staff in Nome, and would likely not require costly aerial enforcement efforts or other expenditures not included in the base budget of existing staff.

The summary paragraph of the document asserts that "superexclusive registration is expected to result in greater benefits to the nation than either the status quo or exclusive registration". The SSC believes that this conclusion is overstated. The representativeness of data contained in Table 17 (in particular, CPUE and price data) used in the net revenue analysis is a concern. The results of the sensitivity analysis contained in Table 20 indicate that the model is sensitive to these two inputs. Therefore, caution is warranted in using the results. The SSC has no preferred alternative.

D-2(a)(1) TERRA MARINE'S EXPERIMENTAL FISHING PERMIT

Shari Gross, HANA, provided testimony indicating a desire to have data collected during the experimental fishery analyzed to determine if retention reduces bycatch. The SSC believes that such an analysis would be useful.

D-2 SALMON BYCATCH

The SSC heard a report by the Alaska Department of Fish and Game on the status of Western Alaska-Bering Sea chum salmon stocks. The SSC notes that chum salmon runs throughout Western Alaska and Bering Sea areas were low in 1993. Fishery management actions to conserve stocks in

the face of the weak 1993 run produced disastrously low commercial and subsistence catches. Certain stocks in the Northern Norton Sound and Yukon River areas have been weak for a number of years and escapement levels have generally been below escapement goals for those areas.

The SSC also heard a report by the National Marine Fisheries Service on the unusually large bycatch of chum salmon in the third quarter 1993 B-season pollock/Pacific cod fishery. The 1993 chum salmon bycatch levels and rates were 5 times the previous year's values. A preliminary examination of the timing and length frequency distributions of the bycatches indicate that they were a mixture of 2 and 3-ocean age immature chum salmon. Determination of exact age composition would require further analysis (i.e., comparison with available age-length information for chum salmon). Nevertheless, these fish could not contribute to escapement until 1994 at the earliest. The SSC does not know the exact origin of chum salmon taken in the bycatch nor the factors contributing to the recent increase in bycatch. Moreover, there are insufficient data to determine what percentage of the bycatch was comprised of Western Alaska chum. From the above information, it can be said that the recent increase in bycatch has not affected the coincident declines in Western Alaskan escapement.

The SSC also heard a status report by National Marine Fisheries Service on the salmon bycatch initiative.

D-2(c) OPILIO CRAB BYCATCH

The SSC received a report from Council and NMFS staff on C. opilio bycatch in crab and groundfish fisheries. Bycatch in the groundfish fisheries is concentrated in statistical areas 513 and 514; bycatch rate is not indicated to vary significantly with time of year. Size information was not presented in the reports. The SSC cautions that the bycatch numbers presented for the two fisheries are not directly comparable, because the groundfish fisheries likely take smaller, younger C. bairdi and C. opilio crab.

OTHER ISSUES

Halibut Bycatch Survival/Sorting Experiment

Gregg Williams, IPHC, described the objectives, experimental design, types of data collected and preliminary results for this experiment. The SSC looks forward to receiving the final report for this project.