# North Pacific Fishery Management Council

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Certified: Phil Mundy 3/16/87
Phil Mundy, Chairman
Date: March 16, 1987

MINUTES
Scientific and Statistical Committee
January 19, 1987
Anchorage, Alaska

The Scientific and Statistical Committee met January 19, 1987 at the Captain Cook Hotel in Anchorage, Alaska. Members present were:

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| Phil Mundy, Chairman | Don Rosenberg |
| Rich Marasco, Vice Chairman | Don Bevan |
| John Burns | Bill Clark |
| Terry Quinn | Doug Eggers |
| Larry Hreha | Bill Aron |

C-1 Election of Officers

The SSC requested that the Council approve the following officers.

Phil Mundy-Chairman
Rich Marasco-Vice Chairman

The SSC extends its thanks to Donald Rosenberg for his six years of service as Chairman. Don first certified the minutes of the SSC in December of 1980, and he formally assumed the role of Chairman on January 5, 1981, just before the 37th Plenary Session. Don's pragmatism and good sense of humor will serve as guides for the incoming Chairman.

C-4 DAP Priority Access

The SSC received a presentation from Dr. Bevan on the results of the DAP priority workshop and received a presentation from Mayor Paul Fuhs on the proposed plan amendment. Specific comments are covered under D-2. The SSC did receive a document entitled "Justification for the Domestic Fishery Zone Within 100-miles of Unalaska." This document was not reviewed at this time. This issue received further consideration as a plan amendment proposal under Agenda D-2, BSAI, and the recommendations of the SSC are given at item #8 in that section.

Trawl Mesh Size

The SSC received a presentation by Edward Evans on a proposed minimum trawl mesh size. The SSC notes that this request is outside the regular amendment process. Lacking specific information and data the SSC does not have any specific recommendations at this time. It is noted that a minimum trawl mesh size of 90 mm (3.54 inches) would probably protect age 3 pollock (12 inches in length). Maximization of yield per recruit in pollock may be facilitated by a 90 mm size limit. This issue is related to Bering Sea proposal #11 [Table D-2(c)] and Gulf of Alaska proposal #13 [Table D-1(c)] regarding a minimum size limit for sablefish.

D-1 Gulf of Alaska

Scientific and Statistical Committee recommendations on Proposals for 1987: The proposals have been split into four categories, immediate action, high priority, low priority, and no action required. The first three categories contain proposals which the SSC judges to be appropriate to the plan amendment process, while the latter category contains proposals which are not judged to be amenable to the plan amendment process. Please note that "no action required" does not reflect low priority, or lack of urgency. The priority of each "no action" recommendation is indicated under "explanation."

Immediate action proposals are those actions which are judged worthy of consideration, whose evaluation could reasonably be accomplished during the current amendment cycle.

High priority proposals are judged worthy of consideration, however in the opinion of the SSC, evaluation of such proposals could not reasonably be accomplished during the current amendment cycle.

Low priority proposals may be worthy of consideration; however, problem development has not progressed to the point where evaluation of the proposal can proceed.

IMMEDIATE ACTION FOR PLAN AMENDMENT

| Description | Explanation |
|---|---|
| 1. Prohibited species definition*<br>Plan Team #7[a]<br>Source: NMFS | A recordkeeping improvement which would specifically list each prohibited species rather than relying on references to prohibited species in other FMPs. It is anticipated that management problems could be created by the inadequacy of the current definition. |
| 2. Revise definition of ABC*<br>Plan Team #8<br>Source: SSC | A recordkeeping improvement which requires minor revision to the Council's definition of ABC. The revision would make NPFMC and PFMC definitions consistent. |

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| 3. | DAP reporting requirements for at-sea transfers and maintenance of daily cumulative catch logs by catcher processors and mothership vessels*<br><br>Plan Team #5<br><br>Source: NMFS | A measure which is necessary to verify all at-sea catches by vessels that catch and process fish through development and use of a document for recording transfers of processed catch between foreign vessels and U.S. transport vessels. The SSC noted that this amendment is necessitated by the lack of a domestic observer program. The lack of a systematic domestic observer program continues to threaten the integrity and utility of basic fisheries management data. |
| 4. | Overall FMP rewrite<br><br>Plan Team #12<br><br>Source: Amend. 15 deferral | Most of the work has been completed. Analysis of consistency with Bering Sea/Aleutian Islands FMP needs to be conducted. |
| 5. | Fishing seasons framework<br><br>Plan Team #10<br><br>Source: Amend. 15 deferral | The measure provides a means to adjust seasons in a timely manner. |
| 6. | Bycatch controls for prohibited species.<br><br>Plan Team #11<br><br>Source: Amend. 15 deferral | Expands existing framework for halibut to include salmon and crabs. A conservation problem could be created by the absence of adequate bycatch controls on "traditional" prohibited species. Plan amendment proposal #10, below, addresses other species. |

HIGH PRIORITY - SUBSEQUENT CYCLES

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| 7. | Expand economic data*<br><br>Plan Team #6<br><br>Source: GOA plan team and NMFS | Proposes to increase the collection of data about cost, catch value, and effort necessary to evaluate allocation issues. Project will need industry participation to develop successfully. Therefore, the SSC recommends that a workgroup which draws from the members of the Council, SSC, AP and industry be formed to develop a data collection program. |

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| 8. | Sablefish size limit of 22 inches*<br><br>Plan Team #13<br><br>Source: FVOA | A minimum size limit is one generic method of achieving MSY, and it could be an important management tool for sablefish. Any size limit regulation would raise allocation issues whose impact will require careful study. The SSC strongly urges that sufficient data be obtained to evaluate the biological and economic benefits of a minimum size limit, including size at sexual maturity, growth, and mortality of sublegal fish that are released. Specific questions include:<br><br>(i) Is the current catch of small fish substantial?<br>(ii) At the present rate of fishing mortality, would yield from the stock be markedly increased by reducing the catch of small sablefish?<br>(iii) If so, would a size limit really reduce catches or just increase discards?<br>(iv) What would be the economic impacts on fisheries using the different gear types for sablefish? |
| 9. | Sablefish limited entry<br><br>Plan Team #1<br><br>Source: GOA plan team and NMFS | This issue will require careful examination prior to the development of an amendment.<br><br>The amount of effort required may be beyond the capacity of the plan team. The Council may wish to consider hiring an outside contractor using programmatic funding. |
| 10. | Management of groundfish bycatch*<br><br>Plan Team #2<br><br>Source: Amend. 15 deferral | The purpose of the proposal is to develop a comprehensive approach to the management questions surrounding harvest of non-target species. Such a measure could enhance the ability to deal with allocation conflicts which arise due to the harvest of non-target species. The issue addressed by this proposal is different from #6, above, since it addresses all bycatch species, not just halibut, salmon, and crabs. This issue will require careful examination prior to development of an amendment. |

LOW PRIORITY

| | | |
|---|---|---|
| 11. | Harvest ceiling for bottom trawling in eastern Gulf of Alaska<br><br>Plan Team #14<br><br>Source: Alaska Longline Fish Association | It is unclear what is intended by this proposal. No action can be recommended until the problem is more clearly defined. This problem exists due to the absence of a domestic observer program. |

NO ACTION REQUIRED

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| 12. | Fixed sablefish quota system/ three years<br><br>Plan Team #3<br><br>Source: Fishing Co. of AK | The Council currently has the flexibility to adopt measures to distribute sablefish harvests across regulatory areas. The SSC does not change its previously submitted recommendations on Gulf of Alaska sablefish, page 3, SSC minutes of December, 1986. The SSC assigns no priority. |
| 13. | Retention and sale of survey catches*<br><br>Plan Team #9<br><br>Source: NMFS | The SSC is greatly concerned that the continuity of the data base now being collected by the Japanese longline survey be maintained. This is an urgent issue. |
| 14. | Closure of juvenile halibut habitat near Kodiak to bottom trawling<br><br>Plan Team #4<br><br>Source: IPHC | Should the halibut bycatches become of concern in any particular area, the authority may now exist for the Council to take action by means of the current framework provisions for managing PSC. As a procedural matter, extended time closures of a particular area might be handled by a plan amendment as recommended by NMFS. The SSC assigns no priority to this proposal. |

*Same for both Gulf of Alaska and Bering Sea/Aleutians proposals.
a-Number in Table D-1(c).

JAN. 1987
SSC MINUTES

D-2 Bering Sea/Aleutian Islands

Scientific and Statistical Committee recommendations on proposals for 1987:

IMMEDIATE ACTION FOR PLAN AMENDMENT

| Description | Explanation |
|---|---|
| 1. Prohibited species definition*<br><br>Plan Team #6[a]<br><br>Source: NMFS | A recordkeeping improvement which would specifically list each prohibited species rather than relying on references to prohibited species in other FMPs. It is anticipated that management problems could be created by the inadequacy of the current definition. |
| 2. Revise definition of ABC*<br><br>Plan Team #7<br><br>Source: SSC | A recordkeeping improvement which requires minor revision to the Council's definition of ABC. The revision would make NPFMC and PFMC definitions consistent. |
| 3. DAP reporting requirements for at-sea product transfers and maintenance of daily cumulative catch logs by catcher processors and mothership vessels*<br><br>Plan Team #8<br><br>Source: NMFS | A measure which is necessary to verify all at-sea catches by vessels that catch and process fish through development and use of a document for recording transfers of processed catch between foreign vessels and U.S. transport vessels. The SSC noted that this amendment is necessitated by the lack of a domestic observer program continues to threaten the integrity and utility of basic fisheries management data. |
| 4. Raise OY to 2.4 million mt<br><br>Plan Team #5<br><br>Source: Mid-Water Trawler Co-op | The SSC is not endorsing the actual limit of 2.4 million mt, however the limit is an important question which can be answered in the time available in the current amendment cycle. More flexibility in computing this limit is desired. |

HIGH PRIORITY - SUBSEQUENT CYCLES

| | | |
|---|---|---|
| 5. | Expand economic data*<br><br>Plan Team #9<br><br>Source: GOA plan team and NMFS | Proposes to increase the collection of data about cost, catch value, and effort data necessary to evaluate allocation issues. Project will need industry participation to develop successfully. Therefore, the SSC recommends that a workgroup which draws from the members of the Council, SSC, AP and industry be formed to develop a data collection program. |
| 6. | Sablefish size limit of 22 inches*<br><br>Plan Team #11<br><br>Source: FVOA | A minimum size limit is one generic method of achieving MSY, and it could be an important management tool for sablefish. Any size limit regulation would raise allocation issues whose impact will require careful study. The SSC strongly urges that sufficient data be obtained to evaluate the biological and economic benefits of a minimum size limit, including size at sexual maturity, growth, and mortality of sublegal fish that are released. Specific questions to be addressed include:<br><br>(i) Is the current catch of small fish substantial?<br>(ii) At the present rate of fishing mortality, would yield from the stock be markedly increased by reducing the catch of small sablefish?<br>(iii) If so, would a size limit really reduce catches or just increase discards?<br>(iv) What would be the economic impacts on fisheries using different gear types for sablefish? |
| 7. | Comprehensive bycatch framework<br><br>Plan Team #2<br><br>Source: IPHC | Defer to Council bycatch workgroup. Similar comments to Gulf of Alaska #5 above. |

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| 8. | Priority DAP access within 100 miles of Dutch Harbor<br><br>Plan Team #1<br><br>Source: City of Unalaska<br>City of Akutan | This is clearly an important issue which will require data about the potential impacts on species composition, types of effort, and allocation decisions. The question of the geographic extent of the area is fundamental to the impact of this measure and, hence, to the design of the study. See SSC report at C-4 for related comments. |

LOW PRIORITY

| | | |
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| 9. | Closure of Statistical Area 514 to trawling May-June<br><br>Plan Team #12<br><br>Source: Oaluyaat and Kokechik Fish Association | Further clarification of the problem is necessary before action can be recommended. Biological assumptions on cod life history need to be substantiated. |

NO ACTION REQUIRED

| | | |
|---|---|---|
| 10. | Retention and sale of survey catches*<br><br>Plan Team #10<br><br>Source: NMFS | The SSC is greatly concerned that the continuity of the data base now being collected by the Japanese longline survey be maintained. This is high priority. |
| 11. | Prohibit joint venture pollock fishing, May-June<br><br>Plan Team #3<br><br>Source: Japan Deep Sea Trawlers/Hokuten Trawlers | The Council does not need an amendment to take this action. No priority. |
| 12. | Implement single-species TAC for TALFF fisheries<br><br>Plan Team #4<br><br>Source: Japan Deep Sea Trawlers/Hokuten Trawlers | NMFS can take this action without a plan amendment. No priority is assigned to this proposal. |
| 13. | Pollock roe stripping | Not an SSC issue, and not properly part of the cycle. No priority. |

*Same for both Gulf of Alaska and Bering Sea/Aleutians proposals.
a-Number in Table D-2(c).

E. Contracts, Proposals and Financial Report

PROGRAMMATIC FUNDING

The SSC reviewed a proposal for programmatic funds entitled "Pilot Domestic Observer Program." The SSC discussed changes to the proposal to ensure close cooperation between this program and the existing foreign observer program. The SSC considers this program to be high priority.

The SSC also discussed the need for other programmatic funds. Should the Council wish to develop amendment proposals for DAP priority access or sablefish limited entry, we recommend that these be developed by contractors utilizing the programmatic funds available to our Council.

GULF OF ALASKA PLAN TEAM EVALUATION OF MANAGEMENT PROPOSALS FOR 1987

| Management Proposal | Appropriate Forum of Action | Ranking of Potential Plan Amendments | | Plan Team Recommendation |
|---|---|---|---|---|
| | | Problem Priority | Proposal Value | |
| 1. Sablefish limited entry | Council consideration | | | Defer to Council workgroup |
| 2. Management of groundfish bycatch | Council consideration | Deferred from Amendment 15 | | Defer to Council workgroup |
| 3. Fixed sablefish quota system/three years | Plan implementation | | | Do not implement |
| 4. Closure of juvenile halibut habitat near Kodiak to bottom trawling | Plan implementation | | | Consider implementation |
| 5. Reporting requirements* for at-sea transfers | Plan amendment | H | H | Analyze amendment |
| 6. Expand economic data* | Plan amendment | H | H | Analyze amendment |
| 7. Prohibited species* definition | Plan amendment | H | H | Analyze amendment |
| 8. Revise definition* of ABC | Plan amendment | L | L | Analyze amendment |
| 9. Retention and sale* of survey catches | Plan amendment | H | H | Analyze amendment |
| 10. Fishing seasons framework | Plan amendment | Deferred from Amendment 15 | | Analyze amendment |
| 11. Bycatch controls for prohibited species | Plan amendment | Deferred from Amendment 15 | | Analyze amendment |
| 12. Overall FMP rewrite | Plan amendment | Deferred from Amendment 15 | | Analyze amendment |
| 13. Sablefish size limit* of 22 inches | Plan amendment | M | L | Defer for future PT consideration |
| 14. Harvest ceiling for bottom trawling in eastern GOA | Plan amendment | M | L | Defer for future PT consideration |

*Similar proposals for BSAI.

BERING SEA/ALEUTIAN ISLANDS PLAN TEAM EVALUATION OF MANAGEMENT PROPOSALS FOR 1987

| Management Proposal | Appropriate Forum of Action | Ranking of Potential Plan Amendments | | Plan Team Recommendation |
|---|---|---|---|---|
| | | Problem Priority | Proposal Value | |
| 1. Priority DAP access within 100 miles of Dutch Harbor | Council consideration | | | Defer to Council workgroup |
| 2. Comprehensive bycatch framework | Council consideration | | | Defer to Council workgroup |
| 3. Prohibit JV pollock fishing May-June | Permit condition | | | Defer to Council and Committee consideration |
| 4. Implement single-species TAC for TALFF fisheries | Regulatory amendment | | | Defer to NMFS |
| 5. Raise OY range to 2.4 million mt | Plan amendment | M | H | Analyze amendment |
| 6. Prohibited species* definition | Plan amendment | H | H | Analyze amendment |
| 7. Revise definition* of ABC | Plan amendment | L | L | Analyze amendment |
| 8. Reporting requirements* for at-sea transfers | Plan amendment | H | H | Analyze amendment |
| 9. Expand economic data* | Plan amendment | H | H | Analyze amendment |
| 10. Retention and sale of* survey catches | Plan amendment | H | H | Analyze amendment |
| 11. Sablefish size limit* of 22 inches | Plan amendment | M | L | Defer for future PT consideration |
| 12. Closure of Statistical Area 514 to trawling May-July | Plan amendment | M | L | Defer for future PT consideration |

*Similar proposals for GOA.

# North Pacific Fishery Management Council

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Certified Phil Mundy
Phil Mundy, Chairman

Date 5/8/87

MINUTES
Scientific and Statistical Committee
March 16-17, 1987
Anchorage, Alaska

The Scientific and Statistical Committee met March 16-17, 1987 at the Hilton Hotel, Anchorage, Alaska. Members present were:

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|---|---|
| Phil Mundy, Chairman | Don Bevan |
| Rich Marasco, Vice Chairman | Bill Clark |
| John Burns | Gordon Kruse(alternate) |
| Terry Quinn | Bill Aron |
| Larry Hreha | Robert Burgner |
| Don Rosenberg | |

Pollock apportionments to DAP, JVP and TALFF for 1987

The SSC declined to consider the matter of Gulf of Alaska pollock apportionments among DAP, JVP and TALFF, as the issues did not include matters of science.

Groundfish Plans

The SSC recommends the development of an amendment to combine the two groundfish plans for the next cycle.

To accomplish this the SSC requests that a special team be appointed (members from the existing teams) to identify the areas of inconsistence between the two plans and to develop recommendations for resolving them. This special team should provide a report to the SSC and to the Council at the next meeting, including a schedule for the development of a plan amendment for the next cycle. The SSC consulted with the plan team and much of this is already finished.

The SSC still supports this position and recommends analysis and conclusions based on this CPUE model be removed from the RIR. Proper analysis of the CPUE effects of the proposed closure requires estimation of catch/effort equations for the DAP and JVP catcher boat segments of the fishing fleet. It must be pointed out that the limited nature of the data will make it difficult to state definitely how CPUE will be affected by the proposed action.

As is true for DAP fisheries, determination of how non-DAP fisheries would be affected by the 100 mile closure requires knowledge of how the catch and effort are related. The dynamics of these fisheries may require development of catch/effort relationships that are time and area specific. As was noted in the case of DAP fisheries it will be very difficult to make definitive statements about how CPUEs of joint venture operations will be affected by this measure. The RIR indicates that the proposed closure has the potential for significantly reducing gross revenues accruing to the joint venture fleet.

Data presented in the request indicate that the cost associated with adoption of the proposed action could be substantial. The SSC feels that there is considerable uncertainty associated with benefits that might accrue from the proposed action. If any benefits accrue they would stem mostly from CPUE modifications. Evidence is currently lacking that clearly demonstrates that exclusion of JVP vessels from the proposed area would improve DAP vessel CPUEs.

The SSC notes that information contained in the RIR contributes to the understanding of the issue. The usefulness of this document would be increased by elimination of the CPUE analyses, inclusion of detailed information indicating the spatial and temporal distribution of catches, and by making several editorial corrections. The SSC supports sending the document out for public review once the modifications are made.

- Revise the Definition of a Prohibited Species (also BS/AI Amendment 11)

The SSC recommends that this be sent out for public review.

- Improve Catch Recording Requirements (also BS/AI Amendment 11)

The SSC received a presentation from the NMFS region staff on the proposed amendment to improve the catch reporting requirements. The SSC notes that the original reason for the amendment was to allow the verification of the amount of groundfish being caught by catcher/processors and mothership/processors. The amendment, as presented, goes beyond what is required to correct the current reporting problem, expanding into the areas of collecting effort and discard data from all DAP vessels.

The SSC supports the collection of information that is required for fisheries management and research, but feels that it is premature to use this amendment to initiate and define a DAP report system. Reporting requirements for the DAP fisheries beyond the existing fish ticket system need careful definition and justification. The first step should be to itemize data needs and specify the uses (analyses) of those data for assessment and management. Then the specific reporting requirements should be developed and prepared for public review.

The Gulf plan team leader informed the SSC that some members were unable to support the expansion of this amendment into this broader area of collecting effort and discard data, since certain types of information in the fishing log could only be verified by onboard observers.

The SSC finds that the amendment as now presented fails to provide the reader with sufficient information on the types of information to be collected under the "Fishing Logbook." It was not until the SSC reviewed the draft data collection forms that the full extent of the reporting requirement became clear. The SSC recommends that if the Council wishes to send the full amendment out for public review, the description of this section needs to be greatly improved.

> For example, Alternative 2 would apply this totally new reporting requirement to all DAP fishing and processing vessels. The discussion of this alternative needs to include information on how this alternative fits the existing reporting requirements. Does it replace fish tickets or is it supplemental to the fish ticket system?

The SSC also found that the amendment needs extensive editing. For example, a single section of the "Fishing Logbook" is called by three different names: Daily Cumulative Product Log, Cumulative Product Log, and Daily Accumulative Product Log. In the presentation to the SSC, this section was referred to by an additional title, "Production Log."

In order to insure that the original reporting problem is addressed by this amendment, the SSC recommends that a fourth alternative be added. That alternative would read as follows:

> Alternative 4: Apply the "Cumulative Product Log" and the "Transfer Logbook" recording requirements to catcher/processor and mothership/processor vessels.

The SSC would also like to point out that care must be taken in the final editions of these amendment packages when they apply to both the Bering Sea and Gulf Plans. For example, within this amendment under social and economic impacts, the number of vessels and catcher processors used in the analysis is the total number off Alaska, not just the Gulf. The text needs to make it clear that the analysis represents total effort off Alaska.

With the additional alternative and clarification, the SSC recommends this for public review.

- Fishing season framework (GOA only)

The SSC recommends sending out for review this fishing season framework which allows the annual setting of seasons using a more efficient notice procedure. Several points which needed clarification were identified by the SSC, and Council staff agreed to make the necessary changes, including dropping the term "risks" on page 17, and deleting the phrase referring to risks in that section of the EA/RIR/IRFA.

D-2 Gulf of Alaska Groundfish Fishery Management Plan Amendment 16

- Establish a Minimum Size Limit for Sablefish (also BS/AI Amendment 11)

At the last meeting the SSC recommended that this amendment be assigned a high priority but for consideration during the next cycle. The reason for that recommendation was to allow sufficient data to be obtained and evaluated with regard to a minimum size limit. The SSC was concerned that time and personnel were insufficient between January and this meeting for the team to gather, document and fully analyze this information. The SSC would like to commend the team on the effort expended in accomplishing this difficult task in the short time available. The SSC only received this analysis and a supporting document at the beginning of this meeting and therefore, our review has been limited.

The SSC points out that the analysis provided in the draft amendment indicates that a size limit would not increase the total yield from the stock in view of the current low fishing mortality. While the analysis indicates that there is a possibility of some economic gain to be realized by applying a size limit to the catches of longliners, it must be understood that these gains will be rapidly dissipated if constraints are not placed on the level of effort deployed in the fishery. Given these conclusions, the SSC suggests that if the Council wishes to implement a size limit for the longline fishery, serious consideration must be given to simultaneous implementation of a program to limit effort. The SSC questions the advisability of continuing public review of the amendment without addressing limitation of effort.

- DAP Priority within 100 miles of Unalaska Island (also BS/AI Amendment 11)

Critical to the examination of the benefits and costs of this proposal is knowledge of how both DAP and non-DAP fishermen will be affected by the proposed action.

Individuals supporting the closure claim that excluding JVP and foreign fishing fleets will increase CPUE experienced by DAP vessels. In the RIR a catch/effort equation was used to examine this issue. The equation, which was taken from the Bering Sea and Aleutian Islands Amendment #6 RIR (NPFMC July 1983, p. 23), was developed from data for the 1979-81 Japanese trawl fishery. After its initial examination of the equation in question the SSC concluded in 1983 that:

> "While monthly Japanese catch data for 1979, 80 and 81 were used to statistically estimate the relationship between catch and effort, it is not clear that the results provided information about the relationship. During the course of any given year, there are any number of factors that could mask the relationship between catch and effort. Seasonality is an example of one such variable. Given the data used in the analysis, seasonality could be an important explanatory variable. Failure to account for its influence could lead to erroneous conclusions concerning the effect on catch rates of changes in the level of foreign fishing effort. That is, it might be concluded that, as the result of incomplete analysis of the data, effort reductions by the foreign fleet would increase catch rates when in reality no such increases would occur." (SSC minutes July 1983, p. 4)

- Expand the existing halibut PSC framework to include all traditional "prohibited species" of halibut, salmon, and king and Tanner crabs. (GOA only)

The SSC recommends sending out for review this measure which is necessary to provide additional regulatory flexibility. Steve Davis agreed to make several changes for the sake of clarification, including answering the question of the regulatory action needed when the PSC limit is attained.

- Overall FMP revision (GOA only)

The SSC recommends sending this out for review. The SSC is concerned that the revision proceed with sufficient attention to the need for consistency with the Bering Sea Groundfish Fishery Management Plan.

D-3 Bering Sea/Aleutian Islands Groundfish Fishery Management Plan Amendment 11

- Establish a minimum size limit for sablefish.

Not recommended. Same reasoning as for GOA groundfish Amendment 16.

- DAP Priority access within 100 miles of Unalaska.

Recommended for review. See GOA groundfish Amendment 16.

- Revise prohibited species definition.

Recommended for review. See GOA groundfish Amendment 16.

- Catch recording for at product sea transfers.

Recommended for review. See GOA groundfish Amendment 16.

- Revise definition of acceptable biological catch.

Recommended to be sent out for review. The SSC further recommends that the plan team add the following definition of threshold to follow the last paragraph in section 6.2.1 (p. 61) agenda D-3(a);

> The threshold is defined as the minimum size of a stock that allows sufficient recruitment so that the stock can eventually reach a level that produces MSY.

Implicit in this definition are rebuilding schedules. They have not been explicitly specified since the selection of a schedule is a part of the OY determination process.

- Increase Upper Value of Optimum Yield (OY) Range

The SSC suggested to the team a number of editorial changes to the draft amendment that we feel are of some importance. The SSC recommends the revised amendment be sent out for public review.

- Prohibited Pollock Roe-Stripping

After reviewing this section of the Amendment package, the SSC suggests that it go out for public comment.

.....End Amendment Proposal Recommendations.....

Arctic Research and Policy Act

The SSC received a report on the Arctic Research and Policy Act (federal). The research initiative provided by the Act makes a research proposal on arctic marine ecosystems with an emphasis on fisheries most timely. The SSC endorsed the concept of subarctic fisheries ecosystem study described below, however the actual text was not seen by the entire SSC until after the Council meeting.

Subarctic Fisheries Ecosystem Study (SAFE)

The rapid expansion of domestic fisheries in high latitudes has clearly pointed out serious gaps in our fundamental understanding of the Subarctic ecosystem. During the past decades populations of some species (seals, sea lions, king crab, Tanner crab, greenland halibut) have undergone significant declines that cannot be directly ascribed to exploitation, while others (pollock, cod, yellowfin sole, arrowtooth flounder) have undergone large increases, and the interactions of these species with their environment and each other is at best poorly understood.

Environmental shifts, entanglement in derelict fishing gear, predation and disease have been suggested as reasons for the population changes. None of these speculations, however, is sufficiently well based to provide predictive capability, and none is sufficiently documented to allow sound long term management decisions. The growing capital investment in subarctic fisheries and the reasonable expectation that they will support a multi-billion dollar industry virtually demands a development of the capacity to understand the causes behind these variations.

To close our knowledge gap and provide for the kinds of information needed a five-year study of the subarctic fisheries ecosystem (SAFE) is proposed. The work would be accomplished as a new initiative involving scientists from academic, private industry and state and federal agencies. The work would supplement critical ongoing studies and bring together a wide spectrum of oceanographers, metrologists, biological scientists, social scientists and modelers in an attempt to synthesize existing knowledge with newly collected information to develop a predictive model of the Subarctic system which would benefit fisheries management decisions. A $19.5 million budget is proposed: 1st year, $1.5; 2nd year, $3; 3rd year, 4th, and 5th, $5.

Procedures and Personnel

The SSC met in closed session to consider several matters; (1) the annual Council meeting schedule, (2) the procedures for preparing SSC minutes, (3) the memorandum on SSC operational policies and procedures of December 8, 1980, and (4) SSC membership with respect to disciplinary representation.

The SSC endorses Mr. Branson's recommendation to retain the January meeting for initial proposal screening, while moving the next two meetings to late April and late June to avoid rushing preparation of proposal evaluation. A Council Policy and Planning Group will meet prior to May to prepare recommendations on both the meeting schedule and the amendment schedule. The SSC also supports the concept of having both one- and two-year amendment cycles. More difficult issues need to be placed in a two-year cycle in order to provide time for proper evaluation and consideration.

The SSC agreed to rotate note keeping among duets of members on each issue. Duets will be chosen and assigned by the chair for each agenda item. A duet would document the position of the SSC and submit a written copy of the opinion to the chair before departing the meeting.

To more adequately document SSC procedings, a number of lap top and/or portable computers and a single printer are needed. As an interim measure, copying facilities on the site of the meeting will be needed in order to share a written draft among the members of the SSC. The SSC is now an inefficient paper mill compared to similar organizations elsewhere on the west coast.

> The majority of SSC members supports the concept of seeking an economist to replace Don Rosenberg at such time as he may retire. The actual choice may not necessarily be an economist, since willingness to serve and availability are important considerations. Members will seek recruits and forward names to Rich Marasco who will report at the next meeting.

The memorandum on operations and policy of December 8, 1980 is out of date, although it contains many worthy concepts. Don Rosenberg will prepare a working revision to reflect the current situation, and mail it to the SSC 15 days before the next meeting.

Terms and Definitions: Overfishing.

The SSC of the North Pacific Fishery Management Council and the Pacific Council have agreed on a set of definitions for Allowable Biological Catch (ABC), Threshold, Overfishing, Annual Surplus Production (ASP), Equilibrium Yield (EY), Total Allowable Catch (TAC), Allocate, and Optimum Yield (OY).

Since the time these definitions were presented to the Council last September, a minor revision in the definition of overfishing has been requested by the Pacific Council. The two revised versions of the definition of overfishing accepted by your SSC are:

> Overfishing is a level of fishing mortality that jeopardizes the capacity of stock(s) to maintain or recover to a level at which it can produce maximum biological yield on a long-term basis under prevailing biological

and environmental conditions. (NOTE: This definition differs slightly from that found in the Guidelines for Fishery Management, 50 CFR Part 602, p. 27228.)

Overfishing is the application of exploitation rates that drive the stock below its threshold. Exceeding acceptable biological catch need not result in overfishing, unless the excess is taken over sufficient time to reduce the population below the threshold.

We recommend the Council adopt the definitions and direct the Plan Teams to use them in future plan amendments.

The SSC meeting ended at 5:30 p.m. March 17, 1987.

# North Pacific Fishery Management Council

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Certified Phil Mundy
Phil Mundy, Chairman

Date July 17, 1987

MINUTES
Scientific and Statistical Committee
May 18-19, 1987
Anchorage, Alaska

The Scientific and Statistical Committee met May 18-19, 1987 at the Hilton Hotel, Anchorage Alaska. Members present were:

| | |
|---|---|
| Phil Mundy, Chairman | Rich Marasco, Vice Chairman |
| John Burns | Terry Quinn |
| Don Rosenberg | Don Bevan (5/19) |
| Bill Clark | Doug Eggers |
| Bill Aron | Robert Burgner |

D-3 Gulf of Alaska Groundfish FMP

(c) Final approval of Amendment 16 and implementing regulations.

(1) Establish DAP priority within 100 miles of Unalaska Island. (See BS/AI notes)

(2) Revise the definition of "prohibited species". (See BS/AI notes)

(3) Improve catch recording requirements. (See BS/AI notes)

(4) Establish a framework procedure for setting seasons.

The SSC recognizes the need for regulatory flexibility, however the SSC supports Alternative 1, Status Quo because Alternative 2 is too broadly stated. The specific mechanisms whereby seasons are actually going to be set were not clearly developed. Rational planning by industry is facilitated by a stable management/regulatory environment. Instability could affect economic performance of the fleet and the ability of fishermen to gain assess to capital. The SSC concluded that setting seasons is largely an allocative function. As such the setting of seasons should be done with a great deal of deliberateness. Sufficient time must be allowed for analysis of alternatives and public comment.

(5) Expand the existing halibut PSC framework to include halibut, salmon, king and Tanner crab.

The SSC believes that the proposed amendment is premature in the absence of a domestic observer program and in light of work being conducted by a Council bycatch committee. The SSC suggests tabling Alternative 2 and continuing the status quo until the Committee's work is completed and an observer program is implemented. The SSC is particularly concerned that accurate reporting and analysis of bycatch is dependent upon independent onboard sampling.

(6) Update the plan's descriptive sections, reorganize chapters, and incorporate Council policy as directed.

The SSC endorses the update of the descriptive material, much of which is outdated.

These are important sections of the plan and should have full public review and comment before submission to the Secretary. Therefore, we recommend the update not be included in the present amendment cycle, but be delayed to offer sufficient opportunity for review. we offer the following comments on sections "a" through "e".

(a) The SSC endorses management of rockfish by species assemblage in Southeast Alaska, rather than as individual species or as a single group. It makes sense because the species are unavoidably caught together and therefore cannot be managed separately. Even if they could, there are so many species that it would be difficult to perform good assessment of the individual species.

Table 7.1 and 7.2 should be revised to make clear that the rockfish assemblages are defined only for Southeast Alaska.

(b) The SSC recommends replacing the term target quota (TQ) with total allowable catch (TAC).

(c) We recommend the change in the definition of Acceptable Biological Catch (TAC).

(d) It is our understanding that research can be funded with the proceeds from the sale of catches made during research fishing. We believe that experimental fishing can better be controlled and more effectively managed if conducted as a research program.

(e) We suggest that reserves be retained in the plan for pollock, cod, and flounder in order to accommodate operational problems which move arise due to our imperfect data gathering systems.

D-4 Bering Sea/Aleutian Islands Groundfish FMP

(b) Final approval of Amendment 11 and implementing regulations.

The SSC had difficulty determining the specific problems that some of the proposals were attempting to address, as well as their associated objectives. These deficiencies made it difficult to develop comments on the DAP priority and roe-stripping parts of the amendment. The SSC urges that future proposals be screened to determine if problems and objectives are clearly identified. Proposals found to be deficient should be returned to their originators. The analysis of vague proposals is an ineffective use of the Council, SSC, AP, Plan Teams, and the public.

(1) Establish DAP priority within 100 miles of Unalaska Island.

The SSC had difficulty in determining the problem being addressed by this proposal. If the proposal is aimed at providing shoreside delivery of fish to processing facilities in the communities of Unalaska/Dutch Harbor and Akutan, and providing priority to DAP harvesters on the grounds through area/time closures, the SSC has the following comments to offer:

With regard to shoreside delivery:

1. None of the Alternatives insure that shoreside delivery of fish will take place. Adopting any of the Alternatives over the status quo will probably have a significant negative impact on JV fishermen, without the generation of offsetting benefits. It is not apparent that Alternatives 2 through 6 promote efficiency in the utilization of the fishery resource.

2. The plants involved are making, or have made, arrangements to secure product (page 2-32) and therefore Council action is not required.

With regard providing priority to DAP harvesters:

1. No evidence is provided that indicates that DAP fishermen are currently adversely affected by JV operation within the proposed zone.

2. If DAP fishermen are benefited by the closure, any benefits would be short term in nature. Improved economic performance of the fishery would attract additional effort (unless there is some form of effort limitation), resulting in a dissipation of benefits in the long term.

The SSC also discussed the change in the pollock harvest pattern in the Bering Sea. As of May 2, 73% of the pollock TAC had been taken. This is a substantial shift from past patterns. For example, during the period 1968-73 an average of 24% of the total harvest was taken in the January through April period (Table 1). During 1984 and 1985 an average of 14% of the total harvest was taken in this period (Table 1).

The SSC notes that concern over the rapid harvest of TAC has lead some segments of the industry to suggest management measures that spread out the harvest over the course of the year. Examples of alternative percentage semi-annual splits that have surfaced are 50/50 and 30/70. With respect to

TABLE 1

BERING SEA-ALEUTIANS REGION

POLLOCK CATCH PATTERNS (Average Percent Of Total JV & Foreign Catch, All Fisheries)

| | 1968-73 | | 1974-80 | | 1984-85 | |
|---|---|---|---|---|---|---|
| | MON | CUM | MON | CUM | MON | CUM |
| Jan | 2.5 | 2.5 | 3.6 | 3.6 | 1.2 | 1.2 |
| Feb | 2.4 | 4.9 | 4.8 | 8.4 | 3.9 | 5.1 |
| Mar | 9.0 | 13.9 | 4.3 | 12.7 | 4.2 | 9.3 |
| Apr | 10.2 | 24.1 | 5.6 | 18.3 | 4.6 | 13.9 |
| May | 10.5 | 34.6 | 7.0 | 25.3 | 1.6 | 15.5 |
| Jun | 10.9 | 45.5 | 10.4 | 35.7 | 7.3 | 22.8 |
| Jul | 16.8 | 62.3 | 14.7 | 50.4 | 19.5 | 42.3 |
| Aug | 16.8 | 79.1 | 15.1 | 65.5 | 17.4 | 59.7 |
| Sep | 12.6 | 91.7 | 14.7 | 80.2 | 13.8 | 73.5 |
| Oct | 3.3 | 95.0 | 9.7 | 89.9 | 12.8 | 86.3 |
| Nov | 2.3 | 97.3 | 6.1 | 96.0 | 8.2 | 94.5 |
| Dec | 2.7 | 100.0 | 4.0 | 100.0 | 5.5 | 100.0 |
| TOTAL | 100.0 | | 100.0 | | 100.0 | |
| Jan-Jun | 46 | | 36 | | 23 | |
| Jul-Dec | 54 | | 64 | | 77 | |
| Jan-Apr | 24 | | 18 | | 14 | |
| May-Dec | 76 | | 82 | | 86 | |

Footnotes: 1968-73 period---before substantive time-area regulations were implemented
1974-80 period---after winter halibut savings area was implemented
1984-85 period---recent period prior to rapid development of JVP fisheries
MON = monthly
CUM = cumulative

the 50/50 split, it corresponds closely with the historical catch distribution (1968-73 before fishery regulations were imposed, Table 1). This harvest pattern does not appear to have negatively affected the population. Data currently are not available that allow assessment of the biological implication of the 30/70 split, or for that matter any other split.

The SSC also has the following comments on the EA/RIR/IRFA:

1. Section 2.4.2 Fishery Cost and Benefits.

a. Page 2-35 - the selection of the 1984-85 period for defining the "worst case" is considered inappropriate given the nature of the 1987 fishery.

b. Page 2-39 and 40 - the text should be modified to indicate that benefits likely to be realized by communities having shorebased processing will accrue only if the proposed management measure results in fish being delivered to the shorebased plants. Further, the discussion is deficient in that it fails to identify quantities of fuel, vessel servicing and supplies purchased from shoreside suppliers by JV operation, and how adoption of any of the alternatives might impact these purchases. Some useful information on this subject is provided in an April 15, 1987 letter sent to the SSC from Dr. James A. Crutchfield.

(2) Revise the definition of "prohibited species".

The SSC agrees that the revision of the definition of prohibited species be accepted as proposed. Concern was expressed over the omission of consideration in the definition for the traditional winter bait fishery for herring in the Aleutians, however this fishery is conducted in State waters.

(3) Improve catch recording requirements.

The SSC points out that NMFS proposed to replace the presently required weekly catch report with a weekly production report, although this intention was not stated within the language of any of the alternatives.

The SSC agrees that catch reports must be accurate and verifiable, whenever the catches are landed or shipped, but wishes to reiterate that there are other critical needs for data on DAP fisheries that would not be met by any proposal before the Council. In particular, age composition samples are needed for determining ABC, and incidental catch rates for managing bycatch. These data needs can only be filled by onboard observers on at least a sample of vessels. Logbook data giving details on the time and place of fishing operations may be needed for managing bycatch and investigating the impacts of various proposed regulations such as the DAP priority proposal before the Council at this meeting.

The SSC questioned the need for some elements of the proposed production and transfer logs for DAP motherships and catcher/processors, specifically the 20 pound tolerance and the requirement for a daily production log in addition to the weekly reports of production and transfers. The Committee primarily regards these as enforcement issues and believes they can be best resolved by NMFS and industry. There does not seem to be any urgent need to tighten up the enforcement system, since the DAP component of the industry is not yet

restricted by catch quotas and therefore has no incentive to under-report catches.

(4) Revise the definition of acceptable biological catch (ABC).

The SSC supports Alternative 2, revise the definition for acceptable biological catch to bring it into conformity with the definition adopted by the Pacific Fishery Management Council.

(5) Increase the upper limit of the optimum yield (OY) range.

The SSC approached the question of optimum yield levels or limits as a procedural management issue and from the standpoint of Council operations. The major consideration was that of the Council's flexibility in establishing OY limits, meaning the ability to choose from an array of acceptable values in the determination of OY.

As pointed out in the EA/RIR/IRFA, an increase in the upper limit of the OY range would provide the Council and the Secretary of Commerce broader latitude to fully utilize groundfish resources when conditions are favorable. The SSC is not suggesting that catch levels be increased at this time. In fact, the SSC is quite cognizant of the rapid temporal, spatial, and technological changes occurring in the fishery and the potential problems of making management decisions in the absence of an adequate or timely database.

From the perspective of management flexibility, Alternative 4 is the most restrictive, in that it restricts the upper limit of OY to the minimum of 2 million mt or the sum of ABCs. Alternative 1 (the status quo of 2.0 million mt) and Alternative 3 (setting the upper limit of OY to the sum of ABCs) are viewed as intermediate in flexibility, with Alternative 3 being more restrictive when the sum of ABCs is less than 2.0 million mt and more flexible when the sum of ABCs is greater than 2.0 million mt. Under the EA/RIR the highest permitted level for OY under Alternative 3 would be 2.6 million mt, without further analysis being necessary. Alternative 2, which has an upper limit of 2.4 million mt, was viewed as the least restrictive under forecasted levels of future ABCs.

Either Alternative 3 or Alternative 2 would be acceptable to the SSC. Alternative 2 is simple and straightforward in fixing the upper limit to a constant value of 2.4 million mt, which is higher than the sum of ABCs in recent years. Alternative 3 was favored by many SSC members who believe that catch limits should not go above the sum of the ABCs. It was pointed out that adoption of Alternative 3 may be problematic in its annual determination of the upper end of OY, because of requirements of NEPA, ESA, MMPA, etc.

(6) Prohibit pollock roe-stripping.

There are two issues which are to be addressed in consideration of this proposal. The first is a purported wastage of product from the roe-stripping operation. The second is the problem of greatly intensified fishing effort in the early part of the year in the JVP pollock fishery. This second issue is dealt with in a separate report as it bears no relation to the intent behind this amendment proposal. Thus the SSC concentrated only on the issue of economic wastage in consideration of this proposal.

The issue of how the fish carcasses are utilized once they are harvested is not in itself of biological concern, other than it affects in a relatively small way the amount of waste product discarded to re-enter the ocean food chain. Depending on the nature of local water circulation patterns, decomposition of carcasses could be injurious to plant and animal life, particular on the benthos.

The SSC notes roe-stripping is currently a minor component of utilization of pollock catches. In 1986, the EA/RIR reports that as much as 27,000 mt of pollock may have been processed by taking the roe and discarding the carcasses by Korean JVP partners and 40,000 mt by Japanese JVP partners out of a total JVP catch of 840,000 mt, which is less than 10% of the total. In 1987, some increase is expected, although it is not possible to quantify how much.

Furthermore, it is important to recognize that wastage occurs in all fishing operations. From the EA/RIR, roe-stripping recovers about 4% of the whole fish, while other accepted processes recover about 20%. After review of the the EA/RIR, the SSC concluded that there is no evidence of economic losses from the roe-stripping operation under current circumstances. It was pointed out by representatives of the fishing industry that there is no variation in price per ton paid to JV fishermen by various buyers. For these reasons and lack of scientific information indicating that the dumping of carcasses has caused any large scale biological problems, the SSC supports Alternative 1, the status quo.

Definition of overfishing: a clarification.

In further discussion we believe we borrowed a term from the guidelines for fishery management definition, maximum biological yield, which has not been defined. We now recommend a change to substitute maximum sustained yield (MSY) for maximum biological yield.

SSC Staffing: A consideration of some options.

The SSC considered the matter of membership by reviewing the resumes of several individuals. The matter of selecting new members has been deferred for an indeterminate period. The chairman will research the topics which may be the subject of a closed meeting.

Report from John Harville on Policy and Planning Committee

The SSC received a report form John Harville regarding a proposal to establish a new committee structure to more intensively screen proposals for FMP amendments.

Proclamation Honoring John Harville

This statement was signed by the members of the SSC and given to Mr. Harville.

May 19, 1987

Be it Proclaimed:

In light of his strong support of Council operations in general and fisheries science in particular that the members of the Scientific and Statistical Committee thank John Harville and wish him smooth seas and a full hold of happiness and joy in his future activities. With affection and appreciation.

Shelikof Pollock Survey

The SSC notes that the Shelikof pollock survey is consistent with the currently established ABC.

Fisheries Management Foundation (FMF) Study

The SSC looks forward to the opportunity to assist Dan Huppert who will review Bering Sea and Gulf of Alaska groundfish fisheries management on behalf of the Foundation. The FMF was established by microwire tag inventor and manufacturer, Keith Jefferts, as a means to further information gathering and research in Pacific fisheries.

Rosenberg comments on Fisheries Management

Exhilaration is that feeling you get just after a great idea on how to solve a fisheries management problem and just before you realize what's wrong with it.

# North Pacific Fishery Management Council

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CERTIFIED Richard J. Marasco
Richard J. Marasco

DATE 12/5/87

MINUTES
Scientific and Statistical Committee
September 21-22, 1987
Anchorage, Alaska

The Scientific and Statistical Committee met September 21 and 22 at the Hilton Hotel in Anchorage, Alaska. Members present were:

| | |
|---|---|
| Phil Mundy, Chair | Rich Marasco, Vice Chair |
| Don Rosenberg | Robert Burgner |
| Larry Hreha | Bill Clark |
| Bill Aron | Douglas Eggers |
| Terry Quinn | Don Bevan |

SSC Officers - The SSC recommends that the Council Chairman confirm Drs. Richard Marasco and Douglas Eggers as Chair and Vice Chair of the SSC. This meeting is the last meeting for the SSC's chairman, Dr. Phil Mundy. While Dr. Mundy's term with the Committee has been short, his contributions have been many. His expertise and leadership will be missed. We wish him well in all of his future endeavors.

B-6 BS/AI Crab Survey

The SSC received a report on the status of the crab resource in the Eastern Bering Sea. In summary, the Tanner crab resource appears to be increasing while the king crab resource does not show a significant change.

C-6 Halibut Management

The halibut issues are largely allocative and at this point were found to be appropriate for AP and Council action. If these issues are translated into action with the need for RIRs and EAs, the SSC warns that additional resources will be required or current work will have to be delayed.

C-7 Sablefish Management

The SSC does not wish to comment at this time. It would like to point out that if these issues are translated into action with the need for RIRs and EAs, additional resources will be required or current work will have to be delayed.

C-9 Future of Groundfish Management

The SSC supports activities undertaken by the Council to address this topic. Time did not permit further consideration of this agenda item.

C-10 Bycatch Committee

The SSC heard a report on the results to date of the Council Bycatch Committee from the chairman, Larry Cotter.

D-2 BS/AI King and Tanner Crab FMP

The SSC concludes that the Draft Fishery Management Plan for king and Tanner crab is not ready to be released for public review.

The SSC is aware that this draft plan is a very contentious issue for many. We wish to report to the Council that it did not result in an argumentative discussion in the SSC. Although there may be differences in individual members' evaluations of the importance of various sections of our report, the conclusions and the recommendations made were reached by unanimous consent.

While the SSC recognizes that the question of who implements the plan and promulgates regulations is of importance to many, we have not addressed this issue. The advantages or disadvantages of state or federal management would not ordinarily be matters in the scientific or statistical domain. The impact of regulatory flexibility on the achievement of conservation objectives is of concern to the SSC. However, the need for flexibility of the regulatory program has not been substantiated in the draft plan. Management measures other than inseason management should be analyzed. While we do not reject all inseason management, replacement of inseason action might be possible without increasing risk to the conservation of the resource. The speed with which regulatory action needs to be taken in order to achieve the objectives of conservation and product quality for each of the species covered by the FMP should be considered.

The SSC spent most of the review time on the management objectives and strategies proposed to attain them. The management strategies should be based upon the best scientific information available relating to crab biology and economics. This is an area in which the plan is most seriously flawed. There is little information given which would allow the evaluation of the various management strategies, and in some cases the management proposed seems counter to the best scientific information. An example is the procedure for setting harvest rates suggested in Table 8.4 on page 8-26. The plan presents no justification for the exploitation rates. Furthermore, the exploitation rates do not appear related to what we believe is the best information on stock and recruitment for Bering Sea red king crab. The discussion of exclusive registration provides an example of where an attempt was made to discuss what might be accomplished by a management measure. However, the presentation is flawed. The document claims that this tool can be used to protect the "overall diversified fishery activities of the participating vessel classes" (p. 8-10). A case can be made without serious difficulty that exclusive areas hinder diversification. The draft FMP further argues that the most significant conservation purpose served by exclusive areas is the reduction of

the opportunity for "pulse" type fishing effort. This claim lacks validity, since exclusive areas do nothing to constrain the total amount of fishing effort employed.

We have concern over the plan's failure to specify procedures for making scientific determinations that will be both objective and reproducible. For example, the section on inseason management suggests a number of possibilities but no clear guidance on how to reach a decision. This will be particularly difficult since the plan's biological objectives are not clearly defined or specified. Economic objectives are also poorly defined. For example, the plan proposes economic stability as an objective but does not define the term.

Another major deficiency in the plan is the lack of any discussion of alternative management measures. It appears the Crab Management Committee and the plan team have considered management alternatives and rejected all of them in favor of the status quo. These decisions on which measures to adopt have been made before the SSC received the document, but perhaps more importantly before public review or Council approval.

The SSC had some discussion on the information available to manage crab. There seems to be a mistaken impression in the fishing community that we lack the basic data to manage. We believe the data and analyses for the biomass assessments and stock recruitment relations for Bering Sea red king crab are superior to those for many of the groundfish species. Of major concern is the lack of information on the impact of management on populations. It is critical to design experiments that would measure the effectiveness of management.

We acknowledge that the Council has placed a high priority on the development of a crab plan and has adopted some very tight time schedules. We are sure you share our concern that a deficient plan be corrected before it starts the review process. We have made a number of suggestions to the Committee and team for changes that we hope will result in an acceptable plan. We suggest the team attempt to rectify the deficiencies we have identified and prepare a new draft. We suggest that the SSC schedule a special meeting one week after the receipt of a new draft. We think that a meeting is unlikely before November. We further suggest that the Environmental Assessment and Regulatory Impact Review not be completed until a new draft plan has been prepared.

D-3 GOA Amendment 16

The SSC endorses approval of Amendment 16 and agrees with the editorial changes proposed by the plan team with the following exceptions or additions:

4.1 General Information, paragraph 3. Delete the first sentence: (Management measures in the FMP set the limit of management authority but cannot be used to control the fishery.)

4.2.1.1 Procedure for setting total allowable catch levels. Change (1) to read, "Prior to the September Council meeting the plan team provides a Resource Assessment Document (RAD) which establishes preliminary ABCs."

4.2.1.2 The OY Range, paragraph 3. Delete last 2 sentences: (It is possible that in the future the Council may wish to establish TAC equal to MSY for all species. It should be noted that to do this the Council would have to amend the upper bound of the OY range.)

4.3.1.2.1 Sablefish fishing seasons, paragraph 1, sentence 1. Change to read "The sablefish trawl fishery . . . ."

p. 3-5 State Regulations of Shelf Rockfish Assemblages. The SSC had extensive discussions regarding the section which allows the State of Alaska management authority of the shelf demersal rockfish assemblages in smaller management units. Under the current plan the State has management authority for the shelf demersal rockfish assemblages in a small district within the Southeastern Regulatory Area. The SSC was informed that the team was making "editorial" changes to the list of Target Species (page 3-4). They are deleting the target species entitled "Rockfish (all other areas)" and the reference to "S.E. Management Area Only" under the target species entitled "Rockfish." The SSC notes that this change apparently expands the scope of the State of Alaska management. The SSC recommends that the section entitled, "State Regulation of Shelf Demersal Rockfish Assemblages" be clarified to reflect the Council's intention with respect to the state's management authority for this assemblage.

p. 5-93 Estimated Management Costs. Include estimated cost of Northwest and Alaska Fisheries Center research activities.

p. 5-95 Change heading to Literature Cited.

D-3(a) Status of Stocks

GOA Pollock

The method used for determining ABC was essentially the same as last year: projecting future biomass from current biomass, under several recruitment and catch scenarios. However, no 1987 estimate of biomass was obtained due to failure of hydroacoustic gear, so projections started in 1986. An ABC based on MSY calculations would probably be higher. The recommended ABC of 200,000 mt does not create a decrease in the population trend under an average recruitment scenario for the 1985 year class. This estimate applies to Shelikof Strait and does not include potential concentrations of pollock to the west and east. Further research or experimental fishing may be warranted to provide data for assessing these concentrations.

GOA Pacific Cod

A new method of estimating MSY and a lower value of natural mortality were used. A range of ABCs was calculated from yield-per-recruit and $F_{0.1}$ analyses. The SSC accepted the approach used by the team. A breakdown of ABC (111,000-206,900 mt) by regulatory area is not necessary because it is assumed that Pacific cod is a single stock in the Gulf. However, TAC by regulatory area may be of use in preventing heavy exploitation in any one area.

GOA Flounder

ABCs were calculated using the $F_{0.1}$ exploitation rate. A summary table of species-specific natural mortality rates in the RAD would be useful in understanding the calculations. The SSC accepted the team's approach of setting the ABC at 537,000 mt.

GOA Rockfish (Sebastes)

The team recommended an ABC for Gulfwide rockfishes (excluding shelf demersal rockfish in the Southeast Alaska-Outside District) of 10,500 mt. This value is based on the method of stock reduction analysis and is identical to the ABC last year for the POP complex. Last year no ABC was set for this category, since the SSC found that there was no scientific basis for establishing an ABC for the other rockfish species. Thus, the ABC estimate of 10,500 mt for Gulfwide rockfish is conservative. The ABCs by management area should be 2,520 mt in the Western area, 3,465 mt in the Central area, and 4,515 mt in the Eastern area. The SSC recommended that determination of TACs by management area are necessary to prevent overharvesting of stock components. The SSC also recommended that the team investigate risks of overharvesting and geographic distribution of fishing on rockfish populations.

For shelf demersal rockfish in the Southeast Alaska-Outside district, the team recommended an ABC of 625 mt, a decrease from 1,250 mt recommended last year. Their recommendation is based on fishery performance data indicating declines in catch per hook, which are not contained in the RAD. Such data should be made available to the SSC, AP, and Council to assess the ABC set by the team. The ABC seems to be determined in order to maintain catch rates at current levels over the district.

GOA Thornyhead (Sebastolobus)

The ABC of 3,750 mt is based on an exploitation rate of 4.5% from MSY calculations. Details of these analyses should be included in the RAD. The team plans to recalculate ABC from 1987 survey results.

GOA Sablefish

No new data or analyses are available at this time. A preliminary value for Gulfwide MSY of sablefish is about 25,000 mt, although this value is imprecise. This results in an exploitation rate of about 5%, which is much lower than the value of 12% accepted by the SSC in the Bering Sea. The SSC recommended further analysis of the exploitation rate at the MSY level in the Gulf. The team set a Gulfwide ABC of 25,000 mt because the team feels that the population is near the MSY level. The team plans to incorporate new information and analyses from 1987 into the revised RAD. The SSC accepted the 25,000 mt as a preliminary value for ABC. The SSC also concurred with the team that ABC should be apportioned to management areas according to biomass in each area.

GOA Halibut PSC

The SSC accepted the team's report.

D-4(a) BS/AI RAD

Overall: The SSC commends the team for producing a comprehensive report with the latest data in the brief time since the end of the 1987 summer surveys. The Council is advised to note that some of the changes in value of ABC are the result of applying the new definition of ABC. Thus, changes in ABC recommended by the SSC do not necessarily reflect changes in the estimated population sizes.

BS/AI Pollock

1. The SSC requested the team to clarify parts of the analyses. There are various definitions and estimates of exploitable and total biomass (see text table, page 23) and it is not always clear which is being used in alternative calculations of ABC.

2. The SSC also recommended that the team carry out some additional analyses in order to obtain a better estimate of the MSY exploitation rate. (In the absence of any evidence of a stock-recruitment relationship, this would amount to a yield-per-recruit analysis incorporating the age-specific vulnerabilities estimated by fitting the separable catch-at-age model.) If there were evidence of a stock-recruitment relationship, it could be incorporated into the model.

3. Given some uncertainty about present exploitable biomass and even more uncertainty about the MSY exploitation rate, a range of ABC estimates is possible. The team's recommendation of 1.41 million mt for Bering Sea is based on the exploitation rate of 16% that has been sustained in recent years. The MSY exploitation rate could, however, be considerably higher, perhaps twice as high. It should be kept in mind that increasing the exploitation rate would reduce stock abundance which could increase variability in stock abundance. Following the same procedure for the Aleutian region yields an ABC range of 160,000 mt to perhaps twice this amount.

4. In the absence of evidence to the contrary, both the team analysis and the SSC's advice assumes that the eastern Bering Sea/Aleutian Islands pollock in the U.S. zone can be treated as a closed stock for management purposes. If catches in the international zone are in fact being taken from this stock, the analysis and advice could be different.

BS/AI Cod

The SSC agrees with the team (and the author of the paper) that stock reduction analysis (SRA) is not well suited to the cod data because the SRA model requires a correspondence between stock and recruitment which is not possible to discern from the short time series of data available. The SSC concludes that the MSY exploitation rate obtained from that analysis cannot be used. The SSC does not recommend basing ABC on an estimate of annual surplus production, as this approach is not generally sufficient to achieve MSY.

As in the case of pollock, the SSC recommends that the team calculate an MSY exploitation rate from the available data and apply it to the biomass estimate to obtain an ABC value. The resultant cod ABC will lie somewhere between the

limits of about 326,000 mt (ASP) and 700,000 mt ($F_{MAX}$ = 0.53 and Biomass = 1,373,800 mt).

BS/AI Yellowfin Sole

Recalculation of ABC by the SSC and team chairman from data in the document produced a point estimate of ABC of 303,000 mt (range 257,000-349,000 mt) at an exploitation rate of 12.3%. The SSC wishes to point out that this is the $F_{0.1}$ rate, and the MSY exploitation rate which was not available could be considerably higher.

BS/AI Greenland Turbot

The SSC agrees with the team that the stocks are depressed with no large year classes in sight. The ABC of 19,000 mt is based on an exploitation rate of 5%, which is probably too low if in fact the natural mortality rate is .18 (For example, arrowtooth flounder with a natural mortality of .20 has an MSY exploitation rate which is conservatively estimated as 25%).

BS/AI Arrowtooth Flounder

The SSC endorses the team's recommendation.

BS/AI Other Flatfish

The SSC believes that the team's estimates are reasonable. Information on these stocks is poor.

BS/AI Sablefish

The SSC believes that the 7% exploitation rate used to calculate the sablefish ABC is probably an underestimate of the MSY value. It recommends the higher rate of 12% that is also presented in the document, which implies ABC values of 6,800 mt for the eastern Bering Sea and 11,600 mt for the Aleutians.

BS/AI POP and Other Rockfish

The SSC endorses the team's recommendations.

BS/AI Atka Mackerel

The SSC notes that the team's ABC values are calculated using the $F_{0.1}$ exploitation rate rather than an estimate of the MSY exploitation rate. Given the uncertainty about the natural mortality rate, the distinction is not very important here.

BS/AI Squid and Other Species

There is no new information.

BS/AI Bycatch Experiments

The SSC heard a report from the Northwest and Alaska Fisheries Center (NWAFC) on the experiment to determine the effect of test net modification on the

bycatch of crab in the yellowfin sole fishery. Data are still being analyzed by the Center and the preliminary report should be available in about a month.

Programmatic Funding

The SSC designated Drs. Marasco, Burgner, Bevan, and Aron to present a recommendation to the Council on programmatic funding during the current meeting.

Programmatic Research Recommendations:

1. Evaluation of alternative management strategies for Alaska king and Tanner crab fisheries. (50k)

2. Bering Sea pollock stock structure studies. (45k)
   (morphometric/meristic comparisons)

3. Development of limited access systems. (100k)

4. System design and program development for integration of state and federal data bases. (100k)

5. Support recommendations of PFMC, SSC for funding of trawl mesh selection study.

Preparation of Minutes

The SSC will attempt to have the minutes in draft form by the afternoon of the day preceding the Council meeting to permit members to review the text. SSC members may have to stay after the SSC meeting to review sections of special interest to them.

# North Pacific Fishery Management Council

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CERTIFIED
Richard J. Marasco

DATE 1/30/88

MINUTES
Scientific and Statistical Committee
December 6-8, 1987
Anchorage, Alaska

The Scientific and Statistical Committee met December 6,7 and 8 at the Hilton Hotel in Anchorage, Alaska. Members present were:

| | |
|---|---|
| Richard Marasco, Chairman | Doug Eggers, Vice-Chairman |
| Don Rosenburg | Robert Burgner |
| Larry Hreha | Bill Clark |
| Bill Aron | Don Bevan |
| Terry Quinn | John Burns |

At the September meeting, the SSC considered MSY exploitation rates, as one of the options being evaluated for determining ABC. The table of ABC values issued for public review incorrectly suggested that the SSC recommended MSY rates. This is not in agreement with the SSC minutes. The SSC has devoted considerable effort during the past year to rigorously define terminology and methodology used in the determination of ABC.

The definition of ABC is:

> A seasonally determined catch or range of catches that may differ from maximum sustainable yield (MSY) for biological reasons. Given suitable biological data and justification by the plan team and/or the SSC, ABC may be set anywhere between zero and the current biomass less the threshold value. The ABC may incorporate safety factors and risk assessment due to uncertainty. Lacking other biological justification, the ABC is defined as the MSY exploitation rate multiplied by the size of the biomass for the relevant time period. The ABC is defined as zero when the stock is at or below its threshold (December 1987, SSC Minutes).

The specification of ABC involves the determination of the current biomass level of a population and an appropriate exploitation rate. The SSC does not in general consider the MSY exploitation rate to be the best rate, but one of several to be considered based on available information. Setting ABC based on an MSY exploitation rate would be conservative when the stock is at low levels, because the exploitation rate would produce yield less than surplus production. At high stock levels, MSY exploitation rates would produce yield higher than surplus production to utilize excess reproductive capacity. Explicit in the definition of ABC is the consideration of uncertainty and

risk. The SSC considered these factors in the determination of both current biomass and appropriate exploitation rate.

One approach to determining the appropriate exploitation rate is described in the Bering Sea/Aleutians RAD. In that document, conservative exploitation rates are chosen when stock levels are low or when information is highly uncertain. For example, fishing mortality rates less than the value of natural mortality rates are considered conservative, although it may be difficult to estimate natural mortality rates. Less conservative approaches can be used when the biological information is good and stocks are at high levels. Approaches based on MSY or on maximum yield-per-recruit are thought to be less conservative. Current knowledge does not favor fishing at the rate that maximizes yield-per- recruit, because the impact on reproductive capacity is not considered in this approach.

The SSC review of the Teams ABC recommendations for the Bering Sea and Gulf of Alaska Groundfish, considered the changes in stock abundance due to a number of factors, including the recommended catch levels, growth, recruitment, and natural mortality. To the extent possible, we considered the implication of alternative ABC levels relative to projected changes in the biomass, age/size structure, and spawning stock thresholds. In the SSC's deliberations to specify ABC's, the health of the population and the quality of the scientific data were key elements of our considerations. In cases where the SSC felt uncertain about the information, recommended ABC's were somewhat lower than the Team's. The SSC would like to commend the teams for providing significant new information and analyses that greatly facilitated our deliberations, including population projections and alternate recruitment scenarios. The SSC recommends that the Teams work with the SSC to insure consistency in the definition and application of various biological reference points.

D-3 Bering Sea/Aleutian Islands Groundfish

D-3(a) Bering Sea "Donut" fishery

The SSC received a report given by Dr. Jim Balsiger of the Northwest and Alaska Fisheries Center on this topic. The report summarized information that has been compiled from available sources. Information presented included observations on size ranges of pollock encountered in the Bering Sea tag recoveries, results of genetic studies, growth observations and limited observations on spawning locations. Several working hypotheses were suggested regarding the relationship of pollock in the international zone of the Bering Sea to pollock elsewhere including the U.S. FCZ Basin and shelf/slope areas. It was indicated that current data do not allow evaluation of the validity of the suggested hypotheses. Further, it was indicated that there is no conclusive information to provide any guidance about the long- term consequences of international zone harvests on the productivity of the eastern Bering Sea shelf area pollock.

The SSC encourages research on stock structure of Bering Sea pollock. Information and analyses of stock status, migration patterns, and fishery removals are necessary to understand the relationships among stocks caught in the U.S., international, and Soviet zones.

D-3(b) Bering Sea/Aleutian Islands ABC's

Pollock

The SSC endorses the Team's 1988 biomass estimate of 6.5 million mt for pollock in the eastern Bering Sea, based on cohort analysis adjusted to trawl-hydroacoustic survey estimates.

The Team recommends applying the $F_{0.1}$ rate, which is 23%. The SSC concurs with this recommendation. Fishing at this rate would provide about 80% of MSY and maintain biomass at about twice the MSY level. It would probably reduce the relative frequency of older (larger) fish in the catch by about 10% relative to the present size composition.

Recent exploitation rates have been low. Only about one-half of MSY is being taken. Spawner-recruit data indicate that the MSY exploitation rate would be extremely high - on the order of 50% per year. Even if this rate were sustainable, it is considered undesirable because it would reduce biomass to a much lower level and annual catches could become highly variable. Applying the MSY rate now would provide a large short-term increase in catch while the stock was being fished down, but a much smaller long- term increase. Further, the MSY rate would probably reduce the relative frequency of older fish by 50%.

Switching from recent exploitation rates to $F_{0.1}$ would produce an incremental gain in catch of about 300,000 mt. Biomass would be about 10% lower than the level associated with the present exploitation rate. Recruitment may be slightly higher.

With respect to the Aleutian Islands area, the SSC agrees with the Team's ABC recommendation.

In summary the SSC, and the Team, recommend that the ABC's for the eastern Bering Sea and Aleutian Islands be set at 1,500,000 mt and 160,000 mt, respectively. The SSC agrees with the Team that it is not possible at this time to incorporate catches in the donut into the calculation of ABC. Information and analyses on stock status, migration and fishery removals are necessary to understand the relationships among stocks caught in the U.S., the Soviet and international zones. The impact of the catches in the donut area on the Bering Sea/Aleutian Islands area is a complicated question to resolve. It will require stock assessment and stock structure analyses in addition to catch data and also will require an examination of biomass and catch in the Soviet zone.

Pacific cod

Biomass trends of cod presented to the SSC by the Team indicate that the cod biomass is at very high levels. While the very high 1977 and 1978 year classes are gradually disappearing from the fishery, there is evidence that the 1982 and 1985 year classes are strong. In the opinion of the Team, it is unlikely that these incoming year classes will have an impact equal to that of the 1977 year class. However, taken together the strength of these two year classes indicates that the stock should remain relatively healthy. Given the high level of abundance of this stock and the strength of recent recruitment,

the Team concluded that this stock could be exploited at a level which maximizes yield as determined by a cod population model (exploitation rate of 26%). Application of this exploitation rate to the projected 1988 biomass of 1.48 million mt for the combined area resulted in an ABC estimate of 385,300 mt. The SSC concurs with this recommendation.

Yellowfin sole

The abundance of the yellowfin sole stock remains high. Using the results of cohort analyses and assuming that recruitment will remain constant at the average for the 1977-85 period, the Team arrived at a projected biomass of 1,408,000 t for 1988. The SSC notes that the current biomass estimate is above the MSY biomass. However, since the biomass is expected to decline because the population appears to be entering a period of lower than average recruitment, the SSC feels that a conservative harvest policy is appropriate. The Team recommends use of a $F_{0.1}$ exploitation rate (0.18) and an ABC of 254,000 mt. The SSC concurs with this recommendation.

Greenland turbot

There is considerable uncertainty associated with the status of this population. Two sources of data have been used to examine trends in relative abundance of this species: (1) NWAFC survey data and (2) catch-effort data collected by U.S. observers aboard Japanese small trawlers. CPUE data provided by the Team indicates that the survey conducted by the NWAFC experienced declining CPUE's from 1979 to 1985. In 1986, CPUE's were about the same as they were for 1985. CPUE's increased slightly from 1986 to 1987. For the Japanese small trawlers, CPUE's generally declined through the early 1980's, then increased sharply from about 1983 to 1986. When data for the small trawlers is disaggregated into immatures versus mature adults, the trend in CPUE's for immatures tracks those previously mentioned for aggregate CPUE's. CPUE's for the mature portion remains relatively constant between 1978 and 1984, then dropped significantly between 1984 and 1985. Due to uncertainties associated with the CPUE data, coupled with declining estimates of the shelf component of the stock and limited data on the slope portion of the stock it is suggested by the SSC that caution is warranted in the selection of exploitation rates for this stock. The $F_{0.1}$ exploitation rate of 0.034 proposed by the Team is consistent with the need to be conservative. Applying this rate to the projected biomass for 1988, 414,000 mt, yields an ABC of 14,100 mt. The SSC concurs with this recommendation.

Arrowtooth flounder

In general, this species is in excellent condition and biomass is increasing. Using results of the surveys conducted by the NWAFC, the Team determined that the combined exploitable biomass for the three components of this stock--the EBS shelf, slope and Aleutian region--was 497,300 t. In the process of calculating ABC the team used the lower end of the confidence level for the combined exploitable biomass (377,700 mt) to calculate ABC. The SSC prefers that average exploitable biomass be used to determine ABC, since this species is in excellent condition. Further, it is suggested that deviation from the exploitation rate recommended by the Team is warranted. The Team recommends that an exploitation rate corresponding to the one that maximizes yield-per-recruit be used to determine ABC. Fishing at this rate over a

period of time may lead to overfishing. For this reason the SSC feels that an exploitation rate that approximates the $F_{0.1}$ rate (0.20) is appropriate. Therefore, the SSC recommends that the ABC be set at 99,500 mt. During our discussions concern was expressed over the potential adverse impact a high arrowtooth flounder catch might have on Greenland turbot.

Other flatfish

In general, it is felt that species contained in this category are in good condition and at high levels of abundance. Therefore, the SSC supports the ABC recommended by the Team, 331,900 mt.

Sablefish

Biomass trends for this species are best determined by examining results of the U.S./Japan cooperative longline survey. Abundance indices for the eastern Bering Sea indicate that abundance declined between 1982 and 1983. Between 1983 and 1985 abundance increased, then it decreased from 1985 to 1986. Preliminary data indicate that abundance declined further in 1987. Abundance indices for the Aleutian Islands increased from 1981- 1985, and then decreased in 1986. Preliminary 1987 abundance indices (RPN's) show no change from 1986 levels. Since the longline survey does not provide an estimate of absolute abundance, results of the U.S./Japan cooperative trawl survey were used to estimate the current size of the exploitable biomass. For the eastern Bering Sea the biomass was obtained by summing the biomass estimates for northern portion of Area 1 and Area 2, 33,500 (This estimate was obtained by adjusting the 1985 biomass estimate for this area by the decline in RPW, 3.45%. This adjustment was necessary because a biomass estimate for this area is not available for 1986.) The biomass in the southern portion of Area 1 was 23,000 mt. Therefore, the combined biomass for the eastern Bering Sea was estimated to be 56,500 mt for 1986. The 1986 Aleutian Island biomass was estimated to be 96,300 mt. Given that the results of the 1987 longline survey are only preliminary and that trawl survey results are not available for 1987, the Team recommends that the 1986 biomass estimates be used to determine ABC. The SSC supports this recommendation: however, we note that caution is probably warranted given the behavior of the longline survey abundance indices the last couple of years.

The SSC had an extensive discussion regarding the determination of an appropriate exploitation rate. The Team recommended use of the MSY exploitation rate (0.08). This rate was obtained from Stock Reduction Analysis (SRA). The SRA approach requires specification of a spawner-recruit parameter, which in practice, is not known. Thus, results of SRA are subject to uncertainty from the lack of knowledge of this parameter. The uncertainty associated with recruitment led the Team to set the value of this parameter at a conservative level. Given uncertainty associated with recruitment and biomass size assumed for 1988, the SSC recommends that the $F_{0.1}$ exploitation rate be used (0.06 was developed using a graphical approach by the SSC). This exploitation rate corresponds to historical levels. Therefore, the SSC recommends that the ABC's for the eastern Bering Sea and Aleutian Island be 3,400 mt and 5,800 mt, respectively.

Pacific Ocean Perch

The POP complex population is at a low level compared to the early 1960's but appears to be increasing due to recent recruitment of strong year classes for the 1975, 1976 and 1977 year classes (See SRA analysis reported in the RAD). The SSC concurred with the Team's recommendation regarding the ABC for the POP complex. The ABC's, 6,000 mt for the eastern Bering Sea and 16,600 for the Aleutian Islands, were developed using an exploitation rate of 0.06.

The SSC notes that the Council has expressed a desire to rebuild the POP stock. Maximum rebuilding will occur by restricting catches to low levels.

The SSC requested that during the next year the Team assess the consequences of aging errors on results obtained from SRA analysis. An estimated natural mortality rate of 0.05 was based on the break-and-burn otolith aging technique, but the growth rates used were based on surface aging of otolith. This problem contributes to the uncertainty in the determination of ABC.

Other rockfish

The status of "Other rockfish" is quite uncertain, because the trawl survey cannot estimate this category with great precision. The SSC concurred with the Team's recommendation regarding the ABC for other rockfish (400 mt for the eastern Bering Sea and 1,100 mt for the Aleutian Islands), based on applying the same $F_{0.1}$ exploitation rate as used for POP.

Atka Mackerel

The SSC concurs with the Team recommendation that the ABC for 1988 be set at 21,000 mt.

Squid

The SSC concurs with the Team recommendation that the ABC be for 1988 be set at 10,000 mt.

The SSC reviewed a letter from Professors Ellen Pikitch and Donald Gunderson of the Fisheries Research Institute, University of Washington and public testimony and written report from Dr. Murray Hayes on the subject of the Bering Sea ABC's.

The SSC notes that Drs. Pikitch and Gunderson support the Team's pollock ABC recommendation. With respect to Dr. Hayes' report, we agree that recruitment, growth and natural mortality, in addition to fishery removals, must be considered in setting ABC. However, we find that Dr. Hayes is in error in his interpretation of the SSC'c definition of ABC. The definition explicitly states that ABC may differ from MSY. The present methodology of setting ABC is not designed to fish a stock to low levels that will lead to a recruitment fishery. Further, we reject Dr. Hayes' notion that a constant harvest is preferable to a constant rate of exploitation in populations where we have little information to set a more biologically justifiable ABC. A constant exploitation rate policy will allow fishermen a greater harvest when the populations are large and provide greater protection if stocks are small than

is possible with a constant harvest policy. With pollock, where we have considerable information, we expect to use the best scientific information available to set ABC's rather than to blindly follow a constant harvest.

Dr. Hayes has attempted an evaluation of a variety of harvest strategies based on various biological reference points with respect to meeting objectives of conservation and maximization of yield. The SSC noted that there is controversy over the relative degrees to which these different strategies, in the long term, meet conservation objectives. The SSC further notes that there may be enormous differences in the magnitude of average sustained harvests expected under these alternative harvest policies. In a sense the setting of ABC is an objective process of establishing a harvest level that meets the objective of the plan. This is an adaptive process which must consider an expanding information base relating to the recruitment, growth, and natural mortality parameters of the stock of interest. No particular harvest policy is the best for all situations.

D-2(d) Gulf of Alaska Groundfish ABC's

Pollock

The Team proposes setting ABC so as to increase the spawning stock size to about 768,000 mt. Because of recruitment of the strong 1984 year class and the modest harvest in 1986, the Team estimated the 1987 biomass to be 687,000 mt. In 1988, the biomass was projected to increase to 1,033,000 mt if the 1985 year class is strong or 867,000 mt if the 1985 year class is average. As indicated in the RAD catches during 1988 in the range of 90,000 mt to 120,000 mt would allow the biomass to increase into 1989 for three of the four recruitment scenarios (A,B and C) and would keep the biomass stable for the more pessimistic scenario D. These results led the Team to recommend an ABC range of from 90,000 mt to 120,000 mt. The SSC wishes to note, as does the Team, that the projection model has had varied success in predicting the biomass which will return to Shelikof Strait. They point out in the RAD p.11 that, "The 1985 estimate projected from the 1984 H/A biomass estimate was 71% high. In contrast, the 1986 estimate projected from the 1985 H/A estimate was 14% low". Given the past performance of the projection model and the fact that the model must project for two years rather than one this year, the SSC feels that caution is warranted. Therefore, the SSC recommends that the ABC for 1988 be set at the lower end of the Team's range, 90,000 mt.

As in the past the SSC recommends that the Council continue to set a pollock TAC of 20,000 mt to be caught outside the Shelikof area during the January 10 - April 15 period. The purpose of this exploratory fishing is to encourage fisherman to fish other areas of the Gulf to determine if large concentrations of spawning pollock exist outside of Shelikof Strait. The SSC recommends that TAC's set for either inside Shelikof Strait or outside during the remainder of the year not be affected by catches taken by this exploratory fishery.

Pacific cod

Potential yields for this fishery were developed by the Team by applying exploitation rates of 0.384 (the exploitation rate the maximizes yield-per-recruit) and 0.206 ($F_{0.1}$) to the 1987 survey biomass estimate (481,704 mt). Yields corresponding to these two exploitation rates are

185,000 mt and 99,000 mt, respectively. As has been previously point out, studies have shown that fishing a stock at the rate that maximizes yield-per-recruit over a period of time may lead to overfishing. For this reason the SSC feels that the more conservative $F_{0.1}$ exploitation rate is appropriate. Therefore, the SSC recommends an ABC of 99,000 mt for this species.

Flatfish

The biomass estimate given in the RAD for this complex is 2,111,000 mt. This estimate is based on the 1987 bottom trawl survey, which provided separate estimates for the individual species contained in this complex.

The ABC of 767,000 mt proposed by the Team for the flatfish complex is based on a yield-per-recruit analysis conducted for four species (arrowtooth flounder, flathead sole, rocksole, and yellowfin sole). ABC was determined by applying the $F_{0.1}$ exploitation rate obtained from the analysis to the biomass estimate. The SSC supports this approach and, therefore, concurs with the Team recommendation. Further, the SSC supports the Team's recommendation for the apportionment of the ABC by district.

The SSC would like to note that the present species harvest levels average only about 1% of ABC. As the Team points out, if catches of these species were to approach ABC levels, the bycatch of Pacific halibut would be high.

Sablefish

The SSC has concluded that the lower end of the 95% confidence interval for the 1984 biomass estimate updated by the RPW's to 1987 represents the best estimate of exploitable biomass (338,000 mt). The SSC opted for the lower end of the range because the 1987 biomass estimate is preliminary and is substantially below the updated 1984 estimate. The Team recommends an ABC of 35,000 mt. This ABC represents an exploitation rate of about 10%. The SSC considers this rate appropriate, since the stock is in good condition.

"Other rockfish" and Pelagic shelf rockfish

The SSC supports the teams recommendation of an ABC for "Other rockfish" (16,800 mt) and for Pelagic shelf rockfish (3,300 mt). The SSC notes that these ABC's are conservative and reflect a desire to maintain population levels under the most pessimistic recruitment assumption, conservative biomass estimate, and a concern that the fishery may target on individual rockfish species, exploiting them at unacceptable levels. These ABC's could also provide for the rebuilding of POP stocks.

The SSC also noted that in the pelagic shelf rockfish category, growth and natural mortality parameters tend to be higher, thus making the ABC recommendation for this group even more conservative than the one for the previous category.

Demersal Shelf Rockfish (in the Southern Outside District)

The SSC notes that the value proposed by the Team is not an ABC but instead a TAC recommendation from the Team and State of Alaska. The SSC does not have any information on which to develop an ABC.

Thornyhead rockfish

The SSC concurs with the recommendation of the Team.

D-2(c) and D-2(d)

With respect to these two agenda items, the SSC is concerned over the adequacy of data that can be used to calculate halibut and fully utilized species bycatches. As foreign and joint venture fisheries are replace with DAP fisheries the ability to collect bycatch data will all but disappear.

C-4(a) Halibut Management

The Draft Environmental assessment and Regulatory Impact Review/Initial Regulatory Flexibility Analysis of Management Proposals for the Halibut Fishery off Alaska was provided to the SSC in the briefing book for the meeting. The critical nature of the Bering Sea and Gulf of Alaska RAD documents demanded the full time and attention of the SSC. Because inadequate time was available to permit review of the document, the SSC cannot provide advice on this issue at this time.

Other Issues Discussed

1) Crab FMP

Minutes of the November 24, 1987 will be circulated for review and comment. The draft of these minutes will be provided to the Plan Team to facilitate redrafting of the FMP.

2) 603 Regulations

During the week of January 11, 1988 a meeting will be set up so that members of the SSC's 603 subgroup can discuss the proprosed regulations with members of the Pacific Council SSC. Critical issues are: (1) the inclusion of socioeconomic considerations in development of ABC's, (2) the definition of ABC, and (3) the threshold, as well as, the procedure that must be followed if there is a need to seek secretarial exemption.

Table 1. Recommends Bering Sea and Gulf of Alaska ABC's and Exploitation Rate.

| Species | SSC's ABC[1/] | Exploitation Rate |
|---|---|---|
| **Bering Sea** | | |
| Pollock | | |
| EBS | 1,500,000 | 23.0% |
| ALU | 160,000 | 23.0% |
| Pacific Cod | 385,300 | 26.0% |
| Yellowfin Sole | 254,000 | 18.0% |
| Greenland Turbot | 14,100 | 3.4% |
| Arrowtooth Flounder | 99,500 | 20.0% |
| Other Flatfish | 331,900 | 15.5% |
| Sablefish | | |
| EBS | 3,400 | 6.0% |
| ALU | 5,800 | 6.0% |
| POP | | |
| EBS | 6,000 | 6.0% |
| ALU | 16,600 | 6.0% |
| Other Rockfish | | |
| EBS | 400 | 6.0% |
| ALU | 1,100 | 6.0% |
| Atka Mackerel | 21,000 | ---- |
| Squid | 10,000 | ---- |
| Other Species | 54,000 | 10.0% |
| TOTAL | 2,863,100 | |
| **Gulf of Alaska** | | |
| Pollock | 90,000 | 10.0% |
| Pacific Cod | 99,000 | 20.6% |
| Flounder | 767,000 | 36.4% |
| Sablefish | 35,000 | 10.0% |
| Other Rockfish | 16,800 | 2.0% |
| Pelagic Shelf Rockfish | 3,300 | 2.0% |
| Demersal Shelf Rockfish | TAC = 660 | ---- |
| Thornyhead Rockfish | 3,750 | 3.8% |
| TOTAL | 1,014,850 | |

1/ The SSC points out that the various ABC's have been developed on the basis of single species considerations of stock status and trends. Allowance for marine mammals, seabirds and other components of the Bering Sea ecosystem have been considered as components of matural mortality.

# North Pacific Fishery Management Council

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M E M O R A N D U M

TO: Council Members

FROM: Helen Allen
Executive Secretary

DATE: April 18, 1988

SUBJECT: Final Minutes of December, 1987 and January, 1988 Council Meetings

Enclosed for your files are the approved minutes for the December, 1987 and January, 1988 Council meetings.

enclosures

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