

North Pacific Fishery Management Council

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MINUTES Scientific Statistical Committee September 22-25, 1991 Anchorage, Alaska

The Scientific and Statistical Committee of the North Pacific Fishery Management Council met September 22-25 at the Anchorage Hilton. All members except John Burns were present, namely:

Bill Clark, Chair
Terry Quinn, Vice Chair
Bill Aron
Doug Eggers

Larry Hreha
Dan Huppert
Gordon Kruse
Richard Marasco

Marc Miller
Don Rosenberg
Jack Tagart

Public comment

The SSC discussed its policy on receiving public testimony on agenda items. The usual practice has been to call for public comment just after the staff presentation on each item, which for the most part has been satisfactory and will be continued. In addition, the SSC will designate a time, normally at the beginning of the afternoon session on the first day of the SSC meeting, when members of the public will have the opportunity to present testimony on any agenda item, so that those who wish to can schedule their appearance for a time certain. The Committee will discourage testimony that does not directly address the technical issues of concern to the SSC, and presentations lasting more than ten minutes will require approval from the Chair. A notice of this policy, similar to the AP notice, will be published with the SSC agenda in the announcement of each meeting.

C-1(a) Proposed MMPA Amendments

The SSC reviewed the draft DLEIS on the regime proposed by NMFS to govern interactions between commercial fisheries and marine mammals. We believe that the basic approach proposed by NMFS would be both workable and effective in protecting marine mammal stocks while minimizing restrictions on fisheries. Specifically, we strongly support the NMFS view that some of the scientific determinations required by the MMC guidelines, such as stock status relative to OSP and food requirements of marine mammals, would not be possible to make in the foreseeable future. On the other hand, the method of determining Acceptable Biological Removals outlined in the DLEIS is quite similar to what is done each year to set ABC for groundfish stocks, and while there will doubtless be some difficult cases we believe that it can be done.

While supporting the basic approach proposed by NMFS, we believe that important improvements are needed in certain elements to clarify the scientific standards and avoid potential inequities. Our recommendations are:

Exemptions

Fisheries and marine mammal managers wish to avoid unnecessary fishery induced mortality on any marine mammal stock. There are, however, some circumstances where the interaction between marine mammals and fisheries is so minimal that the overall health of the marine mammal population is not likely to be affected. It is suggested that these fisheries be exempted from the provisions of the Proposed Regime to Govern Interactions Between Marine Mammals and Commercial Fishing Operations. Conditions should be defined for allowing exemptions. For example, an exemption could be granted in cases where all fishery removals amount to less than a very small proportion of the marine mammal population, or a small proportion of ABR, or a small proportion of uncontrolled removals. In these cases there is clearly little benefit to marine mammals from putting the commercial fisheries under quota management. As an illustration, under the NMFS proposal the ABR of some 7000 walrus would be used entirely by the subsistence take, leaving no allowance for the commercial fisheries, which are estimated to take fewer than 20 animals.

ABR calculation

Under the NMFS proposal, allowable biological removals (ABRs) are calculated as: $ABR = (N_{c-min}) \times R_{max} \times Fr$, where N_{c-min} is the best estimate of minimum stock abundance, R_{max} is the best estimate of the stock's net production rate at the population level where net productivity is maximized, and F_r is a recovery factor set at 0.9 for stocks above $2/3$ of carrying capacity (K), 0.5 for stocks between $(1/3)K$ and $(2/3)K$, and 0.1 for stocks below $(1/3)K$. Each of these three products includes a "safety factor" when taken together provide an overly conservative ABR.

The SSC believes that ABR should be based on the best estimate of total stock size, not on the minimum stock estimate. That is, minimum estimates of abundance should be expanded to unsurveyed areas occupied by the stock using the best information available on stock distribution. As there is an explicit safety factor in the formula for ABRs, there should be no need for additional conservatism in the estimate of population size. In addition, minimum population size can grossly underestimate actual population size, depending on the amount of data collected.

The analysis in the DLEIS does not adequately describe the underlying population dynamics models used to predict population trends and times to recovery. Presumably, these models are similar to traditional models based on intrinsic rate of increase (r) and carrying capacity (K). Some approaches to population dynamics have moved away from the notion of a fixed carrying capacity to a variable one which changes due to environmental and biological changes. Because of the difficulty in estimating a fixed carrying capacity, approaches of calculating OSP and ABR independent of carrying capacity should be considered in the DLEIS.

The safety factor adjustment requires the knowledge of where the current population is with respect to carrying capacity, which may be difficult in some cases. One option that should be considered is a constant 0.5 safety factor, independent of population size. Another option would be a straight-line safety factor, increasing with population size. In any case, the choice of safety factor should be analyzed with respect to recovery times for the population and impacts on fisheries on a case-by-case basis.

Allocation and pre-emption of the ABR

Allocation of the ABR must be regarded as a critical element of a comprehensive bycatch regime. Any mechanism established to distribute the ABR in the North Pacific, for example, should take into account and be consistent with the distribution of bycatch for halibut and crabs as well as the anticipated encounter rate by the involved fisheries.

The large geographic distribution of many marine mammals probably dictates a multi-step process. Initially, we suggest that NMFS establish a total ABR based on the best scientific information available. NMFS should, according to the species range and historical take rates, allocate ABRs geographically according to the boundaries of the FMCs. The FMCs would then be given the lead to coordinate with their states to appropriately allocate their ABR between regional user groups.

The ABR allocation procedure under preferred alternative D would, in certain cases, allow subsistence or foreign takes to pre-empt domestic fisheries entirely. An exemption of the sort suggested above would avoid this in cases where the domestic fishery take is small, but not in other cases.

Social and economic impacts

The SSC notes that fishery management measures taken to protect marine mammals are only lightly treated in the draft document. Under some alternatives, it is possible that some fisheries would be severely restricted or even prevented, with regional social and economic consequences of a draconian kind. The analysis should be expanded to evaluate such possibilities. The SSC was assured by NMFS that this analysis will appear in the final version of the DLEIS.

C-1(b) Sea lion EA/RIR/IRFA (Amendments 20/25)

The SSC reviewed proposed amendments to the GOA and BSAI FMPs for the protection of northern sea lions. The three actions proposed would a) prohibit trawling in the vicinity of sea lion rookeries in the GOA and BSAI; b) establish new pollock management districts east and west of 154°W longitude; and c) limit the rollover of the pollock TAC quarterly allowance. These measures are designed to prevent local pollock stock depletions in the vicinity of sea lion rookeries, and to reduce the possibility of incidental takes in trawl fisheries.

While all of the proposed protective measures represent positive steps to reduce the possibility of local pollock depletion, it is unclear whether current fishing mortality rates cause such depletions. Moreover, it is uncertain whether these measures are needed or whether, if applied, they will actually benefit the sea lion population. Finally, even if sea lion abundance increases, it is unlikely that it can be demonstrated that these protective measures caused the sea lion population to increase.

The SSC supports the establishment of new districts east and west of 154°W longitude for the purpose of managing pollock. As noted in the proposed amendment, the new districts are intended to distribute effort over larger areas. For example in 1990 about 78 percent of the pollock harvest in the area occurred east of 154°W. During 1990 the bottom trawl survey indicated that in the summer 47% of the pollock biomass was located west of 154°W. TAC should be proportional to the best available biomass estimates.

Additionally the SSC recommends that the area west of 154°W be further divided at 159°W. This would further spread the effort. Data from the 1990 bottom trawl survey indicates that the pollock

biomass was distributed approximately 22% west of 159°W, 25% between 159°W and 154°W, and 53% east of 154°W. The SSC cautions that the creation of numerous districts could result in management difficulties if pollock apportionments are small.

The SSC has no comment on the proposed quarterly rollover provision.

The SSC believes that insufficient data exist to determine which set of buffer zones would provide protection to sea lions. Therefore, the SSC recommends that two approaches be implemented concurrently in adjacent areas and the results evaluated. For the Gulf of Alaska and the Bering Sea areas, we recommend the buffer zone be expanded to ten nautical miles year round. Discussion with the mammal biologists indicated that this could provide additional protection for both female and young sea lions who feed close to the rookeries in the summer and to juveniles in the fall and winter. For the Aleutian Islands west of the Island of Four Mountains, we are agreeable to an alternative considered by the AP, under which the buffer zone would remain at 3 nm for the period of May 1 to September 30 and would expand to 60 nm for the period of October 1 to April 30. This could provide some additional protection to sea lions that apparently range farther to feed during the winter months. All information on distances traveled by sea lions from the rookeries is based on satellite telemetry studies in the Gulf of Alaska.

The calculation of consumption of pollock by sea lions (Appendix Table 1 on p.16 of the Amendment 25 document) appears to be an overestimate, for two reasons. First, the sea lion population at sea appears to be overestimated (the table doubles the rookery and haul out summer population estimates to estimate total population size when a lesser multiplier is believed to be more appropriate according to NMFS scientists). Second, to determine the fraction of the total annual food needs attributed to pollock the EA uses frequency of occurrence, i.e., the frequency with which pollock is present in a sea lion stomach, rather than an estimate of the proportion of pollock by weight.

C-2 North Pacific Fisheries Research Plan

The SSC reviewed the draft preferred alternative for the North Pacific Fisheries Research Plan. The plan as now drafted incorporates the State of Alaska's crab observer program for the purpose of collection of fees and to standardize data collection. The State of Alaska's current program is to observe the size distribution and sex composition of the catch. Limited observation on the harvesting, bycatch, and discards are taken. The goals and objectives of the State's observer program are not the same as the current Council groundfish observer program and the differences will need to be addressed in the development of the detailed regulations.

C-3 Sablefish management

The SSC reviewed the sablefish longline management plan developed by the Council at its August meeting and the September 18, 1991 progress report of the Ad Hoc IFQ Implementation Technical Work Group. The multitude of quota share categories that would be created by the plan is of concern. This characteristic of the plan will make implementation difficult, and meshing it with other IFQ programs will complicate implementation and reduce economic benefits.

C-4 Halibut management

The SSC reviewed the Draft Environmental Impact Statement, Regulatory Impact Review, Initial Regulatory Flexibility Analysis for Proposed Individual Fishing Quota Management Alternatives for the Halibut Fisheries in the Gulf of Alaska and Bering Sea/Aleutian Islands, dated July 19, 1991. The

SSC endorses the following statement that is made in the EA/RIR/IRFA, "As compared to the status quo (Alternative 1), the implementation of an IFQ program (Alternative 2) would tend to increase the benefits derived from the halibut resources off Alaska and change the distribution of these benefits: it would increase reporting, administrative and enforcement costs, and it could provide increased benefits to consumers in the United States and elsewhere."

The SSC would also like to highlight the following issues:

1. The continuation of open access for species with small TACs that are taken as bycatch in the halibut fishery (such as rockfish) could continue the race for fish taken as bycatch and therefore reduce the benefits of an IFQ system, and
2. A rigidly designed system, i.e. one with a multitude of quota share categories, will lower benefits that will accrue from an IFQ system and will complicate implementation.

Insofar as the social consequences of the IFQ program are concerned, the SSC notes that the draft document is an improvement over its predecessor in that additional descriptive information obtained from the Division of Subsistence, ADF&G and other secondary sources was incorporated. However, and as the document indicates, the assessment of social impacts of alternative management measures "does not represent any focused effort and should be considered to be indicative of trends and issues and is not a definitive assessment"(p.5-1). With this understanding, the SSC views the social impact discussion -- which in some instances conflicts with economic conclusions -- to be helpful and suggestive, but informal. Consequently, the treatment of social impacts does not compel recommendation of any one alternative.

C-6 Comprehensive rationalization of groundfish and crab fisheries

The SSC received an oral report from member Dr. Daniel Huppert concerning his participation on a NMFS-sponsored study of ITQ systems for 4 major U.S. commercial fisheries. Dr. Huppert is working with Dr. Lee Anderson, University of Delaware, and with the support of Council staff to develop a model of an individual quota system for the multispecies groundfish trawl fishery. This effort is separate from the Council's current efforts to develop QS/IQ systems for sablefish/halibut longline fisheries. It will focus on problems associated with trawl fishing, but will attempt to link the system to the longline fishery IQs. The objective is to deliver a report to William Fox and the Council in January. That report will cover the basic characteristics of an individual quota system, but will not include a quantitative assessment of social and economic impacts. Further work on impacts may proceed if more funds and contracts are arranged in 1992.

D-1 Groundfish specifications

Bering Sea and Aleutian Islands

The SSC commends the Teams for their careful work in preparing this year's SAFE's. The tabular summaries, marine mammal summaries, and description of approaches were quite helpful. The SSC requests that the Teams specify the overfishing definition for all stocks and calculate the corresponding overfishing catch limits.

The SSC accepts the Teams' preliminary recommendations in almost every case. The few exceptions, and technical recommendations concerning further work to be done before the December meeting,

are discussed below. All of the SSC recommendations as to present values of exploitable biomass, ABC, and overfishing limits are summarized in Table 1.

Pollock

The SSC concurs with the concept that there are three underlying pollock stocks in the Bering Sea/Aleutian Islands area: Eastern Bering Sea shelf, Western Bering Sea shelf, and Aleutian Basin stock.

Eastern Bering Sea/Aleutian Islands

The SSC agrees with the Team on the EBS recommendations. The choice of the F0.1 exploitation rate is appropriate, given the declining stock biomass and uncertainty about interactions with the Basin stock. The overfishing limit is based on Fmsy, given that the stock is slightly above Bmsy.

For the AI management area, the population is projected based on the EBS trend, but the 1991 survey in the Aleutians may be available by December to determine biomass. The ABC will be recomputed accordingly. The overfishing rate is FMSY borrowed from the EBS. The SSC has requested that the Team review alternate overfishing rates, such as F30% or M, in the development of the December SAFE.

Basin stock

Available evidence indicates that the fishery that occurs in the international zone of the Bering Sea (i.e., the Donut Hole) exploits the Basin stock. Russian scientist suggests that a small (say 20%) portion of the Basin stock originates in the Western Aleutian Basin and a larger (say 80%) portion of the Basin stock originates in the Eastern Aleutian Basin. A portion of the stock spawns in the vicinity of the Commander Islands and another portion spawns in the vicinity of Bogoslof Island. The exploitation rates estimated as the ratio of catch to biomass (Bogoslof survey) have been in excess of 50% since 1988 and strongly suggest that the Basin stock has been overexploited.

ABC considerations

The SSC is concerned about the status of the Basin stock and recommends that the preliminary ABC be set as a range from 0 to 102,000 mt pending further analysis by the Team. The Team needs to consider alternative management strategies for this stock, including the use of thresholds. The Team needs to review the history of exploitation, overfishing considerations, and projections of biomass. This new analysis should be included in the SAFE and considered in setting the final ABC.

In reaching its recommendation the SSC considered the following:

1. The estimate of Bogoslof biomass in February 1991 from the hydroacoustic survey was 600,000 mt. To obtain a preliminary 1992 estimate, the 1991 estimate should be adjusted to account for natural mortality. This results in a biomass estimate of 445,000 mt. This estimate does not consider Basin fish that may spawn outside the Bogoslof district or adjust for possible recruitment into the Basin. Fishery removals in the Basin and Bogoslof district after February 1991 are not included.
2. To determine an upper limit for ABC the SSC applied the F0.1 rate used in the EBS to the projected 1992 biomass. This results in an ABC of 102,000 mt. There are many reasons why this ABC may be too high. The decline in CPUE in the Donut, the actual catches and other analysis are

indicative of substantial reduction in biomass. There has been a three-five-fold decrease in catch levels from 1989 to 1991. Over the same period, survey biomass in the Bogoslof district has declined from 2.1 mmt in 1989 to 0.6 mmt in 1991. Such alarming evidence of decline in stock status suggests a need for a conservative ABC. Some members of the SSC believed that the decline was sufficient to recommend a preliminary ABC of zero.

Alternative management strategies such as thresholds may be warranted when a population is at low levels. Modelling studies of EBS pollock suggest that thresholds in the range of 20% to 40% of unfished biomass are desirable to maintain high sustainable catches with low variability, and would be desirable to rebuild the stock if it were depleted. The Basin pollock stock is most likely below these thresholds levels, which would suggest an ABC of zero.

In addition, the Bogoslof area is adjacent to a major Steller sea lion rookery. Low levels of pollock biomass in the Bogoslof district may inhibit the recovery of the threatened sea lion population.

TAC Considerations

The SSC has requested that the Team develop a recommendation on the size of harvest that would be necessary to maintain our data series and to accommodate bycatch should the final ABC be set at or close to zero.

The Council should note that any ABC selected from the proposed range will result in a TAC well below the historic catches made by the U.S. industry from the Basin stock. This suggests that no fish would be available to support the foreign fishery in the "Donut Hole."

Cod

The SSC supports the Team's recommendations on biomass, ABC, and overfishing. We note that biomass estimates may be reduced when updated with this year's survey results. The SSC requests that the revised SAFE report include the spawner-recruit data used to estimate F_{msy} .

Yellowfin sole

The SSC compliments the authors on their application of the stock synthesis model to the assessment of yellowfin sole. The authors and Team used two methods to estimate ABC. The first used yield-per-recruit corresponding to $F_{0.1}$ multiplied times the average recruitment from the stock synthesis model. The second used $F_{0.1}$ multiplied times the estimated 1992 biomass from the stock synthesis model. The authors and Team recommended using the former procedure. Consistent with harvest policy on other groundfish stocks, the SSC prefers the latter procedure involving a multiplication of a harvest rate times biomass. For overfishing, the SSC supports the Team's calculation using the 30% rule, but requests the authors attempt to estimate F_{msy} on the basis of spawner-recruit data from the fit of the stock synthesis model.

Rock sole

The SSC supports the Team's recommendation, but asks that the revised SAFE document include the spawner-recruit data used to estimate F_{msy} .

Pacific Ocean perch complex

The BSAI Plan Team provided ABCs for the POP complex in the eastern Bering Sea and Aleutian Islands areas. They calculated ABCs for POP, sharpchin and northern rockfish, and shortraker and rougheye rockfish. Biomass estimates used resulted from an updated SRA analysis for POP and an average of all previous bottom trawl biomass estimates for the other species in this complex. The F_{msy} values (0.07 for the eastern Bering Sea and 0.08 for the Aleutian Islands) were used to calculate ABCs for POP. Exploitation rates corresponding to natural mortality were used for the other species.

The F_{msy} values used for POP were calculated after the SAFE document was prepared and are not presented there. Until the analysis can be reviewed, the SSC prefers using a range for the preliminary ABC specification for POP. The lower bound of the range was determined by applying last year's exploitation rate ($F=M=0.05$) to the current biomass estimate. The upper bound was set equal to the Team recommended ABC values. The ranges by management area are given below:

<u>AREA</u>	<u>ABC RANGE</u>
Eastern Bering Sea	4,545 mt to 6,400 mt
Aleutian Islands	10,560 mt to 16,900 mt

It is recommended that shortraker, rougheye, sharpchin and northern rockfish be combined into a single group in the eastern Bering Sea. As the SSC argued last year, the additional protection to shortraker and rougheye afforded by separating them into their own group would be insignificant. Last year it was determined that over 95% of the combined BS/AI/GOA shortraker/rougheye biomass occurs in the Aleutians and Gulf of Alaska. The ABC for this group therefore is 1800 mt, the sum of the ABCs calculated by the Team for shortraker/rougheye (400 mt) and sharpchin/northern (1,400 mt).

The SSC concurs in the Team's recommendation for the Aleutian Islands.

It is requested that the Team calculate the F that reduces the spawning biomass-per-recruit ratio to 30% of its unfished level for possible use in the overfishing definition.

Gulf of Alaska

Values of exploitable biomass, ABC's, and overfishing limits are given in Table 2. It is recommended that ABC's be specified by management area for all species except the slope and pelagic rockfish complexes for 1992. Given the imprecision of the estimated regional distribution of biomass of these rockfish complexes, apportionment of ABC's by management areas is considered inappropriate at this time. The management objective of distributing effort can be accomplished by apportioning TAC's according to the distribution of survey biomass by management area. The SSC requests that the Team explore the utility of specifying Gulfwide ABC's for all species, with TAC's apportioned in proportion to biomass.

Pollock

Preliminary estimates of the 1992 GOA pollock exploitable biomass were again obtained using stock synthesis (SS) analysis. SS is an age-structured model which incorporates auxiliary information such as survey estimates of abundance. In previous assessments of GOA pollock, the SS model was

separately tuned to bottom trawl and hydroacoustic survey data. In the 1992 preliminary assessment there are two model configurations: first, SS is tuned to bottom trawl survey biomass (Model A); second, the analysis is simultaneously tuned to the trend in hydroacoustic survey biomass and the 1990 bottom trawl survey biomass (Model B). The Team supports the use of biomass estimates (1.4 million t) from model B and the SSC concurs in this choice.

The SSC and the Team have struggled to determine a preferred exploitation rate for GOA pollock. In the 1992 preliminary assessment the authors promote the use of a fishing mortality rate (one the SSC labels $F_{0.1b}$) derived from a density-dependent spawner/recruit function. In previous assessments, the SSC has been reluctant to accept the spawner/recruit relationship presented for GOA pollock. This relationship is typically weak and easily discounted. While the spawner/recruit relationship presented in the 1992 preliminary assessment does not represent a significant improvement over previous estimates, for the preliminary ABC specification the SSC has accepted the $F_{0.1b}$ estimate as presented (0.22 for fully selected age classes or a population weighted average value of 0.098). Nevertheless, the SSC notes that the authors are reportedly working to expand the spawner/recruit time series and we look forward to a review of the spawner/recruit relationship. The authors are also working to refine their estimates of preferred fishing mortality. The SSC will reconsider this value at the December meeting.

Flatfish

The SSC supports the Team's estimates of flatfish biomass, $F_{0.1}$ -based ABC, and overfishing. Two comments are offered. First, the authors pointed out that the complete range of Dover sole (>500 m) was not sampled by the triennial survey in 1990 and may underestimate the stock. However, the authors used the average of 1987 and 1990 survey results to estimate current Dover sole biomass. One alternative may be to use the 1987 biomass estimate, as was done for Greenland turbot, if indeed the 1987 survey covered the area occupied by Dover sole. If possible, this estimate could be adjusted for F, M, and recruitment during 1987-1991. Alternatively, the 1990 data could be used if supplemented by 1987 trawl survey data for the deep areas not surveyed in 1990. In any event, the SSC requests that the Team and authors revisit the Dover sole biomass estimation. Second, the SSC points out that the large increase in arrowtooth flounder abundance could have adverse effects on other fish stocks due to predation.

Slope rockfish

The SSC recommends that this complex be divided into three subgroups as was done last year: POP, shortraker/rougheye, and other slope rockfish. Recommended ABCs for these three groups are 5,730 mt, 2,000 mt and 10,100 mt respectively. These values are the same as those recommended by the Team with the exception of POP. For POP, information provided in the SAFE indicates that the current biomass is approximately 50% of B_{msy} . Even though there is evidence that the 1984 year class is stronger than average, the SSC recommends a conservative approach to the selection of exploitation rate. A 50% reduction in the exploitation rate recommended by the Team is considered appropriate. ABC for POP is therefore recommend at 5730 mt. The SSC recommends that for management purposes the ABC not be broken out by management area. However, the TACs for this complex should be distributed among the three management areas according to the results of the most recent bottom trawl survey.

Pelagic shelf rockfish

The SSC concurs in the Team's recommended Gulfwide ABC (8,600 mt) for this complex. Last year,

the SSC's recommended ABC was developed by applying an exploitation rate that corresponds to the natural mortality for POP (0.05). The proposed ABC for 1992 was developed by applying an exploitation rate that corresponds to the natural mortality rate (0.09) for dusky rockfish, the most abundant species in the complex. This is considered to be the most appropriate procedure at this time. The SSC recommends that the TACs for this complex be distributed among the three management areas according to the results of the most recent bottom trawl survey.

Demersal shelf rockfish

The SSC notes, as we did last year, that the population dynamics of the Demersal Shelf Rockfish complex are poorly known. The Plan Team has recommended an ABC based upon averaging landings over the previous 5 years (an ABC of 512 mt).

For species of this type, overfishing is defined as the mean catch since the inception of the MFCMA. Using landing data from 1982 to 1990, the SSC computed the mean landings to be 434 mt. Since the ABC can be no larger than the allowable catch under the overfishing definition, the SSC recommends an ABC of 434 mt.

The lack of information on demersal shelf rockfish combined with reductions in the harvest in the directed fishery caused by management action to protect other species can be expected to cause the ABC values to continue to decrease. The SSC encourages NMFS and the State to conduct further research on this complex so that stock status can be determined.

Economic assessment

The SSC reviewed the report "Economic Status of the Groundfish Fisheries off Alaska, 1991" which has been prepared as part of the overall Stock Assessment and Fishery Evaluation. This report accomplishes its intended purpose of collecting and documenting information for use by those involved in groundfish management decisions. We note that the report does not now provide an analysis pertinent to the management program. An SSC subcommittee will consider how the report might be expanded to include some analyses reflecting the economic effects of groundfish management. These analyses might include an index of economic performance of the fishing fleet or the processing industry; an evaluation of economic impacts of the fishery on key communities; or an assessment of impacts of groundfish regulations such as PSCs. After reviewing our subcommittee's work, the SSC may provide recommendations for changes in the SAFE.

D-2(a) Bycatch amendment

The SSC reviewed the Amendment 19/24 EA/RIR/IRFA document and heard a presentation from Council staff. This amendment includes seven actions intended to further limit the bycatch of non-target species in the various fisheries of the BSAI and GOA areas.

Important work remains to be done on the analysis. The authors reported that before releasing the document, they intended to estimate the net costs and benefits of the alternatives, verify the data further, document the fishery simulation model used to predict the consequences of the proposed measures, and perform additional model runs. The SSC believes that these additions, and particularly the cost-benefit analysis, are needed.

The SSC has the following comments on elements of the amendment:

The "hot spot" authority as now in effect in the BSAI area takes at least 30 days to implement, which makes it ineffective. The proposed new system of closures triggered by high bycatch rates would take 2 to 3 weeks to implement and would be similarly ineffective. If daily reporting of catches were feasible, this proposed rule could be an effective tool, but we do not expect daily reporting to be practical in the near future. In view of this measure's poor prospects for success, we question the utility of including it in the amendment package for public review.

On a minor point, the SSC is skeptical about the effectiveness of the proposed rule requiring non-pelagic trawls to be rendered unusable aboard vessels fishing in areas where the use of such trawls would be illegal. At least in the Bering Sea, the SSC believes that even pelagic trawls can be fished on the bottom.

D-3 PAAG report and staff tasking

The Committee heard a report of the PAAG meeting from the SSC members. The SSC supports the Teams' proposal to work on comprehensive solutions to the broader issues confronting fishery management, such as limited access and bycatch. For most or all of 1992, the SSC expects that all available staff time will be taken up by the Council's consideration of alternative management of all groundfish and crab fisheries. For both reasons, the Committee did not attempt to prioritize the 51 amendment proposals submitted.