

# North Pacific Fishery Management Council

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## MINUTES Scientific & Statistical Committee September 27-30, 1994

The Scientific and Statistical Committee of the North Pacific Fishery Management Council met September 27-30, 1994 at the Red Lion/SeaTac Hotel. All members were present:

Terrance Quinn, Chair  
Doug Eggers  
Rich Marasco  
Susan Hills  
Hal Weeks  
Bill Aron

Keith Criddle, Co-Chair  
Jack Tagart  
Phil Rigby  
Dan Huppert  
Al Tyler  
Marc Miller

### **B-5 Marine Mammal Report**

The SSC received a report from NMFS scientists on MMPA amendments of April 30, 1994. Interim exemptions provided by 1988 amendments will terminate about mid 1995 and a new regime based on stock assessments incorporating fisheries interactions and growth rates will go into effect to govern taking of marine mammals. Marine mammal stocks will be designated as "strategic" if (1) they are listed under ESA as threatened or endangered, (2) they are considered depleted under MMPA or (3) where human-caused mortality (HCM) is greater than calculated potential biological removal level (PBR). Otherwise, they will be designated as non-strategic. If a stock is designated strategic, Take Reduction Teams will be formed to write Take Reduction Plans unless the zero fishing mortality goal has been met.

The MMPA amendments also prohibit intentional lethal taking except to protect life and limb, or in the case of individually identifiable problem animals (e.g. Ballard Locks); change classification of Category I, II, and III and attendant observer/reporting requirements; call for development of a plan to assess the health of the Bering Sea ecosystem; and somewhat simplify pursuit of scientific research permits.

A report on the method for estimating PBRs was provided and examples of simulations for key strategic stocks were detailed. None of the marine mammal stocks in Alaska are currently listed as "strategic" due to fishing mortality. However, harbor porpoise do not meet the zero fishing mortality goal.

A report was provided on the 1994 range-wide population survey for the Steller sea lions, including aerial surveys for adults and juveniles and rookery counts of pups. Work in Alaska was done in cooperation with ADF&G. Counts of adults in Southeastern Alaska increased but counts in the Gulf

of Alaska and the eastern Aleutians declined, with total counts in Alaska declining for adults, juveniles and pups by 5%. Pup count declines also occurred in Southeastern Alaska, despite adult and juvenile increases.

Recent genetic studies suggest that two stocks of Steller sea lions may be defined: east and west of Cape Suckling.

The above materials will be incorporated into a draft status of stocks report, which will receive independent peer review. By early next year, a recommendation on the status of the Steller sea lion vis-a-vis the ESA will be developed. As part of the status of stock review, research and management actions and directions will be reviewed at several levels including by the Sea Lion Recovery Team.

#### **C-4 North Pacific Fishery Research (Observer) Plan**

Dr. Joe Terry (NMFS) provided the SSC with a presentation on the determination of standard ex-vessel prices to be used in the assessment of recoverable fees. The SSC notes that information on price variation between trawl and other gear catches for the Bering Sea/Aleutian Island, and Eastern and Western Gulf of Alaska, as well as seasonal variations for pollock and rock sole, have been included.

#### **C-5 Comprehensive Rationalization Planning**

The SSC reviewed the most recent draft of the EA/RIR for groundfish and crab fishery license limitation. The analysis is extremely complex and burdensome, largely due to the huge number of alternatives still being considered by the Council. We commend the drafters of the report for their solution to the problem of presenting a simplification of the 70,000 options. They focus attention on three groundfish license limitation options (called "Universal", "Explicit", and "Current") and two crab license limitation options (called "Current" and "Crab"). They have included tables revealing the consequences of variations in all dimensions of the options. This responds to a recommendation from the June 1994 SSC minutes. We repeat our recommendation that the Council indicate a preferred option, or list of options, that could be similarly analyzed.

We note that this version of the report provides an analysis using all information currently available, but that some deficiencies continue to detract from the completeness of the economic impact analysis. For example, the break-even analysis uses information from the "OMB Survey" which does not cover the full set of 14 fishery sectors included in the remaining analysis. This does not appear to be a substantial flaw. A number of additional minor comments and suggestions will be communicated directly from the SSC to the drafters.

We note that the industry sector profiles and community profiles, which are separately documented, provide the basis for a yet-to-be-drafted chapter in the report. That supplemental chapter will contain a socio-economic impact assessment satisfying the Magnuson Act requirement. The SSC recommends that (1) the new chapter be reviewed by us before release, and (2) that the new chapter be incorporated in the draft EA/RIR before it is sent out for public review.

#### **C-6 Harvest Priority and Full Utilization**

The SSC reviewed documents concerning the problems of bycatch, discards, and underutilization of catch. They are ecological or biological problems to the extent that they raise questions about unknown (and, as yet unpredictable) adverse consequences of fishing on marine life and the

environment. They qualify as economic or social problems to the extent that: 1) bycatch/discard reduce benefits from the fishery, and 2) fisheries are perceived by the public as wasteful.

The harvest priority (HP) and full utilization (FR/FU) proposals attempt to address these perceived problems at different stages of the harvesting process: HP, before landings; FR/FU after landing. Both proposals lack specifics and background documents indicate the need to define terms and to develop specific objectives and program structure.

The non-specific nature of HP was designed to allow fishery participants the opportunity to develop their own bycatch system. While this allows fishermen to participate in program development, the lack of specification of the characteristics of the program makes the task of analyzing the costs and benefits difficult.

The following are examples of some issues that need to be resolved in two programs:

1. Experience with management measures that allow action to be taken at the individual vessel level have proven to be cumbersome and lacking in timeliness. Successful implementation of management measures such as harvest priority and ITQs requires the development of systems to accurately document individual performance.
2. Will discards by processors or just fishing vessels be considered?
3. What will the observer requirements be for vessels delivering unsorted catch?
4. What process will be used to determine the quantity of the TAC that will be set aside for harvest priority fisheries?
5. What is the definition of a fishery, i.e., what aggregation of fishers constitutes a body who may propose a HP plan?

In order to be operational, the terms "full retention" and "full utilization" must be defined. Specification of objectives will aid in the development of definitions, identification of alternative management actions and the analysis of alternatives. Is it the intent of the Council to define "full retention" as the retention of all TAC groundfish species? Is 100% processing of the catch/species for human consumption the intention of the Council? Other definitions of these two terms are possible.

Examples of some other FR/FU issues that should receive attention are:

1. Will requirements adopted apply equally to all vessels and processors, including those without observers?
2. Will the same standards apply to all fisheries?
3. Will the standards apply to individual species or species groups and what will the accounting period be?
4. Will standards apply to individual vessels or fleets?

While the resolution of concerns regarding definitions and issues associated with HP and FR/FU will facilitate analysis of the benefits and costs of alternative management measures, much of the analysis will likely be qualitative. In the case of full retention/full utilization, information is lacking on how much it will cost industry to meet any standards. Knowledge of actions that fishermen might take to reduce bycatch under a harvest priority program and their associated costs is also lacking. Further, the amount of bycatch that will be taken by participants in a harvest priority program will not be known beforehand. Neither will we know the costs or scope of measures undertaken to avoid bycatch.

Given the current inability to quantify the cost and benefits of management measures developed to address either of these issues, the Council may want to take an incremental or adaptive approach to their implementation. In the case of full retention/full utilization such an approach might require the selection of target retention/utilization standards. The standard could be phased in over a defined period of time. Phasing in would allow assessment of industry actions taken to modify fishing strategies and the way fish are used.

In the case of HP, rather than create a comprehensive framework and wait for fishers to propose a HP fishery, the Council may wish to reserve a portion of a particular species TAC, then solicit a HP proposal from fishers to gain access to that TAC. By doing this, the Council would provide a means to measure the costs and benefits of a limited HP plan prior to development of a comprehensive generic framework.

Such programs will provide information on the magnitude of bycatch or discard reductions that are feasible and their costs. Nevertheless, quantification of benefits of these actions would remain difficult to ascertain because of the lack of information on the value placed on bycatch/discard reductions by the public at large.

#### **C-7 Onshore-Offshore Allocation Roll-Over**

The SSC considered the likely analytical needs in support of an amendment to continue the onshore-offshore and CDQ fishery allocations. The first issue is one of problem statement. If the problem addressed by a continuation is that Comprehensive Rationalization Planning has taken longer than originally intended and that an extension of existing interim measures is needed, then a relatively simple qualitative analysis of social-economic impacts may be adequate. If the problem is stated in more substantive terms (such as specific biological or economic objectives), it is likely to require more complex evaluation to satisfy Magnuson Act national standards.

Generally, the scope of the socio-economic analysis needed will depend upon (a) the length of the extension, because a longer extension begins to look like a permanent allocation rather than an interim measure, and (b) whether any options are considered besides a simple extension of the existing allocation rules. Consideration of new allocation options (such as different percentages of cod and pollock allocated to onshore processing, or different CDQ percentages) or a long term extension would, in our view, re-open the complex issues of social and economic impacts which were extensively examined in the original amendment process.

A more extensive analysis would need to quantitatively assess social and economic impacts and national net benefits of allocations among onshore and offshore sectors, and it would likely need to assess the success of the CDQ program in providing for economic development of western Alaskan communities.

## **C-8 Longline Survey**

The issue is whether or not to continue the Japanese cooperative longline survey. According to Dr. Gary Stauffer, NMFS, a domestic longline survey of the Gulf of Alaska has been in existence since 1987 and has provided consistent abundance indices with cooperative survey since 1990. NMFS staff now believe that the survey of the Gulf of Alaska does not need to be duplicated, and that many stations in the Bering Sea and Aleutian areas can be eliminated. Because survey catches are low in these two areas, there is little incentive for commercial vessels to participate in a Bering Sea/Aleutian survey without also surveying the Gulf where catches are lucrative. The value of the catch from the cooperative survey was \$2.4 million in 1994. The termination of the cooperative survey will represent a loss of Greenland turbot, rockfish, and sablefish stock assessment information for the Bering Sea/Aleutians. NMFS staff believe that biennial or triennial extensions of the domestic Gulf survey will provide adequate data.

The SSC's primary concern is that there is adequate information to standardize the more recent domestic survey to the older cooperative survey. The SSC did not receive any written information to verify how this standardization will be done. A NMFS paper is in preparation to address this topic, and the SSC requested a copy which NMFS agreed to supply before our next meeting. If the Council wishes, the SSC can revisit this issue in December.

## **D-1 Crab Management**

The SSC received a report from the crab Plan Team on the results of the 1994 Eastern Bering Sea crab survey. A summary of stock status was provided. Stocks are at or below levels estimated in 1993. Bristol Bay red king crab are estimated to be at their all time low level of abundance and there will be no 1994 fishery. Eastern district tanner crab (*C. bairdi*) continue to decline but not quite as far as expected. The guideline Harvest Level (GHL) for this fishery west of 163 degrees W. longitude is 7.5 million pounds. The fishery will be closed east of 163 degrees W. longitude because of potential impacts on red king crab.

The Plan Team expressed concern for red king crab conservation and recommended setting red king crab bycatch cap in the groundfish fishery in that portion of Zone 1 east of 163 degrees W. longitude to 0. Additionally the Plan Team requested the Council and Alaska Board of Fisheries Consultation Group discuss crab bycatch issues, and that the Council specifically examine bycatch caps, observer sampling protocols and bycatch estimation methods, biological characteristics of crab bycatch, and distribution of king crab in Zone 1 relative to the trawl closure area.

During public testimony, similar concerns were expressed by Arni Thompson (ACC) and Jerry Nelson, crab and groundfish harvester. The SSC recommends that the Crab and BS/AI Groundfish Plan Teams examine bycatch issues jointly and present a report to the Council in December. The Plan Teams should focus on the conservation benefits of reduced bycatch, impacts on groundfish target fisheries which may be affected by additional time/area closures, and impacts on bycatch of other species by potentially displaced groundfish fisheries.

During public testimony the industry asked for better biological information on crab stocks. Additionally a plea was made for more research to determine the causes of stock declines, the impacts of bycatch and handling, and the interactions such as predation and competition between crab and groundfish species. The SSC suggested that a NMFS and ADF&G crab research planning committee, which will meet December 15 and 16, may be able to provide some initial contact with the industry and initiate the planning of new research projects which could answer some of industry's concerns.

## **D-2(c) Salmon Bycatch**

### **Chinook Salmon Bycatch Management**

The SSC reviewed the draft EA/RIR/IRFA for Amendment 21b (Chinook Salmon Bycatch). The document has been updated from the April 1993 analysis to include 1993 and 1994 data and two new alternatives. The amendment has adequately addressed a variety of AP and SSC comments. The SSC notes that the economic analysis of the alternatives used only 1990 and 1991 data and was not updated using recent data due to lack of time. Updating the economic analysis using 1992-1994 data would provide a much better estimate of the magnitude of costs; however, the relative magnitude of the costs among alternatives would not likely change in an updated analysis. The SSC recommends the document be sent out for public review.

### **Chum Salmon Bycatch**

The SSC reviewed the draft EA/RIR/IRFA for chum salmon bycatch in the Bering Sea trawl fisheries and alternatives for closure areas. The document has been updated and revised since the June 1994 emergency rule for a bycatch cap of 42,000 other salmon in the CVOA.

The revised analysis addresses several SSC and AP comments, included 1995 bycatch data, more complete review of stock identification information, updated status of Western Alaska chum salmon and more alternative area closures. The SSC recommends the document be sent out for public review.

## **D-3 General Groundfish SAFE Concerns**

The SSC requests that the Plan Teams consider these general concerns at their November meeting.

1. Some studies [e.g. Deriso (1982) and Thompson (1993)] suggest that natural mortality  $M$  may not necessarily be a conservative exploitation rate. Do the Plan Teams agree with this statement, and if so, should ABC's calculated with  $M$  be revised to use a more conservative rate, say  $0.8M$ ?
2. The Plan Teams have a policy of scaling ABC downward, if it is equal to OFL. Would it be more appropriate to scale OFL upward by the same factor? If so, are staff resources available to undertake the necessary Plan Amendment analysis?
3. The Marine Mammal - Ecosystem chapter was not available for review in either SAFE. However, the SSC requests that the authors include information about the take of marine mammals in the area and their status, and a note that the depleted status for the northern fur seal is relative to OSP.

## **D-3 Plan Team Terms of Reference**

The SSC recommends that the Terms of Reference be revised to the effect that Plan Team minutes be made available to the entire Council family. With this change, the SSC recommends that the Terms of Reference be approved.

### **D-3 Plan Team Nominations**

This topic was tabled until the December meeting.

### **D-3(b) BS/AI SAFE 1995 Specifications**

The SSC agrees with Plan Team recommendations, unless otherwise stated below. The SSC only considered assessments where there was new information.

#### **Pollock - Bogoslof Area**

Reassessment of Bogoslof Area population has not changed the previous conclusions that this stock has declined precipitously since 1988. Estimated biomass has declined from 1.1 million t in 1991 to 490 thousand t in 1994. The SSC believes that the best estimate of 1995 biomass is 400 thousand mt. The estimate assumes no recruitment and is the 1994 hydroacoustic estimate of biomass decayed by natural mortality. As done in the past, the SSC recommends that the ABC be calculated by applying the natural mortality exploitation rate ( $M=0.2$ ) divided by 4 to the projected 1995 biomass. The factor 1/4 is the OFL adjustment, equal to the ratio of the current population biomass in relation to that which would product MSY. This leads to an ABC for Bogoslof area pollock of 20 thousand mt, which is also the OFL.

Because of the current status of the Bogoslof population, the importance of supporting international efforts to curtail fishing on the Aleutian Basin population, and the potential impacts on marine mammals and seabirds, the SSC agrees with the Team that the TAC be set at a level to provide for bycatch only.

These recommendations for Bogoslof pollock were made last year and accepted by the Council.

#### **Greenland Turbot**

The SSC recommends that modification of the 1995 ABC for Greenland turbot be delayed until the assessment analysis containing results of 1994 bottom trawl survey is completed. Therefore, the initial ABC recommendation is 7,000 mt. The SSC accepts the Team's overfishing level of 24,800 mt.

#### **Flathead Sole and Other Flatfish**

At the request of the Council, the Plan Team separated flathead sole from the other flatfish complex. Flathead sole ABC for 1995 was estimated to be 119,000 mt, and the remainder of the complex was estimated at 106,000 mt, for a total of 225,000 mt for the total group. No data were provided on distribution of flathead sole in relationship to other flatfish species. The SSC accepted the Plan Team's ABC determinations.

#### **Sablefish**

Because of extensive migratory behavior of sablefish and the small biomass of sablefish in the EBS area, the SSC believes that it is unlikely the EBS and Aleutian Islands sablefish are a separate stock. Like the Team, the SSC recommends that the overfishing limit be specified for the combined Eastern Bering Sea and Aleutians Islands areas.



## Atka Mackerel

For the 1992 fishing year, the SSC recommended reducing the calculated ABC by 5/6 with subsequent annual decreases of 1/6 (stair-stepping). The SSC recommends that this procedure be continued, because of survey variability and concerns for northern fur seals and Steller sea lions which feed heavily on Atka mackerel. Continuing this procedure for the 1995 fishing year, the calculated ABC should be reduced by 2/6. The SSC recommends an ABC of 163,350 t based on the stair-stepping procedure. As required by Amendment 28, the ABC should be distributed among the Western, Central, and Eastern subareas relative to survey biomass estimates of 71,900 mt, 73,500 mt, and 17,950 mt, respectively.

## Squid and Other Species

The SSC concurs with the Plan Team recommendation to include squid in the "other species" complex; the lack of biological and fishery information does not justify separate management at this time. Catch statistics for squid should continue to be collected in the event that a directed fishery develops and leads to a need for separate management.

## **D-3(d) GOA SAFE 1995 Specifications**

### Pollock

The SSC reviewed an updated stock assessment for GOA pollock. New information provided in this analysis included (1) egg production estimates of spawning biomass, (2) 1993 Shelikof Strait hydro-acoustic survey biomass, (3) 1992-1993 acoustic survey length-frequency data, (4) 1992 and 1993 fishery length-frequency data, (5) updated catch and effort. Deleted from the assessment was 1993 fishery catch-at-age data.

Two versions of the stock-synthesis model were presented: Model A, equivalent to the December 1993 preferred model; Model B similarly configured, but using fewer year specific selectivity curves. Model B was the preferred model of the stock assessment authors, Plan Team, and SSC.

Stock biomass continues to decline. Projected 1995 spawning stock biomass is 587,000 mt compared to an estimated threshold spawning biomass of 370,000 mt. The SSC concurs with the Plan Team's recommendations for ABC, using a full recruitment fishing mortality rate of 0.20. The resultant ABC for the Western and Central Gulf is 62,000 mt. The SSC also concurs with the Plan Team's recommendation for the Eastern Gulf of 3,360 mt. Respective overfishing levels are based on exploitation rates at the  $F_{30\%}$  rate (0.51) and are 266,000 mt for the Western and Central Gulf and 14,400 mt for the Eastern Gulf.

Although the SSC accepts the current estimates of stock biomass and ABC, we heard public testimony from Chris Blackburn, AGDB, who raised 4 issues related to the stock assessment, identifying some issues we believe should be examined by stock assessment scientists. Particularly, we encourage the assessment authors to examine the ADF&G bottom trawl crab survey data which could provide estimates of pollock abundance.

The SSC has great concern over the continuing decline in GOA pollock biomass. Despite harvest rates below those assumed to allow for sustainable production, the stock decline continues. The SSC anticipates recommending a zero or bycatch only ABC if spawning stock biomass falls below threshold.



## Pacific cod

The SSC recommended that a range of ABC values be considered at this time: 50,400 to 103,000 mt.

A lengthy discussion was held over this assessment. Concern was raised that the Plan Team recommended ABC is about twice last year's value (50,400 mt from 1994 to a new 103,000 mt for 1995), though the stock was in a period of decline and had been declining since 1987. The SSC notes that the biomass is still above the management target stock size.

The jump to the higher ABC level came partly from the new stock synthesis model application that no longer used knife-edge recruitment, and that fitted survey selectivity of catch as well as natural mortality rate. There was a long discussion on the resulting trawl survey selection curve versus estimates of natural mortality. Also discussed was the level of uncertainty in the survey estimates of biomass for Pacific cod due to patchiness in their distribution. In addition the SSC noted the possible influence of age determination error, since age classification is based on length distributions. It was decided the model was the best that could be developed given the level of uncertainty in the data, but that additional analyses are needed. Specifically, the SSC would like to see results with fixed M over a range of selectivity curves from asymptotic to highly dome-shaped.

## Flatfish

The SSC recommends that the initial ABC's for species in this complex be set at levels proposed by the Team (flatfish-deepwater - 14,590 mt, Rex sole - 11,210 mt, flatfish - shallow water - 52,270 mt, flathead sole - 28,790 mt, and arrowtooth flounder - 198,130 mt). The Team's proposed allocations of the ABC among eastern, central and western management areas were also accepted. The SSC also recommends adoption of the overfishing levels suggested by the Team (flatfish - deepwater - 17,040 mt, rex sole - 13,091 mt, flatfish - shallow water - 60,262 mt, flathead sole -31,557 mt, arrowtooth flounder - 231,416 mt).

## Sablefish

The SSC concurs with the Plan team recommendation for ABC (25,500 mt) and OFL (31,700 mt). We support the Plan Team's intention to develop a consistent method to apportion ABC to regions and areas and note the alternative schemes presented in the preliminary SAFE document summary.

## **ROCKFISH**

The SSC received an overview of rockfish stock status from members of the Gulf Team. Analytical methods are similar to those applied last year, except that a new length-based synthesis model was applied to thornyhead rockfish. The 1984, 1987, and 1990 trawl survey population estimates have been revised, and substantially increased rockfish catches in the 1993 trawl survey resulted in increased estimates of biomass and yield for most species. After substantive discussion with the Plan Team, the SSC agreed with the Team's ABC determinations, except for POP.

## **SLOPE ROCKFISH**

### POP

For the second year, a stock synthesis model was used to estimate exploitable biomass (135,840 mt), which is an increase above last year's estimate of 101,800 mt. The model incorporated 1987, 1990,

and 1993 triennial trawl survey data, 1992 fishery length data and 1993 and 1994 catch data. The 1993 survey biomass of 453,605 mt was an increase of 97% above the 1990 survey estimate. This increase primarily resulted from very high survey catches of young (ages 6 through 9 years) POP in the Western and Central Areas. The SSC expressed concern over the unexpectedly large increase in survey biomass and the potential harvest of young fish. The SSC requested that the Team look more closely at the age of maturity and changes in reproductive capacity with fish size. The application of the model considerably dampened the influence of the most recent survey. A new ABC was calculated using the optimal fishing mortality ( $F_{msy}$ ) of 0.08 adjusted by the ratio of the current to target spawning biomass ( $B/B^* = 0.812$ ) to provide for rebuilding. The adjusted rate (0.65) multiplied times 135,840 mt results in an ABC of 8,830 mt. Because this ABC is equal to the overfishing level the plan team further reduced this number by  $F_{35\%}/F_{30\%}$  to provide a buffer between the ABC and OFL. The SSC did not agree with the latter adjustment and, as it did last year, recommended that ABC equal OFL. Some discussion occurred regarding ways to increase the OFL rather than reduce the ABC; however, at this time the Council is prohibited from doing so without a plan amendment. As mentioned above, the SSC requests that the Plan Team reexamine this issue.

The ABC is apportioned by management area based on the average area biomass estimates from the 1987, 1990, and 1993 trawl surveys. The ABC area allocations for the Western, Central, and Eastern Areas respectively for the SSC are 1,779 mt; 3,194 mt; and 3,854 mt and for the Team are 1,370 mt; 2,460 mt; and 2,970 mt. Under the POP rebuilding plan, TAC is calculated by reducing ABC by the ratio of the optimal F over the fishing mortality rate necessary to provide for minimal discard. For 1995 this rate is 0.054 and corresponds to  $F_{55\%}$ . This rate is further reduced by  $B/B^*$ . The resultant  $F=0.044$  applied to the plan team's ABC equals a TAC of 5,977 mt.

### Northern

The harvest rate for Northern rockfish was set equal to M (0.6) and when applied to the exploited biomass based on the mean of the 1987, 1990, and 1993 trawl surveys resulted in a 5,271 mt ABC. Area allocations based on the average survey abundance by area are 641 mt-Western, 4,613 mt-Central, and 17 mt-Eastern. Because of the low Eastern Area ABC, the Team discussed including this ABC within the Other Slope Rockfish ABC as a way of reducing Northern rockfish discards which is the most sought after species in the slope assemblage. The SSC defers comment on this issue until the Plan Team makes a recommendation in November.  $F_{30\%}$  provides an OFL of 9,926 mt.

### Other Slope

This complex includes sharpchin, redstripe, harlequin, silvergrey, and yellowmouth rockfish. The ABC for this group was obtained by applying species specific  $F=M$  rates (which range between 0.04 and 0.10) to the specific average exploitable biomasses from the 1987, 1990 and 1993 trawl surveys. The products were summed to obtain an assemblage ABC of 6,930 mt (170 mt-Western, 1,150 mt-Central, and 5,610 mt-Eastern).  $F_{30\%}$  for sharpchin (0.080) and natural mortality for the remaining species were applied to obtain a combined OFL of 8,229 mt.

### Shortraker/Rougheye

The recommended ABC for the shortraker/rougheye group is 1,914 mt (170 mt-Western, 1,210 mt-Central, and 530 mt-Eastern). The ABC was obtained by applying an  $F=M$  strategy. Natural mortality (shortraker, 0.03 and rougheye, 0.025) times the estimated biomass from the averaged 1987,

1990, and 1993 trawl surveys (shortraker, 23,689 mt and rougheye, 48,123 mt) yielded the combined ABC. For rougheye  $F_{30\%}$  (0.046) and  $F=M$  (0.03) for shortraker were applied to the respective biomass estimates for a combined Gulf-wide OFL of 2,925 mt.

### Pelagic Shelf

The exploitable biomass (57,644 mt) for this complex was derived by averaging the biomass estimates from the 1987, 1990, and 1993 surveys. An exception, this ABC is a decrease from last year's biomass (76,500 mt). An  $F=M$  strategy using the natural mortality for dusky rockfish (0.09) was used to calculate a combined ABC of 5,190 mt (910 mt-Western, 3,200 mt-Central, and 1080 mt-Eastern).  $F_{30\%}$  (0.151) provides an OFL of 8,704 mt.

The Team recommended separating black rockfish from the pelagic assemblage because of its near shore distribution and the inability of the NMFS trawl and longline surveys to accurately assess abundance. Based on the average 1991 through 1993 commercial catches an ABC of 400 mt was recommended by the Team. The SSC does not recommend splitting out black rockfish at this time and further requests that the Team attempt to obtain all available assessment and catch data with assistance from ADF&G in an attempt to provide an improved ABC estimate which will prevent over-exploitation in both the Eastern and Central Areas.

### Thornyheads

A new length-based synthesis model was used to derive a new exploitable biomass estimate of 64,770 mt considerably larger than last year's estimate (26,207 mt). Revised 1984, 1987, and 1990 survey estimates, a dome-shaped selectivity curve applied to the 1990 and 1993 surveys, and an increased natural mortality derived from the model were factors which increased the most recent biomass estimate.  $F_{35\%}$  (0.0399) was used to calculate a Gulf-wide ABC of 2,320 mt.  $F_{30\%}$  provides an OFL of 2,740 mt.

The new ABC is a two-fold increase over the 1994 ABC (1,180 mt). However, the new assessment uses improved information including maturity data and longline survey catches and size compositions which indicate the presence of larger thornyheads in deeper depths not sampled by the trawl survey.

Because rockfish are vulnerable to over-exploitation, the model is new and based only on length data, and the dome-shaped selectivity curve suggests a much larger non-surveyed population component, the SSC recommends phasing in (stair-stepping) the new ABC. A four-year stair step is recommended, so that the procedure can be reevaluated after the 1996 trawl survey. For 1995, the recommended ABC is 5/8 of the new ABC, because last year's ABC was about 1/2 of the new ABC. For subsequent years, the SSC requests that the Team provide an ABC calculation based on altered fishing mortality values (i.e. (6/8) F in 1996, (7/8)F in 1997, and (8/8)F in 1998, noting that the Plan Team may wish to recommend ABC's based on some other procedure.

### Atka Mackerel

Atka Mackerel was separated from the "other species" category, and ABC, OFL and TAC set for the species during the 1994 fishing year. For the 1994 fishing year the calculated ABC was reduced by 3/6 with subsequent annual reductions decreased by 1/6 (stair-stepping). The SSC recommends that this procedure be continued to maintain consistency of approach between the Bering Sea/Aleutian and Gulf of Alaska areas in addition to the concerns about survey variability and the status of northern fur seals and Steller sea lions which feed on Atka mackerel. Continuing this procedure for

the 1995 fishing year, the calculated ABC should be reduced by 2/6. The SSC recommends an ABC of 4,300 mt based on the stair-stepping procedure.

The SSC notes that biomass has declined substantially from 32,100 mt in 1990 to 21,600 mt in 1993. This decline was due in part to the very high harvest (13,834 mt) in 1992. The 1994 fishery occurred in the Davidson Bank area in close proximity to a sea lion rookery with a 10 nm buffer zone in place. Although the reductions in ABC due to the stair-stepping procedure provide some protection to marine mammals, the Council should consider additional management measures to reduce potential impacts on marine mammals in view of the decline in abundance of Atka Mackerel. These measures include: seasonal closures (November through March), hot spot closure or delayed seasonal opening, setting a limited (1-2 day) fishing season, expanding the buffer zone around sea lion rookeries, and setting other fishing zones to limit impinging on sea lion habitat.

#### **D-3(f) Halibut Discard Mortality Rates**

The SSC received a report from Gregg Williams of the IPHC on the Plan Teams' proposed halibut discard mortality rates. We note that estimation of discard mortality rates is becoming standardized, and we concur with the Plan Team's recommendations.

#### **D-4(a) Total Weight Measurement**

The SSC received a presentation from Sally Bibb (NMFS) on the EA/RIR/IRFA for a regulatory amendment to improve total catch weight estimates in groundfish fisheries off of Alaska. We note that the revised analysis incorporates SSC requested options for using approved procedures such as volumetric measurements, and the SSC appreciates the additional efforts of the analyst. The SSC has consistently supported the investigation of techniques to increase the accuracy of estimates of total removals from the ocean ecosystem. Improved estimates are important for stock assessment purposes, and vessel specific estimates of total removal are especially important to a variety of management measures under consideration by the Council, e.g., IFQs, Harvest Priority, and Full Utilization. We note that the analysis presented is qualitative, and that it is not possible to determine the accuracy or bias of current estimation methods and therefore of the benefits of the alternatives discussed. Neither can we tell whether the assumed benefits justify the costs.

Alternative 5 would provide the greatest confidence in estimates of total removals, although such a system probably cannot be implemented at the current time. While the costs and logistical implications of this alternative cannot be completely assessed, they are the greatest of all the alternatives. Required retention of fish which might otherwise be discarded represents a biological cost as well.

The Council may wish to tailor the different estimation methods presented in the alternatives to different fisheries, although better information on the accuracy of the methods is needed to make an informed decision.

#### **D-4(b) Trawl Mesh**

The SSC reviewed the EA/RIR/IRFA for a regulatory amendment to require minimum mesh sizes in several trawl fisheries. Two other preliminary reports were also received, a pollock codend mesh size study by the Alaska Fisheries Development Foundation (AFDF) and the Fisheries Research Institute (FRI) which was presented by Dan Erickson and a related pollock yield per recruit discussion paper by Rick Methot (NMFS). On the basis of the available information the SSC was

not able to identify a preferred alternative. In the AFDF/FRI study, the SSC was not able to conclude that the selectivities of the meshes tested were statistically significant. We reiterate our previous advice provided after reviewing the 1993 study results that the use of multivariate techniques may be able to demonstrate significant results. The preliminary results of this study suggest that vessel and operational characteristics may be as important as mesh size in determining gear selectivity. No empirical evidence on rock sole and Pacific cod mesh selectivity for the mesh sizes provided are available.

The council should be aware of several possible implications of mesh size selectivity.

1. Increased trawling effort may be required to catch the same quantity of retained groundfish (lower CFUE).
2. If CPUE for prohibited species does not change in parallel with CPUE for the target species, PSC bycatch caps may become more constraining.
3. Alternative mesh sizes may change the size and age at which fish recruit to the fishery. Because ABC determinations are based on the selectivity of the current fleet, selectivity changes will require reanalysis of ABCs. It may not be possible to perform any necessary changes in ABC calculations for the upcoming final SAFE document.
4. Allocational effects may result from changed selectivity within fisheries. For example, it is possible that the Bering Sea trawl fishery would be unable to harvest its allocation of the Bering Sea cod TAC at the proposed larger mesh sizes given the current size distribution of the cod population.

The SSC also discussed the issue of escapement mortality of fish passing through the trawl mesh. The current analyses assume no change in escapement mortality; some studies suggest that mortality of escaped fish can be negligible to very high depending on many factors.

Based on the information provided, the SSC could not predict the impact of the proposed alternatives. The SSC suggest that further studies on mesh selectivity are necessary to test whether the catch of smaller fish could be reduced by mesh restrictions in our groundfish fisheries.

#### **D-5 Opilio Bycatch**

Council and NMFS staff presented to the SSC an Opilio bycatch paper providing bycatch data by fishery, area, and size as it requested during the January 1994 meeting.

#### **D-6 Staff Tasking**

The SSC received public testimony on the following proposals that appear in the briefing document: #10 (Barbara Wilson), #11 (Barbara Wilson) and #16 (Bob Stores). Jeff Stephan also circulated a proposal that was submitted in 1991. Since these proposals and those that appear in the briefing document were submitted out to cycle, the SSC did not give them detailed consideration, but notes that they exemplify problems with the current management system. The SSC believes that, if it is the intention of the Council to take further action on them, the general public should be given the opportunity to submit proposals as well. All proposals received should be handled per Council policy (i.e. receive Plan Team, PAGG, SSC and AP review).

**BERING SEA AND ALEUTIAN ISLANDS GROUNDFISH**

Species	Area	PT ABC	SSC ABC	PT OFL	SSC OFL
Pollock	EBS		1,330,000		1,590,000
	AI		56,600		60,400
	518	127,000		20,000	147,000
					20,000
Pacific cod	BS/AI		191,000		228,000
Yellowfin sole	BS/AI		230,000		269,000
Greenland turbot	BS/AI	17,200		7,000	24,800
Arrowtooth	BS/AI		93,400		130,000
Rock sole	BS/AI		313,000		363,000
Flathead sole	BS/AI		119,000		145,000
Other flatfish	BS/AI		106,000		125,000
Sablefish	EBS		540		
	AI		<u>2,800</u>		
	Total		3,340		4,160
POP complex					
True POP	EBS		1,910		2,920
Other POP	EBS		1,400		1,400
True POP	AI		10,900		16,600
Sharp/Northern	AI		5,670		5,670
Short/Rougheye	AI		1,220		1,220
Other rockfish	EBS		365		365
	AI		770		770
Atka mackerel	Western	107,800		71,900	
	Central	110,250		73,500	
	Eastern	<u>26,950</u>		<u>17,950</u>	
	Total	245,000		163,350	484,000
Other species	BS/AI		30,610		141,000
<b>BS/AI TOTAL</b>		<b>2,884,385</b>	<b>2,685,535</b>	<b>3,740,305</b>	<b>3,613,305</b>

The SSC agrees with other apportionments of ABC recommended by the Plan Team. The SSC also agrees with the Plan Team that OFL should not be apportioned by areas except as specified.

**GULF OF ALASKA GROUND FISH**

Species	Area	PT ABC	SSC ABC	PT OFL	SSC OFL
Pollock	W/C		62,000		266,000
	E		3,360		14,400
	Total		65,360		280,400
Pacific cod		103,000	50,400-103,000	120,000	71,100-120,000
Flatfish (deep water)			14,590		17,040
Rex sole			11,210		13,091
Flatfish (shallow water)			52,270		60,262
Flathead sole			28,790		31,557
Arrowtooth flounder			198,130		231,416
Sablefish			25,500		31,700
Slope rockfish (other)			6,930		8,229
Northern rockfish			5,270		9,926
POP complex	W	1,370	1,780		
	C	2,460	3,190		
	E	<u>2,970</u>	<u>3,860</u>		
	Total	6,800	8,830		8,830
Shorthead/ Rougheye			1,910		2,925
Pelagic Shelf	Rock	5,190		8,704	
	Black	<u>400</u>		<u>400</u>	
	Total	5,590	5,190	9,104	8,704
Demersal Shelf			960		1,680
Thornyhead		2,320	1,450		2,740
Atka Mackerel		6,480	4,300		11,700
Other species			NA		NA
GOA Total		535,110	481,090-533,690	840,600	791,300-840,200

The SSC agrees with other apportionments of ABC recommended by the Plan Team. The SSC also agrees with the Plan Team that OFL should not be apportioned by areas except as specified.