

North Pacific Fishery Management Council

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MINUTES

Scientific and Statistical Committee
December 4-6, 1988
Anchorage, AK

The Scientific and Statistical Committee of the North Pacific Fishery Management Council met December 4, 5, and 6 at the Sheraton Hotel in Anchorage, Alaska. Members present were:

| | |
|---------------------------|----------------------------|
| Richard Marasco, Chairman | Doug Eggers, Vice Chairman |
| Don Rosenberg | Jack Tagart |
| Larry Hreha | Terry Quinn |
| Don Bevan | Dana Schmidt |
| Bill Aron | Bud Burgner |

C-1 SSC AND PLAN TEAM MEMBERSHIP

(a) SSC Membership

During our September meeting it was brought to our attention that Dr. William Clark resigned from his position with Washington Department of Fisheries. While his tenure on the SSC was short, Dr. Clark's contributions were many.

(b) Plan Team Membership

The SSC reviewed resumes for several individuals who have been recommended for membership on the Council's two groundfish teams. Bill Wilson has been nominated to replace Steve Davis on the Gulf of Alaska Team and Washington Department of Fisheries has withdrawn Jack Tagart. Jeremy Collie and Grant Thompson have been nominated to replace Ole Mathisen and Vidar Weststad on the Bering Sea/Aleutian Islands Groundfish Team. The SSC recommends approval of these appointments.

C-3 HALIBUT MANAGEMENT

The SSC reviewed the Environmental Assessment and Regulatory Impact Review/Initial Regulatory Flexibility Analysis of Management Proposal for the halibut fishery off Alaska. The SSC believes that the analysis of the various activities are reasonable.

D-1 GULF OF ALASKA GROUND FISH

Pollock

The SSC received substantial information regarding the status of the Gulf of Alaska pollock stocks. The spring 1988 hydroacoustic survey resulted in a biomass estimate of 330,000 mt in Shelikof Strait. This is not in accord with previous estimates of biomass from the 1987 bottom trawl survey. The reported decline in maturity-at-age and length-at-age of pollock in the presence of a declining population is also of concern. There is no indication of strong year classes appearing in the fishery.

It has been hypothesized that the spawning component of pollock returns to Shelikof Strait in the spring of each year. This hypothesis has direct management implications. If true, pollock in the Gulf should be managed as a single unit and concern for pollock in Shelikof Strait translates into concern for pollock gulfwide. The SSC agrees with the team that this hypothesis needs to be reevaluated.

There is evidence, in recent years, of spawning pollock outside of the Shelikof area. The higher abundance and older age composition of pollock in the 1987 NMFS bottom trawl and the 1988 ADF&G bottom trawl surveys suggest that the 1988 Shelikof hydroacoustic survey did not estimate the entire gulfwide abundance of pollock. There is evidence from egg and larval surveys, from fishermen and Soviet scientists that spawning pollock occur outside Shelikof Strait.

It is not clear what an appropriate threshold level for pollock should be. In the September RAD the team estimated that the threshold level for pollock may be 585,000 mt to 768,000 mt based on an analysis of spawners and recruits during the recent period of high abundance. Theoretical population dynamics studies suggest a threshold at 10% to 25% of the average unfished or pristine biomass level. The very high biomasses and recruitment levels observed during the early 1980's may not be indicative of average pristine stock levels. The SSC agrees with the team that an estimate of threshold is not available at this time.

Because the available indicators of stock strength are inconsistent, the team was unable to determine an ABC for the Gulf of Alaska Pollock. The SSC after a review of the information recommends that an ABC be set for Gulf of Alaska pollock. At the September meeting the SSC was unable to reach a consensus but a majority recommended that ABC be set at zero. The SSC now recommends that a conservative ABC be set based on the information from the NMFS and ADF&G bottom trawl surveys, the evidence of spawning pollock outside Shelikof, and the inability to determine that the population is below a threshold.

The SSC examined several different methods for estimating the 1989 biomass level. We believe the 1987 NMFS bottom trawl survey provides the best estimate of exploitable (593,000) biomass. Discussion with the team chairman regarding augmentation of this estimate for the mid-water biomass resulted in the conclusion that the data are insufficient to allow this action. In developing an appropriate exploitation rate the SSC examined past pollock fishing in the Gulf prior to the development of the Shelikof Strait fishery. Catches were about 10% of the estimated biomass and harvesting at this rate

outside Shelikof Strait was coincident with a substantial increase in the pollock population. Using the 593,000 mt derived from the 1987 NMFS bottom trawl survey and a 10% exploitation rate, the SSC recommends that the ABC for the Western and Central Gulf of Alaska pollock be set at 60,000 mt.

The SSC recommends, that the Council in setting TAC's, limit the harvest inside Shelikof to no more than 6,250 mt. A harvest of this level will provide for continuity in fishery performance data and biological samples necessary for catch-at-age analysis. The SSC notes that emergency action must be taken, for conservation purposes, to designate a Shelikof Management area to limit the removals.

The SSC concurs with the team in suggesting that the Council consider, in setting TAC, that the biomass projection model shows little difference in short term biomass trend under catches ranging from 0 to 50,000 mt.

The SSC notes that substantial new information will be available by the June Council meeting, including the 1989 Shelikof survey, results of fishing effort directed inside and outside the Shelikof area, and a more complete analysis of threshold.

Lacking new information for the Eastern gulf pollock population, the SSC concurs with the team and suggests using the method reported in the 1987 RAD to estimate ABC of 3400 mt for the Eastern gulf.

Pacific cod

In the final 1989 RAD, the plan team provided a revised estimate of projected 1989 exploitable biomass of Pacific cod based on 1984 and 1987 U.S. trawl surveys. ABC was calculated to be 71,200 mt based on an F_{msy} estimated from stock reduction analysis. The SSC concurs with this estimate of ABC.

It should be noted that the team's analysis provides a much lower estimate of MSY biomass than obtained in previous analyses and that if the new MSY estimates are correct, present exploitable biomass of Pacific cod is at a level well above MSY.

Flounders

The SSC recommends that arrowtooth flounder be broken out of the flounder category in accord with the Bering Sea/Aleutian Island groundfish plan and to prevent overexploitation of more commercially viable species.

Because populations are apparently close to virgin populations, the team chose fishing mortality rates to maximize yield per recruit (F_{max}) for arrowtooth flounder, rock sole, and yellowfin sole and $F_{0.1}$ for flathead sole. The SSC accepts ABC's presented by the team but cautions that continued use of F_{max} is not wise because it may eventually reduce the populations below the level that produces maximum sustained yield. Due to the potential for high halibut bycatch, the Council may elect to choose TAC's lower than ABC's for this complex.

The ABC's for arrowtooth flounders, other flounders and total by area are:

| <u>Area</u> | <u>Arrowtooth Flounder</u> | <u>Other flounder</u> | <u>Total</u> |
|-------------|----------------------------|-----------------------|---------------|
| W | 38,051 | 73,449 | 111,500 |
| C | 199,072 | 185,228 | 384,300 |
| E | <u>37,494</u> | <u>21,406</u> | <u>58,900</u> |
| TOTAL | 274,617 | 280,083 | 554,700 |

Sablefish

The SSC concurs with the teams recommendation of an ABC of 30,900 mt. The SSC discussed the preception presented by some members of industry that CPUE's were decreasing.

Slope rockfish

The team recommends an ABC as a range, from 14,700 to 30,700 mt. The SSC believes that the midpoint rather than a range is more appropriate. Therefore the SSC recommends an ABC of 22,700 mt. This ABC should be apportioned among the regulatory area as recommended by the team.

Pelagic rockfish

The team recommends an ABC of 3,300 mt. Discussions with the team indicated that during their deliberations, the team did not evaluate the SSC recommendation made in September. The SSC believes that using a fishing mortality rate of 0.04 is still appropriate. Using that rate results in an ABC of 6,600 mt.

Demersal shelf rockfish

The SSC agrees with the plan team that very little is known about this species assemblage and that it is impossible at this time to estimate an ABC. CPUE's have been declining and if management wishes to prevent the continuation of this decline current harvest levels must be reduced. This group of rockfish is managed under the FMP by ADF&G. They plan to propose that the 1988 harvest level be reduced by 50 to 70% in 1989.

Thornyheads

The SSC accepts the plan team recommendation that the ABC be set equal to the MSY level of 3,750 mt which is unchanged from 1988, noting that the catches continue to increase and that the 1988 catch was the highest on record.

D-2 BERING SEA/ALEUTIAN ISLANDS GROUND FISH

The SSC notes that there are differences in estimates of MSY in the Resource Assessment Document and in the Fishery Management Plan. We suggest that the estimates be updated at the time of the next plan amendment.

(a) ABC recommendations

Pollock

The SSC considered stock divisions in the Bering Sea and the possible effect of Donut Hole catches on productivity. One hypothesis suggests there are two major stock components in the U.S., EEZ--a shelf group in the eastern Bering Sea and a basin group to the west.

The SSC believes that the cohort analysis and survey estimates provide an adequate assessment of the shelf pollock in the eastern Bering Sea, even if there is some dispersion of fish from this group into the basin group. We therefore support the team's recommendation of an ABC of 1.34 million mt for the eastern Bering Sea shelf component.

Since the November RAD was written new information is available from the 1988 hydro-acoustical and bottom trawl surveys of the EBS. The preliminary survey results indicate an eastern Bering Sea shelf biomass of about 11.1 million tons. While this new estimate may require a revision of both MSY and ABC of the eastern Bering Sea pollock, we recommend that this be considered after the survey data has been completely evaluated and analyzed.

There is insufficient information to determine either the biomass or the ABC for the basin area. Since the fish in Area 515 (Bogoslof Island) may contribute to the basin population and since data are not available to estimate ABC for the Basin, we do not support the team's recommendation that an ABC be calculated for Area 515 and added to the ABC of shelf pollock in the eastern Bering Sea.

Although we are unable to determine an ABC for Area 515, the SSC considered whether there should be a separate TAC for this area. The SSC notes that biomass in the basin area is additional to that in the eastern Bering Sea. Nonetheless, we believe the uncertainties regarding stock structure and other vital population parameters make it premature to set a separate TAC at this time.

The SSC believes that until more information is available, the ABC for the Aleutian Islands management area be calculated as in the past and recommends an ABC for 1989 of 117,900 mt.

In any case a plan amendment would be required to control the harvest of basin and shelf groups of fish separately.

Pacific cod

The SSC concurs with the team's ABC recommendation of 370,600 mt for Pacific cod.

Yellowfin sole

The SSC concurs with the team's ABC recommendation of 241,000 mt for yellowfin sole.

Greenland turbot

The SSC notes that there is considerable variation in estimates of ABC depending on the value chosen for the recruitment parameter in the SRA analysis. The SSC concurs with the team's 1989 ABC recommendation of 20,300 mt and notes that this value is higher than the 1988 ABC due to reanalysis. The population should decline over the next few years regardless of catch level as recruitment has been low for several years. The Council may wish to choose a TAC lower than ABC in light of the low observed recruitment.

Arrowtooth flounder

The SSC concurs with the planning teams decision to use a five year average less the 1985 data in determining trawl based biomass. The SSC supports the plan team's recommended ABC for this species, 163,700 mt.

Rock sole

The SSC concurs with the plan team's recommendation, 171,000 mt.

Other flatfish

The SSC concurs with the plan team's recommendation, 155,900 mt.

Sablefish

The team proposes ABC's for sablefish of 2,800 mt in the Eastern Bering Sea management area and 3,400 mt in the Aleutian management area. These ABC's were determined by applying an exploitation rate determined by an annual surplus production approach to the estimated 1989 exploitable biomass. The SSC examined the reference points used by the team in making this recommendation.

The SSC accepts the team's estimates of the 1989 exploitable biomass. These estimates are projected using the 1986 trawl surveys and applying relative changes in abundance as indicated from the 1988 longline survey. This results in exploitable biomass estimates of 25,300 mt in the Eastern Bering Sea area and 68,000 mt in the Aleutian area.

The SSC noted that the current biomass levels appear to be determined by a strong 1977 year class. There are no further indications of a strong year class. Biomass trends from the longline survey have been downward since 1985. In the Eastern Bering Sea area the current biomass (25,300 mt) appears low compared to the equilibrium biomass that would occur at current recruitment levels with no fishing (about 60,000 mt). In the Aleutian area the current biomass of 68,000 mt is about 62 percent of the unfished biomass (about 110,000 mt).

The SSC noted that the reference points used by the team are all determined by the application of SRA, which had strict assumptions regarding growth, natural mortality and recruitment. We believe these reference points should be viewed with caution.

The team's proposed exploitation rates (Eastern Bering Sea - 11%, Aleutian - 5%) were based on a surplus production approach which would keep the exploitable biomass at equilibrium. The SSC does not believe that exploitation rates based on surplus production are appropriate in this situation. This approach produces lower exploitation rates when the biomass is high compared to the unfished biomass (the model develops a 5% exploitation rate for the Aleutian stocks when the exploitable biomass is at 62% of the unfished biomass estimate and 11% for the Eastern Bering Sea stocks when the exploitable biomass is at 42% of the unfished biomass.)

The SSC recommend a simple and conservative approach: an exploitation rate of 9.1% (corresponding to a natural mortality of 0.10) for both areas. This will allow the possibility of rebuilding in the Eastern Bering Sea population and provides a conservative approach for the Aleutian population which may be declining. This results in an ABC of 2,300 mt for the Eastern Bering Sea management area and 6,200 mt of the Aleutian management area. In setting the TAC in the Aleutian area the council should note that the catch has never exceed 3,900 mt.

Pacific Ocean Perch

Recommendations of Pacific ocean perch ABC, from the November RAD, of 6,000 mt and 16,600 mt for the Bering Sea and Aleutian Islands are unchanged from those presented in the September draft. The SSC concurs with the team's recommendation.

Other rockfish

Recommendations of Pacific ocean perch ABC, from the November RAD, of 400 mt and 1,100 mt for the Bering Sea and Aleutian Islands are unchanged from those presented in the September draft. The SSC concurs with the team's recommendation.

Atka mackerel

The SSC concurs with the team's recommendation, 21,000 mt.

Squid

The SSC concurs with the team's recommendation, 10,000 mt.

Other species

The SSC concurs with the team's recommendation, 59,000 mt.

(b) Groundfish PSC's

The SSC has no comments to offer on this topic at this time.

(c) Bycatch limits proposed for 1989 (Amendment 12a)

In a joint session with the AP, Council staff described a computer simulation program that has been developed to examine impacts, including benefits and costs, of alternative bycatch management approaches. We also received reports

from Steve Hoag, IPHC, Dr. Robert Stokes, University of Washington, and several members of the public.

The SSC would like to commend Council Staff, members of the Northwest and Alaska Fisheries Center who developed computer program, and others who provided data to adjust the initial model. This effort has shown that bycatch controls can have significant economic impacts on both groundfish fisheries and fisheries that target on species taken as bycatch, that benefit and cost estimates are sensitive to assumptions made in the analyses, and that there are serious voids in our data bases.

Benefit/cost analysis provides a tool that assists the evaluation of alternative management options. A characteristic of benefit/cost analyses is that results are frequently sensitive to assumptions made. The results of the program developed to examine the Council's September bycatch decision indicate a sensitivity to bycatch rate, catch-per-unit-effort, and fishing patterns. Public testimony indicated that some of the bycatch rates used in the model are inappropriate. Similar views were expressed about CPUE's with catch-per-hour being the preferred to the two measured used in the analysis and fishing patterns. The use of 100% mortality rate for halibut taken in all trawl fisheries was challenged. Data examined by the SSC indicates that, while mortality rates are high, they probably are not 100% for all trawl fisheries. Observer data for Bering Sea foreign and joint venture trawl fisheries for 1986 and 1987 indicate that from 5 to 24 percent of the halibut caught were in excellent condition. The percentage of halibut observed during 1988 to be in excellent condition in selected domestic Bering Sea and Gulf of Alaska fisheries ranged from 5 to 48. The SSC recommends using a halibut bycatch survival rate in Bering Sea DAP fisheries based upon an average of the percent of halibut released in excellent condition. In the 1988 winter-spring bottom trawl and summer Pacific cod bottom trawl factory/mothership fisheries, the average halibut bycatch in excellent condition was 12.7%. Since Bering Sea halibut bycatch in these fisheries is composed primarily of small fish, the SSC used 0.48 as the survival fraction of these fish. The resulting estimated survival rate is 6%.

The SSC would like to caution the Council that this estimate is based on limit data. Further, the SSC was unable to determine survival rates for other Bering Sea fisheries, for example the H&G fishery, due to insufficient data.

Definitive statements about the benefits and costs associated with implementing proposed bycatch caps in 1989 are not possible. This statement should not be taken as a criticism of the usefulness of the model but as an indication of the lack of DAP bycatch data and our limited understanding of these fisheries. If domestic fishermen are unable to lower halibut bycatch rates, a large portion of the eastern Bering Sea could be closed to groundfish fishermen.

Criticisms voiced over results obtained from the simulation model indicate that we have stretched the foreign/joint venture data base to its limits. Even more disconcerting, our ability to update these data is coming to an end as the fishery is pursued by domestic, unobserved vessels. Scientists, in their attempts to examine the impacts of management measures, are increasingly faced with the frustrating task of locating usable data. The absence of credible data bases also limits the SSC's ability to function as a review and advisory body. In the opinion of the SSC we are in a crisis situation. Lack

of domestic fisheries data affects our ability to determine the status of groundfish stocks and evaluate the impact of management measures. The impact of these data gaps will be significant in 1989, in the likely absence of information on the age structure of the catch by the DAP fishery.

(d) Proposed sablefish directed fishing definition

The SSC reviewed the Issue Paper on Amending the Definition of Directed Fishing of Sablefish Directed Fishing in the Bering Sea Area. The proposal to reduce the retention rate for sablefish does little to control the fishing mortality on sablefish. If the retention rate is below the actual bycatch rate necessary to prosecute the fishery, sablefish will be discarded. Information does not exist to estimate the actual mortality expected under various retention rates.

The proposal has allocation implications that were not addressed in the analysis. The SSC heard public testimony that some trawl fishing operations were designed to process sablefish and need to retain sablefish to maintain profitability. In the absence of information on management goals, the SSC is unable to comment further on an appropriate change to the definition.

The SSC offers the following specific comments on the document:

1. The bycatch data presented in Table 2 for TALFF and JVP fisheries are not directly comparable with the bycatch rates presented for the DAP fishery as presented in Tables 4 and 5. Bycatch rates in Table 4 and 5 are a percentage of the target species only when sablefish were present while the rates in Table 2 are the percentage of sablefish for the total harvest.
2. The bycatch rates provided in Table 4 include both retained and discarded catch. Table 5 most likely does not include discarded catch. Because discards are included in the rates direct application to the TAC harvest is not possible. The magnitude of this error is most likely small.
3. Table 8 "High Estimates" represents the best estimate of the sablefish catch (retained and discarded) needed to operate in 1989 with the current definition of directed fishing and given the assumption that operations of the fishermen and JVP/DAP allocations are the same as in 1988. If it is assumed that all of the catch is retained and the fishery strategy does not change, then about 3,100 mt would be harvested. If TAC is set at the recommended SSC ABC then 2,300 mt would be retained and 830 mt would be discarded. This assumes that no targeted sablefish fishery is allowed. If one is allowed, discards would increase by that catch.

The SSC recommends that caution should be exercised in using the results in Table 7 and 9. These tables reflect amounts of sablefish taken by various fisheries under alternative bycatch rates. The rates used are not a reflection of needs required to carry out fisheries under 1988 conditions. Likewise, these tables do not reflect the changes in catch from JVP and DAP that are occurring.

OTHER BUSINESS

(b) Research and Data Collection Priority Recommendations of the SSC

The SSC reviewed recommendations of the council staff and the Gulf of Alaska and Bering Sea/Aleutian Islands Groundfish plan teams for research needs. Given the decrease in observer coverage of the fleet and uncertainty about sources of future data necessary for management of the fisheries of both the Bering Sea and Gulf of Alaska, the following priorities are recommended. The SSC also emphasizes that we continue to depend upon the existing research programs of the National Marine Fisheries Service and the Alaska Department of Fish and Game and assume these programs will continue.

The highest priority program:

Provide for the domestic observer programs for the Bering Sea and Gulf of Alaska groundfish fisheries with the intent of providing statistically valid sampling of the commercial groundfish harvests. These data are essential for management of the groundfish species and bycatch of other commercial species.

Other high priority programs for management of North Pacific Fisheries:

Determine stock structure, life history information, population dynamics and other biological data essential for management of Pollock stocks with special emphasis on the stocks of the central Bering Sea and the Shelikof Straits.

Determine the actual age structure of populations of groundfish in the Gulf of Alaska and the Bering Sea through valid aging techniques and sampling programs and provide support for the port sampling programs necessary to collect the data.

Conduct studies of trophic interactions in the Bering Sea ecosystem with particular emphasis on the interrelationships between critical populations of fish, shellfish, and marine mammals.

SSC BERING SEA AND ALEUTIAN ABC RECOMMENDATIONS 1989

| SPECIES | | ABC (mt) | TAC (mt) |
|---------------------|-----------|-----------|----------|
| Pollock | EBS | 1,340,000 | |
| | 515 | --- | |
| | Aleutians | 117,000 | |
| Pacific Cod | | 370,600 | |
| Yellowfin Sole | | 241,000 | |
| Greenland Turbot | | 20,300 | |
| Arrowtooth Flounder | | 163,700 | |
| Rock Sole | | 171,000 | |
| Other Flatfish | | 155,900 | |
| Sablefish | EBS | 2,300 | |
| | Aleutians | 6,200 | |
| POP | EBS | 6,000 | |
| | Aleutians | 16,000 | |
| Other Rockfish | EBS | 400 | |
| | Aleutians | 1,100 | |
| Atka Mackerel | | 21,000 | |
| Squid | | 10,000 | |
| Other Species | | 59,000 | |

SSC GULF OF ALASKA ABC RECOMMENDATIONS 1989

| SPECIES | | ABC (mt) | TAC (mt) | |
|------------------------|-------------------|-------------------|---|--------------|
| Pollock | Western | 50,000 | (no more than 6,250 maybe taken in Shelikof Strait) | |
| | Central | | | |
| | Jan 15 - April 15 | --- | | |
| | Eastern | 3,400 | | |
| Pacific cod | Western | 13,500 | | |
| | Central | 52,000 | | |
| | Eastern | 5,700 | | |
| | Total | 71,200 | | |
| | | <u>Arrowtooth</u> | <u>Other</u> | <u>Total</u> |
| Flounders | Western | 38,051 | 73,449 | 111,500 |
| | Central | 199,072 | 185,228 | 384,300 |
| | Eastern | 37,494 | 21,406 | 58,900 |
| | Total | 274,617 | 280,083 | 554,700 |
| Sablefish | Western | 4,900 | | |
| | Central | 13,900 | | |
| | Eastern | 5,300 | | |
| | S.E./E.Yakutat | 6,800 | | |
| | Total | 30,900 | | |
| Slope rockfish | Western | 5,500 | | |
| | Central | 9,900 | | |
| | Eastern | 7,300 | | |
| | Total | 22,700 | | |
| Pelagic Shelf | Western | 1,100 | | |
| | Central | 4,700 | | |
| | Eastern | 800 | | |
| | Total | 6,600 | | |
| Demersal Shelf | | --- | | |
| Thornyhead rockfish | | 3,800 | | |