North Pacific Fishery Management Council

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MINUTES
Scientific and Statistical Committee
February 1-2, 1999

The Scientific and Statistical Committee of the North Pacific Fishery Management Council met February 1-2, 1999 at the Anchorage Hilton Hotel in Anchorage, AK. All members were present except Steve Klosiewski and Richard Marasco:

Jack Tagart, Vice-Chair	Keith Criddle	Doug Eggers
Steve Hare	Sue Hills	Dan Kimura (Alt.)
Doug Larson	Seth Macinko	Terry Quinn
Al Tyler	Harold Weeks	

C-1   STELLER SEA LIONS

This agenda item was presented by Tim Ragen and Kent Lind (both of NMFS-AKR). Public testimony was presented by Chris Blackburn (AGDB), Ben Ellis (Alaska Sea Life Center - Seward), Ed Richardson (ASPA) and Dave Fraser (High Seas Catcher Boat Cooperative).

The pace of this issue continues to make it difficult for the SSC to provide constructive advice. A draft environmental assessment was not provided to the SSC. It would have been helpful to have written materials outlining new alternatives to be considered in the new emergency action and the post-1999 permanent action. An outline of the analytical framework for the EA/RIR to be presented in April would also have facilitated SSC, AP and Council discussions.

The factors that have led to the decline in Steller sea lions are poorly understood, and it is unclear whether proposed management measures will have any effect on sea lion recovery. The SSC urges caution in enacting fishery management measures, and that careful review and deliberation of alternatives be allowed to occur.

The principal emphasis now is on preparation of an EA/RIR for both the emergency rules governing the pollock fishery in 1999, and subsequent rule-making to govern the fishery in 2000 and beyond. Setting alternatives for this analysis is critical for the Council to understand the choices before it, and to effectively use the analysts' time and efforts. It is essential to articulate the characteristics that will allow an alternative to avoid a jeopardy opinion. Developing alternatives that meet the conservation need and that provide realistic constraints on the fishery hinges on a clear understanding of what will meet the goal of avoiding jeopardy. The discussion to date has focused on dispersing the fishery in space and time. This implies that there is some threshold of "local" exploitation (space and time) that is too much. This threshold needs definition.

Once a suite of alternatives are defined, the EA/RIR needs to address the following elements:

(1) It is important for the EA/RIR to set forward testable hypotheses and the monitoring and analytic needs to evaluate proposed measures. The SSC has previously made detailed suggestions regarding these measures in its April, June and November 1998 minutes. Arguments that support the adoption of measures that constrain fishing activities are contingent on the hypothesis that commercial fishing decreases the effectiveness of sea lion foraging. As in the past the SSC recommends that future management be based on an experimental design that provides information about the interactions of fisheries and Steller sea lions.

The SSC received an update on the overall research efforts planned to address the Steller sea lion situation. Although the SSC is encouraged by the workshops to be convened next week and by the prospect for revising and updating the Steller Sea Lion Recovery Plan, it is important that future research conducted by NMFS and other entities directly address fundamental hypotheses regarding fishery/sea lion interactions. One useful study mentioned in public testimony is a local depletion study, in which surveys would be conducted prior to and after a fishery to test the hypothesis that a significant portion of the pollock population was removed in an area. Further SSC comments on Steller sea lion research are given in our minutes under Research Priorities.

(2) A discussion of the designation of critical habitat is needed. The SSC suggests it is time to investigate whether a redefinition of critical habitat is needed. Such an investigation should incorporate recent information from NMFS and other scientific studies.

(3) Although there is no requirement that the Section 7 consultation address the effect of implementation of these measures on industry, communities, or other management objectives, these are required considerations in the context of an EA/RIR. The EA/RIR should include information on the effect that the measures will have on prohibited species bycatch, changes in the size/age distribution of catch and consequent effects on stock dynamics, gear conflicts, and economic impacts. Implementation of conservation measures consistent with the RPAs may have unintended consequences. For example, trip limits in the Gulf of Alaska might increase discarding and redistribution of effort from the CVOA could result in increased bycatch of chum salmon and bairdi Tanner crab.

(4) The SSC believes that the NMFS proposal for spatial reapportionment of the B and C seasons should be altered. Eastern Bering Sea pollock undergo significant seasonal feeding and spawning migrations. A large portion of the spawning occurs at the outer shelf and offshore area of the southeastern Bering Sea in close association with the CH/CVOA. This observation is based on a number of synoptic hydroacoustic surveys of the eastern Bering Sea during the spawning period, the distribution of eggs and larvae from synoptic surveys of EBS, and the location of the A season catch. Following spawning, pollock move on to the shelf and by the time of the annual bottom trawl survey are dispersed throughout the shelf feeding areas. Thus, the NMFS bottom trawl surveys occur when the portion of the EBS pollock stock outside of CH/CVOA is the greatest. Pollock then migrate into CH/CVOA areas in late summer. Therefore, using the spatial distribution of pollock based on the NMFS surveys as a surrogate for the spatial distribution of pollock during the B/C season is erroneous.

The rationale for, and consequences of, spatial reapportionment of B and C season pollock fishing each year must be made explicit. Any reapportionment should reflect the fact that the fraction of pollock in the water column is significant and variable from year to year, and is surveyed hydro-acoustically only every three years. The SSC has often endorsed the principle of distributing removals of a resource in accord with the corresponding distribution of biomass (e.g., Atka mackerel). This is consistent with the RPAs presented in December. Because the SSC does not believe the distribution of biomass inferred from NMFS trawl and hydroacoustic surveys reflects B and C seasonal biomass distributions, the SSC suggests the following five alternatives be considered in the EA/RIR:

(a) a 50/50% split inside and outside the CH/CVOA

(b) the allocation proposed by the Council at its December 1998 meeting (either of these schemes reduce the percentage of removals within the CH/CVOA).

(c) a return to the percentages that occurred prior to recent increases in the harvest proportion taken in the CVOA;

(d) a distribution based on an analysis of commercial fishery catch and effort data (probably with increased weighting toward the more recent period and with standardization for catchability differences among vessels and effects of regulations). While this option may require substantial time for analysis and may need the assumption that catch or CPUE is proportional to biomass, there is assuredly information in commercial fishery data that should be examined.

(e) a distribution based on real-time surveys (trawl and hydroacoustic) just prior to the B and C seasons. Implementation of this option will be difficult due to design considerations, necessary resources, and timing constraints.

C-3 EA/RIR FOR THE SEABIRD AVOIDANCE MEASURES TO REDUCED BYCATCH OF SHORT-TAILED ALBATROSS

The SSC received a presentation from Kim Rivera of NMFS Protected Resources Division, Juneau, Alaska. Public testimony supported the position that proper weighting of lines was the most economical, effective measure to minimize the bycatch of birds. The draft EA/RIR was not provided to the SSC in advance. Consequently, the SSC did not receive the draft and cannot comment on its suitability for public review. Public testimony was provided by Carl Vido, Steven Vindal, and Bob Alverson of Fishing Vessel Owners Association. The purpose of the draft EA/RIR is to provide reasonable and prudent measures to protect the short-tailed albatross.

The short-tailed albatross is an endangered species, so rare that only average of one bird is estimated to taken annually. However, two birds were taken in the Pacific cod longline fishery in 1998, and current regulations allow a take of only 4 birds over a two year period before a further Section 7 consultation would be required. As further background, the worldwide population of short-tailed albatross is approximately 1,100 and is believed to be increasing at a rate of 6% per year.

The seabird issue is an ESA problem, but it does not involve a jeopardy finding. The SSC is pleased to note that the problem associated with short-tailed albatross and longline fisheries is clearly defined, the timetable for taking action reasonable, provisions have been made for experimentation, and concern expressed for minimizing the cost to industry is included.

However, some significant shortcomings were also noted: there is no estimation of reduction in risk of bycatch for options under Alternative 2, and there is limited discussion of costs. Because bycatch is so small, estimation of the total take of short-tailed albatross is problematic. Uncertainty exists on how the known take of albatross should be expanded to the unobserved portion of the fishery. The SSC would like to see a frequency distribution of seabird bycatches. It has been noted in other longline fisheries (e.g. New Zealand) that the distribution of seabird bycatches tends to be highly clustered, with a high proportion of the bycatch taken in a small number of hauls.

Because of the extremely small numbers in the bycatch of short-tailed albatross and because little quantitative information is available concerning the efficacy of proposed measures, it is unlikely that meaningful estimates of bycatch reduction can be made.

C-5(a) HALIBUT CHARTER GHL

Jane DiCosimo provided the SSC with an overview of a discussion paper that will lead to the development of an EA/RIR for a GHL and moratorium for halibut charters. In addition to issues raised in the discussion paper, the SSC suggests that the analysis address the following:

(1) The tradeoff between profits earned by charter operators and net benefits obtained by charter customers. For example, while an appropriately specified moratorium may conserve or increase profits for charter operators, it may constrain or reduce the net benefits obtained by charter customers.

(2) The distribution of risk associated with alternative specifications of the GHL. For example, if the charter fishery is allocated a fixed tonnage or number of halibut rather than a fixed percentage of the TAC, the commercial fishery will absorb reductions (increases) in the TAC.

(3) The sensitivity of exvessel demand (elasticity) for halibut and the sensitivity of demand (elasticity) for halibut charters.

(4) Differences in the regional economic impacts of commercial and charter fishing.

C-6 ECOSYSTEM MANAGEMENT

Dave Witherell presented this agenda item. The report of the NMFS Ecosystem Principles Advisory Board is in the final drafting state and is not available for discussion. The Council's ecosystem committee met on January 21-22, 1999. Four principal topics of discussion were:

(1)   the effects of environmental change on fisheries,
(2)   the effects of fishing gear on habitat,
(3)   time-area closure management, and
(4)   recommendations of the Ecosystem Principles Advisory Board.

The SSC continues to support and encourage the work of the Council's ecosystem committee as an avenue to work toward sustainable fisheries and a better understanding of ecosystem dynamics. We concur with the committee's recommendations.

C-7 SOCIAL AND ECONOMIC DATA

The SSC received a progress report from Darrell Brannan. The SSC notes that due to time constraints, the committee report was not reviewed by the entire committee and should be regarded as a draft. It is important that data elements on economic and social aspects of the fisheries that are not currently available or not available in a useful form, begin to be routinely collected, maintained, and made accessible. The report and the working group's deliberations, represent a useful step toward enhancing social and economic data resources. While these data will ultimately support improved assessments of the status quo magnitude and distribution of net benefits and predictions of how these benefits may change in response to various

management decisions, the SSC wishes to caution that this is a long-lived process analogous to development of the data now routinely collected to support stock assessment models. Moreover, the data collection initiatives explored by the Social and Economic Data Committee are not comprehensive. Specifically, while data generated by the operating cost surveys and the proposed changes to COAR and Fish Ticket reporting requirements will contribute to improved estimates of current net economic benefits, additional information (e.g., cold-storage holdings and other inventories, export and import volumes and prices), would be necessary for modeling exvessel and wholesale product price formation processes.

Similarly, while the fishery atlas will help to describe present and past social and economic context of the fishery, it is unlikely to serve as the basis for predictive models of the social and economic consequences of various management actions. Additional data priorities are identified under Research Priorities (Section D). The SSC is particularly supportive of the Committee's recommendation in favor of the establishment of an instrument for gathering information about participation by fishing crew and processing employees.

C-8   RESEARCH PRIORITIES

The SSC updated the list of research priorities from last year by incorporating Plan Team recommendations and its own new thoughts. The SSC emphasizes that this list is not inclusive of all needed research nor is it prioritized; rather it represents a compilation of research ideas recognized by the SSC as deserving attention by NMFS, ADF&G, IPHC, other agencies, and institutions of higher learning. The SSC wants to emphasize the new importance of sea lion and pollock related research in C.9.

A.   Critical Assessment Problems

1.   Rockfish: There is a general need for better assessment data, particularly investigation of stock structure and biological variables.

   a)   *Supplement triennial trawl survey biomass estimates with estimates of biomass or indices of biomass obtained from alternative survey designs.*
   b)   *Obtain age and length samples from the commercial fishery, especially for Pacific ocean perch, northern rockfish, and dusky rockfish.*
   c)   *Increase capacity for production ageing of rockfish so that age information from surveys and the fishery can be included in stock assessments in a timely manner.*

2.   Walleye pollock: There is a continuing need for research on stock structure as it relates to assessment. There is a critical need for a tagging study to focus on stock interactions. We continue to emphasize the need for age-structured assessments of recognized stock units. As the Bering Sea pollock population has declined, the forecasts of future pollock recruitment have undergone greater scrutiny. Research on alternative forecasting methods is needed

   The SSC believes that the magnitude of the catch, size and age structure of the EBS stock harvested in the Russian zone in the vicinity of the transboundary area is needed. It may be necessary to consider fishing removals from the Russian zone and their impact on EBS pollock mortality in the estimates of ABC and TAC.

   Assessment of the status of the Gulf of Alaska resource is critically dependent upon results of resource surveys. Currently, these surveys are conducted every three years. Various ways of supplementing the triennial survey data should be evaluated. The relationship between fish in Prince William Sound to those in the Gulf of Alaska needs to be elucidated.

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

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

    Correct model specification is critical to stock assessment. Further research is needed on model performance in terms of bias and variability. In particular, computer simulations, sensitivity studies, and retrospective analyses are needed. As models become more complex in terms of parameters, error structure, and data sources, there is a greater need to understand how well they perform.

5. Life history information, e.g., growth and maturity data, is incomplete for a number of stocks. This information is essential for determination of ABC, OFL and preferred fishing mortality rates. Maturity data are lacking for: Pacific cod, Dover sole, other flatfish, sablefish, and many species of rockfish. Life history and distributional patterns of Greenland turbot are lacking. To better understand sablefish recruitment variability, additional information on the geographical distributional and movement of juvenile sablefish is needed.

6. Identification of the origin of chum and chinook salmon stocks captured incidentally in the groundfish fisheries is needed. The chum salmon stocks in particular are recognized as a mixture of Asian and North American origin. Resolution of stock origin is important in the consideration of bycatch management.

7. There is need for information about stock structure and movement of walleye pollock, Atka mackerel, Pacific cod, POP, and other rockfish.

8. Further research is needed about management strategies that provide for conservation of aquatic resources. Topics that need attention include: which measure of biomass should be used in biomass-based adjustment of ABC and OFL; what measure of average recruitment to use in $B_{40\%}$; the effect of seasonality in spawning, recruitment, and harvest on optimal harvest rate; adaptive management schemes which are designed to provide understanding of multispecies interactions and spatial population dynamics. One objective is to develop multispecies analysis of stocks.

9. Presentation of uncertainty in stock assessments is often lacking or incomplete. Further research is needed into which methods are most appropriate for capturing uncertainty in the status of populations.

10. Management measures such as time-area closures and other restrictions are frequently imposed, but rarely rescinded. Studies are needed to evaluate the effectiveness of management measures on conserving populations, achieving management goals and assessing other ecosystem effects.

B.   Stock survey concerns

1.   Conservation of aquatic resources in the North Pacific is critically dependent on a consistent time series of trawl, hydroacoustic, and longline surveys. The continuity of these series must remain one of the highest priorities of NMFS and the Council. Data analysis should be expanded to include non-target, non-FMP species.

2.   Explore ways for inaugurating or improving surveys to assess rockfish (including nearshore pelagics), pollock, squid and Atka mackerel.

3.   Expand bottom trawl surveys in the Gulf of Alaska and Bering Sea to include slope areas that encompass the population range of Greenland turbot, rockfish, thornyheads, and sablefish.

4.   Conduct surveys of the Aleutian Islands management area to assist in the assessment of groundfish stocks found in this region.

5.   Improve surveys for Bering Sea crab complementary to the existing Bering Sea crab/groundfish survey (e.g. Norton Sound, Pribilof Islands, St. Matthew Island, and Bristol Bay).

6.   Direct observation (e.g. submersible and dive surveys) offers unique opportunities to directly examine gear performance, fish behavior in the proximity of gear, gear related habitat impacts, and differences of fish density between trawlable and nontrawlable habitat.

7.   There is a continuing need to perform gear calibration and fish observation studies to validate indices of abundance (e.g. fishing longline and trawl gear side-by-side, and fishing different baits on longline gear over the same stations).

8.   Within the EEZ are seamounts that are unsampled for groundfish, halibut, and crab abundance. Surveys that sample these seamounts may improve estimates of total abundance in the EEZ, particularly for sablefish and rockfish stocks.

9.   Data from annual ADF&G crab surveys should be examined and their usefulness for assessing groundfish abundance in near-shore areas should be evaluated. Dialogue between ADF&G and NMFS assessment scientists regarding ways of gaining more useful groundfish data from this survey should be encouraged.

C.   Expanded Ecosystem Studies

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

2.   Effort is needed on status of stocks and distribution of forage fishes, such as capelin, eulachon, and sand lance. Forage fish are an important part of the ecosystem , yet little is known about these stocks. The Lowell-Wakefield Symposium (October 1996) presented current research on forage fishes.

3.   Studies of the effects of harvesting and processing activities on the ecosystem and habitat should be instituted. For example, studies contrasting species diversity and abundance in the red king crab savings area with that in adjacent regions.

4.   Trophic dynamics research should be undertaken on the relationships among critical species, e.g., Pacific cod and its prey (including shrimp and crabs). The feasibility of constructing multispecies models using ongoing collection of gut contents data should be investigated.

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

6.   Studies are needed to identify essential habitat for groundfish and forage fish species in the Gulf of Alaska and Bering Sea. This identification is required by the MSFCMA and would benefit from field studies conducted across a matrix of spatial temporal, and life history stages. Mapping of nearshore and shelf habitat should be continued for FMP species.

7.   Expand studies of distribution, abundance, and productivity of seabird populations and ensure that data are collected in ways that provide for rigorous analyses of seabird/marine mammal/oceanographic/fisheries interactions. The majority of data on seabirds in Alaska was collected during the 1970s (through OCSEAP); the quantity of data collected afterwards has been insufficient to adequately examine these interactions.

8.   Multivariate statistical analysis of the time series of annual survey data may identify which species regularly occur in assemblages. Mapping these assemblages through space and time may reveal changes in the distribution and abundance of the species of the Eastern Bering Sea. These mappings and trajectories may be applicable to adaptive management approaches suggested for exploring ecosystem concerns. Although related analyses were started by NMFS in the late 1970's , they have not been conducted in recent years. Recent advances in spatial statistics may prove fruitful tools for re-examining these existing data.

9.   Uncertainty about the relationship between the Steller sea lion population and groundfish fisheries has taken an elevated significance. With this uncertainty as to the extent of factors affecting Steller sea lions, it is critically important to investigate the effects of mitigation measures on the sea lions, the fisheries, and the ecosystem. The monitoring must be based on an experimental design that provides information about the interaction of fisheries and Steller sea lions. Five questions are central to future work:

   (a)   What is the distribution of fish in relation to areas used for fishing, and what are the seasonal changes?
   (b)   What is the distribution of fish in fishing areas before and after fishing?
   (c)   How do Steller sea lions use pollock in relations to pollock distributions?
   (d)   How does the Steller sea lion's pollock feeding habits influence sea lion population dynamics?
   (e)   Does the fishery effect Steller sea lions in other ways (e.g., behavioral disturbance)?

D.   Social and economic research

There is a critical need for the development and continued maintenance of basic social and economic information databases on the fisheries and fisheries dependent communities of GOA and BS/AI. This information is required for establishing a baseline to be used in the evaluation of the impacts of alternative management measures.

1.   There is a need to develop a cross section-time series of data on:

    a)   Exvessel and wholesale prices (information is needed on actual transactions and sources of variability).

    b)   Inventories and exports (greater detail on product form, volume, and transactions prices).

    c)   Cost of variable inputs to fishing

    d)   Patterns of ownership in fishing and processing operations (concentration, vertical integration, foreign participation).

    e)   Employment and earnings for crew and skippers

    f)   Patterns of employment/unemployment, earnings, transfer payments in fishery dependent communities, and

    g)   The location where goods and services are purchased.

2.   There is a need for economic analyses of:

    a)   The demand for fisheries products (exvessel, wholesale, international, and retail markets)

    b)   Production functions for catch and processing

    c)   Regional models of economic activity in fishery dependent communities,

    d)   An assessment of the cumulative efficiency and equity consequences of management actions that apply time/area closures

    e)   An assessment of the consequences of the halibut/sablefish IFQ program (changes in product markets, characteristics of quota share markets, changes in distribution of ownership, changes in crew compensation, etc.)

    f)   Estimates of the net economic benefits of recreation and subsistence harvests, and,

    g)   And improved representation of fleet behavioral response to alternative fishing opportunities to provide better prediction of how fishing effort will shift in response to time/area closures.

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

    a)   Fishery/Community Linkages: Field research aimed at capturing the full array of linkages between fisheries and social and economic life in fishery dependent communities.

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

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

d)   Develop better methods for determining the social costs and benefits of management actions (e.g. through the use of non-market valuation techniques).

E.   Bycatch problems

1.   Research on gear modification and other methods for reducing bycatch should be expanded.

2.   A better quantification of discard mortality rates is needed, especially for halibut and crab.

3.   Data on size/age and sex of crabs taken as bycatch are needed to assess impacts.

4.   Comprehensive evaluations are needed of single and multiple time/area closures and other bycatch management measures.

5.   Develop better methods for assessing the social costs of bycatch.

6.   Identify sources of variability in actual and estimated bycatch rates.

7.   Collect bycatch information in the directed halibut fisheries using observer coverage. Current logbook information is inadequate to quantify this bycatch.

F.   Fishery Monitoring

1.   Inseason management and stock assessment are critically dependent on catch estimates. There is a need to conduct ongoing analyses of the accuracy and precision of catch estimates in all fisheries. An analysis of the utility of fishery logbook information should be conducted. In particular, determine if it is possible to gain insight into fleet performance from such information. Examine feasibility for developing a representative CPUE index and determine if it is proportional to stock size

2.   Evaluate sampling procedures used by observers and various catch estimation procedures.

3.   Development of catch and bycatch sampling procedures for individual vessel accountability programs.

D-1(c) CHINOOK BYCATCH PSC

Dave Ackley, ADF&G, presented the EA/RIR for the proposed amendment to minimize chinook salmon bycatch in groundfish trawl fisheries of the Bering Sea and Aleutian Islands. Public testimony was provided by Dan Albrecht, Dorothy Childers, Joe Sullivan, and Jennifer Chris. The Council is scheduled to take final action on the amendment at this meeting. Current regulations include a prohibition on trawling in designated chinook salmon savings areas (CHSSA) upon attainment of an estimated catch of 48,000 chinook prior to April 15. No restrictions on bycatch are in place after April 15.

Among alternatives proposed in the amendment are activation of a prohibition on trawling in the CHSSA at any time in the calendar year after the 48,000 fish cap is reached, reduction of the cap from 48,000 to 36,000 fish with trawl closures triggered upon attainment of cap prior to April 15; seasonal allocation of the cap, change in the accounting year for the cap, and annual closure of specific "hot spots".

In October 1998, the SSC recommended amending the draft EA/RIR to accommodate 3 issues: (1) expression of returns of chinook salmon to rivers of origin as adult equivalents; (2) illustration of the impacts of proposed alternatives with respect to bycatch within Steller sea lion critical habitat; and (3) a discussion of the changes in expected fishing effort resulting from proposed alternatives. All items requested are provided in the current document. The SSC reiterates a comment it has provided on this issue in the past: Because chinook salmon bycatch levels are historically low relative to the directed catch (commercial and subsistence) the proposed bycatch management measures are largely allocative among the competing fisheries. Proposed alternatives variably distribute the conservation burden for the chinook stocks between the groundfish and directed salmon fisheries.

While the current document offers a thorough evaluation of where and when chinook salmon bycatch occurs, and the differences in anticipated catch as a consequence of the proposed alternatives, the consideration of the costs and benefits associated with the alternatives is limited.

This is some question whether the data analyzed in the EA/RIR are realistically predictive of outcomes expected in the upcoming groundfish fishery given the very substantial changes in management resulting from the recent AFA, and management measures related to the Steller sea lion biological opinion. Regardless, the EA/RIR does attempt to provide qualitative insight on the direction and type of impact resulting from these actions. The SSC notes that data on the river of origin of chinook salmon bycatch is dated, and we don't know if more timely data would change the inference on this topic. We also note that there is continued controversy with respect to the accuracy of chinook salmon bycatch estimates.

Chinook salmon bycatch estimates are known to have low precision and are potentially biased. The magnitude and direction of the bias is undetermined. Industry suspects overestimation of bycatch from the implementation of basket sampling, while NMFS observer program personnel suspect underestimates of chinook bycatch from whole haul counts that are dependent on industry assistance to set aside salmon bycatch prior to counting. Some effort should be made to resolve this question. Additionally, the SSC requests that NMFS report on the consistency of salmon bycatch sampling methods over the history of the Bering Sea groundfish fisheries.

In spite of these concerns, the SSC believes the data reflect the trend and spatial pattern of salmon bycatch in Bering Sea groundfish fisheries. The spatial and temporal patterns have been very consistent in the foreign, JV and domestic groundfish fisheries.

D-3   BSAI CRAB FMP

The SSC heard a report from Dave Witherell on the Status of the C. bairdi rebuilding plan and looks forward to seeing the analyses to be developed for the April meeting.

D-4   REVIEW OVERFISHING DEFINITION FOR THE SALMON FMP

The SSC reviewed the revised overfishing definition developed for the Salmon FMP. The definition under Alternative 2 (preferred) applies to chinook salmon (Tier 1) and coho salmon (Tier 2,3) explored by the southeast Alaska troll fishery. The definitions reflect the overfishing polices of the State of Alaska, and the Pacific Salmon Commission (PSC) and are consistent with the Magnuson-Stevens Act's National Standard 1.

The SSC notes that the mortality rates under Tier 1 are accumulated from 1997 (the year the PSC letter of agreement was implemented) until the most recent time. Over time these rates would become insensitive to

catches exceeding management targets. The SSC recommends that the rates be accumulated only over the previous T years, where T is the average life span of the chinook salmon stocks exploited.

ABC/OFL DISCUSSION

Grant Thompson (AFSC) gave a thorough overview of recent events concerning ABC/OFL determinations. Passage of the MSFCMA in 1996 led to the Council's redefinition of overfishing and the development of Amendments 56/56 to the BSAI and GOA FMPs. Following the advice of the Plan Teams, SSC and AP, the Council approved Alternative 2; approval from DOC came just last week.

The Council's alternative does not follow NMFS Guidelines exactly. In particular, a minimum stock size threshold allowing rebuilding to a target level within a given number of years was not in the alternative. It is unclear at this point what the difference means for the annual ABC/OFL process.

Dr. Thompson also distributed a revised version of his paper presenting his vision of how to optimize the elusive harvest control rules. The SSC continues to support his and others' work on improving the basis for determinations of ABC and OFL.

<u>Election of Officers</u>

Dr. Richard Marasco was unanimously re-elected as chair and Dr. Jack Tagart was re-elected vice chair of the SSC.