DRAFT
MINUTES
Scientific Statistical Committee
February 5-7, 2001

The Scientific Statistical Committee of the North Pacific Fishery Management Council met February 5-7, 2001 at the Hilton Hotel in Anchorage, Alaska. All members were present:

Rich Marasco, Chair	Jack Tagart, Vice Chair	Steve Berkeley
Keith Criddle	Doug Eggers	Steve Hare
Jeff Hartman	Sue Hills	Dan Kimura
Seth Macinko	Terry Quinn	Al Tyler

C-1 HALIBUT CHARTER IFQ PRELIMINARY REVIEW

Darrel Brannan, Nicole Kimball, Maria Tsu, and Jane DiCosimo (NPFMC) presented and responded to question about the initial review draft of the Halibut Charter IFQ EA/RIR analysis. Public testimony was provided by Duncan Fields (Gulf of Alaska Coastal Communities Coalitions), Jerry Merrigan (Petersburg Vessel Owners Association), Donald Westland, Bruce Gabrys, and John Crowley (Fishing Vessel Owners Association).

The SSC commends staff on the completeness and balanced presentation of the draft analysis. In particular, the SSC notes that the analysts responded to suggestions included in the October and December 2000 SSC minutes. The SSC recommends that the draft analysis be released for public review after staff addresses the following substantive and editorial issues:

1. Discussion of the impact of GHL and IFQ on consumer, producer, and total surplus should be expanded. (See appendix, below)

2. The EA/RIR should include an expanded discussion of the merits and disadvantages of specifying the charter halibut IFQ in numbers of fish rather than in pounds of fish. Very few IFQ programs have been specified in numbers of fish. One such fishery, a commercial fishery for lake trout in Wisconsin, has noted a problem with highgrading of catch.

   The principal concern about highgrading in the charter fishery with halibut IFQ expressed in numbers of fish arises from the way that the number of fish is determined. It is proposed that the IFQ in numbers be based on the ratio of the QS-pool expressed in pounds and the average weight of sport-caught halibut harvested in the preceding year. If the average weight of fish caught in year *t* is greater that the average weight in year *t-1*, this approach will allow the total weight of halibut caught in the charter sector to exceed the intended charter sector allocation. However, this problem is unlikely to be significant over the long run because the specification of IFQ in numbers of fish in year *t+1* will be based on the average weight of charter caught fish in year *t*. In addition, concerns about highgrading may be mitigated by the fact that highgrading is already a characteristic of the sport fishery and release mortality is relatively low for halibut. Moreover, because the fishery is currently subject to bag and possession limits, the incentive of anglers to highgrade are unlikely to increase. The effect of an IFQ program based on numbers of fish on the incentive of charter operators to highgrade (lowgrade) are uncertain and will depend on angler demand for various trip attributes (e.g., 'high probability of catching bag limit', 'high probability of catching large fish'), the ability of anglers to identify the trip attributes that are provided by charter operators, and on the ability of charter operators to offer differing trip attributes.

Expressing charter halibut IFQ in numbers may have some enforcement advantages. Staff noted that Coast Guard has suggested that operators be allocated uniquely coded tags at the start of each year equal to the number of halibut they are allocated under the IFQ. Operators could be required to affix a tag to each carcass landed. When the tags run out, legal fishing is done and the presence of untagged fish aboard a charter vessel would constitute an obvious violation of the IFQ program. The EA/RIR should include additional detail about this system and its application to either a number or weight based programs. Transferability provisions should also be explored in more detail.

3. The EA/RIR should include more information about the process used to generate the charter enterprise operating and capital cost data obtained from ISER, e.g., sample design (sample size and response rate by strata, and sample expansion algorithms), significance of regional differences. The EA/RIR should include a discussion of the relevancy of the data to characterizations of the cost of operating charter businesses in remote coastal communities.

4. Adjustment of the operating/capital cost estimates should be based on established price indices rather than the assumed average annual inflation rate (3%).

5. The analysis should discuss the possible varied character of charter type operations in remote communities. For example, luxury lodges, fulltime halibut charter business, mixed service business (e.g., halibut/salmon charter, bird/marine mammal sightseeing, kayaker/camper/hunter drop-off services) may have different quota share needs.

6. The EA/RIR should include a discussion on the ability of charter operators to transfer the opportunity cost of quota share holdings to anglers. This ability can be expected to depend on the elasticity of demand for sportfishing trips and will differ for resident and nonresident anglers. The discussion should also note that long run responses are likely to be more elastic than short run responses. When demand is elastic, operators are not able to pass the cost increases on to their customers. Because the resident demand for halibut charter trips is more elastic than the nonresident demand for halibut charter trips, increases in the price that charter operators charge will lead to disproportionately large decreases in the number of resident angler trips. Because the short run nonresident demand is relatively inelastic, price increases intended to pass the opportunity cost of quota share onto customers are unlikely to result in large decreases in the number of trips taken by nonresidents. However, because the long run demand is more elastic than the short run demand, price increases can be expected to cause long-term declines in the number of charter trips taken by nonresident anglers.

7. The EA/RIR should include an expanded qualitative discussion of the potential effects on commercial quota share holders of the possible dilution of the commercial quota share pool to accommodate quota share allocations to communities and charter operators.

8. In its October minutes on this agenda item, the SSC cautioned against employing too narrow a conception of efficiency. The SSC reiterates this advice. The treatment of efficiency (pp. 158-59) and net benefits (p. 248) should be revised to directly incorporate consideration of broad policy goals (such as equity and community access concerns).

9. The discussion of the sunset option in the community set-aside program should be expanded. It is not clear that a sunset provision offers the same policy implications for communities as it does for individuals. The SSC also recommends that the analysts consider the discussion of sunset provisions that appears in the NRC (1998b) reference cited in the document.

10. The discussion of subsistence activities in various communities should rely on subsistence data from the Alaska Department of Fish and Game Division of Subsistence. The ambiguity regarding reliance on subsistence in Port Graham (see p. 132) should be resolved.

11. The discussion of poverty and unemployment levels in the candidate community set-aside communities presented on pages 148-150 is flawed and the SSC recommends that it be deleted and the tabular presentation of demographic data be left to stand on its own.

12. The SSC cautions against placing to much reliance on the precise estimates presented in Tables 4.16-4.19 and the breakeven analysis (Table 4.20). The estimation of "necessary" catch levels can arguably result in an overestimation (low catch quartiles were ignored) or an underestimation (catches from operators in communities with underdeveloped charter industries were used rather than catches from communities with fully developed charter industries). Similarly, there may be limits on the appropriateness of extrapolating operating costs from the Kenai-based ISER survey to remote communities. In light of these issues, the SSC recommends that the analysts revise these tables to present the relevant results in the context of sensitivity analyses which present a range of possible outcomes.

13. (page 160) change Gardner Brown's affiliation to UW not OSU.

14. The EA/RIR should include brief discussions on the potential impact of the IFQ program on license revenues and on transfer of effort into other sport fisheries.

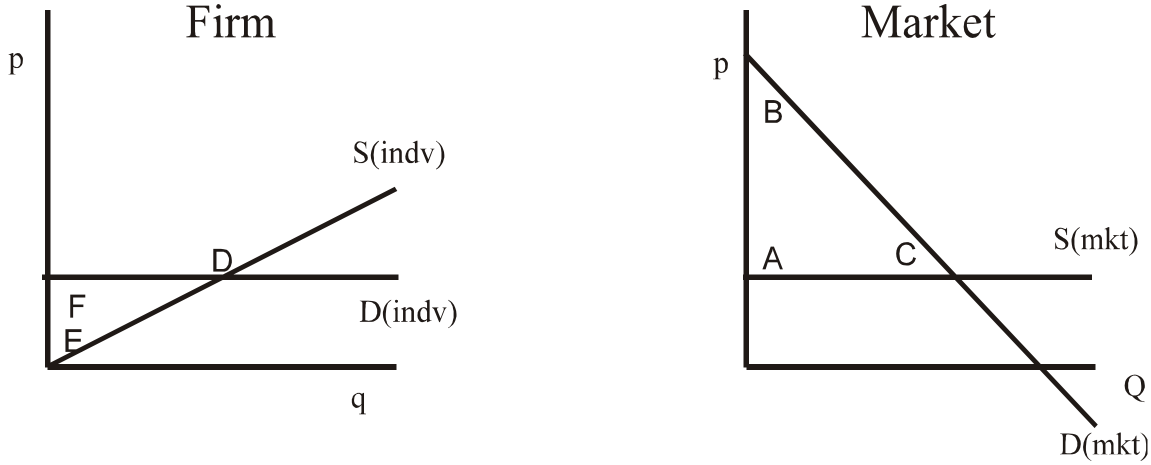
15. The EA/RIR should include an expanded discussion of the incremental costs of implementing and enforcing a charter halibut IFQ program.

Appendix to SSC comments on halibut charter IFQ EA/RIR

Economic analysis of a charter based sport fishery must take in to account several unique characteristics of the provision of services that contribute to recreational activities. Recreational activity associated with charter operations generates benefits to the anglers (often called consumer surplus or compensating variation) and profits to charter operators (often called producers surplus). The following figures may help elucidate the probable changes in consumer, producer, and total surplus that may arise in a movement from an unrestricted charter fishery through the initial imposition of a GHL to the long run outcome of a GHL system and contrasted with the expected outcome of an IFQ-based charter fishery.

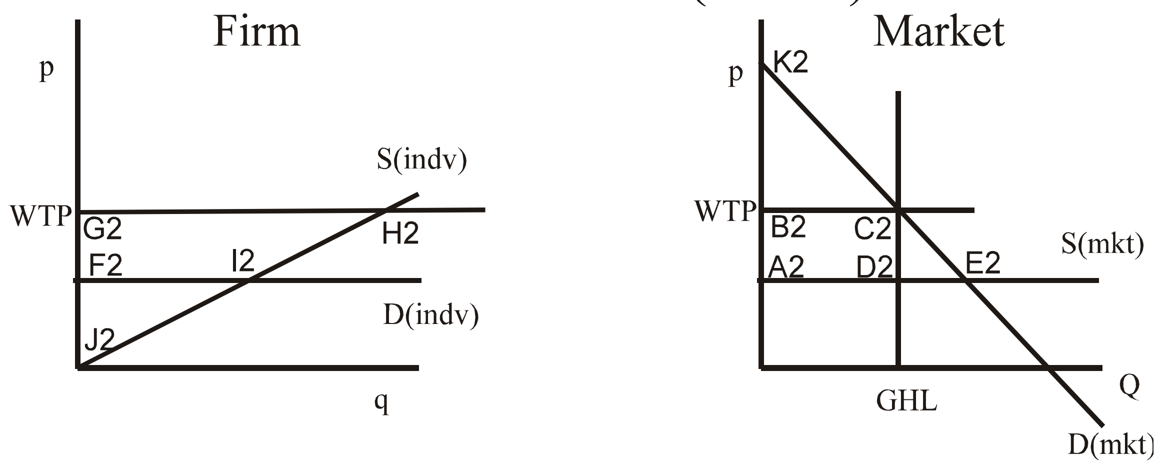
Before implementation, halibut charter operators can be assumed to have behaved as perfect competitors; the activity of each operator represented a small component of the market, the number of operators was large, and the barriers to entry are relatively small. Under perfect competition, the market supply (the sum of the *n* homogeneous individual firm supply functions) is highly elastic and individual firms face a demand for their services that is highly elastic. The level of consumer surplus is represented by the area A-B-C, the integral between the market demand (D(mkt)) and market supply (S(mkt)). Under perfect competition, individual firms earn zero economic rents, so producer surplus for the industry is zero.

Before GHL



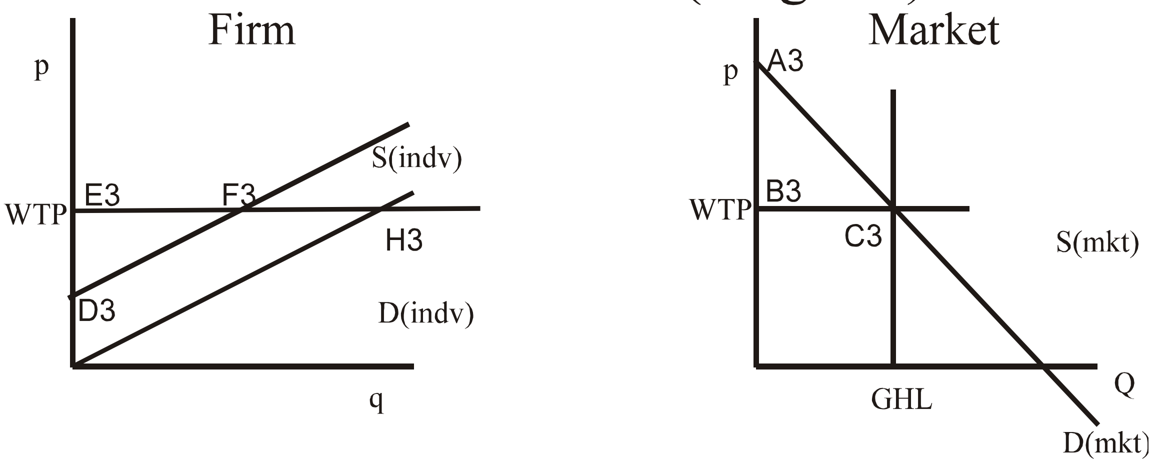
A GHL is a constraint on total production. If the constraint in non-binding, the expected outcome under a GHL management system is identical to that without a GHL. If the GHL is binding, the market and individual firm outcomes change in a predictable manner. For exposition, it is useful to represent initial and long run GHL outcomes. The initial effect of a GHL is to move the market equilibrium from E2 to C2 to reflect anglers' willingness to pay (WTP) up to B2 for the number of trips represented by the GHL. The effect is to reduce consumer surplus from the area A2-K2-E2 to B2-K2-C2. At the same time, charter operators gain producer surplus represented by A2-B2-C2-D2. That is, there is a reduction of consumer surplus (or reduction in the ability of consumer surplus to grow as demand expands) that is partially captured by the charter operators. From the individual firm perspective, the GHL is non-binding, thus each operator has an incentive to increase the number of trips they provide from I2 to H2.

With GHL (initial)



However, because individual charter operators are not assured of particular shares of the GHL, they will compete with one another to attract anglers. Because the angler willingness to pay for C3 trips is B3 (also E3), the competition to attract anglers will take the form of offering additional services rather than offering lower trip prices. (Any price below B3 results in excess demand, which is resolved by customers bidding price up to B3.) The effect is that the individual charter operators' supply function will shift up and to the left until the number of trips taken falls from H3 to F3 where *n**F3 is equal to the GHL (C3). Under these conditions, the consumer surplus is B3-A3-C3 (identical to B2-K2-C2, above) and producer surplus is eliminated.

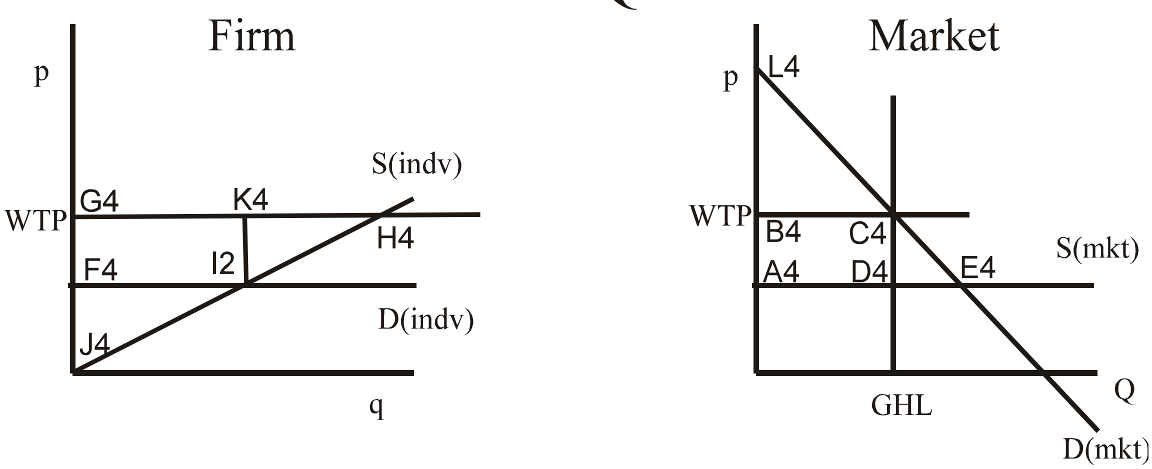
With GHL (long run)



That is, a reduced level of consumer surplus and an ephemeral increase in producer surplus characterize the long run GHL outcome relative to the fishery without a GHL. Similar outcomes arise under circumstances where the GHL is not initially binding, but become so as demand expands.

In contrast with the GHL, the long run outcomes of an IFQ-based charter fishery preserves producer surplus. The consumer surplus is B4-L4-C4. Total producer surplus is A4-B4-C4-D4. Individual operators offer K4 trips at price G4 and cost F4 for an individual producer surplus of F4-G4-K4-I2.

With IFQ



An IFQ program can be expected to result in the same reduction of consumer surplus that is characteristic of a GHL managed charter fishery, while preserving producer surplus. Thus, the sum of consumer and producer surplus will be larger under an IFQ program than it will be under a GHL. The price charged to anglers can be expected to be comparable under GHL and IFQ programs. The difference is that charter operators will incur additional costs in competing for customers under a GHL program and these additional costs can be expected to eliminate producers' surplus.

C-3 REVIEW OF THE NMFS NOVEMBER 30, 2000 BIOLOGICAL OPINION (BiOp3)

Between the December 2000 and February 2001 Council meetings, SSC members individually reviewed BiOp3 and sent their comments to Rich Marasco, who sent these comments to all SSC members. Jeff Hartman attended the January 2001 Council meeting and recorded four items of interest that the Council wanted the SSC to address. At the February meeting, each commenter summarized his or her main points, and public testimony was then provided by Mike Payne, Ed Richardson, Paul McGregor, and Thorn Smith. Then, the SSC synthesized these comments into a review document, which is attached to these minutes. This review is written as a stand-alone document and provides the details to support our principal findings listed below.

The four main items of interest from the January 2001 Council meeting were: (1) review the scientific underpinnings in BiOp3, (2) evaluate the RPA with respect to the BiOp3 findings, (3) evaluate the monitoring program ("experimental design") consisting of 13 open and closed areas, and (4) provide suggestions for the short-term review by 3 independent scientists and the long-term review by the National Academy of Sciences. The SSC responses to these items are found below, classified into 12 topics related to the multitude of factors (including fisheries) that may have affected and still affect the SSL population.

Our focus in this summary is to provide recommendations about the key considerations for the Council process in the next few years. We note that despite the deficiencies listed in our attached review, BiOp3 satisfied Judge Zilly sufficiently that the SSL issue has returned to the Council arena. Our recommended course of action at this point is to extract and build upon the useful features in BiOp3, while using our review and other scientific reviews to indicate the deficiencies, excesses, and limitations in that document. We note that another scientific review by the State of Alaska's SSL Restoration Team should be finalized in April, and our reading of their minutes of three meetings held in the last three months suggests that their review is consistent with and complementary to ours.

1. Scientific credibility of BiOp3

BiOp3 is an attempt by NMFS's Office of Protected Resources to provide a comprehensive evaluation of whether Alaska's fisheries are, "...jeopardizing the continued existence of listed species in the areas affected by the fisheries, ... or adversely modifying critical habitat of such species." Findings of jeopardy and adverse modification occurred only for SSLs. Therefore, the major goal of BiOp3 is to provide a comprehensive assessment of the effects of fisheries and their management on SSLs, in part to respond to a court directive. Consequently, BiOp3 differs from previous BiOp's in that all groundfish fisheries, including State of Alaska fisheries, are more intensively evaluated, as are subsistence takes, water pollution, urbanization, tourism, and other human activities. A reevaluation of global effects of groundfish fisheries leads to a requirement that the control rule for pollock, cod, and Atka mackerel be modified to be more conservative at low stock levels. A reevaluation of regional and local effects focuses on local depletion as being the primary mechanism for interactions with SSLs and leads to a requirement that more stringent time and area closures be implemented. Finally, a "monitoring program" is developed to accommodate NPFMC's oft-stated goal of having an experimental design that allows for testing the efficacy of management measures.

As an ESA-driven document, BiOp3 has as its main focus the impact of human actions rather than the consideration of all factors that may affect the population. Much useful information is summarized in BiOp3, but it is clear that very little is understood about the SSL decline and the interaction of SSLs and Alaska's fisheries. In many ways, the document reads like a prosecutor's brief in a criminal trial. In common with the previous BiOp's, the tenor of the document is unduly negative toward fisheries, opinions are frequently unsubstantiated and/or stated as facts, and there is a lack of scientific balance. The document contains errors and misunderstandings of the historical record, ecological and fisheries theory, and the regime shift. In many cases, subsets of data appear to have been selected to support the findings, and some recent literature, some of which supports alternative viewpoints, has not been presented. **Therefore, the SSC finds that BiOp3 is scientifically deficient.**

2. Alternative hypotheses

BiOp3 finds that fisheries do affect the SSL population and that the most likely mechanism is reduced prey availability caused by local depletion. Alternative hypotheses that could account for the explanation of at least part of the decline are summarily rejected as being insufficient to explain the entire SSL decline. Therefore, BiOp3 concludes that the fisheries must be significant contributors to that decline. Hypotheses that may be important either in explaining the large decline in the 1980's or the failure to rebuild in the 1990's include:

1. reduced prey availability due to local depletion caused by current fisheries

2. direct removals by adult harvests, pup harvests, shooting, entanglement (primarily in the past but subsistence hunts still occur)
3. removals by predators such as orcas and sharks (the "predator pit" hypothesis)

4. changes in nutrition caused by changes in prey from fish such as herring and capelin to fish such as pollock and cod (the "junk food" hypothesis)
   a) prey changes resulting from the regime shift
   b) prey changes resulting from fisheries.

The SSC recommends that documents prepared by the Council in the future evaluate all of these hypotheses. SSL population abundance in the past, present, and future and the efficacy of RPAs should be viewed in this light. The scientific information used for this evaluation should be clearly presented. Further, an attempt should be made to determine the relative importance of these hypothesis, either individually or collectively in explaining the dynamics of the SSL population in the 1980s and 1990s.

3. Global effects

In its consideration of global effects, BiOp3 contains many criticisms of current fisheries management by NPFMC. An analysis attempting to construct historical biomass as if fishing had not occurred is misleading in that it supposes that constant recruitment is a valid assumption at all biomass levels and that species interactions do not exist. In reality, density dependent effects are likely to occur, especially near the unfished level, so that unfished biomass would not be as large as estimated in the analysis.

Furthermore, the document incorrectly concludes from this analysis that current fisheries management has reduced groundfish biomass significantly. The historical "fished" record shown in Figures 6.16 and 6.17 supports the conclusion that NPFMC management has not substantially reduced spawning biomass over the historical record. On the contrary, most stocks have either increased or oscillated over the period, unlike many world fisheries that have declined and not recovered. The operating paradigm is that recruitment is the most important factor in determining population trends and the fishery is generally following that trend rather than causing it. This conclusion is further supported by the multi-species analyses contained in section 6.5.3.
An additional analysis in Appendix 3 estimates that fish biomass is several times the amount needed to satisfy SSL feeding, both at current and at historical SSL population levels. **Therefore, the document should have concluded that global catch levels do not seem likely to affect SSLs, and consequently, that there is no justification for altering the current control rule for pollock, cod, and Atka mackerel at present.**

4. Prey availability and competition

There is no information supporting the conclusion that local depletion is now occurring in Alaska's fisheries. The only evidence presented in the document to support local depletion is the Atka mackerel depletion analysis of Fritz (unpublished) described on p.230. The conclusions from this analysis raised the possibility that local depletion had occurred but also acknowledged that other factors could explain the results as well. Nevertheless, the Council took action in 1998 to mitigate the possibility of local depletion. BiOp3 overreaches by incorrect inference in concluding that local depletion is likely to occur in other fisheries.

BiOp3 incorrectly concludes that competition between SSLs and Alaska's fisheries is occurring. Apparently, the document confuses competition with co-occurrence or propinquity. The fact that SSL's eat fish and the fishery takes fish is not evidence of competition. If there are sufficient resources available, then competition is not occurring.

A general issue in this debate is the relative importance of competition, either fishery or interspecies, in marine ecosystems in relation to predation. The direct effect of one species eating another may contribute more than competition does to population regulation and community structure. Competition for food resources may be of lesser importance because food limitations seem to affect growth more so than survival. There is some evidence to suggest that growth of sea lions changed from the 1970s to the 1980s, so one might speculate that a reduction in prey availability contributed to growth change. It is less clear that the growth change also translated into an increase in juvenile mortality.

Resolution of issues related to prey availability and nutrition must await ongoing and new research. As stated above, such research needs to occur across several research fronts that address the competing hypotheses.

5. Steller sea lion modeling

Modeling of the Steller sea lion population in BiOp3 is minimal. Part of the reason for this is the lack of detailed and consistent age or size composition information and the lack of detailed information on removals. **Nevertheless, modeling could help to address the competing hypotheses about the decline.** There is a strong need for more in-depth analyses that incorporate aggregate sources of potential mortality (such as orca and shark predation, removal of sea lions by direct and indirect harvest, and prey availability) into a population dynamics model for SSLs. A reevaluation of extinction risk under current rates of decline could then be performed. Time series analysis could be useful for short-term forecasting. In addition, there is a need for statistical analysis of the count data on rookeries or haul-outs to examine the uncertainties in these counts and in their extrapolation to the total population.

6. Experimental design

One of the best features of BiOp3 is the consideration of an experimental design to test whether management measures are effective. Careful consideration was given to the selection of areas and the number of replicates, and power analyses were conducted to assess the ability of the data collection to test hypotheses. The major limitation of the design is that there is little contrast between experimental units, because protected areas are so large and catches are limited. Consequently the power may be overstated. At the present time, the experimental design is viewed as so draconian by the industry, that it will have little acceptance in the fishing community.

The SSC believes that a revised experimental design can be developed within the context of the 2002 RPA. A concerted effort should be made by the Council family to come up with an alternative design that meets the goals of evaluating the efficacy of management measures in a reasonable amount of time, while allowing a viable fishing regime. **The alternative design must follow solid scientific principles, including testable hypotheses, evaluation of assumptions, and power to detect differences in trend**.

7. Precautionary management

The above criticisms notwithstanding, there is simply inadequate knowledge to conclude that the fishery is having no impact on the SSL population. Therefore, some level of precaution is warranted, and determining that level will be a crucial task of the Council in the next few years. The failure to use a precautionary approach is clearly evident in the description of the declines in endangered whale and salmon species in chapter 4. It is clear that humans can have large effects on the ecosystem and that these effects can be direct (e.g., whale harvest) and indirect (salmon habitat loss from dams).

8. Support for the RPA management measures

The SSL closures implemented in the early 1990s have not reversed the SSL decline despite having been in effect for a decade. But were the closures at least partially effective in contributing to the reduction in the rate of decline seen in the 1990s? One could equally conclude that these closures were ineffective because they were too small or because the fisheries have nothing to do with the SSL decline. The SSC has stated repeatedly that learning can only occur with a valid experimental design that includes contrast in the protection treatments. The failure to have done this a decade ago means that we remain at ground zero.

The lack of knowledge about the interaction of fisheries and SSLs hampers any reasonable attempt to develop precautionary measures. **Therefore it is impossible to evaluate the temporal and spatial dispersion component of the RPA in BiOp3**. Unintended consequences of management measures to disperse fisheries in time and space could easily occur without knowledge of fishery/SSL interaction mechanisms. These unintended consequences could relate to SSLs and/or to other parts of the ecosystem (e.g., by increasing bycatch). Hopefully the additional monies made available by Senator Stevens will be wisely used to increase the knowledge base. Unfortunately, the answers to difficult questions about indirect effects will not come easily in a short period of time. **Nevertheless, the need for a comprehensive scientific program that addresses multiple hypotheses has never been greater.**

As part of this program, efforts should be made to better define critical habitat using ecological aspects of SSL life history. One focus should be to examine the seasonality of rookery, haulout, and foraging areas, so that management measures correspond to critical times in the SSL life history. Another focus should be to determine if the relative importance of some of these areas has changed and no longer need to be a part of critical habitat.

9. Carrying capacity

The debate about SSL declines frequently involves the notion of carrying capacity, which often is not well-defined. BiOp3 incorrectly states that SSL carrying capacity is related primarily to prey availability. In reality, changes in reproductive parameters, juvenile and adult survival, growth, prey availability, and predator populations may all contribute to changes in SSL carrying capacity over time. Human activities may contribute to the changes in population parameters and hence to this fluctuating carrying capacity. **The SSC recommends that the best way to understand the changes in SSL carrying capacity is to concentrate on the individual processes such as prey availability, foraging behavior, and predation that are amenable to scientific study.**

10. Jeopardy

It has been quite difficult to follow the logic of any of the BiOp's with regard to their jeopardy findings. **There is a need for scientifically-based and objective definitions of "jeopardy", "critical habitat", and "adverse." In addition, there should be unambiguous criteria for assessing when jeopardy and adverse habitat modification are occurring**. These criteria would presumably be a function of the size of the sea lion population, the size of the populations of the important fish species, the fisheries management regime and its changes, and knowledge or research findings related to the connection between fisheries and the SSL population.

11. Future reviews

The Council will have a short-term review team and the long-term NAS committee panel assisting it in the next year or two, as well as an internal RPA committee. The SSC suspects that one of the most beneficial duties of the short-term review panel would be to assist in the scientific aspects of developing the experimental design component of the Council RPA. Other valuable contributions could be made regarding the overlap between SSLs and fisheries in size, season, depth, and prey, a new population dynamics/prey availability model for SSLs, or developing biological criteria for critical habitat.

The NAS committee, being drawn from a large variety of disciplines, could also contribute substantially to the experimental design. However, its major role should be to provide a big-picture view of the factors affecting SSLs, including the role of human activities. This committee should provide a forward-looking report, that suggests the type of research programs and management measures that advance our understanding while avoiding unintended consequences of harm by human activities.

C-3(b) KODIAK ADAPTIVE MANAGEMENT REPORT

The SSC received a presentation by Anne Hollowed and Chris Wilson of Alaska Fishery Science Center on results of the summer 2000 Fishery Interaction Study in Barnabas and Chiniak Gullies. This study is the first phase of NMFS initial monitoring program designed to examine the "localized depletion" hypothesis on Steller sea lions (SSLs).

Due to the injunction against trawling in designated SSL critical habitat, the fishery interaction study was unable to achieve one of its major objectives - measuring localized changes in the distribution and abundance of fish following large-scale commercial fishing operations. Nevertheless, a number of important objectives were achieved. The suitability of acoustic/trawl methods to estimate species-specific resident biomass was demonstrated for age-1 and adult pollock. Confidence intervals around the biomass estimates were achieved by surveying the two study areas twice in a relatively short time frame.

The SSC commends the team for their results to date and wishes to emphasize, in the strongest possible terms, the importance of this study. Demonstrable progress in identifying factors responsible for the non-recovery of SSL populations will only come from well designed experiments that explicitly focus on a particular hypothesis. In its BiOp, NMFS identified localized depletion of prey by commercial fishery operations as its preferred hypothesis/explanation. It is incumbent upon the NMFS to devote all necessary resources to ensure that this study be executed as designed this year.

There are several issues to consider that the SSC wishes to highlight.

1. Acoustic estimates of biomass have large confidence intervals - on the order of 25% of the mean value. In order to detect impacts on biomass, large removals in the test area will be required. Historically, exploitation rates on pollock have been in the range of 10-15%, it is likely that a considerably higher rate will be needed.

2. Concurrent studies on SSL biology, including behavior and diet, are an integral aspect of the study. To validate the localized depletion hypothesis, the response of the resident SSL populations must also be demonstrated. Collection of scat samples, measurement of foraging times, evidence of emigration are among such studies.

3. The two study sites are not identical. The analysts should strongly consider a modification of the design in which test and control sites are switched every year. Only by conducting a long term, controlled study will any definite answers/conclusions begin to emerge. In this way, treatment effects will not be confounded with area, and interannual effects will average out.

4. The SSC recommends all avenues be explored to ensure that fishery removals, of an adequate magnitude, in the test area can occur. The Miller Freeman is available for the period August 7-31 thus the dates of the fishery must conform to this schedule.

D-1(a) PACIFIC COD POT GEAR SPLIT

Nicole Kimball (NPFMC) presented the draft EA/RIR. There was no public testimony.

The SSC notes that the draft EA relies on assumptions and conclusions represented in the Steller sea lion BiOp. As noted elsewhere in these minutes, the SSC does not fully endorse the characterization of the state of nature represented in the BiOp and consequently does not endorse inclusion of those conclusions in the EA. For example, the EA/RIR suggests (page 33) that localized depletion of food resources by the pot fishery may adversely affect Steller sea lion recovery. Similarly, the EA/RIR asserts (page 37) that there is considerable overlap in space and time between the pot fishery for P. cod and the foraging success of Steller sea lions. The SSC does not accept that these hypotheses have been established and recommends that the EA be reworded to reflect the lack of consensus on the significance of localized depletion, food limitation, and competition between sea lion foraging and commercial fishing activities. Similarly, the potential for differential impacts by gear type cannot be just assumed away. The Council should expect that most analyses that will be brought forward for initial review will rely in a similar fashion on the BiOp.

The SSC recommends that the draft EA be released for public review pending revisions suggested below. The SSC is concerned that amendments 64, 67, and 68 result in an implicit rationalization program(e.g.,the combined effect of amendments 64,67, and 68 is to create an opportunity for CPs to form a Coop), which has not been analyzed as a rationalization program. The SSC believes that it is preferable to consider the entire fishery when designing such programs. The piecemeal approach to program design could result in the implementation of management measures that would affect the magnitude and distribution of benefits. The magnitude of the policy choices involved and the distribution of positive and adverse effects associated with the institution of a rationalization program do not simply disappear if rationalization results from a sequence of seemingly distinct amendments rather than an explicit rationalization amendment. The SSC requests that the following issues be addressed before the document is released for public review:

1. There is considerable confusion as to the exact nature of the problem this amendment is intended to address. The text in the problem statement box suggests that the problem is that historical pioneers need protection from relative newcomers to the fishery. However, the narrative on the same page (p. 7) suggests that the problem is one of inter-sector competition (cp's versus cv's). The proposed measures almost exclusively address the latter version of the problem. The analysts' task would be made easier if the Council could clarify what problem(s) it is attempting to address.

2. Catcher-processors should be treated in the same manner as catcher vessels with respect to the data presented in Table 2.2 regarding the percentage of catch coming from critical habitat.

3. The policy implications involved in the contrast between Table 4.8 and Table 4.12 should be highlighted and more directly presented to readers of the draft EA/RIR (including presentation of these implications in the executive summary).

4. The EA/RIR should include a discussion of the likelihood that the TAC can be harvested under the conditions imposed by the RPAs and whether that TAC will be released to other gear groups if the RPA's preclude the prosecution of a pot CV/CP cod fishery.

5. The price analysis ignores stochasticity and lacks a behavioral (demand-supply) framework. While development of such models may be beyond the level of analysis that can reasonably be expected in an EA/RIR, the document should include a discussion of the implications of assuming constant prices.

6. The assertion (page 51) that "processors cannot be expected to track the flow of fish through a plant by gear type" reflects a dated perspective on product quality control and traceability. While some fish processors may not currently track input-output flow with a close degree of detail, many food-processing operations choose to organize production so as to provide close traceability to meet emergent trends in consumer demand for security in the food system.

7. It should be noted on (page 52) that the PRRs used to back-calculate round weight from product output are not independently verified and may not reflect variability across processors or through time (seasonal or interannual).

8. The discussion of the effect of the alternatives could benefit from a representation of expected average catch per vessel under the alternatives.

9. The discussion about the potential for Coop formation (page 77) should provide additional detail on the degree of concentration in each sector, a general characterization of the relationship between the number of vessels and the number of independent companies. While Coops are more likely to form when the number of firms is small, they may also develop with larger numbers of firms if some are dominant, if contracts are easily enforceable and patterned after existing contracts, etc.

10.

D-1(b) REVISE THE TAC-SETTING PROCESS

The SSC reviewed the draft EA/RIR for Amending the Process by Which Annual Harvest Specifications Are Established for Alaska Groundfish Fisheries. The draft EA/RIR was presented to the SSC by Sue Salveson (NMFS) and is a revision based on SSC and Plan Team reviews of an analysis presented in June 2000. The analysis incorporates a new alternative that uses stock assessment projections for multi-year and interim TACs. The SSC recommends that the document be released for public review after being revised to address the following.

The annual TAC specification process is problematic in that the public is notified and given opportunity to comment on proposed specifications that are often outdated by time of the notification. Therefore, the process may not meet the NEPA requirements of providing adequate opportunity for public review and comment. Several alternative procedures are offered by this EA/RIR to balance the needs of fulfilling administrative requirements under NEPA, ESA, APA, and RFA with the desire to base annual specifications on the best available scientific information. The SSC notes that the problem with the current annual specifications process, as well as, the objectives for the evaluating alternative specification processes could be clarified. While the SSC is sympathetic with the need to comply with administrative requirements, it is most concerned with ensuring that the alternative selected preserves the integrity of stock assessments.

The SSC notes that Alternatives 1, 3, 4, and 5 maintain the current timeline for providing annual assessments. Under the current timeline, survey results including biomass estimates are not available until September/ October, shortly before stock assessment results and preliminary ABCs are given to the SSC for review. Draft assessment documents are presented at December meeting, with limited time for a thorough scientific and public review.

Proposed and final specifications under Alternative 2 would be issued prior to start of the fishing year, providing an expanded period between the time that survey results are available and final specifications are due. It is the only alternative that provides expanded opportunity for both scientific and public review of annual specification. Alternative 2A (Issue proposed and Final Specifications Based on Previous Years Abundance Surveys), while providing more time for scientific review then the status quo, has the "downside" of not utilizing the most current survey information in the stock assessment process. In terms of meeting the public review requirement and relaxing the often-harried pace at which the annual stock assessments take place, this Alternative solves the associated problems with the status quo. Under this alternative, stock assessments based on the previous year's survey and catch-at-age data could be prepared earlier in the calendar year with recommended TAC's, public review, comment, and publication of final TAC's occurring before earlier in the year.

Alternative 2B (Issue proposed and Final Specifications Based on an Alternative Fishing Year Schedule) appears to both take advantage of the most recent survey data and provide an expanded timeline for scientific and public review. The SSC, however, would like a more complete discussion of the expected consequences of this alternative, in particular:

1. The impact of a revised fishing season on the stock assessment process. Presumably, the assessments would be modified to provide biomass estimates in April or May rather than December. There is some question as to how the models would be adapted and whether the data are amenable to this change.

2. How would a new definition of the fishing year interact with the January-December managed fisheries such as Pacific halibut, sablefish, and ADF&G managed fisheries including crab and salmon.

3. The implications of having the high value/high volume fisheries at the end of the fishing calendar year.

Alternative 2C issues proposed and final specifications based on current year survey conducted earlier in the year. The SSC notes that distribution and abundance of fish in winter/spring surveys would be different than in historically timed stock surveys. The winter/spring survey is not feasible because of the inconsistency with historically timed surveys and reduced sampling precision expected due to loss of surveys expected in the winter/spring weather regime. This alternative should be excluded from further consideration in the revised EA/RIR.

The SSC notes the following more specific comments:

1. Table 2.5. The aggregate score of alternatives based on sum of individual scores is arbitrary and should be eliminated from the Table.

2. Table 5.5. The net economic costs associated with Interim TAC's do not apply to Alternative 2.

D-2 CRAB MANAGEMENT

Dave Witherell presented the minutes of the Crab Plan Team meeting on January 25, 2001 to the SSC. The Crab Plan Team concluded that the bycatch of C. opilio in the trawl fishery during the past few years was inconsequential to the biology of the crab stock and to the forgone catch value on the directed fishery. The SSC recommends that the bycatch data be presented in the same units as the catch. Currently the crab bycatch is expressed in numbers of crabs. This would mean that the weight of legal males in bycatch would be given in tabular form. It emerged that the observer program has not taken this measurement. The SSC suggests that the observer program examine the feasibility of providing weight measures of bycatch.