

North Pacific Fishery Management Council

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**DRAFT
MINUTES
SCIENTIFIC STATISTICAL COMMITTEE
October 6-7, 2003**

The Scientific Statistical Committee met October 6-7, 2003 at the Sheraton Hotel in Anchorage, AK.
Members present:

Rich Marasco, Chair,
Keith Criddle
Doug Woodby

Jack Tagart, Vice Chair
Steve Hare
Ken Pitcher

Pat Livingston
Mark Herrmann
Terry Quinn

C-3 ESSENTIAL FISH HABITAT

While the SSC received a full presentation on the EFH EIS, it focused its attention on Appendices B (Evaluation of Fishing Activities That May Adversely Affect Essential Fish Habitat), C (Regulatory Impact Review/Initial Regulatory Flexibility Analysis), and J (Proposed HAPC Identification Process).

Appendix B - Evaluation of Fishing Activities that May Adversely Affect Essential Fish Habitat

The SSC received a presentation on an Effects of Fishing analysis by Craig Rose (NMFS). Comments on the presentation were provided by Ben Enticknap (AMCC), Ron Clarke (MCA), Donna Parker (Arctic Storm), Heather McCarty (Central Bering Sea Fisherman's Association), Jon Warrenchuck (Oceana), John Gauvin (Groundfish Forum), Ed Richardson (PCC), Julie Bonney (AGDB).

The analysis included both a quantitative fishing impacts model and a more qualitative assessment based on current and projected species abundance. The purpose of the fishing impacts model was to provide a quantitative summary of the effects of fishing on essential fish habitat, or more specifically on habitat features such as infauna, epifauna, living structures, non-living structures, and hard corals. The SSC notes that this model is at an early stage of development. The analysts are working at the forefront of research and model development in this area. They are to be commended for the progress they have made to date.

The impacts model considers fishing intensity, the effect of fishing on habitat, and the rate of recovery of affected habitat. The model output is a Long Term Effects Index (LEI) defined as the percentage reduction in availability of a habitat feature. A number of caveats apply to the model and it is extremely important to keep these in mind when evaluating model outputs. The model assumes that the distribution and intensity of fishing effort (average over the last 5-years) is constant; that the habitat effect of a unit of effort is known; that for a given fishery and habitat feature, every unit of effort has the same effect; and that the rate of recovery from fishery impacts is known and constant for each habitat type. In practice few of these assumptions are likely to remain true. Nevertheless, the LEI provides an opportunity to scale the relative

habitat impacts of a variety of fisheries given our current understanding. Because the information available to estimate model parameters was sparse, improving parameter values will require directed research in Alaskan waters.

Model outputs are used to construct detailed maps showing expected habitat reduction in a 5' by 5' grid across the BSAI and GOA. As noted in the analysis "*While quantitative output may provide an impression of rigor, the results are actually subject to considerable uncertainty.*" The dominant feature of these maps is basically a non-linearly weighted representation of the distribution of fishing effort. Areas of higher fishing effort tend to project greater habitat effects. While there are large regions of low habitat impact, there are also large regions where the habitat effects are very high. However, the integrated impacts taking into account all available habitat are consistently low. The casual reviewer of these maps may find it incongruous that these high intensity impact areas don't result in higher integrated LEI index values.

The SSC notes that there is a large disconnect between the LEI maps and the apparent ability of the habitat to support large populations and sustain healthy fisheries. Despite estimates of a reduction (at equilibrium) of 75-100% of some habitat features, regions of the Bering Sea continue to support large fisheries. Clearly, the connection between habitat feature reduction – as currently modeled - and effect on population productivity of the managed species is unknown. Until a better understanding of these linkages is made, it is questionable to what extent the LEI maps can be used to demonstrate the effects of fishing on habitat and, through habitat feature reduction, on fish productivity.

The LEI analysis has a further tendency to subsume local effects by focusing on impacts summed over a species total resident area. It is possible that habitat reduction may have local effects on fish productivity and these effects may be of greater concern for sedentary species, but this effect is lost in the bigger picture. Regardless, it is not only unrealistic but undesirable to expect fisheries managers to develop a management regime that distributes fishing effort uniformly over all available habitats.

In addition to the development of a habitat effects model, a "bottom up" approach, a "top down" approach was also taken to determine the effects of fishing on EFH. In this approach a "knowledgeable scientist" was asked to evaluate whether fisheries, as they are currently conducted, affect the welfare of the species in question in a way that is more than minimal and not temporary. This was done in two ways, first through a "linkages" assessment and second by evaluation of the ability of the stock to maintain its population above the Minimum Stock Size Threshold (MSST). Analysts looked at both historical stock levels relative to MSST and 10 year projections under current harvesting policy. The ability of the stock to remain above MSST was interpreted as an indication of habitat health.

Following consideration of these analyses, the determination was made that for the 105 species/species groups in no case were the effects of fishing found to be more than minimal and not temporary. The SSC notes that the overall conclusions that were reached are heavily reliant upon expert opinion and may have been heavily influenced by the evaluation of each stock's ability to remain above MSST given the estimated habitat effect. The SSC notes that using stock status in relation to MSST is problematic in at least a couple of ways. First, both MSST and stock size are determined by a number of factors other than the effects of fishing on habitat, such as recruitment trends related to environment, effects of fishing on stock biomass, changes in population parameters, and measurement errors in the data. Second, the projected stock status is based on the use of average historical recruitment, which assumes that no habitat effects on recruitment are occurring. Consequently, whether the stock is or is not currently above MSST may have little to do with fishing effects on habitat.

The SSC urges further development of the habitat effects model. When questioned, the model developer noted that the model would benefit most from solidifying two of the input data types: finer detail habitat

information for the GOA and AI and better estimates of recovery rate for biological structures. The SSC urges that funding be sought for these avenues of research, particularly fine scale habitat mapping.

Appendix C—RIR/IRFA

Jeff June (NRC) presented EFH Appendix C, the RIR/IRFA for the proposed EFH alternatives. Public Testimony was provided by Ben Enticknap (Alaska Marine Conservation Council), Ron Clarke (Marine Conservation Alliance), Donna Parker (Arctic Storm Fisheries), Heather McCarty (Central Bering Sea Fisheries Association), John Warrenchuck (Oceana), John Gauvin (Groundfish Forum), Ed Richardson (Pollock Conservation Cooperative), and Julie Bonny (Alaska Groundfish Databank)

General Comments: The RIR/IRFA attempts to project the net economic benefits and resulting industry and community distributional impacts associated with the alternatives. Although the qualitative discussion of potential costs and benefits as well as inferences about the potential distributional effects on industry sectors and communities are well-written and provide an appropriate foundation for decision making; the empirical analyses that endeavor to characterize the magnitude of differences in costs, benefits, and distributional consequences of the alternatives suffer from critical data limitations and therefore should be used with caution when selecting among the alternatives.

The RIR/IRFA includes results denoted “*revenues at risk*”. These numbers were used to characterize potential losses in exvessel revenues and mixed revenues (for CPs), as well as to characterize changes in the distribution of revenues anticipated under the EFH alternatives. Changes in fishing patterns that could partially, or wholly mitigate these potential revenue changes (and associated cost changes) were not estimated. Nor was there an attempt to quantify other values (option or quasi-option) engendered by the EFH alternatives. While primary distribution effects (resulting from revenue changes) were discussed there was no attempt to quantify overall direct, indirect, and induced impacts to communities.

Differences in “*revenues at risk*” should not be confused with differences in economic variables such as net benefits to the nation or net revenues that accrue to harvesters or processors. In order to develop estimates of the differences in net benefits to the nation or net revenues for harvesters and processors, analysts would need to begin by developing: (1) estimates of exvessel and wholesale level demand functions, (2) estimates of production functions and associated cost functions based on primary data on harvesting and processing costs and technology, (3) behaviorally-based models of entry, exit, and site-selection decisions by fishers, (4) regional economic models parameterized to reflect local economic organization and current purchasing patterns, and (5) estimates of the magnitude of amenity values associated with the EFH alternatives. “*Revenue at risk*” lacks a foundation in economic theory and should not be regarded as a sound basis for comparing the economic performance of the EFH alternatives. Moreover, because the estimated “*revenues at risk*” are presented without confidence intervals, it is inappropriate to assert that apparent differences are statistically significant.

Public testimony raised additional concerns about the data and assumptions that formed the basis for estimates of “*revenues at risk*”. Specifically, it was noted that the value added from shore-based processors was not represented and that the some of the wholesale prices used were lower than prevailing prices. Concern was also expressed that the scale of aggregation obscured fishery sector level changes within affected statistical areas.

The summary table (slide 92 – “Practicability Analysis”) was particularly troubling because it tempts the reader to conclude that the six EFH alternatives can be uniquely ranked using a simple quantitative performance measure. The table legend should clearly identify that the reported values are “*revenues at risk*”

rather than costs associated with the alternatives. As such, they do not provide an accurate indication of the actual costs of the alternatives or an accurate ranking of associated revenue losses.

The SSC notes that these well-qualified researchers dedicated to the empirical portion of the economic analysis were faced with an impossible task. There is simply not enough data, funding, or time to do even a superficial empirical economic analysis. The SSC is continually frustrated by the poor empirical economic analysis that accompanies nearly every major policy analysis that comes before the Council.

Specific Comments:

1) Under C.3.1.2.1 (Revenue at Risk) it says that “The economic law of supply and demand suggests that ...” The discussion that follows is related almost solely to demand. It may be clearer if *supply* is struck from the opening statement so it reads “The economic law of demand”.

2) Under C.3.1.2.1 (Revenue at Risk) there is mention of some preliminary work on the responsiveness of price to changes in quantity for pollock, Pacific cod, and Atka mackerel. The work in the Steller Sea Lion RPA/RIR Appendix D was cited and the comment was made that “interested readers may consult that report for additional detail”. The SSC notes that it was highly critical of the demand modeling in this report and that the reference to this study be removed.

3) Under C.3.1.2.1 (Revenue at Risk) the second paragraph starts with “Increased revenue accruing from such a per-unit price rise...” It seems that this lead-in follows from the previous paragraph that infers that this price rise is the result of reductions in supply. If this is the case then the sentence may be clearer by rewriting it as “The increased *per-unit* revenue accruing from a price rise...” so that the reader is not misled into thinking that a price increase will necessarily raise *total revenue*.

4) Under C.3.1.2.1 (Revenue at Risk) the term *deadweight loss (DWL)* is used in reference to the loss of consumer surplus that may result from a reduction in supply and a corresponding price increase. The SSC strongly suggests that reference to this reduction in consumer surplus be renamed. The use of the term DWL has social welfare implications and is generally used to represent a negative impact on net benefits arising from a situation where supply is decreased and marginal social benefits (MSB) (at the new equilibrium quantity) exceeds marginal social costs (MSC) resulting in a decrease to net benefits. The motivation for EFH protection is to bring MSC and marginal private costs (MPC) more in line and negate damages that may have occurred from the situation when MSC exceeded MSB. By enacting EFH protection, if alternatives are enacted to produce a better harvest strategy, the loss of consumer surplus is not a DWL but the result of price increases that result from a fishing policy that more accurately reflects the true cost of fishing.

Appendix J - Proposed HAPC Identification Process

The SSC offers the following comments on options for HAPC 1) criteria, 2) priorities, and 3) a stakeholder process and proposal review.

1) The four criteria (importance, sensitivity, susceptibility to stress, and rarity) are adequately inclusive and no other criteria are needed.

2) Establishing Council defined habitat priorities is important to assure relevancy of submitted HAPC proposals. The HAPC process will be an important vehicle for additional habitat protection. The substantive information requirements for proposals and the extensive review process will greatly benefit if proposals are focused to address Council priorities.

Most protection to habitat will likely be provided through the HAPC process.

3) Proposals need to be specific, with clear identification of the action to be taken and the overall goals for the action. The Council should determine who is responsible for spelling out the adaptive management program (i.e., the program to evaluate the efficacy of the HAPC in meeting the goals).

C-5 STELLER SEA LION MITIGATION COMMITTEE REPORT

Representatives of the SSL Mitigation Committee (SSLMC) presented a report of progress on charges assigned them by the Council. They reported on two major topics; (1) a proposal to issue a RFP for a design to experimentally evaluate the impacts of fisheries on SSL population dynamics, and (2) potential regulatory changes to provide additional fishing opportunity yet preserve the level of protection to SSLs afforded by current regulations.

ADAPTIVE MANAGEMENT EXPERIMENT - The National Research Council's report on the SSL decline strongly recommended an experimental approach to fisheries management that would allow an evaluation of the effects of the fisheries on SSL survival and recovery. The Council requested the SSLMC provide advice on an adaptive management experiment as proposed in the NRC report. Currently, SSL researchers and managers have been unable to develop such an experiment for a number of reasons. These include concerns about experimental design including sampling issues such as size, number, and locations of experimental areas, comparability of experimental and control areas, time required to obtain results, and wide-ranging movements of SSLs and some of their prey. Additional concerns include constraints imposed by the Endangered Species Act and impacts on communities and industry.

The SSLMC developed an RFP concept as a way to expand the range of inputs for experimental designs with the hope that a novel approach(s) could be developed that would allow for an adaptive management experiment than would not be unduly limited by factors which have restrained previous design attempts.

The SSC supports the RFP concept as way to bring fresh perspective and perhaps new approaches to an adaptive management experimental design. There were concerns expressed regarding the proposed process for soliciting the RFPs, particularly in regard to providing motivation for the preparation and submittal of high quality proposals. With no compensation for proposal preparation nor any commitment for continuing involvement and/or compensation the SSC was concerned that the RFP would not attract the high quality, innovative proposals desired. The SSC suggested that the SSLMC consider this in their continued development of the RFP. A workshop approach, with participants contributing to an experimental design, was suggested as an alternative to a RFP process. The SSC also emphasized the importance of community and industry support for any experimental approach.

PROPOSED REGULATORY CHANGES – The SSLMC presented, for discussion, a total of 7 draft proposals for the GOA dealing with modifying area closures (4), changes in temporal TAC allocations for Pacific cod (1), removal of the stand-down period between the pollock A and B seasons and C and D seasons, and a change in the method for rolling over underharvested pollock TAC in the western/central Gulf (1). These proposals were developed under the concept that passage of the regulations would increase fishing opportunity and result in no net loss in SSL protection provided under current regulation.

The proposal (1-A) that would open the closed area around the Marmot Island rookery to 10 n mi for pollock trawling in exchange for additional closure of pollock trawling out to 20 n mi around Sea Otter Island, a nearby haulout, generated substantial discussion. It was pointed out that Marmot Island is a major rookery, currently reduced to about 10% of former abundance, whose recovery will likely be important to overall

population recovery. SSLs use Marmot Island throughout the year and unlike many other rookeries it supports substantial numbers of juveniles. Substantially fewer animals use Sea Otter Island. The area beyond 10 n mi at Sea Otter Island is likely far less important for SSL foraging than the area between 5 and 10 n mi at Marmot Island. In addition, a substantial portion of the area proposed to be closed around Sea Otter Island is already closed due to overlapping closures around Marmot and Sugarloaf rookeries. This proposal does not appear to meet the standard of “no net loss” in protection for SSLs.

Proposal 1-B & C, reductions in closures at haulouts in exchange for additional protection at other haulouts, appear to more closely conform to the concept of “no net loss” of SSL protection. A point of concern is the concept that opening waters near a haulout in exchange for additional closures more distant from another haulout provides equivalent protection for SSLs. It is probable (based on telemetry data) that areas closer to a haulout or rookery are more important for SSL foraging than more distant areas as in proposal 1-B. Other factors that should be considered are the numbers of SSLs at the sites considered and their seasonal use patterns. The Castle Rock proposal reduces SSL protection with no corresponding protection and does not appear to meet the “no net loss” standard.

Proposal 2-A that would change seasonal TAC of Pacific cod is somewhat counter to the original intent of spreading the harvest over a longer time period and thereby presumably reducing the impact on SSLs.

The SSC expressed support for resumption of a localized depletion experiment for pollock in the Chiniak and Marmot gully areas near Kodiak. This research has the potential to provide substantial insight into a hypothesized mechanism for fishery/sea lion interaction which has been the basis for many SSL protection measures.

D-1 GROUND FISH MANAGEMENT

D-1(b) AFSC Review of F40 Report

Dr. Grant Thompson (AFSC) presented an overview of the AFSC review of the F40 report by Goodman et al. In general, AFSC agreed with many of the conclusions of the F40 report and noted that it was a very useful summary of the current harvest strategy used by NPFMC. The AFSC review noted that two recommendations of the F40 report, “conducting a management strategy evaluation” and “bring in additional ecosystem considerations”, were being accomplished through the PSEIS and EFH EIS processes. The AFSC review also revealed that the conclusion of the F40 report that “the current harvest strategy was not appropriate for rockfish” requires additional evaluation. It was shown, using an equilibrium yield model with deterministic stock recruitment relationships, that a rockfish-like species with low natural mortality and high age of maturity is no more vulnerable to over harvest at F40% than a flatfish-like species with higher natural mortality and lower age of maturity. Further work will be done by AFSC to evaluate harvest strategies of rockfish in the next year to more fully address this issue.

D-1(d) Final Action to adopt preliminary and interim groundfish specifications for 2004, including GOA amendment 63 to separate skates from the “other species” category

The SSC received public testimony from Beth Stewart (Aleutians East Borough), Gerry Merrigan (Prowler Fisheries).

Preliminary groundfish TAC setting specifications for 2004 included a description of the catch estimation methods as requested last year by the SSC. A projection approach was used for most Tier 1-3 species and a rollover approach for Tier 4-6 stocks. The SSC agreed with the GOA Plan Team that a rollover approach

for GOA pollock, instead of the projection approach which would have given a large increase in TAC, seemed reasonable given the low biomass value from the 2003 Shelikof Strait survey results. The SSC supports the Plan Team proposed ABC and OFL specifications.

Amendment 63 is slated for final action at this Council meeting. The SSC has not directly addressed GOA skates since being presented a Discussion Paper in 2001. This issue has two components. The first issue, and the one that must be acted upon, is whether or not to separate skates from the Other Species complex. The second issue would then be to provide guidance on how to specify OFLs and ABCs for GOA skates.

The urgency of this issue is reflected in catch data for skates in 2003. These data confirmed that skates have become the target of a directed fishery, with the fishery being concentrated in the Central Gulf of Alaska region. Presently, the only TAC applicable to GOA skates is the GOA wide TAC for "other species". Catches of skates in the Central Area totaled 3,131 mt and this compares to a recently estimated OFL of 3,623 mt (Table 2.5-3, pg 30 Amendment 63 EA/IRFA). Clearly, some action is required. Skates are species highly vulnerable to overfishing: they are slow growing, long-lived, low-fecundity fish that become exposed to fisheries years prior to reaching sexual maturity. Therefore, the SSC recommends that skates be separated from the "other species" group.

The SSC discussed a number of issues that follow directly from recommending Alternative B of Amendment 63. By default, skates would likely become a Tier 5 stock and subject to the rules of OFL and ABC determination. The SSC discussed the possibility of putting skates on bycatch only status, or treating them like forage fish and establishing a Maximum Retainable Allowance. These are issues that obviously require much further thought and analysis. As this is a fast developing issue, the SSC believes that any measures put into place should focus on 2004 and be restricted to a relatively small set of options. In particular, one objective should be establishment of options that would not trigger additional rulemaking under APA. This is a distinct possibility with Option 3 (ABC/OFL split by species and region). The SSC does not recommend any of the 3 options (recognizing the Plan Team's preference for Option 2 and the assessment analysts' recommendation of Option 3). The SSC believes that Option 3 is moving to a management arrangement that could have widespread ramifications for other fisheries where skates are taken as bycatch and suggests limiting to Options 1 and 2.

The SSC is concerned about the concentration of directed skate catch in the Central GOA Management Area, as well as, skate bycatch in a number of directed fisheries, and notes that recognition of this is important in establishing a range of options.

The SSC received reports on preliminary groundfish SAFE sections for sablefish, Aleutian Islands pollock, northern rockfish, a stock production model, forage fish, and Dover sole. The SSC noted that stock production models, which can be applied to species lacking a time-series of age data, assume instantaneous responses, which might be problematic for rockfish species that have large lags in recruitment.

An overview of the Ecosystem Considerations section was given that noted the additions of new information this year, particularly with regard to status and trends of state-managed species such as salmon and herring. The strategy behind the proposed ecosystem assessment was also presented, that proposes to use a variety of multispecies modeling frameworks to derive model-based indicators of future ecosystem status.

D-1(e) TAC setting

The SSC received a report on the TAC setting Plan Amendments for BSAI and GOA by Melanie Brown (NMFS). Public testimony was provided by Ron Clark and Paul MacGregor (MCA), Ed Richardson (PCC), Carl Haflinger (SeaState), and Jerry Merrigan (Prowler Fisheries).

This amendment package has been before the Council several times. The objectives of the action as described by NMFS include (1) using best available scientific information, (2) providing additional public comment, (3) minimize disruption to the existing TAC setting process, (4) providing for additional Secretary review, and (5) achieving administrative efficiency. The SSC renders these down to two principal objectives; assuring adequate opportunity for meaningful public input on final specifications, and utilizing the most recent survey and fishery data when developing ABC and OFL recommendations.

Conflicting objectives has led to consideration of the following five alternatives: (1) Status quo, (2) Using a one-year projection, (3) Changing the fishing season to July – June, (4) Using a two-year projection, and (5) Performing 18-month harvest specifications.

NMFS notes that Alternative 1 (Status Quo) is likely to violate the Administrative Procedures Act, so is not a preferred alternative. The SSC recommends against Alternative 3, because changing the fishing year could have unknown repercussions and unintended consequences. Also, the SSC recommends against Alternatives 2 and 4, because these are based on projections and hence do not use the most current data. SSC believes that Alternative 5 best meets our two principal objectives.

In addition to the alternative, there are several options under consideration. One option places sablefish on its own annual cycle to facilitate the IFQ program. The SSC notes that Alternative 5 may not work well with sablefish, and recommends that NMFS and the Plan Teams work further to find a solution for this issue. Option A, eliminating the reserve system, seems to be a housekeeping measure, but public testimony indicated that the reserve system still appears to have a use in adjusting flatfish TACs. Option B, rewriting the plans to be more accurate, clearly deserves support. The SSC supports Option C, utilizing a biennial specification process for certain GOA species, because it should promote efficiency in the TAC setting process and utilizes new survey information as it becomes available.

D-2 CRAB MANAGEMENT

Pribilof Blue King Crab Rebuilding Plan

The SSC received a presentation on the Pribilof Islands Blue King Crab Rebuilding Plan by Doug Pengilly and Diana Stram. Public comments were made by Frank Kelty (City of Unalaska) and Steve Minor (St. Paul CDQ group).

The SSC notes that the Pribilof blue king crab stock continues to decline despite multiple years without fishing pressure. After examination of the simulation results in the report by Zheng and Pengilly (2003) for their base model (cyclic recruitment assumption with handling mortality rate = 0.2), all eight of the options lead to rebuilding within 9 years with 50% probability. Five of the eight options lead to rebuilding within 11-12 years with 90% probability, leading us to conclude that there is little to differentiate the models with respect to the expected time to rebuilding (based on simulation). The key to successful rebuilding is increased recruitment. Given the depressed stock status, and the apparent lack of pre-recruit crab, there is only a small chance of rebuilding in the next 10 years unless there is an unforeseen recruitment event.

The SSC commends the crab plan team for establishing a work group to develop proposals to revise the overfishing definitions for BSAI crab. The planned review of the overfishing/overfished definition has been warranted for a long time and the SSC is encouraged to see this go forward. The SSC requests periodic updates of progress and of direction in which the review is proceeding. The intent is for the SSC to offer advice at an early stage to avoid subsequent problems.

BSAI Crab SAFE

The SSC received a presentation on the BSAI Crab SAFE by Doug Pengilly and Diana Stram. The SSC asks that the status of stocks report include an historic evaluation of fishery management performance, including graphs of the guideline harvest levels compared to the actual catches. Similarly, the SSC requests the inclusion of a graphical retrospective evaluation of exploitation rates in comparison to rates specified in the harvest strategies.

Terms of Reference

The SSC supports the modifications to the plan team terms of reference to specify two meetings each year. This change will allow a more thorough scientific discussion of stock status and review of the guideline harvest levels in relation to MSA requirements. The SSC notes that the Crab Plan Team is at liberty to revise the team's terms of reference.