North Pacific Fishery Management Council

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REPORT of the
SCIENTIFIC AND STATISTICAL COMMITTEE
to the
NORTH PACIFIC FISHERY MANAGEMENT COUNCIL
June 1st – 3rd, 2015

The SSC met from June 1st through 3rd at Centennial Hall, Sitka, AK.

Members present were:

Farron Wallace, Chair *NOAA Fisheries—AFSC*	Robert Clark, Vice Chair *Alaska Department of Fish and Game*	Chris Anderson *University of Washington*
Jennifer Burns *University of Alaska Anchorage*	Sherri Dressel *Alaska Department of Fish and Game*	Brad Harris *Alaska Pacific University*
Anne Hollowed *NOAA Fisheries—AFSC*	George Hunt *University of Washington*	Seth Macinko *University of Rhode Island*
Steve Martell *Intl. Pacific Halibut Commission*	Lew Queirolo *NOAA Fisheries—Alaska Region*	Terry Quinn *University of Alaska Fairbanks*
Kate Reedy *Idaho State University Pocatello*	Matt Reimer *University of Alaska Anchorage*	

Members absent were:

Milo Adkison *University of Alaska Fairbanks*	Alison Whitman *Oregon Dept. of Fish and Wildlife*

B-1 NS1 Guidelines

Following the recommendation of the SSC in April 2015, an SSC subgroup met with representatives of the Council Workgroup to prepare a draft SSC report to the Council on the NMFS-proposed rule that makes changes to National Standard 1 Guidelines (and also National Standards 3 and 7). Participants were Terry Quinn (chair), Farron Wallace, Chris Anderson, and Anne Hollowed of the SSC; and Grant Thompson (AFSC), Gretchen Harrington (NMFS RO), Ben Fissel (AFSC); and Jim Armstrong (Council staff) of the Council Workgroup. The goal was to blend the Council Workgroup report with the SSC comments from the April SSC meeting. Following some discussion about the Workgroup report and the SSC comments, Jim Armstrong volunteered to extract the relevant material from the Council Workgroup report, and Terry Quinn agreed to blend the SSC comments into the extraction. The merged report was then sent to the participants for suggestions. Terry Quinn presented the draft report to the SSC. **The SSC was agreed with the report's recommendations and has placed the report in Appendix A of this report for the use of the Council in developing its comment letter to NMFS, which is due June 30.**

Overall, "most of the proposed [NMFS] changes provide flexibility for the Council to adopt fishery conservation and management protocols that will align with region specific needs and concerns (April 2015 SSC Report)." However, the SSC has identified the places in the proposed rule that it believes need further clarification or that may not be appropriate for NPFMC or in general.

C-1 BSAI Crab

At this meeting, the SSC provided the OFL/ABC recommendations for three crab stocks (Tables 1 and 2). We also received a presentation on Plan Team modeling advice on EBS snow and Tanner crab, Bristol Bay red king crab, Pribilof Island red king crab, and St. Matthew Island blue king crab, and recommendations on a variety of other issues. Bob Foy (NMFS AFSC) and Jack Turnock (NMFS AFSC) presented Crab Plan Team (CPT) recommendations for these three stocks, model reviews, and CPT discussions on other issues.

General recommendations

Previously, the SSC recommended the Plan Teams conduct a workshop on uncertainty to address procedures for assigning ABC buffers for data-poor stocks. The SSC is glad to see a workshop is planned for fall 2015 and notes that the May 2015 Lowell Wakefield Symposium on data-poor stocks provided ideas for methods that could be used. Presentations from this symposium can be accessed on-line and manuscripts are currently in review.

The SSC would like to reiterate a request to stock assessment authors for consistency in units used in the assessment. The SSC appreciates the author's inclusion of standard and metric units in the text but requests consistency in which units are used (e.g., lbs., thousand lbs., or million lbs. and t, mt, or kg). The SSC also requests consistency in the units chosen for tables and figures, requests that the units cited in the table legends match the values in the tables, and suggests authors refer to the terms of reference for chapters.

Dr. Foy summarized the crab plan teams' meeting including a recommendation to all assessment authors that all final assessments consider stepwise changes to data and individual model runs, such that the effects of a single change to the model structure or data elements on estimates of stock status and catch recommendations can be evaluated. **The SSC endorses this recommendation.** The SSC also heard reports from the CPT on model developments for other crab species, a proposed survey plan for the Aleutian Island Golden King Crab (AIGKC), and updates on the developments of a General Model for Alaskan Crab Stocks (or GMACS).

The SSC encourages continued efforts to bring the assessment model for AIGKC to the plan team and SSC for approval.

Aleutian Islands Golden King Crab

Dr. Robert Foy presented the Crab Plan Team report on the AIGKC. There was no public testimony. The AIGKC stock is assessed under Tier 5 and OFL recommendations were based on the same approach used in 2012/13. The CPT recommends a 25% buffer for this stock. There is no approved stock assessment model for AIGKC, therefore there are no estimates of MMST or mature male biomass. **The SSC**

recommends adopting the Crab Plan Team OFL recommendation of 5,690t (12.53 Mlbs.) and the ABC recommendation of 4,260t (9.40 Mlbs.).

The CPT had a number of other recommendations including splitting the CPUE trend data into areas east and west of 174 degrees west, so that trends in CPUE can be tracked in the Tier 5 assessment. **The SSC also endorses this recommendation.**

In addition, the SSC endorses efforts by ADF&G and Industry to conduct a cooperative survey, which the SSC believes will be helpful in improving this assessment.

Pribilof Islands Golden King Crab

The SSC concurs with the author and CPT that the Pribilof Island golden king crab (PI GKC) stock be managed as a Tier 5 stock for the 2016 season, with a recommended OFL of 91 t. While the SSC has raised concerns about the relatively short time period for the OFL estimation in the past, using the 1993 through 1998 time period is consistent with recent assessments. Since complete data from all crab fisheries in 2014 are not presently available, total catch in 2014 cannot be estimated for comparison with the 2014 OFL and ABC at this time, but will be updated for the September CPT meeting. Retained catch and total catch are often confidential throughout the fishery history due to limited participation. **The SSC shares the CPT's concern about not having an estimate of harvest in years when the catch was confidential and supports the CPT recommendation that the author add notation to tables specifying whether or not the GHL was reached. The SSC also requests that the author approach the harvester(s) regarding whether they would voluntarily allow confidential data to be presented in assessments.** No overfished status determination is possible for this stock, given the lack of a biomass estimate.

The PI GKC is managed on a calendar-year basis and currently prohibited species catch (PSC) from groundfish fisheries is reported by crab fishery year (July-June) instead of calendar year. **The SSC and CPT recommend that NMFS assess if it is feasible to provide groundfish PSC data for the PI GKC by calendar year.**

The author and CPT recommended an ABC reduced by 25% from the maximum permissible. The rationale includes: 1) consistency with the uncertainty of other golden king crab assessments (e.g., Aleutian Islands GKC), 2) increased concern because of the cancellation of the 2014 EBS slope survey, and 3) the sharp decrease in the estimated biomass in the Pribilof Islands area from 2010 through 2012 (the most recent data). **The SSC agrees with Crab Plan Team's recommendation for a 25% buffer due to uncertainty, resulting in an ABC of 68 t.**

In response to an SSC recommendation, an alternative Tier 4 assessment was intended to be presented to CPT in September 2014 but was not prepared due to the cancellation of the EBS biennial slope survey. **The SSC supports the CPT recommendation that a preliminary Tier 4 assessment be brought to the September 2015 meeting, using existing slope data and applying a Kalman filter approach.** The SSC requests that the author include a discussion in the Tier 4 assessment of what stock delineation was chosen (what slope data were used) and the reason for that delineation. **The SSC also asks that a Stock Structure Template be completed for PI GKC.**

The SSC appreciates the summary of PI GKC data from the EBS slope survey that is included in the current document and concurs with the CPT recommendation that future versions of the document include a summary of available slope survey data with appropriate graphs and plots, regardless of whether the Tier 4 assessment is adopted or the stock remains Tier 5. Although the slope data are not used for determining the Tier 5 OFL and ABC, they are particularly helpful due to the lack of non-confidential catch data. NMFS will provide the author with slope survey CPUE data based on state statistical areas or other stratification instead of the entire slope survey area, because the entire survey extends beyond the Pribilof management area.

Western Aleutian Islands Red King Crab

The SSC reviewed the 2015 SAFE chapter for the Western Aleutian Islands red king crab (WAI RKC). Public testimony was provided by Linda Kozak (Golden King Crab Coalition). There is no assessment model for this stock. The WAI RKC fishery has been closed since the end of the 2003/04 season. In agreement with the CPT, **the SSC continues to recommend that this stock be managed as a Tier 5 stock for the 2015/16 season, with an OFL of 54 t (120,000 pounds).** This OFL is based on the 1995/96 through 2007/08 average total catch, as recommended by the SSC in 2010. Catch in the 2013/14 season did not exceed the OFL; therefore, overfishing is not occurring. No overfished status determination is possible for this stock, given the lack of a biomass estimate.

In agreement with the author and CPT, the **SSC recommends a 40% buffer between ABC and OFL, resulting in an ABC of 32 t (70,000 pounds).** The 40% buffer was originally put in place by the SSC in 2012 for the 2013/14 season to allow for bycatch and groundfish prohibited species catch in non-directed fisheries and the proposed test fishery catch. The test fishery has not occurred, but industry is working with ADF&G to perform a "reconnaissance survey" for RKC in the vicinity of Adak during the September 2015 golden king crab fishery. No retention of RKC is planned, but handling mortality is expected and will be accounted for in the 2016/17 assessment.

The CPT recommended that as much biological data as possible be collected during the "reconnaissance survey" to help assess stock structure and that collecting genetic samples is a top priority. The SSC supports this recommendation and adds that the lack of survey design will require attention when trying to interpret collected data. The SSC appreciates the efforts to collect data for this stock, since that is a topic suggested previously in SSC meetings.

The SSC concurs with the CPT recommendation that the author try to recover length and effort information in historical data to inform an assessment and to provide a plot of CPUE through time in the 2016/17 assessment, if possible.

In March 2014, the Alaska Board of Fisheries established two districts for the management of commercial red king crab fisheries west of 171° W longitude. The Adak District was established from 171° to 179° W longitude, and the Petrel District was established west of 179° W longitude. There is interest by industry to split the annual OFL for WAI RKC, but the SSC cannot provide a recommendation on this issue until there is additional information on the status of this stock. The SSC supports recommendations by the CPT for analyses to inform this issue:

1. "During the reconnaissance survey, take genetic samples to determine if a genetic difference occurs across Amchitka Pass and measure crabs to identify size distribution.
2. Investigate Amchitka Pass is a potential stock boundary. Research could address movement of larvae using models and what is known about currents. The oceanographic models may not work well in the Aleutian region because of boundary issues, and because of the extent of models that are currently available.
3. Use the template from the AFSC Stock Structure Working Group to evaluate red king crab stock structure and extent of available information.
4. Data are needed on crab abundance throughout the Aleutian Islands. A more standardized pot survey would be needed after the planned reconnaissance survey before a fishery could be prosecuted.
5. A larger analysis could be conducted to identify if there is evidence for stock boundaries in this area."

Table 1. SSC recommendations for three crab stocks for 2015/16. Dark shaded fill indicates parameters not applicable for that tier. Light shaded sections are to be filled out for the final SAFE in September 2015. Values are in thousand metric tons (kt).

Chapter	Stock	Tier	Status (a,b,c)	F_{OFL}	B_{MSY} or $B_{MSYproxy}$	Years[1] (biomass or catch)	2015/16[2 3] MMB	2015 MMB / MMB_{MSY}	γ	Mortality (M)	2015/16 OFL	2015/16 ABC	ABC Buffer
1	EBS snow crab												
2	BB red king crab												
3	EBS Tanner crab												
4	Pribilof Islands red king crab												
5	Pribilof Islands blue king crab												
6	St. Matthew Island blue king crab												
7	Norton Sound red king crab												
8	AI golden king crab	5				See intro chapter					5.69	4.26	25%
9	Pribilof Islands golden king crab	5				See intro chapter					0.091	0.068	25%
10	Western AI red king crab	5				1995/96–2007/08					0.054	0.032	40%

[1] For Tiers 3 and 4 where B_{MSY} or $B_{MSYproxy}$ is estimable, the years refer to the time period over which the estimate is made. For Tier 5 stocks it is the years upon which the catch average for OFL is obtained.
[2] MMB as projected for 2/15/2016 at time of mating.
[3] Model mature biomass on 7/1/2015

Table 2. Maximum permissible ABCs for 2015/16 and SSC recommended ABCs for three stocks where the SSC recommendation is below the maximum permissible ABC, as defined by Amendment 38 to the Crab FMP. Values are in thousand metric tons (kt).

Stock	Tier	2015/16 *Max*ABC	2015/16 ABC
EBS Snow Crab			
Bristol Bay RKC			
Tanner Crab			
Pribilof Islands RKC			
Pribilof Islands BKC			
Saint Matthew BKC			
Norton Sound RKC			
Aleutian Islands GKC	5	5.12	4.26
Pribilof Islands GKC[1]	5	0.08	0.07
Western Aleutian Islands RKC	5	0.05	0.03

[1] For Pribilof Islands golden king crab, this is for the 2016 calendar year instead of the 2015-2016 crab fishing year.

C-2 Bering Sea Halibut PSC

The SSC received a presentation of the revised draft EA/RIR/IRFA document for the proposed halibut PSC reduction action under consideration by the Council. Presentations were given by Diana Evans (NPFMC), Marcus Hartley (Northern Economics, Inc.), Mike Downs (AECOM), and Josh Keaton (NMFS AKR).

Public testimony was offered by Gerri Merrigan and Chad See (FLC), Arne Fuglvog (Iquique), John Gauvin (Alaska Seafood Cooperative), Jon Warrenchuk (Oceana), Mateo Paz-Soldan and Simion Swetzof (City of St. Paul), Bob Alverson (FVOA), Linda Behnken (ALFA), Paul Olson (The Boat Company), Peggy Parker (HANA), Heather McCarty (CBSFA), Jim Johnson (Glacier Fish), Karl Halflinger (Sea State), Mike Hyde (American Seafoods), Mark Fina (Alaska Seafood Co-op), Joel Hanson (self), Heather Brandon (World Wildlife Fund).

The SSC reviewed the initial draft of this analysis at its February 2015 meeting. While acknowledging the impressive compilation of empirical information describing the commercial activity of a diverse suite of participants in the BSAI groundfish and halibut fisheries, and the thorough characterization of the development of the BSAI halibut PSC management process, the SSC was concerned about several specific deficiencies. In this revised draft, the analysts have made a clear and (by in large) successful effort to address each of these specific concerns. Indeed, what the analysts have accomplished between the February and June meetings is very impressive.

The IMS simulation model at the heart of the RIR has been extended and enhanced in several respects. The SSC was concerned that the original model was not well documented, and it would benefit from a clearer description of the inherent assumptions underpinning the simulation. This has been largely achieved in the revised draft.

The revised simulation model has been less successful in meeting the challenge of identifying "behavioral" responses to proposed PSC reductions. The IMS model results have been usefully supplemented with an imaginative alternative examination of PSC encounter rates and spatio-temporal groundfish fishing activity (Appendix B), and consideration of the distribution across fishery-dependent communities, considering both groundfish dependence and commercial halibut dependence (Appendix C). We commend the analysts and authors.

The revised analysis, while vastly improved, continues to suffer from several shortcomings that limit its utility as a decision-making tool for the Council. The SSC noted that many of these shortcomings can be appropriately attributed to sources beyond the control of the analysts.

Several important elements required for a thorough analysis of the halibut PSC reduction issue (listed below) lack sufficient information and/or have a poor scientific understanding and are based on a few tenuous assumptions. **The SSC, therefore, recommends that the Council approach all portions of the analysis (the primary analysis and the associated appendices) with caution. At best, the analyses can indicate general trends and possibilities, but they cannot provide definitive estimates of likely impacts or responses.** The SSC identified the following critical deficiencies in the analysis that are important to consider for interpretation of the conclusions:

- The founding assumption of the simulation model is that halibut PSC mortality cannot be reduced without sacrificing groundfish harvest. Indeed, the only behavior change "available" for fishermen to reduce halibut PSC is to stop fishing in a particular directed fishery for a particular month. SSC discussion and public comment identified that this does not represent a realistic characterization of change in fishing behavior, and this assumption should be more clearly stated in the analysis. Moreover, Appendix B highlights many other behaviors that fishermen are currently using to reduce PSC rates. Thus, the results from the simulation model likely do not reflect realistic behavioral changes by the industry in response to the contemplated halibut PSC rate reductions.
- Halibut biomass is assumed to stay constant over the 10-year period considered in the simulation model, while PSC mortality is assumed to be the same as those incurred between 2008 and 2014. However, the IPHC reports that halibut size- and weight-at-age have been declining since the late 1970s, and this is likely to affect the size- and age-composition of PSC and directed fishing mortality in future years. This has alternative-specific impacts on: 1) total and exploitable biomass; 2) the time required for small halibut "conserved" in the simulation to reach legal size; and 3) the size- and age-specific characteristics of the halibut stock (e.g., sexual maturity at size and migratory behavior). These dynamics are not accommodated in the simulation model, and as such, the estimated "PSC savings" are likely not reflective of current or future conditions as reported.
- Another critical assumption in the IMS model is that one pound of U26 PSC mortality results in a one pound loss in the directed fisheries yield. The analysis conducted by the IPHC that identified the size at which there is a 1:1 correspondence between PSC and lost yield to the directed fishery is conditional on a number of dynamic variables, including: natural mortality, all sources of fishing mortality, fisheries selectivity, size-at-age, spatial distribution, *inter alia*. For example, if size-at-age continues to decline, then losses to the directed fishery for each pound of PSC mortality would decrease. Therefore, further reductions in PSC caps would be required in order to

accommodate the 1.285 million pound FCEY in area 4CDE. Conversely, if size-at-age were to increase, or PSC selectivity shifted towards larger halibut, reductions in the PSC caps may not be necessary to achieve the same 1.285 million directed fishery.

- Economic performance measures available to Council analysts are strictly limited to "gross" measures, which may not provide meaningful information about "net" performance. This becomes extremely critical when hypothetical "behavioral" changes are ascribed to PSC rate reductions. Gross performance estimates of operational responses to reduced PSC threshold changes, as presented in both the simulation and Appendix B models, and as reflected in the SSC's questions during public testimony, may be naïve and, thus, misleading. A profit maximizing operator will use informed expectations of the "net" result of their response to an operational change (e.g., achieving reduced halibut PSC). We recognize that the cost data and information about the strategic proprietary decisions fishermen may make are not readily available or amenable to staff analysis. However, they are crucial to anticipating realistic post-implementation effects.
- Species-specific wholesale and ex-vessel prices are critical elements for explaining industry behavior. Unfortunately, the price data that are compiled by NMFS and made available to the analysts are compressed and smoothed over time and species, effectively eliminating the usefulness of much of this crucial economic signal when modeling fishing behavior under the range of PSC threshold reductions in the simulation model.
- The analysis limits its evaluation of serious impact to directed halibut fisheries (principally in the BSAI) and groundfish fisheries. Some treatment of subsistence use of halibut has been added in this draft (Appendix C), but it remains insufficient and likely underestimates the potential impacts.
- The analysis uses the AFSC fishery involvement indices to do a quantitative assessment of halibut community dependence and engagement. This method only assesses the current level of direct involvement in halibut and other BSAI fisheries, based upon existing information. The analysis should also consider direct or indirect community impacts that may have already occurred due to changes in the status of the halibut resource. It likely underestimates the number of communities dependent on halibut and their levels of dependency because it neglects the unique histories and recent challenges of each. Further, the analysis assesses a level of vulnerability for each community; but again, these are likely underestimates because the indices do not consider the cultural and historical contexts of multi-generational fishing communities or their investments.
- Subsistence halibut harvest data are provided only through SHARCs. The author notes that "caution" should be used in their interpretation, because they show a bare minimum of subsistence halibut harvest for each community, but a more developed description of the low utility of the data are warranted. The analysis should frame these data in terms of SHARC permit return rates, which are drastically low, and explore the ADF&G Subsistence Division's Community Subsistence Information System for current information from household surveys to show these deficiencies.
- The uneven treatment between sectors (e.g., income plurality only for halibut permit holders and demographics of employment only for trawl CPs) further confounds the ability to evaluate impacts. With respect to employment data, the analysis uses jobs as a measure of fishery engagement only for one Seattle-based sector, and projects a greater level of engagement based

upon these numbers. The analysis should consider jobs provided by the directed fisheries, by CDQs, and by processors, and consider the types of jobs provided between sectors. Attributable fishing-based employment numbers as a measure of community engagement could be expressed on per capita basis for the community of interest, which could produce a different conclusion.

Based on the deficiencies outlined above, the SSC can discern scientific support for only the following general statements, around which the Council can frame a policy decision:

- Halibut is worth several times its nominal gross ex-vessel value in the directed fishery in foregone revenues to the groundfish fleet. The specific range reported is a factor of 7 to 15, but this is based on the aforementioned assumption that halibut PSC can only be reduced by not fishing during times when high PSC encounter rate fisheries were pursued historically. Thus, the reported range of foregone gross revenues likely provides an upper bound as harvesters can mitigate their foregone revenue by fishing in other fisheries, in cleaner areas, or changing gear deployment or fishing practices.
- The economic and cultural footprint of the directed halibut fishery is larger than that of the groundfish fishery in many small communities; the economic footprint of the groundfish fishery is larger in Seattle. However, the relative degree of dependence and involvement varies by community, and many small communities are heavily involved with fisheries that are impacted by halibut PSC. The current analysis does not allow a systematic quantification or detailed characterization of likely impacts on a community or regional level.

The SSC acknowledges that the underlying issue being addressed by this measure is pressing. However, within a highly dynamic environment, such as BSAI, any policy resolution will likely require adjustment and refinement over time. Moreover, the implications of declining size- and weight-at-age on the halibut total and exploitable biomass in the BSAI are not well understood, but are critical for identifying a long-term solution to the halibut PSC reduction effort. Since the present analysis uses a static set of data, employed in a static modeling framework, its probative value is short-term. Further, many of the questions posed during the SSC discussion may be far better addressed with existing methods on existing data; others require additional data or new methods**. Therefore, the SSC recommends the Council adopt a continuous or horizon-based programmatic evaluation for action performance** (e.g., a planned five-year review). The SSC recommends that the scientific work to support a review be initiated immediately, to identify critical data gaps. The review should better quantify the avoidance impacts to the groundfish fishery along the many margins of behavior actually observed to be used (a question about which any current reduction will allow far more insight) and a quantitative and narrative understanding of how the engagement, dependence, and vulnerability of communities are impacted by changes in these fisheries.

The SSC also makes the following important points for consideration for both present and future analyses for PSC reduction:

- The Council's objectives are not specified in well-defined, measurable/quantifiable thresholds (e.g., "reduce halibut PSC by X%" or "reduce halibut PSC until it costs $Y in foregone gross revenue", rather than "reduce PSC… to the extent practicable.").
- There is phrasing in the main analysis (p. 28, p. 381) that "the analyst asserts" that a behavioral change has occurred. This is misleading as the analyst has simply adopted a procedure for

removing records from a historical database and then recalculated groundfish and PSC totals from the remaining records. In other words, the supposed "behavioral change" is solely due to the assumptions of the model, as opposed to actual behavioral changes observed in the groundfish fisheries.

- Discussion in the 2015 Observer Report (included under the C-4 agenda item at this meeting) of observer intimidation and fouling of halibut PSC data has potentially important implications for the entire analysis of the halibut PSC agenda item. The SSC did not receive a report on Chapter 5 of the Observer Report and cannot fully assess the scope of the issues discussed there. The SSC merely notes that data integrity is essential and requests a presentation of Chapter 5 in the Observer Annual Report at a future meeting.
- Specific to Appendix C, limited time available, resource constraints, and no budgeted fieldwork severely restricted the ability of the analyst to explore potential impacts and benefits to BSAI communities. Within these limitations, the analysis attempts to cover a lot of ground using large, mostly publicly available datasets and, thus, aptly frames the appendix with a number of cautionary statements on the utility of the data. The SSC notes that the potential effects of this action warranted the initiation of a more in-depth analysis from the start.
- Appendix C makes generic references to the intangible elements of fishery engagement and attendant cultural considerations in coastal communities. These intangibles are too comprehensive to cover in this report, but it would benefit from a few examples that illustrate these in greater depth.

C-3 Observer Program Supplemental EA

The SSC received presentations from Gretchen Harrington (NMFS-AKR), Cathy Tide (NMFS-AKR), and Jason Gasper (NMFS-AKR). Public testimony on C3 and C4 were provided by Paul Olson (The Boat Company), Jon Warrenchuk (Oceana), Dan Falvey (ALFA), Julie Bonnie (Alaska Groundfish Data Bank), Robert Savage (CBSFA), and Bob Alverson (FVOA).

This supplemental EA was prepared in response to a court order to consider whether the observer deployment plan under the revised program is likely to yield high quality and reliable data. This concern is raised because overall observer coverage rates have declined due to actual costs being higher than projected costs, and year-to-year variation in the landings-based fee revenue that supports the program.

The Supplemental EA adopts the notion that data quality and reliability are measured by whether the sample is representative of the post-strata relevant for in-season management. This measure is chosen because it was the primary reason for restructuring the observer program. The analysis clearly conveys that there is adequate evidence to show that the revised observer deployment plan is unbiased from a design perspective, that the restructured program achieves its goal of expanding the sampling frame to include vessels under 60ft and vessels targeting halibut, and as such, it substantially improves the representativeness of the data collected. **The SSC is satisfied that the Supplemental EA adequately addresses the statement of need.**

The analysis explores the realized effects of the smaller than expected sampling rates by examining the possibility that a post-stratum lacks an observed trip. At rates comparable to the 16% that have been possible with fee revenue, it was shown that there are observed trips to match with 97% to 98% of the

trips taken within the sampling frame. At lower partial coverage (i.e., sampling rates below 10%), a much higher number of trips are unmatched. Thus, the Supplemental EA shows that, at the current deployment/coverage rates, the data are credible and reliable in that they capture activity throughout the sampling frame.

In addition, the SSC recognizes that the quality of the data returned by the revised program will continue to improve as the ADPs are developed and refined. As the program evolves, the SSC encourages the analysts to evaluate the small sample statistical properties of the estimators derived from the observer data. Coverage probability and estimator variance at alternative sample sizes will be important factors in interpreting the products of the observer program. Many measures (e.g., total catch) used for in-season management sum over post-strata, and, thus, the best measures will incorporate differences in means and variances across post-strata into their sampling plans. The SSC acknowledges that estimating the variance in these parameters is not straightforward, and appreciates the time and thought that the analysts have already invested in this area. The SSC also notes that becauseobserver data are used in a number of ways (catch accounting, in-season management, biological sampling), designing an unbiased deployment plan will likely involve tradeoffs in quality among the multiple measures produced by the observer program.

C-4 Observer Program Annual Report

A presentation was given by Craig Faunce (NMFS-AFSC) on the North Pacific Groundfish and Halibut Observer Program Annual Report (Annual Report). Public testimony was provided by Paul Olson (The Boat Company), Jon Warrenchuk (Oceana), Dan Falvey (ALFA), Julie Bonney (AGDB), Robert Savage (CBSFA), and Bob Alverson (FVOA).

The SSC received the second Annual Report of the restructured observer program, which pertains to trips observed during 2014. We acknowledge the dedication and tireless work of the observer program staff to provide this information. The Annual Report is concise and well written. It provides useful information on the implementation of the restructured observer program in 2014, and is largely responsive to SSC comments about the program provided during our February and June 2014 meetings. Observer-collected data provide essential biological samples and fishery-dependent information for management of sustainable fisheries in waters off Alaska. The Annual Report provides an overview of the program including coverage levels, description of the fee collection program, programmatic and contract costs, compliance and enforcement, as well as metrics on the performance of the deployment plan. The overview provided by the analysts and the SSC focused primarily on the performance metrics provided in the report. The SSC greatly appreciates the enhanced analysis of selection and observer effects that can be the cause of biases with respect to differences between observed and unobserved trips. The analyses revealed that there is the potential for bias in landed catch for the hook and line and trawl fleets in the trip selection stratum. It appears that observer and temporal effects are more important than spatial effects in terms of bias.

The SSC offers the following comments and recommendations to the Council:

- As stated previously by the SSC, we agree with the analysts' decision to discontinue the vessel-selection method for the large vessel stratum and to create two vessel-length-based strata, each using trip selection. This was the sampling method used in 2015.

- **The SSC recommends developing the necessary procedures for calculating the variances associated with point estimates.**
- While we agree with the analysts that it is not the sole determinant of quality of the sampling program, there is a critical need to calculate the variances associated with the point estimates (e.g., target catch, bycatch, PSC) to aid with optimization of the observer deployment sampling design and to assess uncertainty in estimates of catch. For example, the observer effect detected in landed catch in the HAL and TRW gears could have been better assessed for significance if there had been variances of these landed catches. In this way, the potential for bias detected by the observed versus unobserved trips could be weighed against measurement error in the estimates of landed catch for these two gears. Variances would also aid assessment authors in their understanding of the uncertainty associated with estimates of catch.
- **The SSC recommends that an appropriate level of stratification for sampling beyond, or as a replacement for, vessel length be investigated.** There was discussion of the potential for stratifying by gear type and/or area. Matching the sampling design stratification with the needs of the assessment and management processes is required to optimize use of the observer deployment budget.
- **The SSC recommends that sampling issues with tendered trips be addressed. There is a critical need that regulatory action be considered.** Our primary concerns are with the potential for bias, caused by trips that are tendered versus those that are not, and the inability to collect a representative sample of salmon PSC from tendered trips.
- The report detailed problems associated with trip cancellation in the Observer Declare and Deploy System (ODDS). Selected trips were cancelled at nearly four times the rate of trips not selected. However, this may be a function of the ODDS software that requires selected trips to be cancelled and rescheduled, while the dates of unselected trips can be changed. **The SSC recommends that the policy of allowing trip cancellation and logging multiple trips prior to sailing be reevaluated.**
- **The SSC recommends that methods to link data from the ODDS to the e-Landings system be developed.** Inclusion of a trip identifier is required for some data analyses.

The SSC offers the following recommendations to the Observer Program:

- This year we were provided with an overview of Chapter 3 (Performance Review) at the meeting. While the material is provided in the written report, the SSC would also like to see an overview of Chapter 5 (Compliance and Enforcement) given in future reviews of the Annual Report.
- Evaluate performance relative to the success of observer deployments. For example, report on those statistic associated with numbers of successfully completed trips versus total observed trips, and differences in trip metrics associated with trips where there were observer complaints versus those without complaints.
- The SSC is particularly concerned that reported instances of observer intimidation and crew tampering of the observer environment (e.g., hiding halibut) could prevent the collection of accurate and unbiased information. The reported high level of incidences of intimidation should be addressed immediately. These acts should not be occurring even at a low level in a fishery that has carried observers for many years.
- Examine the potential association of prohibited species catch (PSC) with trip attributes on observed vessels. If associations are found, PSC rates in shoreside offloads from unobserved

vessels could be compared for evidence of bias. We recognize that accounting for "takes" of rarely encountered species (e.g., birds, mammals) is difficult and will likely require alternative methods, such as design-based estimators.

- We encourage the analyst to work with Catch Accounting System staff for potential steps for identifying the appropriate trip target to minimize trip targets resulting from the 'largest proportion' protocol.
- We request that a specific section with responses to SSC comments be provided in the written report, as is done for SAFE documents.
- Consider, as a first-step, the calculation of variance using standard multi-stage cluster sampling (Thompson 2012), wherein the stage-specific variance is calculated along with the mean.
- In addition to sample size needs for spatial and temporal coverage, develop accuracy and precision objectives for catch, PSC, and bycatch.
- Use of the term "non-target" should be defined better within the trip definition.

D-1 Research Priorities

Jim Armstrong (Council Staff), Anne Hollowed (SSC sub-group), and Sherri Dressel (SSC sub-group) presented the proposed revisions to the research priorities database that were developed by the SSC subgroup and the Crab and Scallop Plan Teams. Michelle Ridgeway (Oceanus Alaska) provided public testimony.

In recognition of the importance of clearly stating the NPFMC's research priorities, the Council elected to develop a standardized method for ranking research priorities. In addition, the NPFMC developed a database to retain a history of the Council and Plan Team rankings for research priorities and to provide easy access to research priorities. The SSC used the research priorities database for the first time in 2014 and we had several recommendations for improvement. In April 2015 the SSC reviewed the new categories for prioritizing research that were developed by a sub-group of Council, Plan Team, and SSC members. The SSC and Council accepted the following categories for research priorities: Critical Ongoing Monitoring, Urgent, Important (Near-term), and Strategic (Future Needs).

The SSC formed a subgroup of the SSC and Council staff to review the existing research priorities and rank these using the revised categories. The subgroup included representatives from Council Staff (Jim Armstrong), academia (George Hunt, Terry Quinn, and Matt Reimer), ADF&G (Sherri Dressel), and NMFS (Anne Hollowed). The SSC-subgroup met in early May to review all of the existing research priorities. This list incorporated the proposed consolidations and deletions recommended in June 2014.

The SSC discussed the SSC-subgroup revisions and the proposed changes requested by the CPT and SPT. Sherri Dressel also described how ADF&G would use new information derived from selected research themes relevant to some crab and scallop stocks. The SSC made a few modifications to the SSC-subgroup list and is now providing our recommendations on research priorities to the Council for its use in determining its research priorities.

In general, the SSC found that most of the research priorities could be categorized using the new system. In a few cases, projects required re-phrasing to separate the strategic, long-term, and short-term elements of a single consolidated entry. The SSC continues to struggle with finding a balance between a long and

comprehensive list of all of the specific research projects considered by the Council's scientific advisory bodies, and striving to identify research themes that are relevant to a number of science questions. The SSC agrees with the CPT's recommendation that, when research topics are consolidated an additional column be added to the database to indicate some of the high priority species that might be candidates for targeted research under a consolidated research theme. The proposed modifications to the research priorities list are provided as a separate document to the SSC minutes.

The SSC reiterates that its recommendations be retained and accessible in the database for comparison in future years and we recommend that the priorities generated by each of the Plan Teams be accessible for each project.

The SSC added four new research priorities, all relevant to halibut: a) a priority focused on the collection of relevant socio-economic information from halibut fishery-dependent communities, b) a focused study on factors underlying fishermen's responses to halibut PSC caps, c) a research project focused on quantifying the relative importance of historical closed areas, as juvenile nursery habitat for halibut relative to other regions coast-wide, and the possible value of their protection and d) examine areas near the Pribolof Islands where PSC catch is high and whether protection might be of value.

Jim Armstrong reported that the Council plans to prioritize research relevant to the management goals and objectives of the North Pacific Fishery Management Council. He reported that a potential starting point for this exercise might be a review of the goals and objectives for the NPFMC as identified in the PSEIS. The SSC would benefit from this prioritization of management issues and they will consider ways to incorporate this information into future reviews of research priorities.

D-2 Adak Crab Offload

The SSC received a presentation by Sarah Marrinan (NPFMC). Public testimony was offered by Dave Fraser (ACDC) and Linda Kozak (Golden King Crab Coalition). The document is an initial draft of an EA/RIR/IRFA for a potential regulatory exemption that would allow vessels participating in the Western Aleutian Islands golden king crab (WAG) fishery to continue fishing after offloading a portion of their retained catch. Under current regulations, a vessel participating in a crab rationalization fishery is not permitted to deliver a portion of their retained harvest to a processor and, subsequently, resume fishing for additional crab.

The SSC appreciates the effort staff have demonstrated in interpreting recent Council discussions and public testimony on this action to craft an initial document for Council consideration. If the Council intends to proceed with evaluation of this action, the SSC recommends that the Council formally adopt a Purpose and Need statement, and articulate its objectives for this proposed management change.

Assuming the Council adopts a Purpose and Need statement and alternatives that are equivalent with those assumed by the authors of this draft, the SSC believes that this initial draft does an effective job of identifying the key elements of the action; characterizing the context within which the action would be implemented; specifying how and to whom the expected benefits and costs of the management change may accrue; enumerating enforcement concerns; and assessing the potential for significant adverse economic impacts to be imposed upon directly regulated small entities. Given that the original intent of

the regulation under consideration is to prevent high-grading, the document would benefit from further elaboration on why a regulatory exemption is not expected to increase the likelihood of discarded deadloss. Moreover, the analysis would be more complete with a discussion of how allowing vessels to continue fishing after a partial delivery would affect (if at all) how observers are deployed and any potential related effects on the amount of observer coverage for the vessels under consideration.

The analysis addresses an action alternative that would be limited exclusively to the Western AI golden king crab fishery. If the Council limits action on this item to that area and fishery, the SSC recommends release of this draft for public review (presumably after the Council adopts a Purpose and Need statement and alternatives). The SSC offers this caveat because when the draft discusses enforcement considerations, it is suggested that perhaps the partial offload exemption should be considered for extension to all Crab Rationalized fisheries. If this broader action alternative is adopted for analysis, the present draft is not sufficiently complete for public review.

D-3 Pacific Cod Modeling Report

Dr. Grant Thompson (AFSC) presented a report about the first of three stages of stock assessment of Pacific cod in the following three areas: eastern Bering Sea (EBS), Aleutian Islands (AI), and Gulf of Alaska (GOA). In this stage, a committee reviews models used in the previous year, examines proposals for new models and analyses, and recommends a suite of models and analyses to be used. Gerry Merrigan (Freezer Longline Coalition) gave public testimony. **The SSC agreed that this suite of models was appropriate and practicable, and had no suggestions for additional models and analyses.**

Members of the SSC were confused by the model numbering, which often gets changed when going from the preliminary analysis (second stage, reviewed in September/October) and the final analysis (third stage, reviewed in November/December). The source of confusion in this case was the renaming of models between assessment cycles. For example, this year's proposed Model 2 was the same as last year's proposed Model 6. Previously, the SSC recommended numbering Model 0 as last year's base model and Model 1 as last year's base model with only updated data. **The SSC recommends that the Groundfish Plan Teams further refine the numbering system to avoid confusion and ensure that the origin of the model can be traced back to its original derivation. Our initial suggestion is to keep the numbering system the same throughout all three stages of the annual stock assessment cycle.**

During the first-stage committee review, it was suggested that the time series of the ratio of catch to survey biomass be examined as metric of model suitability. The SSC could not interpret this metric biologically and rather prefers to use the standard metrics of model performance in the stock assessment to guide its selection of useful model(s). Discussion ensued about the desirability of the ensemble model approach of Stewart and Martell (2015) to improve stock assessment. As this issue is general to all stock assessments, it was deferred to a later time.

Stewart, I. J., & Martell, S. J. (2015). Reconciling stock assessment paradigms to better inform fisheries management. *ICES Journal of Marine Science: Journal du Conseil*, fsv061.

Appendix A.

SSC Comments on Proposed Revisions to the Guidelines for National Standards 1, 3, and 7 of the Magnuson-Stevens Fishery Conservation and Management Act

Background

On January 20, 2015 NMFS published a proposed rule (80 FR 2786) for revisions to National Standards (NSs) 1, 3, and 7 with a June 30, 2015 comment deadline. The revisions are described by NMFS as a product of lessons learned since the implementation of annual catch limits (ACLs) and accountability measures (AMs). NMFS states that the purpose of the proposed changes is to facilitate compliance with requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) "without establishing new requirements or requiring Councils or the Secretary to revise their Fishery Management Plans." The objectives of the revisions are "to improve and clarify the guidance within the NS guidelines, address concerns that have been raised during the implementation of [ACLs] and [AMs], and provide flexibility to address fishery management issues."

In response to the proposed rule, the North Pacific Council formed a special working group to review the proposed rule and develop draft comments on the proposed revisions. Those comments were reviewed by the SSC during the April 2015 Council meeting; and the SSC and Council were also given a presentation on the proposed revisions by Wes Patrick of NMFS Headquarters. In its consideration of the draft comments and presentation, the SSC identified a few additional or complementary issues that it wished to communicate to the Council in addition to its endorsement of the working group's comments. It appointed a subgroup of the SSC to work with the NS1 subgroup to blend all comments into a single report. After review by the whole SSC at the June 2015 meeting, the SSC offers this report to the Council for its review at the June 2015 Council meeting, where the Council will develop a comment letter to NMFS headquarters.

The SSC comments below are arranged according to the enumerated topics in the proposed rule preamble. Additional editorial remarks are also provided in an attached redline version of the proposed rule.

III. Goals and Objectives of Fishery Management Plans (FMPs).

Amended Section(s): 600.305(b)
Comments:

600.305(b)(2) - The proposed rule suggests that Councils "should reassess the objectives of the fishery on a regular basis." "Fishery objectives" are not addressed or mandated by the MSA, but the Council routinely reviews the "management objectives" within its groundfish FMPs and is considering doing so for its other FMPs. Within the revised guideline language itself, the added text is vague and open-ended in terms of the expected periodicity of review. We recognize that, because of the wide spectrum of objectives in FMPs, it would be difficult to develop specific criteria to guide the frequency of reassessments. Appropriately developed FMP objectives should not have to be revisited very often. If, however, the intent of this modification is to encourage action from Councils with outdated objectives in their FMPs, then this proposed change could accomplish that.

The term "objectives of the fishery" is different than that used in the preceding paragraph 600.305(b)(1) ("management objectives to be obtained in regulating the fishery") and the following paragraph 600.305(b)(3) relating objectives to the management process and problems of a particular fishery, while proposed 600.310(e)(3)(iii)(B) that says "Councils should consider the management objectives of their FMPs…".

Suggested Improvement:

Replace "objectives of the fishery" in paragraph 600.305(b)(2) with "FMP's management objectives."

IV. Stocks That Require Conservation and Management

Amended Section(s): 600.305(c), 600.305(d), 600.340(b)
Comments:
600.305(c) - This section is entirely new except for items (iii) and (vi)-(x) of the enumerated factors in paragraph (1) and one sentence in paragraph (2) regarding identification of ecosystem component (EC) species at either the species or stock level. Subsection (c)(3) is responsive to the Council's/SSC's interest in including stocks as EC in FMPs if they do not require conservation and management, while Subsection (c)(4) allows inclusion of stocks as EC in FMPs that do not directly manage those stocks, even if those stocks are overfished.

600.305(c)(1) - This paragraph includes a (non-exhaustive) list of ten factors that "should be used by a Council when deciding whether stocks require conservation and management," six of which were taken from the existing guidelines for NS7 (existing paragraph 600.340(b)(2)). The first factor in the list reads, "the stock is an important component of the ecosystem." Although paragraph 600.305(c)(2) states that "no single factor is dispositive," the inclusion of ecosystem importance as the first factor listed in paragraph (1) and its identification in paragraph (2) as one of the first three factors to consider may give the impression that all important components of the ecosystem require specification of maximum sustainable yield (MSY), optimum yield (OY), acceptable biological catch (ABC), ACL, and status determination criteria (and all other MSA 303(a) required provisions). It is not clear what problem the addition of the list in paragraph (1) is intended to solve. If the goal is to provide the Councils with more flexibility to include stocks not currently managed under FMPs, this can be accomplished without adding a list that might easily be interpreted as requiring <u>all</u> stocks caught to be included in FMPs. Instead of simply providing more flexibility, this list may appear to remove any discretion by the Council to decide that a stock does not require conservation and management, thereby requiring the MSA 303(a) provisions for every stock caught in every Federal fishery.

600.305(c)(3) - The proposed rule deletes the four existing criteria for determining whether a stock can be included in the EC (must be a non-target, must not be overfished, must not be likely to become overfished, must not be generally retained), thus providing significant new flexibility. To this extent, the proposed rule is responsive to the SSC's comment on the advanced notice of proposed rule (ANPR) that the guidelines should allow overfished stocks to be listed in the EC of an FMP if those stocks are managed primarily under another FMP. However, paragraph (4) of the proposed rule suggests that such stocks should be identified as "other managed stocks" rather than being included in the EC. Paragraph (3) is also confusing in that EC species are defined as FMP species not requiring "conservation and management," yet the same paragraph states that they can be the object of "management measures" designed to minimize bycatch, protect their role in the ecosystem, and "other."

The proposed rule is not responsive to the SSC's ANPR request for clarification regarding the need to protect species even if they are not "in" an FMP and the Council's ability to do so without adding them to the species that are "in" the FMP.

While most of the existing provisions of the NS7 guidelines at 600.340(b) were moved to proposed 600.305(c), two concepts of the NS7 guidelines were deleted, 600.340(b)(1) and 600.340(b)(2)(vii):

- 600.340(b) Necessity of Federal management—(1) General. The principle that not every fishery needs regulation is implicit in this standard. The Magnuson-Stevens Act requires Councils to prepare FMPs only for overfished fisheries and for other fisheries where regulation would serve some useful purpose and where the present or future benefits of regulation would justify the costs....
- 600.340(b)(2)(vii) The costs associated with an FMP, balanced against the benefits…

The preamble to the proposed rule does not explain why these concepts were deleted. Unless the goal is to require specification of status determination criteria, EFH, and all MSA 303(a) required provisions for all species, the Council would benefit from having guidance that allows a balance of costs and benefits and consideration of whether management serves some useful purpose. This is particularly important with the addition of proposed 600.305(c)(1)(i) and (ii), which basically encompass everything caught in every fishery.

Overall, the proposed rule misplaces the emphasis on "stocks" requiring conservation and management, whereas the Act is explicit that a "fishery" is to be the subject of conservation and management. The following text describes an alternative approach to this issue that is simple, sensible, fully protective of both target and non-target stocks, and explicitly consistent with the language of the Act (note that this is intended as a description of an overall approach rather than as substitute text for a particular section of the proposed rule; adoption of this approach would probably require an extensive rewrite of several parts of the proposed rule):

"A management plan must be developed for a fishery if, absent Federal management, the fishery is not expected to be prosecuted in a manner that results in achievement of optimum yield, prevention of overfishing of the target stocks, and protection of the marine ecosystem (or results that are reasonably equivalent to these). All stocks targeted by the fishery must be identified in the FMP, with the understanding that references to 'stocks' in MSA 303(a) apply to those stocks only. References to 'fishery' in MSA 303(a) may be interpreted as applying to individual stocks or groups of stocks within the set of target stocks, or to any fishing for such stocks, to the extent that the context allows. In addition to containing all items required by MSA 303(a), the FMP must contain conservation and management measures sufficient to protect the marine ecosystem from the effects of the managed fishery. The 'marine ecosystem' is understood to consist of all non-target species impacted directly or indirectly by the fishery as well as all physical features of the marine environment impacted directly or indirectly by the fishery. While protection of the marine ecosystem is mandatory, Councils have flexibility in determining how to accomplish this goal. For example, in providing protection to non-target species, reference points based on MSY may or may not be relevant or necessary. Listing a particular non-target species in the FMP is not a prerequisite for providing protection to that species; neither does failing to list non-target species exempt a Council from its obligation to protect them. Moreover, listing a non-target species in the FMP does not thereby create a requirement to include all MSA 303(a) items for that stock."

Suggested Improvements:
600.305(c)(1) - Either strike the list of ten factors or, if the list in paragraph (1) is to be retained, item (vii) of the existing list in paragraph 600.340(b)(2), which recognizes the need to consider the costs of including a stock in an FMP, should be added (it is deleted in the proposed rule). Also, consider moving (iv) to the top of the list because this should be the primary factor in determining whether a stock requires conservation and management. This new section could result in FMP amendments to add new stocks to

FMPs and establish status determination criteria, and all other 303(a) required provisions, for stocks that meet these new broad criteria.

600.305(c)(2) - This paragraph should be revised to include the possibility of removing a stock from an FMP, to read "(2) When considering whether a stock should be added to or removed from an FMP…." This would make (c)(2) consistent with (c)(5).

600.340(b) - Retain provisions 600.340(b)(1) and 600.340(b)(2)(vii) in NS7 in order to preserve guidance that acknowledges that the decision to include a species in an FMP will involve evaluation of costs and benefits.
Rewrite the proposed rule from the perspective of the alternative approach described above.

V. Data Limited Stocks

Amended Section(s): 600.310(e)(2)(ii) , 600.310(h)(2)
Comments:
600.310(e)(2)(ii) - The proposed rule includes new options for proxies that can be used in place of the standard status determination criteria in cases where data are especially sparse or uninformative. The insertions represent improvements, as they acknowledge the reality that certain currently required reference points simply cannot be estimated in data-poor situations, and they identify achievable alternatives. Although these changes are not directly responsive to the SSC and Council comments on the ANPR, other language in the proposed rule does suggest that not all stocks require conservation and management.

VI. Stock Complexes and Indicator Stocks

Amended Section(s): 600.310(d)(2), 600.310(e)(1)(iii)
Comments:
600.310(d)(2)(i) - The current definition of "stock complex" is, "a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar." The proposed rule retains this definition (with some non-substantive modifications), but prefaces it with the phrase, "Where practicable." While providing somewhat greater flexibility, the addition still implies that the current definition should normally apply, which seems a bit contrary to the argument used to modify the current definition in the first place (viz., that the methods used to identify stock complexes in practice often differ from the current definition; see preamble to the proposed rule).

600.310(e)(1)(iii) - The existing suggestion that MSY for a stock complex "should" be estimated on a stock-by-stock basis is proposed to be replaced by a suggestion that it be estimated for one or more indicator stocks or the complex as a whole. This is an improvement, given that non-indicator stocks are often data-poor, making estimation of MSY difficult if not impossible.

VII. Aggregate Maximum Sustainable Yield (MSY) Estimates

Amended Section(s): 600.310(e)(1), 600.310(e)(3)
Comments:
600.310(e)(1) - The proposed rule retains the requirement that each FMP include an estimate of MSY for the stocks and stock complexes that require conservation and management, and adds that MSY "may also" be specified for the fishery as a whole. "Also" implies that specification of MSY at the fishery level is in addition to, rather than a substitute for, specification at the stock/complex level. This goes beyond the requirement of the Act, which states simply that MSY must be assessed and specified for the fishery.

Suggested Improvement:
Replace "MSY may also be specified for" with "MSY may alternatively be specified for" at 600.310(e)(1).

VIII. Developing a Definition for ''Depleted''

Amended Section(s): 600.310(e)(2)(i), 600.310(e)(2)(ii)
Comments:

600.310(e)(2)(i)(F) - The proposed rule allows for a distinction between "Depleted" and "Overfished" stocks that have fallen below the MSST. Attempting to clearly distinguish environmental impacts from fishery-induced impacts is a complex undertaking. Unless there is a clear reason why the actions of the Council would differ under these two definitions, it is not clear why additional nomenclature is needed. Previous comments by various SSCs and Councils have suggested the **replacement** of "overfished" with "depleted", not the addition of "depleted", because "overfished" gets used for stocks for which no overfishing ever took place. Given the difficulty of separating environmental effects from fishing effects on the status of the stock, the proposed rule's attempt to tie the term "depleted" to stocks that meet stringent conditions that tie the low stock condition to environmental effects creates the addition of the new term "depleted" that has no role in the process of setting ABCs and overfishing levels (OFLs) and of any fisheries management measures.

The definition of "depleted" in the proposed rule is: **"**An overfished stock or stock complex is considered depleted when it has not experienced overfishing at any point over a period of two generation times of the stock and its biomass has declined below MSST [minimum stock size threshold]…." NMFS is attempting to address the ongoing concern that "the term 'overfished' implies that fishing is the sole cause for a decline in stock biomass, when other factors such as environmental conditions may be the leading cause for the stocks biomass decline….." However, the proposed revision does not accomplish the purpose, because it says that only an overfished stock or stock complex can be considered depleted under the proposed rule. It would be better to add an option for a stock that has declined below MSST for reasons other than overfishing. It does not make sense to say that a stock is overfished when it has never been subjected to overfishing.

600.310(e)(2)(ii) - The proposed rule changes the definition of MSST by eliminating the requirement for rebuilding to BMSY within 10 years and instead adding this to a list of several new factors that "could" be considered when specifying MSST: life history of the stock, long-term natural fluctuations expected when fishing at maximum fishing mortality threshold (MFMT), socio-economic impacts associated with rebuilding to BMSY, international agreements, and "other" factors. While these changes would not necessitate revising the MSST specifications currently contained in the NPFMC's FMPs, they would provide additional flexibility should the Council wish to revisit those specifications.

Suggested Improvement:
Change the new "depleted" sub-category of the "overfished" category to its own stand-alone category.

IX. Developing an Alternative Definition of Overfishing To Include a Multi-Year Approach

Amended Section(s): 600.310(e)(2)(ii)(A)
Comments:
Editorial improvements are suggested in the redline document.

X. Revising Optimum Yield (OY) Guidance

Comments:
600.310(e)(3) - The proposed rule says that OY may be specified at the stock, stock complex, or fishery level. The phrase "FMP level" should be added to this list, since many FMPs cover multiple fisheries. A similar change should also be made in other sections (e.g., MSY) where appropriate.

600.310(e)(3)(iii)(B) - The potential factors listed in (B)(1)-(B)(3) are too loosely defined to provide operational guidance on what factors to consider. Item (B) is a list of factors to consider when determining (A), hence is more appropriately nested under (A).

600.310(e)(3)(iv)(A) - The proposed rule strikes the existing sentence, "All catch must be counted against OY, including that resulting from bycatch, scientific research, and all fishing activities," but this is inconsistent with the proposed rule's new language requiring that all these sources of mortality be taken into account when making status determinations, (600.310(e)(2)(ii)(C)). It should also be noted that the issue of how to account for all sources of anthropogenic mortality, which was highlighted in the ANPR, is not addressed in the proposed rule.

Because the overall issue remains unresolved, the specific sub-issues identified in the SSC's associated ANPR comment are shown below:

"The guidelines state that all sources of fishing mortality must be accounted for. However, a number of points remain ambiguous, particularly with respect to removals from sources other than the directed fishery (hereinafter referred to as 'other' catches). Specifically, the guidelines should clarify each of the following points:

- When considering use of 'other' catches in assessment and management, it will be necessary to distinguish between:
    1. listing those catches but not using them for determination of catch limits,
    2. using those catches to estimate reference fishing mortality rates (F35%, etc.),
    3. using those catches to estimate reference harvest amounts (maxABC, OFL, etc.) given the reference fishing mortality rates, and
    4. including those catches in the total against which harvest specifications are compared.
- It will also be necessary to determine whether the use of 'other' catches should differ depending on the source of the removals (e.g., should research catches be treated differently from catches taken in non-directed commercial fisheries?).
- In the event that 'other' catches will be used to estimate either reference fishing mortality rates or reference harvest amounts, methods will need to be devised for doing so (e.g., does the calculation of F35%, etc., assume that 'other' catches are zero, that they are equal to the long-term average, or something else?).
- How should years be incorporated for which 'other' catches were known to have occurred, but for which no direct estimate of magnitude is available (e.g., years in which surveys occurred but from which data no longer exist).
- How should sources be incorporated for which 'other' catches were known to have occurred, but for which no direct estimate of magnitude is available (e.g., catches taken in recreational fisheries).
- Can Councils preempt scientific research by allocating the entire ACL to the commercial fishery?

The proposed rule does not respond to the SSC's request for additional guidance on accounting for social and ecological effects. However, the existing text does include two fairly lengthy paragraphs on the types of social and ecological factors that might be appropriate to consider in the OY specification.

600.310(e)(iii) - The first sentence of the existing text reads as follows: "An FMP must contain an assessment and specification of OY, including a summary of information used in making such specification, consistent with requirements of section 303(a)(3) of the Magnuson-Stevens Act." The proposed rule would add a requirement that each FMP "documents how the OY will produce the greatest benefits to the nation and prevent overfishing." This change would require amendments to most, if not all, of the NPFMC's FMPs because they do not document how the OY will produce the greatest benefits to the Nation and prevent overfishing. Documenting how the OY will prevent overfishing seems contrary to NS1, which says, "conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery..." and inconsistent with the proposed guidelines at 600.310(f)(4)(iv) on the relationship between OY and the ACL framework.

The proposed rule is sufficiently vague in use of the phrase, "documents how the OY will produce the greatest benefits to the Nation and prevent overfishing," that there are a number of possible problematic implications of this new requirement. The new language (unless loosely interpreted to be equivalent to the existing text) requires changes to the FMPs that could be both significant and operationally infeasible. We elaborate on these concerns below.

The MSA defines OY, in part, as the yield that "will provide the greatest overall benefit to the Nation" (section 3(33)), which sets a very high bar. The main problem with the new requirement in the proposed rule is not its use of the statutory definition, but rather its mandate for documenting how the statutory definition has been satisfied in each FMP together with its lack of any guidance on how this can be accomplished in practice. Any specification of OY in practice will necessarily be an estimate, and use of proxy values will often be required, just as in specification of MSY. NMFS should commit to providing technical guidance as to the types and use of allowable proxies for specification of OY. Without such guidance, the proposed text could be interpreted as broadening the positive (practical) determination of OY to include factors for which we currently have no practical means of defensibly estimating, thereby creating a burden that is untenable.

Requiring that FMPs must "document," as opposed to "summarize" (as prescribed in MSA), creates a regulatory burden that may not be appropriate for all FMPs. If the methods used to assess and specify OY are sufficiently simple in a given instance, it is conceivable that such documentation might reasonably fit within the FMP. However, it is easily conceivable that the methods used to assess and specify OY might be highly technical and span a great many pages, in which case it would be awkward to include full documentation within the FMP itself. Therefore, the language in the proposed rule should be amended to allow documentation either in the FMP itself or in other documents such as environmental assessments or regulatory impact reviews.

The MSA requires each FMP to "assess and specify" OY (section 303(a)(3)). Given this, it seems reasonable to assume that some sort of documentation would exist describing how the specified OY will provide the greatest benefit to the Nation. It is critical that we continue to make progress in accounting for previously unaccounted economic values in the specification of OY, but doing so without a clear, defensible methodology for many of the factors may put the cart before the horse and potentially undermine this objective. The proposed text goes beyond what should be its intent, namely, achieving more comprehensive documentation so that we might determine whether an alternative specification would produce greater "benefits to the Nation."

Suggested Improvement:

The final rule should retain the existing text in 600.310(e)(iii) and NMFS should provide a technical guidance document describing in precise and pragmatic terms whether and how any existing OY specifications should be amended so as to satisfy the statutory definition.

In section 600.310(e)(3) the proposed rule should say that OY may be specified at the stock, stock complex, fishery level, or FMP level.

In section 600.310(e)(3)(iii)(B) - Item (B) should be nested under (A). The potential factors listed in (B)(1)-(B)(3) should be concretely defined.

In section 600.310(e)(3)(iv)(A), retain the existing language, "All catch must be counted against OY, including that resulting from bycatch, scientific research, and all fishing activities," and amend to account for all sources of anthropogenic mortality, as described in the SSC's comments on the ANPR detailed above.

XI. Acceptable Biological Catch and Annual Catch Limit Guidance
Amended Section(s): 600.310(f)
Comments:
600.310(f)(1) - The proposed rule adds two new sub-paragraphs (v and vi) defining management uncertainty and scientific uncertainty. These additions are responsive to the first of the SSC's two comments on the corresponding issue in the ANPR.

600.310(f)(2)(i) - The proposed rule removes the requirement that ABC control rules be based on the P* approach and explicitly allows for use of "other appropriate methods." The preamble to the proposed rule goes so far as to mention decision theory as an acceptable alternative to the P* approach, and even cites a discussion paper on the subject that was prepared for the NPFMC SSC. This change is completely responsive to the SSC's comments on the ANPR, and constitutes total victory in a struggle that has spanned the last 8 years.

600.310(f)(2)(ii)(A) - The proposed rule allows a phase-in period for adoption of status determination criteria. The use of this option should be accompanied with an evaluation of the implications of this phase-in on stock status. If scientific information indicates that the stock has become much larger, a phase-in of 3 years may be prudent if there is much uncertainty in the information or if the stock is not assessed very often. NPFMC has used a 10-year stairstep in one case, so rather than specifying a limit of 3 years, it would be better to examine the rationale in the evaluation. If scientific information indicates that a stock has unexpectedly decreased for whatever reason, a phase-in may be unwise. The burden of proof should be put on the evaluation to justify the phase-in in this case.

600.310(f)(2)(ii)(B) - The proposed rule allows for carry-over of total allowable catch (TAC) or catch to the next year if it does not result in catch exceeding ABC. The proposed rule should mention the problem with doing this carry-over when stocks are assessed annually. The problem is that the carry-over is based on the previous assessment, but the current year may have updated values of ABC and OFL. The current assessment automatically adjusts for any changes to stock condition resulting from the previous catch being lower than the previous TAC. Thus, no carry-over should be allowed when new information is available that indicates a change in stock condition.

600.310(f)(4)(i) - See comment under Topic XII below.

600.310(f)(4)(iv) - Clarification is needed in terms of conflicting characterizations of ABC in the second and sixth sentences of this paragraph. The second sentence implies that the only purpose of ABC is to prevent overfishing, while the sixth lists several other considerations that may go into determining the

risk policy for an ABC control rule. The latter is more appropriate. If the only purpose of ABC is to prevent overfishing, this could be accomplished most simply by setting ABC equal to zero.

Suggested Improvement:
In the second sentence of 600.310(f)(4)(iv), replace "and is designed to prevent overfishing" with "that prevents overfishing within an established framework of risk and other considerations."

XII. Accountability Measures

Amended Section(s): 600.310(f), 600.310(g)
Comments:
600.310(f)(4)(i) and 600.310(g)(4) - Paragraph 600.310(f)(4)(i) of the proposed rule adds new language suggesting that "management uncertainty should be accounted for in the ACL" whenever the (optional) concept of annual catch target (ACT) is not used. This is a significant change that may warrant revisiting the ABC control rules currently specified in the Crab and BSAI and GOA Groundfish FMPs or, alternatively, formally adopting use of ACT terminology in the NPFMC's FMPs. When the NPFMC's FMPs were amended to bring them into compliance with the Magnuson-Stevens Reauthorization Act of 2006, TACs were not equated with ACTs, in part because the current guidelines require use of an ACT control rule whenever the concept of ACT is used, and this would be inconsistent with the Council's current procedure for setting groundfish TACs. However, paragraph 600.310(g)(4) of the proposed rule relaxes the requirement for use of an ACT control rule, stating instead that such control rules "can" be used.

Suggested Improvement:
Given that the NPFMC's groundfish FMPs use TAC as a functional equivalent of ACT, it would be helpful if the proposed rule used the phrase "ACT, or functional equivalent," in places such as the second sentence of 600.310(f)(4)(i): "If an annual catch target (ACT), *or functional equivalent*, is not used, management uncertainty should be accounted for in the ACL."

XIII. Establishing Annual Catch Limit (ACL) and Accountability Measure (AM) Mechanisms

Amended Section(s): 600.310(h)
Comments:
The proposed rule's addition of "data-limited cases" to the set of circumstances under which "alternative approaches" are warranted is helpful, and simply acknowledges the reality that some things cannot be estimated without data.

Regarding the Council's comment on the corresponding issue in the ANPR, the proposed rule does not provide a more straightforward exemption for salmon, although the exemption in the current guidelines is already explicit.

Suggested Improvement:
At 600.310(h)(2) the proposed rule mischaracterizes the spawning potential of Pacific salmon ("the spawning potential is concentrated in one year"). This could be fixed by inserting the phrase "of each run" after "potential," or by retaining the current language ("the spawning potential for a stock is spread over a multi-year period").

600.310(h)(2) "Flexibility in application of NS1 guidelines" is nested under (h) "Establishing ACL mechanisms and AMs in FMPs." It would be more appropriately elevated to full paragraph status as 600.310(i), which would require renumbering subsequent paragraphs, or added as new paragraph

600.310(n). This change would make it clear that the Councils have flexibility under the complete set of NS1 guidelines, not just flexibility under (h).

XIV. Adding Flexibility in Rebuilding

Amended Section(s): 600.310(j)
Comments:
600.310(j)(3)(i)(A) - The proposed rule identifies the starting date for calculating the minimum time for rebuilding (Tmin) as the first year that the rebuilding plan is expected to be implemented, which is a helpful clarification.

600.310(j)(3)(i)(B) - The proposed rule retains the existing discontinuity in the formula for the maximum rebuilding time (Tmax), wherein Tmax can be no greater than 10 years if Tmin is slightly below or equal to 10 years, but Tmax can be substantially greater than 10 years if Tmin is even slightly above 10 years. Although the discontinuity is difficult to rationalize, it is also difficult to see how the Act can be interpreted otherwise. For stocks with Tmin greater than 10 years, the proposed rule adds two new alternative methods for calculating Tmax, which provides helpful flexibility, particularly in cases where estimates of generation time are unavailable or unreliable. But it would be helpful for guidance on which of the three approaches should be chosen if more than one can be calculated. Is it permissible to choose the longest of the three for management flexibility?

600.310(j)(3)(iv) and 600.310(j)(3)(v) - Paragraph 600.310(j)(3)(iv) of the proposed rule provides significant new text on determination of "adequate progress" under a rebuilding plan, which is an issue that the current guidelines do not address; thus the proposed rule is responsive to the SSC's first ANPR comment on this issue. However, the new text does not address data-poor cases separately from the general case, so is not responsive to the SSC's second ANPR comment.

The proposed rule emphasizes keeping catch below the level associated with the specified fishing mortality rate under the rebuilding plan ("Frebuild"). This is helpful in that it places the focus on something that managers can actually control, but it may also de-emphasize the progress of the stock biomass toward BMSY (which managers can at best control indirectly, and sometimes not at all), thereby resulting in insufficient scrutiny of the Frebuild estimates. For example, paragraph 600.310(j)(3)(v) states that revision of Frebuild is not necessary unless adequate progress is not being made, which implies that, if Frebuild is initially overestimated and catches stay below the level associated with the (overestimated) Frebuild, there may be no incentive to revisit Frebuild even if biomass makes no progress toward BMSY. A possible remedy might be found in the proposed rule's option wherein progress "may also" be found to be inadequate if "rebuilding expectations of a stock or stock complex are significantly changed due to new and unexpected information about the status of the stock." For example, if the unexpected information consists of a finding that biomass is not increasing as rapidly as expected under Frebuild, this clause could allow for a determination of inadequate progress, thereby necessitating a re-evaluation of Frebuild. However, it is not clear that such an interpretation is consistent with NMFS' understanding that "the primary objective of a rebuilding plan should be to maintain fishing mortality at or below Frebuild."

Suggested Improvement:
The proposed rule includes the following text at 600.310(j)(3)(iv): "The Secretary may find that adequate progress is not being made if Frebuild or the ACL associated with Frebuild are exceeded, and AMs are not correcting the operational issue that caused the overage and addressing any biological consequences to the stock or stock complex resulting from the overage when it is known (see paragraph (g)(3) of this section). A lack of adequate progress may also be found when the rebuilding expectations of a stock or stock complex are significantly changed due to new and unexpected information about the status of the

stock." These sentences should be modified by changing "may" to "will" in the first sentence, and replacing the second sentence with the following: "Each rebuilding plan should identify a reasonable level of statistical significance that will be used to evaluate progress of the stock toward BMSY. The Secretary will also find that adequate progress is not being made if the status of the stock relative to BMSY is significantly different from that projected in the rebuilding plan."

Consider revising 600.310(j)(3)(vi) to read:"(vi) If a stock or stock complex has not rebuilt by Tmax or the Secretary finds that adequate progress is not being made, then the fishing mortality rate should be maintained at Frebuild or 75 percent of the MFMT, whichever is less, until the stock or stock complex is rebuilt."

XV. Recreational Fisheries

Amended Section(s): 600.305(b)(2), 600.310(g)(3), 600.310(e)(2)(ii), 600.310(h)(2)
Comments:
Comments provided above on Sections III, V, XII. No comments are offered specific to recreational fisheries

National Standard 3

Amended Section(s): 600.320
600.320(e) - The proposed rule leaves this paragraph, which deals with analysis of management units, largely as it appears in the current guidelines. Although the NPFMC's FMPs do not address the items enumerated in this paragraph, most of them are addressed in the analytical documents that support the FMP (EAs, RIRs, etc.). It is not clear why this analysis would belong in an FMP, and it could create excessively long FMPs.

Suggested Improvement:
Consider changing the beginning of the first paragraph from "An FMP should include discussion of the following:" to "The supporting analyses for FMPs should demonstrate:" This change would make the analysis paragraph for NS3 consistent with the analysis paragraph for NS7 (proposed 600.340(c)).

National Standard 7

See comments under IV above.