

# Public Testimony Sign-Up Sheet

## Agenda Item D-3 Crab Overfishing

NAME (PLEASE PRINT)	AFFILIATION
1	Steve Minor
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NOTE to persons providing oral or written testimony to the Council: Section 307(1)(I) of the Magnuson-Stevens Fishery Conservation and Management Act prohibits any person "to knowingly and willfully submit to a Council, the Secretary, or the Governor of a State false information (including, but not limited to, false information regarding the capacity and extent to which a United State fish processor, on an annual basis, will process a portion of the optimum yield of a fishery that will be harvested by fishing vessels of the United States) regarding any matter that the Council, Secretary, or Governor is considering in the course of carrying out this Act.

MEMORANDUM

TO: Council, SSC and AP Members  
FROM: Chris Oliver *CO*  
Executive Director  
DATE: September 26, 2007  
SUBJECT: BSAI Crab Management

ESTIMATED TIME  
2 HOURS

ACTION REQUIRED

- a) Crab Plan Team Report; Approve BSAI Crab SAFE
- b) Initial review of crab overfishing definitions analysis

BACKGROUND

- a) Crab Plan Team Report; Approve BSAI Crab SAFE

The Crab Plan Team met at the Alaska Fisheries Science Center in Seattle, WA from September 12-14, 2007 to review the status of stocks and to compile the annual Stock Assessment and Fishery Evaluation (SAFE) report. The Crab SAFE report was mailed to you September 18<sup>th</sup>. The SAFE report summarizes the current biological status of fisheries, total allowable catch (TAC), guideline harvest levels (GHL), and analytical information used for management decisions or changes in harvest strategies. The report is assembled by the Crab Plan Team with contributions from plan team members as well as from additional personnel from the State of Alaska, Department of Fish and Game (ADF&G), and the National Marine Fisheries Service (NMFS). The report from the Crab Plan Team is attached as Item D-3(a).

- b) Initial review of crab overfishing definitions analysis

An Environmental Assessment (EA) has been prepared which evaluates proposed changes to the current overfishing definitions for BSAI crab stocks. The proposed action is to establish a set of overfishing levels (OFLs) that provide objective and measurable criteria for identifying when a BSAI crab fishery is overfished or when overfishing is occurring, in compliance with the Magnuson-Stevens Act. The BSAI crab FMP establishes a State/Federal cooperative management regime that defers crab fisheries management to the State of Alaska with Federal oversight. The Magnuson-Stevens Act requires that FMPs specify objective and measurable criteria for identifying when the fishery is overfished (with an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stock). The OFLs are a Category 1 measure in the FMP, and as such revisions to the OFLs require an FMP amendment.

Determinations of total allowable catches (TACs) and guideline harvest levels (GHLs) are a Category 2 management measure and are deferred to the State following the criteria in the FMP. Catch levels established by the State must be in compliance with OFLs established in the FMP to prevent overfishing. NMFS annually determines if catch levels exceed OFLs or if stocks are overfished or are approaching an overfished status. If either of these occurs, NMFS notifies the North Pacific Fishery Management Council (Council) and the Council has one year to develop an FMP amendment to end overfishing and the rebuild the stock.

The purpose of the proposed action is to establish status determination criteria in compliance with the Magnuson-Stevens Act and the national standard guidelines. The Council reviewed this analysis in June 2007. At that time, given extensive comments by the Crab Plan Team and the SSC, the Council requested that the analysis be revised for initial review in October 2007. Accordingly the analysts have substantially revised the analysis. The analysis presents three alternatives with two different sets of options. These are summarized below:

**Alternative 1: (Status Quo)** Amendment 7 provided fixed values in the FMP for the status determination criteria: minimum stock size threshold (MSST), maximum sustainable yield (MSY), optimum yield (OY), and maximum fishing mortality threshold (MFMT) for the BSAI king and Tanner crab stocks.

**Alternative 2:** Tier system with five Tiers. The FMP amendment would specify the Tier system and a framework for annually assigning each crab stock to a Tier and for setting the OFLs (see Options 1 and 2). The Tier system with five Tiers would provide an OFL for all FMP stocks (see Options A and B).

**Alternative 3:** Tier system with six Tiers. The FMP amendment would specify the Tier system and a framework for annually assigning each crab stock to a Tier and for setting the OFLs (see Options 1 and 2). The Tier system with six Tiers would provide an OFL for stocks with sufficient catch history and, in Tier 6, set a default OFL of zero for those stocks with insufficient information from which to set an OFL, unless the SSC establishes an OFL based on the best available scientific information

The two sets of options are summarized as follows:

Options 1 and 2 provide options for the OFL setting and review process by which stocks would be annually assigned to Tier levels, the OFLs would be set, and the timing of the annual review process by the Crab Plan Team, Scientific and Statistical Committee, and Council.

**Option 1:** Council annually adopts OFLs. In June, the Council would adopt the final Tier level assignments and OFLs for each stock. OFLs would be determined based upon model estimates prior to the summer survey because the Council would adopt the OFLs before the survey.

**Option 2:** Council annually reviews OFLs. OFLs would be calculated after the survey data are available in late August. The Council would review the status of the stocks, the OFLs, and the TACs in the Fall.

Options A and B provide options for the stocks managed under the FMP, and therefore, determine the stocks for which OFLs are required.

**Option A:** This option would remove eleven stocks from the FMP for which the State is interested in the conservation of management of the stock and there is no need for additional Federal management.

**Option B:** Status quo FMP species

The analysis reviews the impacts on crab stocks, groundfish incidental catch limits for crab species, seabirds, marine mammals, threatened and endangered species and the economic impacts on participants in the crab fisheries. The executive summary of the EA is attached as Item D-3(b)(1). The full analysis was mailed to you on September 4<sup>th</sup>. A summary of errata to this analysis is attached as Item D-3(b)(2). This analysis is scheduled for initial review at this meeting.

## Crab Plan Team Report

The Crab Plan Team convened their Fall meeting from September 12-14th, 2007 at the Alaska Fisheries Science Center in Seattle, WA.

Members present included the following:

**Forrest Bowers (ADF&G-Dutch Harbor), Chair**

**Ginny Eckert (UAF/UAS), Vice-Chair**

**Diana Stram (NPFMC)**

**Doug Pengilly (ADF&G-Kodiak)**

**Gretchen Harrington (NOAA Fisheries –Juneau)**

**Wayne Donaldson(ADF&G-Kodiak)**

**Jack Turnock (NOAA Fisheries/AFSC-Seattle)**

**Shareef Siddeek (ADF&G-Juneau)**

**Herman Savikko (ADF&G-Juneau)**

**Lou Rugolo NOAA Fisheries /AFSC-Kodiak)**

**André Punt (Univ. Of Washington)**

**Bill Bechtol (UAF)**

**Bob Foy (NOAA Fisheries /AFSC-Kodiak)**

CPT member Josh Greenberg (UAF) was absent.

Members of the public (and state and agency staff) present for all or part of the meeting included: Brett Reasor, Doug Wells, Paul Duffy, John Jorgensen, Claire Armistead (NOAA), Liz Chilton (NOAA), Ivan Vining (ADF&G), James Murphy (UW/NOAA), Brian Garber-Younts (NOAA), Anne Vanderhoeven, Dick Powell, Linda Kozak, Florence Colburn, Jack Tagart, Doug Woodby (ADF&G), Jay Anderson, Leonard Herzog, Jorn Kvinge, Keith Nelson, Jeff Kaufman, Phil Hanson, Margo Posten, Arni Thomson, Dave Hambleton, Vic Scheibert, Rob Rogers, Ken Tippet, Keith Colburn, Kevin Kaldestad, Jie Zheng (ADF&G), John Boggs, Steve Hughes, Scott Goodman, Bob Lauth (NOAA), Anne Hollowed (NOAA).

### **Administration**

**Agenda:** The attached agenda was adopted for the meeting. Some items were noted to be taken out of order later in the meeting due to timing constraints but no items on the agenda were omitted.

**New membership:** The Team welcomed the addition of Bob Foy from NOAA Fisheries as a new member of the Crab Plan Team. Dr. Foy replaced Dr. Bob Otto as the director of the Kodiak RACE lab. The Team looks forward to Dr. Foy's participation.

**September 2008 meeting location:** The Team discussed the location of the September 2008 CPT meeting. Team members noted that this is difficult time period for travel, particularly for plan team members from Kodiak and Dutch Harbor. Team members requested consideration that next year's September meeting be held in Anchorage. The Team passed a motion to meet next September in Anchorage with the intent of reevaluating the 2009 meeting location.

The Team further discussed its intent to hold the Fall 2008 meeting during the week of September 15<sup>th</sup>, possibly the 16<sup>th</sup>-18<sup>th</sup>, noting that having the meeting earlier than that week results in difficulty for state and agency staff to compile requisite stock status information in time, not including the possibility of additional work under forthcoming revised overfishing definitions.

**Plan Team minutes:** The Team discussed the presentation of CPT minutes. The Team agreed that to the extent possible, the minutes should reflect all discussions that occurred during the course of the meeting, including rebuttals by assessment authors as communicated during the meeting. However, comments made outside of the meeting, although in reference to points raised during the meeting itself, should not be reflected in the minutes. The Team notes that each stock assessment should include a "Response to Comments" section whereby the assessment author may specifically address comments from the Plan Team, the SSC, and other reviewers. The May 2007 minutes were approved by the Team.

**Meeting conduct:** The Team discussed meeting conduct and the relative protocol for Plan Team discussion and public testimony. The CPT chair, Forrest Bowers noted that public testimony is generally taken to the extent possible following discussions by team members. With respect to specific direction for reviewing the overfishing definitions analysis however, he noted that comments from the public should relate solely to analytical clarifications, presentation clarity, and other issues related to the analysis itself. An opportunity for comments on the political impacts or implications of revised overfishing definitions exists for the public in conjunction with the Council meeting itself in October.

**New Business/Arctic FMP:** Diana Stram provided an overview of a proposed Council action to draft a new Arctic FMP, noting that this has implications in redefining the northern extent of the Crab FMP to the Bering Strait. There is anecdotal evidence of a Chukchi Sea red king crab fishery which would fall under the jurisdiction of the new Arctic FMP; analysts are trying to obtain information on the spatial and commercial extent of this fishery. Forrest noted that there have been exploratory, subsistence fisheries for RKC in this area, but likely very limited. Wayne Donaldson noted that in the 1990s the Nome ADF&G office issued two permits for exploratory commercial fishing, but no commercial landings were ever recorded.

The Team discussed the Council's intent to close the area to all commercial fishing. Bob Foy noted that if waters continue to warm in the Bering Sea and north, and crab stocks move further north, this would preclude fisheries from continuing into this area. The CPT requested that it be kept informed of continuing actions on the Arctic FMP and involved in any further actions taken by the Council as it relates to crab stocks in the Arctic.

### **Review of 2007 Surveys**

**NMFS 2007 survey:** Lou Rugolo provided an overview of results of the 2007 EBS trawl survey as well as changes in the annual survey abundance based estimates of stock status for the 6 annually surveyed crab stocks. He noted that EBS Tanner is above Bmsy for the second year in a row and, thus, considered to be officially rebuilt. St. Matthew blue king crab are above MSST and in a rebuilding phase rather than being considered overfished. However, for the second year in a row the cold water in the Bristol Bay region at the start of the survey appeared to limit molting of female red king crab; thus, 32 stations in the region were resampled at the end of the survey.

These 32 stations comprised the majority of the female biomass. The Team discussed the relative criteria for resampling. Lou noted that while there is no specific criteria, nearly 99% of the sampled females have undergone the molt cycle by the beginning of the survey in a normal year. In contrast, approximately 50-80% had not molted by the start of the surveys in 2006 and 2007, making the decision to resample straightforward.

Lenny Herzog commented that there seems to be spatial differences in the resampled females. Lou noted that female abundance does seem to change between sampling periods; in this instance, a higher female abundance was observed when resampling. Ginny Eckert noted that the proportion of old and very old also seems to change in the resample. Doug Pengilly asked if it is atypical to see large catches of females

and large males in nearshore stations to the northwest of Unimak. Lou responded that this has occurred in the past, and that the NMFS survey tends to get close to shore.

Pribilof red king crab showed an increase in survey biomass from 2006, but the uncertainty on the estimates remains extremely high. Pribilof Island blue king crab survey biomass remains low, with no evidence of significant recruitment again this year and extremely low catches; this stock remains overfished and well below MSST.

St. Matthew blue king crab showed a survey biomass increase of nearly 40% and remains above MSST, but is still under a rebuilding plan. It was noted that this stock remains difficult to survey due to a habitat preference for nearshore, untrawlable grounds, particularly for females. As a result, population estimates for females have low precision.

For EBS Tanner crab survey abundance, all population categories except pre recruit crab decreased from the 2006 estimates. However, the substantial increase in pre recruit males was enough to keep the stock above Bmsy for second year in a row. This stock by definition can now be considered rebuilt. Survey data indicated a large percentage of old shell males and old shell females.

For EBS snow crab abundance, there was a decline in the small female category, with all other size/sex categories within 19% of last years. The stock remains above MSST, but below Bmsy and still in a rebuilding phase.

Lou discussed the difficulty in ascertaining why female distribution is so different in leg 1 versus the resample. He showed results comparing male and female distribution patterns from one leg to the other, with the intent of finding spatial patterns where increases occur. He indicated that while catches of the large female category in the eastern most stations show large increases in the retow, analysts are still evaluating this pattern of movement, given that there are no obvious inshore/offshore patterns.

Questions were posed regarding the comparison of old shell percentages against the previous 3 years of data. Lou indicated that there are more old shells comprising the samples since 2006. A member of the public questioned to what extent the observed barnacle problem of 2005 was apparent. Liz Chilton noted that some crabs with barnacles were observed in the survey, but not in a high proportion. Forrest noted that barnacles can be found in both new shell and old shell crabs and are not a fundamental aspect of shell condition; thus, this tends to be more of a market issue than a crab shell health issue.

A member of the public questioned the observed indications of good intermediate recruitment but a lack of small males in the data. Lou noted that the survey gear tends to sample the pre recruit category more effectively than for smaller crabs.

*ADF&G Survey:* Doug Pengilly summarized the November 2006 survey for Petrel Bank red king crab. Noting that this is the first fully systematic pot survey of the Petrel Bank area, Doug compared the 2006 results to the 2001 industry survey. The 2001 survey was not statistically designed but was instead intended to provide relative indices of crab catch from known fishable locations. The 2006 effort employed a standard survey design. A comparison between results of the two surveys indicate that density declined substantially since 2001, and the geographic area where crab are located also declined.

Team members questioned to what extent the survey will be continued on a regular basis. Doug indicated there are plans to repeat the survey this fall, with the goal to see if the 2006 results are reproducible, thus long term plans to continue the survey beyond this year are dependant on results of this upcoming survey. If survey results indicate a similar population decline, then survey effort will likely be deployed elsewhere given that the area is closed to fishing and the population needs additional time for recruitment.

prior to an increase in population density. However, if a different result is indicated, the department will consider expending additional effort for near-term surveys of this area. Doug reiterated the necessity of prioritizing pot surveys by area. He indicated that a Pribilof pot survey would be a priority.

Bob Foy requested additional information on the fishery catches in the area. Doug noted that CPUE in the 2002/03 fishery was roughly 18 crabs per pot, close to the fishery threshold, but observer data showed limited recruitment. In 2003/04 the overall CPUE declined to 10crab/pot under a very short fishery and thus the fishery was closed and has remained closed.

Doug Pengilly provided an overview of the 2007 pot survey for Saint Matthew blue king crab. He noted that results are very preliminary as the survey was recently concluded. This is the 5<sup>th</sup> triennial survey in this region. He provided an overview of the survey methodology and the higher density stations closer to St. Matthew, noting that these nearshore high-density stations are included to cover areas where the NMFS trawl survey does not sample. Female crab tend to be caught nearshore and southwest of the island. The overall trend in survey catch declined beginning in 1998, with a dramatic increase since 2004. Although survey stations have changed among years due to the relative importance of certain stations, comparison of similar stations from 2004 and 2007 surveys seems to concur with NMFS trawl survey trends in suggesting an increasing population trend. Jack Turnock questioned the potential for a separate St. Matthew stock assessment. Ivan Vining indicated that he is working on modeling the pot survey data at present and a separate stock assessment for this stock may be possible in the future.

Lenny Herzog questioned if there was a possibility of resurveying the area next year. Doug commented that from a feasibility standpoint it would be difficult to staff at this point. Comments from the public indicated that if federal surveys do not provide sufficient CVs to open the fishery, then time and resources should be directed at pot survey and data efforts. Keith Colburn further noted that there is a desire to allocate additional resources for determination of stock status given the apparent increase in recent years and the desire by the public to reopen the fishery.

### ***Review model and assessment results***

*Bristol Bay red king crab:* Jie Zheng presented an approach for combining standard and resurvey data in the stock assessment model for use of area-swept estimates. Jack Turnock noted that not every year is resurveyed as this depends on temperature and its effect on crab molting. Thus, it would be reasonable to utilize what is most consistent in the rest of the data rather than arbitrarily selecting which data points to use in combining the initial and resurveyed data sets. Jie noted that temperature could explain some but not all of the variation. The resurvey always resulted in higher mature female abundance than the standard survey when the large proportion of females have not molted e.g. in 1999, 2000, 2006, 2007. Jie reiterated that there is no agreement yet on what causes these differences and adjusting for the different years is difficult.

Jie reviewed the different approaches employed by ADF&G and NMFS for use of the resurvey data. ADF&G uses the resurvey for 32 stations and the regular survey data outside of those stations. In contrast, NMFS uses male data only from the standard survey with female data averaged between the standard and resample surveys.

The assessment results indicate an increase in abundance since 2006, with the highest levels of stock abundance since 1982.

The team continued to discuss the issue of how to treat survey and resurvey data. Discussion noted that the relationship to temperature, molting, and survey availability differs. Changes in survey abundance over time may be due to survey availability issues. The important aspect is what is most consistent with the current time series.

Jack reiterated comments submitted to the team in advance by André regarding the suggestion to include F35 and B35 in the projections for the stock. Jie responded that these estimates are available and that results are similar to the EA results. Future assessments could provide these estimates.

Jack Tagart suggested comparing the use of only the standard survey in the model with using only the resurvey stations in the model and evaluating how these trends differ. Jie replied that the model estimates selectivity and thus he would need a separate survey selectivity for the resample, but he will explore that option.

*EBS Snow Crab assessment review:* Jack Turnock presented an overview of the EBS snow crab assessment update. He reviewed the SSC comments, noting that the assessment model is similar to what is employed in the EA analysis. Jack reviewed changes to the model assumptions and structure, indicating that many changes to assumptions were done in order to be consistent with the approach utilized in the EA.

Jack noted difficulty in getting the model to fit the observed increase in pot fishery CPUE in recent years, possibly due to CPUE changes from rationalization. It may be necessary to split the time series to improve the model fit to fishery CPUE.

Wayne Donaldson suggested that a universal glossary of terms for the annual SAFE report would be useful to assist the reading and understanding of various tables, figures, etc.; comprehension is complicated by the fact that different assessment authors define terms differently. Consistency in presentation between assessments would vastly improve the understanding of what is being measured and compared.

Doug Pengilly commented that in previous assessment iterations the model estimated total biomass and survey biomass were further apart than that presented in this iteration. Jack responded that this could relate to model changes in survey selectivity and parameterization.

The team noted that unlike last year, there was no single dominance of snow crab biomass this year from a single tow and, hence, survey variability was lower than the previous year. The team discussed the use of the assessment model and last year's decision to utilize the model estimate (vs. area-swept estimate) as the best estimate of population biomass in 2006 due to concerns with the variability in the area-swept estimate due to a single large tow in 2006, coupled with improved model formulation. Discussion focused on the fact that the model and area-swept estimates are similar this year and that the model appears to be tracking closer to the observed estimates in 2007 of >101mm males while still providing a poor fit to the 2006 observed data. Lou Rugolo noted that the model seems more robust to trends in survey biomass. Bob Foy commented that the model seems to fit the data well and provides a buffer against the variability inherent in the survey.

The team expressed consensus that the model would provide an excellent tool for buffering against survey variability and recommends the model estimate of population biomass as the best estimate. The team noted that while this year we are not faced with the same issues of survey variability as in 2006, it still seems appropriate to use the model as best representing the stock trend. The team stated its intent to revisit this annually based upon model performance and survey variability. The team noted that model formulation is to be annually addressed in May. Team members also noted that we should annually evaluate the comparison of model results with the area-swept estimates, but the onus should be on the assessment author to evaluate large-scale differences.



Jack Tagart commented that it would be also be useful to include a retrospective analysis of survey estimates from the previous year with the model estimate from the previous year. The team discussed the change in selectivity resulting from the net change pre-1982, 1982-88, followed by the area-change in the surveyed region in 1989 when an area to the north was included.

### **Crab Economic Review**

Brian Garber-Younts presented an overview of the current status of the Economic Data Review (EDR), including the information that is included in the EDR and the data years collected thus far. Brian reviewed the necessary level of aggregation for confidentiality of economic data and that the 'rule of 3' aggregate may be insufficient. Thus, it may be necessary to move to a greater level of aggregation (e.g. rule of 5) to better protect the data, although this aggregation standard would only apply to the crab EDR data. The agency is currently reviewing and updating its standard for data reporting and confidentiality.

The team questioned how this related to issues of data quality requirements under the DQA. Brian noted that any release is as a synthesized product and not raw data. Brian reviewed the recent validation audit and discussed the validity issues with using annual days at sea and total crew share payment data. Results indicated that annual "days at sea" seems to be biased down for historical data. A review of metadata is proposed for the SSC/Council to meet DQA requirements for validity. Herman Savikko noted that the EDR is intended to assess how well the program is working compared to the intent.

Brian noted that the intent was for the data to be available for use in annual and 18 month review reports, but this has not yet been possible due to data validation requirements. He noted that, thus far, the majority of the data appears to be well supported although some specific issues are not well supported. The SSC will need to be the peer review body for the accuracy of all of these data and must therefore be able to have sufficient time to review all of the reports and specifics of the inputs to the datasets and problems with the accuracy of specific variables.

Gretchen Harrington questioned the usefulness of the blind EDR data for conducting the economic analysis required under applicable Federal law, and specifically whether it can be used in the estimation of small entities. Brian responded that waivers to blind data may necessary to use the data for the economic analysis required under the RFA. Ron Felthoven will be presenting a discussion paper on comprehensive economic data collection to the Council in October.

Lou Rugolo noted that there is a lack of economic data in analytical modeling for impacts of FMP changes and asked if anyone in the economic group at AFSC is planning on doing economic analysis of various issues? Brian replied that staff economists plan to do these analyses but have generally been constrained by the absence of cost information and the difficulty in assessing cost impacts.

The Team decided to agenda time at the May meeting for further discussion of overarching economic questions and studies and plans for the future. The team requested the participation of AFSC economists, and possibly Council economists, in this larger discussion to help the team structure the economic SAFE chapter, as well as to allow the team the opportunity to discuss and provide input to economists on plans for future analyses and studies.

### **SAFE Report**

The Team reviewed assignments for the Crab SAFE report and timing for compilation of the report. The team reviewed the executive summary and chose to delete Table 4 as being largely uninformative. Further revisions to the executive summary were made individually by contributors. The Team then met in a work session to compile the SAFE report for the remainder of the day. The Team noted their intent to revisit SAFE report issues on Friday.

## Review of draft Crab Overfishing Definitions Assessment

The Team spent considerable time reviewing the revised initial review draft of amendment 24 EA. The Team observed that this was a much improved version compared to the previous versions. Comments represented here are organized according to general comments on the document and chapter by chapter suggestions. Following the comprehensive review of the analysis, the team then discussed implementation issues and commented on their preferred alternative. Discussion of these latter issues is included following the specific review comments on the analysis itself. Specific editorial comments have been internally noted and are not repeated within this report.

### General comments on the document:

- The list of acronyms should be expanded to include a more explicit glossary of terms
- Remove all statements regarding the discussion of fishing mortality as a benchmark against which comparison of overfishing is made
- Check for consistency in how the term “biomass” is defined and used throughout document.
- Request that all figures, tables, and sections are labeled correctly and included in the table of contents.
- Formatting issues to be resolved in next version including table headers and labels.
- Consistency is needed in labeling of stocks (WAI, western Aleutians,...)
- Too much use of subjective language: remove words such as “worst” and “best”, unless specific criteria are included.
- Suggestion that maps be added to each chapter (or overall) which show areas that are being discussed and or provides context to text.
- Remove ‘death catch’ references
- Page 77: 5.2.2 how is  $F_{35}$  justified when  $F_x$  ranged from  $F_{38}$  to  $F_{39}$ ? Why was 35 used and by what justification? If the justification is that the  $F_{MSY}$  proxy is  $F_{33}$  for RKC and  $F_{38} - F_{39}$  for snow crab then average of the two is roughly  $F_{35}$ . Need to move this up to general methodology section and provide additional justification for the common metric single value approach. (noting both the concept and the value chosen).

### Chapter 1: Introduction/Purpose and Need

- Page 10: Some of the statements implying requirements under the National Guidelines should be replaced with requirement under BSAI FMP.

### Chapter 2: Description of Alternatives

- Need to clarify that the timing process as described in table 2-2 only covers the annually surveyed stocks.
- Need to add explicit information that the current timeframe under alternative 1 allows for a lengthy time to evaluate the non-surveyed stocks at present (i.e. GHs are established throughout the year) while the proposed changes to the process would potentially impact this. *Note that this issue is discussed further under the discussion of implementation issues.*
- Page 11: need to be consistent in notation and definition of beta (should be a ratio not a biomass)
- The control rule should be better explained for clarity: possibly add a flow chart describing process (if Beta = X then...), move figure 2-1 forward in description section, cross reference to discussion of values in 3.2.5.2.
- Footnote to be added re MMB on page 11
- Page 12: strike sentence “Biomass...”, add “fertilized egg production” in place of “biomass” in last sentence 1<sup>st</sup> paragraph (and through the document as appropriate).
- Tier 4 page 12: clarify statement that simulation modeling borrows information [from other stocks] to estimate  $\gamma$  third sentence. Revise sentence to clarify this.
- Figure 2-1: Y axis needs to be modified to be  $F_{OFL}/F_{MSY}$  or  $F_{MSY\_proxy}$

- Clarify in paragraph 3 (section 2.3.2) that there is no retention; suggestion to add additional language here to make it explicitly clear that OFL is set to a default value of 0 when stock status is unknown (note not to imply that information indicated the stocks is in trouble and needs extreme protection).
- Discussion of 1<sup>st</sup> sentence second paragraph (section 2.3.2): Add information that additional effort would need to be expended to establish a non-zero OFL for these stocks based on best available information.
- Table 2-6: suggestion to annotate table to indicate where stock status is in relation to  $B_{msy}$  (\* for above  $B_{msy}$  or some other indication)
- Need significant digits consistency (3 significant places)
- Table 2-7: comments on information presentation and placement, and suggestions for revised based on draft “super table” presented by Siddeek
  - Split the table by Tier levels: e.g. (a) tier 3-4 and (b) 5-6 stocks
  - For tiers 3/4 include the ratio of  $B/B_{msy}$
  - For tiers 5/6 add information for years utilized and delete superfluous columns. Footnote stocks where no years are available.
  - Note need total catch for EBS Tanner crab to be included in the table and footnote Tier determination appropriately (i.e., for the EBS Tanner stock analysis of both Tiers 3 and 4 are presented but the Table assumes Tier 4).
  - Note that it has not been determined how total catch OFL will be determined for stocks by Tier, thought it was based on availability of reliable bycatch information not on tier level. Add this information prior to Table 2-7
  - Add information prior to Table 2-7 to explain what is included in total catch, retained catch, etc (explained later in document, but not preceding this table)

Jie Zheng commented about the inapplicability of the inclusion of female bycatch in estimates for Bristol Bay red king crab (BBRKC). The team discussed the fact that these estimates take on increased importance when the OFL is for total catch. The team discussed whether or not the total catch should include females, noting that this is a more of a policy decision. The fits to female bycatch in BBRKC model are not good. Further discussion concerned the fact that aspects such as the relative fit to female discard catch is a stock assessment issue that should be annually reviewed and how bycatch is modeled perhaps revised. This was noted as another reason why incorporation of a buffer would be appropriate in order to avoid inadvertently overfishing.

Figure 2-1: The team discussed that while directed fishing may go to zero when  $B/B_{MSY} < \beta$ , this does not imply that catch equals zero when  $B/B_{MSY}$  given the incidental catch in other fisheries. Currently  $F_{OFL}$  as listed is only for the directed fishery. Siddeek clarified that in the simulations the  $F_{OFL}$  estimated the directed fishery catch and the total catch (i.e., retained plus bycatch removal) simultaneously. André commented that currently there are systematic patterns in the residuals about the fits to early bycatch estimates for non-directed sources in the assessments. The impact of such residual patterns becomes more important as stock biomass declines and bycatch is a large fraction of total removals. The team discussed how mortality is specified in the simulation and assessment models so that even when fishing mortality for the directed fishery is zero there is still fishing mortality from discards due to trawl bycatch. The team suggested incorporating a model flow chart to indicate how the model approximates all aspects of catch.

Doug Pengilly volunteered to put together a clarifying figure and text (text box, definitions) to complement the existing Tier system and control rule descriptions.

#### Section 2.5

- add additional information in this section regarding comments on the non-surveyed stocks.

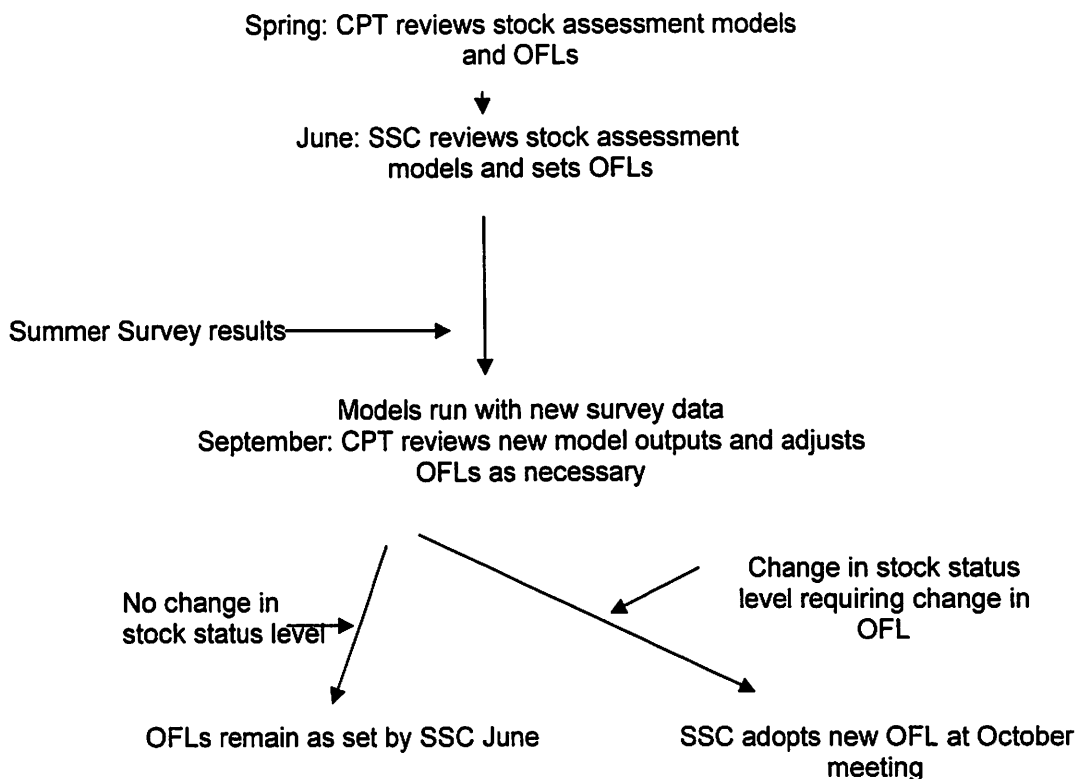
- Section 2.5.4: need to add information regarding previous discussion of stock status determination and the potential fishery constraints due to a stock status determination based on old data
- Tier 5 retained catch information: discussion of insufficient data available to have total catch OFL, but retained catch only used in the current analysis. Bycatch information is available. Need to revise page 29 language so that the process of Tier 5 determination does not force a retained catch OFL rather than “for purposes of analysis” or “at present”...
- Tables 2-11 and 2-12: if possible, add information (figures and text) to reorganize this section and clarify the purpose of its inclusion. If staff timing does not allow for revisions of this section, the tables and text should be stripped as they are not informing the analysis in the manner intended (perhaps included as an appendix).

The Team discussed Options 1 and 2 and then were provided a “modified option 1” for potential incorporation in the analysis as an option. The team discussed the differences between Options 1 and 2 and the relative pros and cons of each. Both appear to require similar analytical workloads. There was a suggestion that Option 2 did not provide for adequate peer review by the team and SSC. This needs clarification by the SSC as one purpose of creating Option 2 was to specifically provide for a review of the models and assessments on an annual basis. The objectives of peer review seem to be twofold: (1) assessment model review and (2) review of the exact OFL numbers.

Option 1 is clearly problematic in that it does not allow for a change in OFL should the new survey information indicate a potential change in stock status. The stock status determination under Option 1 should be moved to the spring to be internally consistent (the same assessment is used for stock status and OLF determination). Further text should be added to the impact of Option 1 discussion regarding the potential to constrain the ability to open a fishery (which might, under a different schedule for timing, be opened).

Modified Option 1 discussion: the following figure was discussed as a schematic for a modification to Option 1 to provide for SSC peer review of OFLs while allowing for flexibility in modifying the OFL between June and September.

**Option 1 - modified  
Determination of OFL for upcoming fishing season**



The Team discussed the pros and cons of the modified option, particularly the goal of allowing flexibility in the June establishment of OFLs to accommodate change in stock status after survey data are available. A suggestion was made to modify the definition of “a change stock stats” (which would lead to a new OFL) to be a “change in stock status level (e.g. a, b, c) by Tier”. However, discussion noted many problems in the potential implementation of this option. Option 1, as modified, would effectively imply that the SSC approves provisional OFLs in the spring. One particular issue was noted with respect to the problem with running the model to obtain a biomass estimate for TAC setting and stock status determination without estimating a new OFL. Once an OFL is estimated within the model at that time, it becomes the best available science. CPT does not recommend the inclusion of modified Option 1 for this reason. While this was suggested as a means of amending the OFL after June, this intent appears to be covered under Option 2 and Option 1 seems to create more problems than it solves.

**Chapter 3 Methodology:**

- 3.1: Re title the section so that it is consistent with the previously use terms ( “fertilized egg production” or “effective spawning biomass”). There is a need for consistency in how “biomass” is described throughout the document.
- Question regarding  $B < 20.25 B_{MSY}$ . Was fishery closed or only when below  $0.25 B_{MSY}$ ? (the is only a concern for the analyses which vary  $\alpha$  and  $\beta$ ).

The team commends the authors on making the suggested changes to the methodology section from the previous draft. It was noted that it would be good to cross-reference these tables with the plots in the later sections. André noted that there is an inconsistency between the use of  $h=0.68$  in the simulations and the values for Beverton-Holt steepness in table Table 3-4. It was explained that  $h=0.68$  accounted for the Ricker as well as the Beverton-Holt results. Additional text making the relationship between  $h=0.68$  and

the values in Table 3-4 is therefore needed. Questions were also posed regarding why the steepness parameter was adjusted from the May version of analysis.

- Add justification why the value of steepness in the tables in Section 3 are considered unreliable, but are nevertheless used in the simulation analyses.
- Need more information to justify lower end of range indicated for  $h$  range (the lower end of the range in the simulation is very close to the best estimates, but this is not the case for the upper end of the range on which the simulations). Jie Zheng commented that the range was selected based on 2005 data while Lou Rugolo noted that much discussion focused on these issues during the workgroup meetings. However, since documentation on the WG meetings is lacking as a reference more explanation is necessary here.
- 3.2.5.2: Move Figure 5-3 into methodology section and revise with panels that show each control rule combination
- 3.2.5.3 gamma The 3rd sentence from the end of the section indicates that this was “somewhat high” so a lower number was chosen. However, this choice is a policy call and might not represent the best available science. It was clarified that 3.0 was used not 3.5. Further investigation using  $\gamma = 3.5$  is desirable although it was emphasized that this is a highly uncertain value, so this aspect to the assessment should not be lost in re-analysis.
- 3.4 Tabulation of the annual catches: Note that the intent is to add additional information per groundfish tabulations based on estimation of the weight of groundfish and scallop bycatch (a section is needed on scallop bycatch). Further discussion of the use of proxies for moving from bycatch in numbers (as recorded in the SAFE reports) to bycatch in weight is needed. This can be achieved as noted in the analyses, but this would need to be revisited when this is done annually.

#### Chapter 4: red king crab

- 4.3.2 need to clarify last sentence on page 55 (or move it forward to description of alt 1) as it becomes confusing whether this is to reflect realities of management or the analytical framework only.
- Page 56: Suggestion to shade table values based on some threshold of change (e.g. above 1.2 or below 0.8) to show which Tier level assumptions have the greatest impact on the final results.
- Basing the summary of the simulation analyses on relative values was an improvement over listing the absolute values. Suggestion to re-scale Tables 4-3 and 4-4 according to the  $\alpha = 0$ ,  $\beta = 0$ .
- change Norton Sound  $B_{MMB}$  from 2.87 to 4.88 on page 68
- Page 70 Dutch Harbor RKC: delete reference that “any future fishery” as it is not clear that any future fishery would be exclusively in state waters.

#### Chapter 5: snow crab

- Page 73: Need clarification of how the percentage of old shell legal males used was determined and what value was utilized for the simulation
- Discussion of units: need to have tables in similar units - Table 5-1 should be revised to show pounds not 1,000 tons.
- 5.2.3: Clarify that comparison of  $F_{MSY}$  control rule here is the Tier 2 CR
- As per previous discussion, for clarity Figure 5-3 should to be replaced with multiple figures showing each individual curve.
- The analysis should more clearly state the rationale for the recommended  $\alpha$  and  $\beta$  values
- 5.2.4.2: Question on results indicated at top of page 80 regarding 50% discard rates. It should be clarified that these results are not directly comparable given the modification necessary to the model (and parameters) in order to re-specify discard mortality.
- First sentence needs to delete its reference to years and replace with “of the Tier 2 result” given the change in tabular presentation whereby results are scaled to Tier 2 results and presented accordingly.

- In Tables 5-4 through 5-9 the  $F_{35\%}$  and  $F_{40\%}$  need to be updated given the results of the revised simulations (depending upon to what extent there is a change in the results).
- Table 5-2 Need to add to caption that Tier 2 control rule is for  $F_{MSY}$ . Similar comments for scaling this relative to 0,0 column and shading major results accordingly for clarity.
- Need consistency in Tier 5 simulation approaches: for snow crab the Tier 5 catch is 0.5 MSY, whereas for BBRKC Tier 5 it is the average catch over a specified time period. It is inappropriate to use a constant catch of 0.5 MSY as this would not be known in practice. The Tier 5 results for snow crab should be redone to use the average catch over a specified time period for consistency with approach used for RKC and the intent of Tier 5.
- Page 89/90: Table 5-11 text has not been revised in accordance with the revised table.

Chapter 6: Tanner crab:

- Second paragraph page 93: need additional information to describe what is going on for the Tier 2 simulations and that the parameterization comes from analysis of the Bristol Bay portion of the stock applied to entire population for Tier 2 and 3 analyses. This extrapolation impacts both the simulation itself as well as the implementation of Tiers 2 and 3.
- 6.2.1 Maturity probabilities for Tanner crab. It is unclear why this section was included here: move to Appendix C.
- 6.2.2.2 Following questions, Siddeek clarified that 1.43 is the  $\gamma$  value for the Tier 4 estimate. Further explanation is necessary to clarify that the middle of the range rather than the best estimate is utilized here. Siddeek indicated that similar steepness values could be used for both Tier 3 and 4 (e.g. either 1.43 or 2.03) and he will re-run for consistency with 1.43. The team endorsed this proposal.
- The reference to “modified  $F_{MSY}$ ” needs explanation. Siddeek note that the selectivity of old shell and new shell with old shell was not appropriate so he utilized the newshell selectivity for both shell ages. The team noted that the methodology appears fine but further explanation needs to be provided.
- Recommendation to run analyses for Tanner crab based on a Tier 5 control rule to allow further inference about how this rule performance for less well known stocks.
- Reference to “rebuilding times were shorter” is a misnomer and should be deleted since the stock is initially at  $B_{MSY}$  anyway.
- Last sentence (page 103) should clarify that the  $F=0$  scenario provides trawl fishery yields. This description should be provided in Chapter 3 methodology as it applies to all simulation studies for Tier 3 stocks.
- Table 6-5: delete the “rebuilding” row for scenarios that begin at  $B_{MSY}$ , the results are, by definition, uninformative.
- Question regarding the bycatch as listed in Table 6-11 (yield under  $F=0$  implies that bycatch high). The authors noted that bycatch in this fishery is high, which causes concern for setting a retained catch only OFL.
- 6.4 EAI Tanner Strike 75% OFL comment page 115.
- Note that a BOF proposal to establish a formal harvest strategy for this stock would be based on the informal harvest strategy currently utilized to set the GHL.

Chapter 7: BKC

- Discussion of potential change in F rate due to proposed biological parameters. This paragraph needs further editing.

Chapter 8 GKC

The Team discussed the years utilized for the OFL for GKC and, while not hard-wired why the years from 2000-2005 were excluded. Jie responded that CPUE was dropping in years prior to 1996 CPUE. Note that further clarification and justification should be added on the years used in the analysis; further discussion will also occur at the time of implementation.

Chapter 9: other crab stocks

- Table 9-2 added for retained catch. In response to questioning, it was clarified that catch data for years prior to 1992 may be available for AI scarlet king crab, but not for the other stocks. Note that sentence should be added to indicate that the values in table 9-2 represent known catch data for these stocks.
- Need to revise/check tables 9-1 and 9-2 for consistency.

Chapter 10:PSC limits

- 10.2 Need to use terminology consistent with the remainder of the draft for ESB.
- Suggestion to modify wording so that directed crab fisheries are not mandated to be closed for exceeding an OFL.

The team discussed that the forthcoming accountability Measures (AMs) under MSRA create potential issues whereby it might be necessary to account for overages in OFL determination for the following year. The team emphasized that other fisheries that take crab bycatch should also bear the burden of conservation concerns. Note that if impacts are perceived these might be brought to Council attention. This contrasts somewhat with current practices in which changes in the OFLs would only affect the crab fisheries.

Chapter 11: Economic Effects

The team discussed the revision of the economic analysis and noted that Table 11-11 represents the best estimate of impacts at this time for those stocks. Additional information is needed regarding the comparison and rationale for this comparison.

- The OFL for EAI Tanner is incorrect and needs to be revised.
- PI GKC: paragraph on avoiding overfishing here should be stuck from all stock specific sections and move to intro of impacts on 11.7
- Page 157. Amend statement to read "...equal to or below OFL"

This completed the technical review portion of the meeting and the team then discussed issues with implementation and the selection of a preferred alternative.

*Implementation Discussion:*

The team noted that any new OFL definitions would need to be implemented by June 2008 to be in place for the 2008/2009 crab fishing year. This would only be possible if the Council took final action in December. The Team reiterated the need for more rigorous review of the stock assessments themselves prior to the adoption of their results for use in calculation of OFL, noting that, for example, issues such as residual patterns should be reexamined.

Furthermore, there is an explicit need to have a more rigorous review of models annually, which would, for example, allow time to delve into the specifics of model formulation. This could be via an internal workgroup meeting, with the results then presented to the CPT and discussed at the May meeting. Another option would be to choose a single model each year for in-depth review at the CPT meeting and move forward with a review of other models in subsequent years.

Staffing issues that have yet to be resolved with respect to implementation of the new overfishing definitions. While annual status determination for all stocks is the responsibility of NMFS, it has yet to be determined who will do the actual stock assessment work on an annual basis for each stock. Assessments for BBRKC, Tanner crab, and AIGKC are currently authored by the State. Staff assessment authors would need to be tasked for annual OFL determinations, likely placing an additional workload on assessment authors in the spring for the proposed review process. The Team discussed the fact that neither State nor Federal staffing have this added work burden built into existing job descriptions. Additional work is also being added to catch accounting staff (NMFS) to annually compile observer data in the crab fishing year for use in compiling total catch information to compare against the OFL. Additionally, all of the applicable information generated would need to be tabulated, described, and



presented to the SSC and Council in June and October (Option 1 or 2 would prescribe which specific information would be presented, however, both options would require this step). The CPT recommends that NMFS and the State have a discussion of implementation needs and the divisions of responsibilities for annually assessing OFLs.

Additional implementation issues exist for Tiers 5 and 6 stocks. Annual review and documentation of an OFL determination including justification and rationale for the choice of years must be provided. Guidelines are needed regarding the documentation and information needs for all stocks on an annual basis. The availability of adequate information may also impact the timeliness of implementation. Additional consideration should also be given to what the review process itself will entail (by the CPT and SSC).

The Team discussed possibilities for delayed implementation or phased-in implementation for some stocks. For major stocks with existing assessments, much of the groundwork to annually establish the OFLs has been accomplished. However, additional information and work is likely needed for Tiers 5 and 6 stocks. A concern is that the amendment process is implemented prior to these issues being adequately resolved. The CPT suggests that consideration be given to adding specific implementation options to the existing suite of alternatives to address these issues.

The Team discussed several options for addressing the implementation issues. The team has no preference for any one option over the other, but is rather proposing several that might be considered by the Council to address this problem.

These options are:

1. Implement new overfishing definitions for all stocks as soon as possible.
2. Delay implementation for a set time period (to be determined by Council)
3. Phase-in implementation by stock
4. Delay final action by Council for one year to evaluate ability to work within the process

The Team discussed the selection of a preferred alternative. The Team did not reach consensus on the recommendation to remove some stocks from the FMP under option A although some members felt strongly individually about the choice of this option. The Team discussed to what extent there was an additional conservation concern to be addressed by removal of these stocks from the FMP (which then by default confers full management authority to the State), noting that normally species are removed from the Federal FMP when the presumption is that improved management would be conveyed through the State (an example includes recent action to remove dark rockfish from groundfish FMPs due to the potential for overfishing in the larger pelagic shelf complex under federal management). The Team was unable to determine an appropriate rationale based on conservation of the stocks and notes that the primary rationale for removal is to reduce the administrative burden on the federal government in managing these stocks under the FMP whereby OFLs (and soon ACLs and AMs) will need to be established. While the Team noted that this might be adequate rationale for removal of the stocks, the Team felt that such a choice was primarily a policy. The Team notes that management of these stocks will not differ greatly under either option.

The Team felt that in the future, documents submitted for CPT review need to be more carefully edited for typographical errors prior to distribution. This is needed because the present review process (as performed for this EA) has been bogged down by typographical errors and lack of standardization. Perhaps more thorough internal review (by individual agencies) needs to occur prior to CPT distribution in order to minimize editorial review comments and to focus the review on substantive issues. This will become increasingly important as the CPT annually reviews assessments on limited timeframes.

*Discussion of alternatives:*

The CPT recommends Alternative 3, the six-tier system, noting that if the Council decides to select Option A to remove stocks then the team would recommend Alternative 2, the five-tier system, noting that without the Option A stocks there would be no need for a Tier 6.

*Timing options:*

The Team notes the following issues need to be considered in selecting a timing option: a) peer review process, b) use of best available data, c) implications of using the next recent data, and d) the practical timing problems inherent with OFLs determined in the fall.

From a purely scientific standpoint, the Team notes that a preference of using the most recent data, but understands that logistical issues may preclude this. The Team discussed the possibility of a modified option 1 as a compromised intended to address some of the timing issues, but this approach was not deemed feasible. Given the volatility of crab stocks, the Team recognizes that timing and data availability issues are particularly important. The Team recommends Option 2 as a preferred alternative, understanding that there are timing and implementation issues to be addressed with respect to this option. The Team further requests clarification on the issues related to peer review under this option (as opposed to peer review under Option 1). Implementation should also consider the issues raised with respect to additional data analysis for analysts involved as well as the additional burden of substantially increased review time required by the CPT in conjunction with these new alternatives.

***Bering Sea Fishery Research Foundation (BSFRF) Presentation***

Steve Hughes and Scott Goodman presented an overview presentation of preliminary results from the Foundation's 2007 survey for BBRKC. Data were collected primarily for red king crab, but were also recorded for other crab species during the survey. In addition, very small crabs (~ the size of a quarter) were caught in survey nets. A summary was provided of the operational aspects of the survey and preliminary biological results were compared with BSFRF analysis of NMFS survey results from the same season and a similar survey area; the surveys occurred within approximately 3 weeks of each other, although the foundation survey extends further inshore than the NMFS survey. The BSFRF survey found RKC to be distributed further south than in previous years. Results from geostatistical analyses will be available later in the year. Future plans would ideally include a snow crab survey (both a pilot survey over a limited area and a full scale resource assessment survey) and a follow up RKC survey, although the timing of these proposed studies is as yet undecided.

***Board of Fisheries (BOF) proposals***

Wayne Donaldson provided the team with an overview of king and Tanner crab proposals being considered at the upcoming Board of Fisheries meeting. Gretchen Harrington reminded the team that one function of the CPT is to categorize BOF proposals according to FMP categories. Wayne provided an overview of each proposal and the team discussed and reached consensus on the FMP category for each. The proposal numbers and the team's recommended FMP categories are listed below:

- 369: category 3 state observer requirements
- 370/371 category 3 vessel tank inspections
- 372: category 2 registration areas
- 373: category 3 gear modifications plus cat 2 registration areas
- 374: category 3 gear placement and removal
- 375: category 3 gear placement and removal
- 376/377: category 2 pot limits
- 378/379: category 2 pot limits and category 3 gear modifications
- 380: category 2 GHLL, inseason adjustments and closed waters.

For proposal 380, there was some discussion of what this would entail if approved by the BOF. It was noted that the CPT's role in commenting on BOF proposals is limited to comment to the Council

on the utility of proposals, not to the BOF on the potential impacts of implementation. There was discussion, however, that in developing a harvest strategy for Pribilof Island red king crab, the BOF should be apprised of the stock status of both Pribilof red and blue king crab stocks.

- 381: category 2 GHJ.

The Team noted that this action still needs to comply with the rebuilding plan for this stock. This proposal might be a topic for the next joint BOF/Council meeting.

- 382: category 3 gear modifications
- 383: category 2 GHJ
- 384: category 3 gear placement and removal
- 385: category 2 GHJ
- 386: category 2 registration areas
- 387: category 2 fishing seasons
- 388: category 2 fishing seasons
- 389: category 2 minimum size limits
- 390: category 3 gear modifications
- 391: category 3 gear modifications

***Other issues/new business:***

*Crab Rationalization Program (Program) changes:* Gretchen Harrington updated the team on possible Program changes to come before the Council in October. These include the following:

- Initial review to remove the requirement that C-shares be subject to regional delivery requirements, the A/B split, and arbitration;
- Initial Review of changes to allow custom processing for north region snow crab and Bristol Bay red king crab, and minor species (St. Matthews blue king crab, Pribilof Islands red and blue king crabs, and Aleutian Islands golden king crab) so that processors could consolidate fishing operations at a single facility to achieve better returns;
- Initial Review of a provision to allow post delivery transfers to "settle up" IFQ accounts after delivery (note this is also being evaluated for Amendment 80 fisheries, rockfish, and other CDQ fisheries).

These analysis documents will be available on the web prior to the Council meeting. The CPT was concerned that the post deliver transfer issue could have biological implications in that there is the potential for the TAC to be exceeded while the other two issues are primarily economic. However, it was noted that the post delivery transfer provision would not change the existing overage provisions and that the fleet would still be subject to the same, or greater, penalties for overages, thereby reducing the potential for exceeding the TAC and any potential biological implications. The Council might also consider additional Program changes during the three year review of the Program.

The CPT has been on the periphery Program issues, but could be involved in reviewing analysis documents. Team members noted that they would like to hear periodic updates of pending actions to allow the team to decide if there is a need for further CPT participation. The team also felt that it would be useful to understand more about the Program and process (members have different levels of familiarity with the program) and expressed an interest in receiving copies of the reports. The team felt the May meeting would be an appropriate time to receive additional information on the Program. At its May meeting, the team plans on discussing economic issues, including crab EDR issues and the economic section of the SAFE. The team requested an overview presentation (a primer) on the Program itself, as well as additional information on proposed changes. Additionally, NMFS intends to start releasing the Program annual report prior to the September CPT meeting, which could be reviewed by the team at that time.

**Habitat:** Herman Savikko provided an overview of habitat protection changes resulting from Council actions in June. Actions by the Council are intended to freeze the footprint of trawl effort in the Bering Sea, establish gear modification requirements to keep gear off of the bottom, and to establish the Northern Bering Sea Research Area (NBSRA) (north of St Matthew) which will be closed to bottom trawling until additional research is completed evaluating experimental gear. Additional protection measures may also be considered. The CPT requests additional information on the development of the research area and the appropriate means to provide the Team's input into the development process.

***AI FEP overview***

Forrest Bowers provided an overview of the AI FEP that has been developed and adopted by the Council. He noted that this is a policy and planning document without any implementing regulations. He provided an overview of the background behind the development of the document and an overview of the general content of the FEP. The members requested clarification on the list of indicators, and what will be done with these. Forrest thought they will likely need to be evaluated annually and updated periodically. The team discussed the food web information and the relative utility of the usage of these models. The Team continues to support the use of the models as a tool for understanding and highlighting data gaps, but expressed caution at any expanded application noting that stomach data is limited in years and spatial extent.

The Team discussed the utility of incorporating expanded ecosystem information in the Crab SAFE report. The Team intends to work with Jennifer Boldt to summarize some of this information in the Crab SAFE as is currently done in the groundfish SAFE report introductions. The Team agreed to include time during the May PLAN meeting to discuss how to incorporate ecosystem information into the Crab SAFE and how to identify who is responsible for this.

The meeting adjourned at 4:30pm.

**NPFMC Crab Plan Team meeting**

**September 12-14, 2007**

**AFSC Observer Training Room, Seattle, WA**

**Draft Agenda revised 9/4/07**

**September 12**

9:00 am -12:00 pm:

**Administration**

- Introductions,
- Additions to agenda and approval of agenda,
- Discussion of September 2008 meeting location
- Review and approval of May 2007 minutes
- Discussion of meeting conduct, protocol and public testimony
- New business: overview of new Arctic FMP in relation to Crab FMP

**Review 2007 survey results:**

- NMFS survey results;
- ADF&G survey results;
- Public comments/questions

12:00 pm – 1:00 pm

**Lunch break**

1:00 pm - 5:00 pm:

**Review model and assessment results**

- Bristol Bay red king crab; [material to be posted on-line 9/7/07]
- Bering Sea snow crab; [material to be posted on-line 9/7/07]
- Public comments/questions

**Update on Economic review and data analysis of Crab Rationalization Program**

**Stock assessment and fishery evaluation report**

- Review status of stocks relative to overfishing and current harvest strategies;
- State annual management report
- Review and revise Executive Summary and compile SAFE
- Fishery performance/harvest relative to GHL and TAC

## **September 13**

8:00 am -12:00 pm:

### **Review of draft Crab Overfishing Definitions Assessment (time certain):**

- Review workgroup progress on draft amendment based on CPT and SSC recommendations from May and June
- Finalize FMP amendment
- Considerations for October council meeting
- Public comments/questions

12:00 – 1:00

### **Lunch break**

1:00 pm - 5:00 pm:

**Continue review of draft Crab Overfishing Definitions Assessment**

## **September 14**

8:00 am -12:00 pm:

**Continue review of draft Crab Overfishing Definitions Assessment**

12:00 pm – 1:00 pm

### **Lunch break**

1:00 pm - 5:00 pm:

**Bering Sea Fishery Research Foundation presentation**

**Continue and finalize work on SAFE**

**Review Board of Fisheries proposals for March 2008 meeting**

**AI FEP overview**

### **Other issues/new business**

- **Update on new Bering Sea Habitat measures by NPFMC**
- **Changes under consideration in the Crab Rationalization Program**

**Adjourn - (5:00 pm)**

CPT members please schedule your travel so that you are able to attend the entire meeting.

## EXECUTIVE SUMMARY

The king and Tanner crab fisheries in the Exclusive Economic Zone (3 to 200 miles offshore) of the Bering Sea and Aleutian Islands (BSAI) off Alaska are managed under the Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP). The FMP establishes a State/Federal cooperative management regime that defers much of the management of the BSAI crab fisheries to the State of Alaska with Federal oversight using the following three categories of management measures:

1. Those that are fixed in the FMP and require an FMP amendment to change;
2. Those that are framework-type measures that the State can change following criteria set out in the FMP; and
3. Those measures that are neither rigidly specified nor frameworked in the FMP and are at the discretion of the State.

The proposed action is to establish overfishing levels (OFLs) that provide objective and measurable criteria for identifying when a BSAI crab fishery is overfished or when overfishing is occurring, in compliance with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Section 303(a)(10) of the Magnuson-Stevens Act requires that FMPs specify objective and measurable criteria for identifying when the fishery is overfished (with an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of the stock). The OFLs are a Category 1 measure in the FMP. As such, revisions to the OFLs require an FMP amendment.

Determinations of total allowable catches (TACs) and guideline harvest levels (GHLs) are a Category 2 management measure and are deferred to the State following the criteria in the FMP. Catch levels established by the State must be in compliance with OFLs established in the FMP to prevent overfishing. As described in Chapter 2, NMFS annually determines if total catch levels exceed OFLs or if stocks are overfished or are approaching an overfished condition. If either of these occurs, NMFS notifies the North Pacific Fishery Management Council (Council) and the Council must immediately end overfishing and develop an FMP amendment to rebuild the stock within two years.

### ***Purpose and Need***

Chapter 1 describes the proposed action and its purpose and need. The purpose of the proposed action is to establish status determination criteria in compliance with the Magnuson-Stevens Act and the national standard guidelines. The current OFLs were implemented under Amendment 7 to the FMP in 1998. In the environmental assessment (EA) for that amendment, the Crab Plan Team stated its intent to review the definitions after 5 years or when environmental conditions have changed such that revising the definitions may be necessary.

The need for the proposed action is explained in the Crab Plan Team's problem statement:

*New overfishing definitions are necessary to reflect current scientific information and accomplish the following:*

- *Provide an FMP framework for definition values to facilitate use of the best available scientific information as it evolves.*
- *Provide a new tier system that accommodates varying levels of uncertainty of information and takes advantage of alternative biological reference points.*

- Define the status determination criteria and their application to the appropriate component of the population.

## Alternatives

Chapter 2 describes and compares the three alternatives and two sets of options. The alternatives and option analyzed in this EA are consistent with the Magnuson-Stevens Act and the national standard guidelines. Chapter 2 also provides (1) a comparison of the status determination criteria under each alternative, (2) a comparison of the two options for the OFL setting and review process under Options 1 and 2, and (3) a discussion of alternatives considered and eliminated from detailed study.

**Table EX-1 Alternatives and Options analyzed in this Environmental Assessment. Options 1 and 2 apply to Alternatives 2 and 3 only. Options A and B apply to all alternatives.**

<b>Alternative 1: Status quo</b>	N/A	<b>Option A:</b> Remove specific stocks from FMP  <b>Or</b>  <b>Option B:</b> Status quo - no removal of stocks
<b>Alternative 2: Five-Tier System</b>	<b>Option 1:</b> Council annually adopts OFLs in June	
<b>Alternative 3: Six-Tier System</b>	<b>Or</b> <b>Option 2:</b> Council annually reviews OFLs in the fall	

The three alternatives are summarized as follows:

**Alternative 1: (Status Quo)** Amendment 7 provided fixed values in the FMP for the status determination criteria: minimum stock size threshold (MSST), maximum sustainable yield (MSY), optimum yield (OY), and maximum fishing mortality threshold (MFMT) for the BSAI king and Tanner crab stocks.

**Alternative 2: Five-Tier System.** The FMP amendment would specify (1) the five-tier system, (2) a framework for annually assigning each crab stock to a tier and for setting the OFLs (either Option 1 or 2), and (3) the crab stocks under the FMP (either Option A or B).

**Alternative 3: Six-Tier System.** The FMP amendment would specify (1) the tier system, (2) a framework for annually assigning each crab stock to a tier and for setting the OFLs (either Option 1 or 2), and (3) the crab stocks under the FMP (either Option A or B). The six-tier system would provide an OFL for stocks with sufficient catch history and, in Tier 6, set a default OFL of zero for those stocks with insufficient information from which to set an OFL, unless the SSC establishes an OFL based on the best available scientific information.

The status determination criteria provided in Alternative 1 are fixed in the FMP and reflect the understanding of crab biology and abundance at the time that Amendment 7 was adopted. Alternatives 2 and 3 were designed to incorporate new scientific information and provide a mechanism to continually improve the status determination criteria as new information becomes available. Alternatives 2 and 3 use a tier system that accommodates varying levels of uncertainty of information and takes advantage of alternative biological reference points in setting the OFLs.



The OFLs established under these alternatives would be specified for the appropriate component of the population.

Table Ex-2 provides a comparison of the biological reference points provided in the alternatives. Additional information on the biological reference points for individual species is contained in the chapter for that species.

**Table Ex-2 Comparison of biological reference points used in the alternatives.**

Biological Reference Points	Alternative 1 (Status quo)	Alternatives 2 and 3
Maximum Sustainable Yield (MSY) or MSY proxy	Average of the annually computed sustained yield (SY) over the 15-year period, 1983-1997 (SY = total mature biomass * M)	Calculated by applying $F_{MSY}^{\dagger}$ or $F_{MSY}$ proxy <sup>†</sup> in tier system to appropriate biomass estimate
MSY Biomass ( $B_{MSY}$ )	Average annual estimated total mature biomass for the 15-year period, 1983-1997	Mature male biomass <sup>†</sup> at MSY level
Minimum stock size threshold (MSST)	$\frac{1}{2} B_{MSY}$	$\frac{1}{2} B_{MSY}$
Maximum fishing mortality threshold (MFMT or $F_{OFL}$ control rule)	MSY control rule applied to the current total mature biomass	$F_{OFL}$ control rule calculated by applying tier system: Tiers 1 and 2 – pdf of $F_{MSY}$ or $F_{MSY}$ Tier 3 - $F_{MSY}$ proxy = $F_{35\%}^{\dagger}$ Tier 4 - $F_{MSY}$ proxy = $\gamma^{\dagger} * M$
MSY control rule	M	$F_{OFL}$ control rule
Natural mortality rate (M)	0.2 for all species of king crab 0.3 for all <i>Chionoecetes</i> species	0.18 <sup>†</sup> for all species of king crab 0.23 <sup>†</sup> for male and 0.29 <sup>†</sup> for female <i>Chionoecetes</i> species
Sustainable yield (SY)	Total mature biomass * M	Not Applicable
Optimum yield (OY)	OY range 0 - MSY	OY range 0 - < OFL catch

<sup>†</sup> These parameters are frameworked in the tier system and the values used for this analysis are based on the best available scientific information. Biological parameters change with new scientific information through the OFL setting process outlined in Options 1 or 2.

### Timing of OFL setting and review

The timing of the OFL determinations is important because it determines two key factors: (1) who the decision-maker can be, and (2) what information is used in the OFL determinations. Timing also impacts the level and extent of peer review and information shared with the public. The OFL setting and review process establishes (1) the placement of stocks into tiers; (2) the information utilized in the projection models for OFL determination; (3) the setting of the OFLs; and (4) the determinations of the status of the stocks relative to the OFLs. This review process includes the Council and the Scientific and Statistical Committee review for determining appropriate tiers and OFLs on an annual basis.

The timing of the OFL determinations similarly affects the fisheries for the surveyed stocks, including Bristol Bay red king crab, snow crab, Eastern Bering Sea Tanner crab, Pribilof Islands red and blue king crabs, and St. Matthew blue king crab. Stocks not subject to the NMFS annual eastern Bering Sea trawl survey are not impacted by the timing of the OFL determinations.

Options 1 and 2 establish different processes for OFL setting and review process by which stocks would be annually assigned to tiers, the OFLs would be set, and the timing of the annual review process by the Crab Plan Team, Scientific and Statistical Committee, and Council.

- Option 1:** Council annually adopts OFLs and MSST in June. In the spring, the previous year's data would be incorporated into the model used to set the OFLs and MSSTs, and, in the fall, the most recent summer survey data would be compared to that OFL in TAC setting and to that MSST to evaluate the status of stocks.
- Option 2:** Council annually reviews OFLs and MSSTs in the fall. Each fall, the summer survey data would be incorporated in to the models used to estimate biomasses, set the OFLs and MSSTs, evaluate the status of stocks in relation to the MSSTs, and to set the TACs.

### ***Crab stocks under the FMP***

The FMP manages 22 crab stocks. NMFS annually surveys six of these 22 stocks. Options A and B determine the stocks managed under the FMP, and therefore, determine the stocks for which OFLs are required.

**Option A:** This option would remove from the FMP twelve state-managed stocks for which there is no need for additional Federal management and for which there is either no directed fishery, a limited incidental or exploratory fishery, or the majority of catch occurs in State waters.

**Option B:** This option would maintain the status quo FMP species.

### ***Summary of the environmental consequences of the alternatives***

This EA evaluates the alternatives and option for their effects within the action area. The environmental consequences of each alternative for 22 crab stocks under the FMP, crab bycatch in the groundfish and scallop fisheries, and the economy, are assessed in Chapters 4 through 12 of this EA.

This EA tiers off of the Bering Sea Aleutian Islands Crab Fisheries Final Environmental Impact Statement (Crab EIS, NMFS 2004a) to focus the analysis on the issues ripe for decision and eliminate repetitive discussions. The Crab EIS provides the status of the environment and analyzes the impacts of the crab fisheries on the human environment, including habitat, the ecosystem, non-target species, safety, and community impacts. This EA details the specific impacts of the proposed action to establish status determination criteria for the crab stocks under the FMP.

#### ***Bristol Bay Red King Crab***

Chapter 4 analyses the effects of the alternatives on Bristol Bay red king crab. Under Alternative 1, the  $B_{MSY}$  for Bristol Bay red king crab is 89.6 million pounds of total mature biomass and the MSST is 44.8 million pounds. The 2006 total mature biomass estimate is above  $B_{MSY}$  at 157.2 million pounds. Under Alternatives 2 and 3, the Bristol Bay red king crab estimate of  $B_{MSY}$  proxy would be 77.86 million pounds of mature male biomass. For comparison, the 2006 estimate of mature male biomass for this stock is 65.54 million pounds. Thus, this stock status would be below  $B_{MSY}$  proxy under the Alternative 2 and 3, rather than above it as with Alternative 1.

Under Alternative 1, overfishing occurs when the TAC is more than the estimated sustained yield (SY). The Bristol Bay red king crab TAC for the 2006/2007 fishery was 15.5 million pounds, which is less than the 2006 SY of 31.44 million pounds. Under Alternatives 2 and 3, overfishing would be defined as any amount of catch (retained catch plus discard losses) in excess of OFL as prescribed through the tier systems described in Chapter 2. The recommended OFL control rule for the Bristol Bay red king crab stock is an  $F_{35\%}$  control rule. The control rule defines the full selection fishing mortality rate to apply to the exploitable stock at any level of the egg production index or its mature male biomass proxy.

To evaluate the historic impacts of the alternatives on Bristol Bay red king crab, the analysis compares the historic harvest and abundance under Alternative 1 with the estimated values from applying the Alternative 2/3 tier system to historic data (Table 4-1). For the 10-year period from 1997 to 2006, the retained catch would have exceeded the retained catch OFL in six of the 10 years. For the same period, the total catch would have exceeded the total catch OFL in three of those ten years.

To evaluate the short-term (30-year) and long-term (100-year) impacts of the alternatives on Bristol Bay red king crab, eleven harvest strategy scenarios were investigated to predict the changes in stock abundance levels under various harvest rates (Tables 4-4 through 4-7). For Alternative 1, two harvest control rules were simulated to predict the possible effects of this alternative on stock biomass; the status quo harvest strategy and fishing at the status quo OFL control rule. For Alternatives 2 and 3, an evaluation was made of control rules in Tiers 2 to 5.

The Alternative 2/3 harvest control rule scenarios produced higher retained yield and lower mean rebuilding time compared to the Alternative 1 scenarios. The status quo harvest strategy performed similarly to the Alternative 2/3 scenarios. Fishing under the Alternative 1 OFL control rule performed worst of all, with very low mean number of recruits, a higher overfished percentage, and no stock rebuilding.

To evaluate the immediate (six-year) impacts of the alternatives on Bristol Bay red king crab on retained catch and mature male biomass, five control rules were run (Table 4-8). The status quo harvest strategy constrained by the  $F_{35\%}$  control rule recommended under Alternatives 2 and 3 resulted in lower harvests in the first four years than status quo harvest strategy under Alternative 1, however, by the fifth year, the constrained harvest strategy resulted in a higher retained catch. This is most likely due to the conservation benefits of reducing harvests in the short term.

### ***Pribilof Islands Red King Crab***

Chapter 4 analyses the effects of the alternatives on Pribilof Islands red king crab. The Alternative 1 status determination criteria for Pribilof Island red king crab established a  $B_{MSY}$  of 6.6 million pounds of total mature biomass and an MSST of 3.3 million pounds. The 2006 total mature biomass estimate is above  $B_{MSY}$  at 19.0 million pounds. Under Alternatives 2 and 3, the Pribilof Islands king crab estimate of  $B_{MSY}$  proxy would be 7.82 million pounds of mature male biomass. For comparison, the 2006 estimate of mature male biomass for this stock is 6.43 million pounds. Thus, this stock status would be below  $B_{MSY}$  proxy under the Alternatives 2 and 3, rather than above it as with Alternative 1. The stock would still be above its MSST proxy, and thus would not be considered overfished.

### ***Other Red King Crab***

Chapter 4 analyses the effects of the alternatives on other red king crab stocks. For the remaining red king crab stocks, no status determination criteria were established under Alternative 1. Under Alternatives 2 and 3, Norton Sound red king crab stocks would be managed under Tier 4, while Dutch Harbor and Adak red king crab would be managed under Tier 5. Status determination criteria are provided for Tier 4 stocks, while maximum fishing mortality rates would be prescribed by the Tier 4 and 5 formulas. Under Alternatives 2 and 3, the 2006 Norton Sound red king crab mature male biomass would be well above the  $B_{MSY}$  proxy and the MSST proxy.

Under Option A, Dutch Harbor red king crab would be removed from the FMP and managed by the State.

### ***Snow Crab***

Under Alternative 1, snow crab has been declared overfished and is under a rebuilding plan. The Alternative 1 status determination criteria for snow crab establish a  $B_{MSY}$  of 921.6 million pounds of total mature biomass and an MSST of 460.8 million pounds. The 2006 total mature biomass estimate is 547.6 million pounds, above the MSST for this stock but below the  $B_{MSY}$ . While the estimated total mature biomass under Alternative 1 is above MSST, and hence no longer in an overfished condition, this stock remains under a rebuilding plan until the stock is above  $B_{MSY}$  for two consecutive years.

The status of snow crab is similar under the three alternatives. Under Alternatives 2 and 3,  $B_{MSY}$  for snow crab would be measured by mature male biomass. The long-term  $B_{MSY}$  estimate for the stock would be 354.72 million pounds of mature male biomass. An MSST for this stock would be 177.36 million pounds. The 2006 mature male biomass estimate is 211 million pounds and above this MSST.

Under Alternative 1, overfishing occurs when the TAC is above the estimated SY. The snow crab TAC for the 2006/2007 fishery was 36.6 million pounds, which is below the 2006 SY of 164.3 million pounds. Under Alternatives 2 and 3, overfishing would be defined as any amount of fishing in excess of the OFL as prescribed through the tier system described in Chapter 2. The recommended OFL control rule for the snow crab stock is an  $F_{35\%}$  control rule.

To evaluate the historic impacts of the alternatives on snow crab, the analysis compares the historic harvest and abundance under Alternative 1 with the estimated values from applying the Alternative 2/3 tier system to historic data (Table 5-1). For the period from 1997 to 2006, the actual retained catch would have exceeded the estimated retained catch OFL in eight of the 10 years and the actual total catch would have exceeded the estimated OFL in five of those 10 years.

To evaluate the short-term (30-year) and long-term (100-year) impacts of the alternatives on snow crab, thirteen harvest strategy scenarios were investigated to predict the changes in stock abundance levels under various harvest rates. For Alternative 1, two harvest control rules were simulated to predict the possible effects of this alternative on stock biomass; the status quo harvest strategy, and fishing at the Alternative 1 OFL control rule. For Alternatives 2 and 3, an evaluation was made of the control rules in Tiers 2 to 5.

The Alternative 1 status quo harvest strategy control rule and the Alternative 2/3  $F_{35\%}$  control rule produced similar simulation results for rebuilding times, and short-term and long-term yields. Fishing at the Alternative 1 OFL control rule did not rebuild the stock.

To evaluate the immediate (five-year) impacts of the alternatives on snow crab, eight control rules were run to analyze the impacts of the alternatives on retained catch and mature male biomass (Table 5-11). The status quo harvest strategy constrained by the  $F_{35\%}$  control rule recommended under Alternatives 2 and 3 resulted in higher harvests in two of the five years projected compared to status quo harvest strategy under Alternative 1.

### **Tanner Crab**

Under Alternative 1, Eastern Bering Sea (EBS) Tanner crab has been declared overfished and is under a rebuilding plan. The Alternative 1 status determination criteria for EBS Tanner crab establish a  $B_{MSY}$  of 189.6 million pounds of total mature biomass and an MSST of 94.8 million pounds. The 2006 total mature biomass estimate is 253.3 million pounds, above the  $B_{MSY}$  for this stock. While the total mature biomass under Alternative 1 estimate the stock above its  $B_{MSY}$ , this stock remains under a rebuilding plan until the stock is above  $B_{MSY}$  for two consecutive years.

Under Alternatives 2 and 3, the EBS Tanner crab analyses were carried out separately for Tier 3 and Tier 4 because the stock assessment parameters were available only for the Bristol Bay portion of the stock.

Under the Alternatives 2 and 3 status determination criteria,  $B_{MSY}$  for EBS Tanner crab would be measured in mature male biomass. The long-term  $B_{MSY}$  proxy estimate for the stock under Tier 3 would be 73.16 million pounds of mature male biomass, with an MSST of 36.58 million pounds. The long-term  $B_{MSY}$  proxy estimate for the stock under Tier 4 would be 63.29 million pounds of mature male biomass, with an MSST of 31.65 million pounds. For comparison, the 2006 estimate of Tanner crab mature male biomass is 62.76 million pounds. Therefore, under Alternatives 2 and 3, this stock would be above the MSST, but below its  $B_{MSY}$  proxy in 2006.

Under Alternative 1, overfishing occurs when the TAC is above the estimated SY. The EBS Tanner crab TAC for the 2006/2007 fishery was approximately 3 million pounds, which is below the 2006 SY of 76.1 million pounds. Under Alternatives 2 and 3, overfishing would be defined as any amount of catch in excess of the OFL as prescribed through the tier systems described in Chapter 2. Under Alternatives 2 and 3, either an  $F_{35\%}$  control rule considering Tier 3 or  $\gamma M$  ( $\gamma=3$  and  $M=0.23$ ) control rule considering Tier 4 would be the recommended OFL control rule for Tanner crab. Harvest rates in recent years have been well below either of these control rules.

To evaluate the short-term (30-year) and long-term (100-year) impacts of the alternatives on EBS Tanner crab, ten harvest strategy scenarios under Tier 3 and seven harvest strategy scenarios under Tier 4 were investigated to predict the changes in stock abundance levels under various harvest rates. For Alternative 1, two harvest control rules were simulated to predict the possible effects of this alternative on stock biomass; the status quo harvest strategy and fishing at the Alternative 1 OFL control rule. For Alternatives 2 and 3, an evaluation was made of control rules under Tiers 2 to 4 assuming that the stock-recruitment relationship and base parameter values determined for Bristol Bay portion of the stock were applicable to whole EBS stock (i.e., Tier 2 and Tier 3 assumptions). Another set of evaluation of control rules under Tier 4 was also carried out assuming that Bristol Bay stock assessment parameters were not adequate to apply to the whole EBS stock.

Alternatives 2 and 3 simulations with an  $F_{35\%}$  control rule (Tier 3) produced higher retained short-term and long-term yields. The status quo harvest strategy was satisfactory, with performance similar to the Alternative 2 and 3 scenarios. Fishing under the Alternative 1 OFL control rule performed worst of all, with a very low mean number of recruits, higher overfished percentage, and much lower long-term biomass.

Alternatives 2 and 3 simulations with an  $\gamma M$  control rule (Tier 4) also produced higher retained short-term and long-term yields. The status quo harvest strategy was satisfactory, with performance similar to the Alternative 2 and 3 scenarios with an  $\gamma M$  control rule. Fishing under the Alternative 1 OFL control rule performed unsatisfactorily, with a very low mean number of recruits, higher overfished percentage, and much lower long-term biomass. The stock did not rebuild during the time horizon considered in most of the simulations.

Under Alternative 1, no estimates of  $B_{MSY}$  or MSST are made for the other Tanner crab stocks. Under Alternative 2 and 3, the Eastern Aleutian Islands Tanner crab stock would be under Tier 4. For this analysis, average biomass from 1999 to 2005 was used as a  $B_{MSY}$  proxy for Eastern Aleutian Islands Tanner crab. Stock status would be below its  $B_{MSY}$  proxy but above MSST proxy. Historical comparison of stock status shows that the stock was below the MSST proxy in all years prior to 2000, with the exception of 1999. Under Alternative 3, Western Aleutian Islands Tanner crab would be under Tier 6 due to lack of available information and a default OFL would be set at zero for this stock. Under Option A, Eastern and Western Aleutian Islands Tanner crabs would be removed from the FMP and managed by the State.

### ***Blue King Crab***

Under Alternative 1, Pribilof Islands blue king crab and St. Matthew blue king crab have been declared overfished and are under rebuilding plans. Under Alternatives 2 and 3, both of these stocks would be managed as Tier 4 stocks. As such, proxy  $B_{MSY}$  values would be estimated. Under Alternatives 2 and 3, the status of these blue king crab stocks would be similar to the status under Alternative 1.

The Alternative 1 status determination criteria for Pribilof Islands blue king crab establish a  $B_{MSY}$  of 13.2 million pounds of total mature biomass and an MSST of 6.6 million pounds. The 2006 total mature biomass estimate is 1.6 million pounds, well below the MSST for this stock. Under Alternatives 2 and 3, the Pribilof Islands blue crab estimate of  $B_{MSY}$  proxy would be 6.68 million pounds of mature male biomass, with an MSST of 3.34 million pounds. For comparison, the 2006 estimate of mature male biomass for this stock is 0.63 million pounds.

For St. Matthew blue king crab, a  $B_{MSY}$  of 22.0 million pounds of total mature biomass was established with an MSST of 11.0 million pounds. The 2006 total mature biomass estimate for this stock is 11.2 million pounds, slightly above the MSST. Under Alternatives 2 and 3, the St. Matthew blue king crab estimate of  $B_{MSY}$  proxy would be 13.92 million pounds of mature male biomass, with an MSST of 6.96 million pounds. For comparison, the 2006 estimate of mature male biomass for this stock is 7.41 million pounds.

Under Option A, St. Lawrence blue king crab would be removed from the FMP and managed by the State.

### ***Golden King Crab***

Under Alternative 1, no estimates of  $B_{MSY}$  or MSST are made for any of the golden king crab stocks. Under Alternatives 2 and 3, two golden king crab stocks (Pribilof Islands, Aleutian Islands) are preliminarily recommended for Tier 5. Under Tier 5, the OFL would be set using average catch estimated for a selected time period. For Aleutian Islands golden king crab, if average catch is used to establish an OFL for this stock, the OFL would be very close to the current total allowable catch. Under Alternative 3, St. Matthew golden king crab would be recommended for placement in Tier 6 whereby a default OFL would be set at zero. Option A would remove St. Matthew golden king crab from the FMP for exclusive management by the State.

### ***Other Crab Stocks***

Under Alternative 1, no  $B_{MSY}$  or MSST was specified for these stocks and the maximum fishing mortality threshold was based on the MSY control rule of 0.3 for Tanner crabs and 0.2 for king crabs.

Under Alternative 2, these stocks would all be under Tier 5, OFLs would be calculated for each stock based upon average catch.

Under Alternative 3, these stocks would be under Tier 6. For Tier 6 stocks, a default OFL would be set equal to zero for retained catch, unless the SSC determines a value based on the best available information. No additional status determination criteria are currently estimated for these stocks nor proposed under the revised definitions.

Option A would remove the following crab stocks from the FMP: Eastern Bering Sea grooved Tanner crab; Eastern Aleutian Islands grooved Tanner crab and Western Aleutian Islands grooved Tanner crab; Aleutian Islands scarlet king crab; Eastern Bering Sea scarlet king crab; Bering Sea triangle Tanner crab; and Eastern Aleutian Islands triangle Tanner crab. The State would manage these stocks without Federal oversight.

### ***Prohibited Species Catch Limits***

Chapter 10 analyzes the effects of the alternatives on crab caught as bycatch in the BSAI groundfish fisheries and scallop fishery. Bycatch limits are established in BSAI groundfish fisheries for red king crab, Tanner crab, and snow crab. Once these limits are exceeded, the specified area closures are triggered for the fishery. Crab species are also caught as bycatch in the Alaskan scallop fishery and bycatch limits by species are established for this fishery.

Under Alternatives 2 and 3, OFLs would restrict crab harvest levels in the near-term resulting in a projected increase in abundance. Since bycatch limits are based on overall abundance, the amount allocated for bycatch could increase. If an OFL for a crab species is exceeded, there is no inseason response for management measures in the fisheries which catch those crab species as bycatch. Should a crab stock become overfished and necessitate a rebuilding plan (or revisions to an existing rebuilding plan), regulations to reduce the bycatch of crab in groundfish and scallop fisheries would be considered at that time.

### ***Economic and Social Effects***

Chapter 11 analyzes the economic and social effects of the alternatives. The economic and social impacts are largely qualitative and deal with impacts on persons and on communities. The economic impacts of Alternatives 2 and 3 depend on the extent to which those control rules constrain the status quo harvest strategies used in establishing TACs. The immediate (5 or 6-year) simulation projections suggest that TACs under Alternatives 2 and 3 would be less than under Alternative 1. The extent of this difference depends on the degree to which actual TACs are set below the proposed OFLs. Under the Alternative 1, the MSY control rule for these fisheries has not been constraining. However, the proposed OFLs for Alternatives 2 and 3 would be lower than those under Alternative 1, so TACs would likely have to be set lower to adjust for the lower OFLs.

In general, any decline in the TAC is likely to contribute to reduced gross revenues to harvesters, processors, and other businesses that rely on the crab fishery. Reductions in TAC could also negatively impact communities through reduced spending in that community by processors, harvesters, crab support businesses, residents that work in the crab industry, and other residents and businesses that indirectly depended on the snow crab industry.

Despite these concerns, projected changes in retained catches under Alternatives 2 and 3 are generally small in the immediate, short, and long terms. In both the Bristol Bay red king crab and the snow crab fisheries declines in retained catch are projected to be less than 2 percent in the immediate term (i.e., the next 6 years). Given these relatively small changes, economic effects of this action are likely to be limited.

Impacts of changes in TACs resulting from the proposed action will likely vary across communities depending on the degree of importance the crab fishery to the local economy. Communities with a high degree of dependency on the crab fishery will likely be affected to a larger degree than communities with low a dependency on the fishery. For example, snow crab is very important to the economies in St. Paul and St. George. Any changes in the snow crab OFL that result in a change in the snow crab total allowable catch will likely impact these communities to a much higher degree than Dutch Harbor or Kodiak, which are diversified across many fisheries.

### ***Cumulative Effects***

Chapter 12 analyzes the cumulative effects of the alternatives. The cumulative effects of crab fishing are analyzed in the Crab EIS (NMFS 2004a), including the interactive effects of any past, present, and reasonable foreseeable future external actions. That analysis is incorporated by reference. The Crab EIS concludes that for the majority of the components of the environment analyzed, the cumulative effects of the crab fisheries are insignificant based on the best available scientific information. For some environmental components analyzed, the Crab EIS determined the cumulative effects were unknown, because of a lack of sufficient information on the cumulative condition or the inability to predict effects of external future actions. No new significant information is available that would change these determinations in the Crab EIS. This action would not result in additional impacts beyond those considered in the Crab EIS and is not anticipated to change any of the cumulative effects conclusions.



## Errata Sheet

Page ii, Alternative 3 explanation paragraph: change '(1) the tier system' to 'the six-tier system'

Page iii, Table Ex-2, row 5, last cell: change '.. pdf of  $F_{MSY}$  or  $F_{MSY}$ ' to '.. mean of pdf of  $F_{MSY}$  and  $F_{MSY}$ '

Page vi, paragraph 4, line 4: change 'eight of the 10 years' to 'six of the 10 years'

Page vi, paragraph 7, line 1: change 'eight control rules' to 'five control rules'

Page vii, paragraph 2, line 2: change '76.1' to '76.0'

Page ix, paragraph 2, lines 2 continued to line 3: change 'for red king crab, Tanner crab' to 'for Bristol Bay red king crab, EBS Tanner crab'

Page ix, paragraph 5, last line: change 'the snow crab industry' to 'the crab industry'

Page xii: Insert '5.2.5 Six-year projections of stock biomass under alternative control rules ..... 89'

Page xiii, one before the last line: remove 'CW=carapace width ..... 187'

Page xiv: renumber 'Table 4-2 ... Table 4-9' to 'Tables 4-1, ... Table 4-8.'

Page xv: Insert the following Table captions immediately after Table 6-11:

Table 9-1 Estimated OFLs (in pounds) for other crab stocks in Tier 5..... 134

Table 9-2 Retained catch (in pounds) for the other crab stocks in the.....135

Page xv: Insert the following Table captions immediately after Table 11-8 and change the Table numbering below Table 11-8 to Table 11-12, Table 11-13, and Table 11-14:

Table 11-9 Processing summary..... 154

Table 11-10 Stock, 2006/07 ..... 158

Table 11-11 Potential reduction in retained catch..... 159

Page xvii, Figure 6-2: change 'EAI Tanner crab' to 'EBS Tanner crab.'

Page 7, paragraph 2, line 1: change '...sets of options analyzed...' to '...sets of options are analyzed...'

Page 19, Table 2-5, row 5, last cell: change '.. pdf of  $F_{MSY}$  or  $F_{MSY}$ ' to '.. mean of pdf of  $F_{MSY}$  and  $F_{MSY}$ .'

Page 19 last paragraph, line 10: change 'BS Tanner crab' to 'EBS Tanner crab.'

Page 20, paragraph 1, line 4: change 'catch is greater that...' to 'catch is greater than...'

Page 20, paragraph 2, line 1 continued to line 2: change '(Table 2-3 and)' to '(Table 2-3 and Table 2-4)'

Page 20, bullet 1 under For Tier 4 stocks, line 3: change ' $B_{35\%}$ ' to 'proxy  $B_{MSY}$ '

Page 20, bullet 3 under For Tier 4 stocks, line 1: change '...greater than  $B_{MSY}$ ...' to '...greater than proxy  $B_{MSY}$ ...'

Page 22, paragraph 1, line 4: change 'Tanner crab' to 'EBS Tanner crab'

Page 30, paragraph 3, line 5: change 'BS Tanner crab' to 'EBS Tanner crab'

Page 39, paragraph of section 3.2.1, line 6 continued to line 7:

change 'Zheng et al. 1999' to 'Zheng and Kruse 1999'

change 'NPFMC 2006' to 'NPFMC 2006a'

Page 49, paragraph 1, last line: change 'NPFMC 2006' to 'NPFMC 2006a'

Page 50, paragraph 1, line 1: change 'ADF&G conducts annually survey the EAI...' to 'ADF&G conducts annual surveys of the EAI...'

- Page 53, paragraph 2, line 8: change 'Table 4-3' to 'Figure 4-3'
- Page 54, Table caption: change 'Table 4-2' to 'Table 4-1'
- Page 56, paragraph 3, line 1: change 'Table 4-6' to 'Table 4-5'
- Page 56, paragraph 4, line 1: change 'Table 4-7' to 'Table 4-6,' 'Table 4-8' to 'Table 4-7,' 'Table 4-5' to 'Table 4-4,' and 'Table 4-6' to 'Table 4-5'
- Page 56, paragraph 5, line 1: change 'Table 4-5' to 'Table 4-4'
- Page 57, Table caption change: 'Table 4-3' to 'Table 4-2' and 'Table 4-4' to 'Table 4-3'
- Page 58, Table captions: change 'Table 4-5' to 'Table 4-4'
- Page 59, Table captions: change 'Table 4-6' to 'Table 4-5'
- Page 60, Table captions: change 'Table 4-7' to 'Table 4-6'
- Page 61, Table captions: change 'Table 4-8' to 'Table 4-7'
- Page 64, line 3: change '...compared to the status quo harvest strategy...' to '... compared to the unconstrained status quo harvest strategy...'
- Page 64, line 4 continued to line 5: change ' fishing at the status quo OFL control rule, and unconstrained status quo harvest strategy control rule (Table 4-9)' to 'and fishing at the status quo OFL control rule (Table 4-8)'
- Page 65, Table captions: change 'Table 4-9' to 'Table 4-8'
- Page 65, Table caption, line 4: replace 'The status quo harvest strategy was constrained by  $F_{35\%}$  control rule.' by 'The status quo harvest strategy estimates were provided for unconstrained and  $F_{35\%}$  control rule constrained scenarios.'
- Page 66, last line: change '...stock would not only be considered...' to '...stock would be considered...'
- Page 79, paragraph 1, line 4 continued to line 5: change 'Figure 5-4' to 'Figure 5-6'
- Page 79, last line: change '(Tables 5-6 and 5-7)' to '(Tables 5-6, 5-7, and 5-8)'
- Page 80, paragraph 1, line 3: change '(Table 5-7)' to '(Table 5-6)'
- Page 80, paragraph 2, line 12: change 'Figure 5-3' to 'Figure 5-4'
- Page 89: change section number '5.2.4' to '5.2.5'
- Page 89, paragraph 1, line 8: change '16% of  $B_{MSY}$ ' to '14% of  $B_{MSY}$ '
- Page 89, paragraph 1, line 11: replace 'Error! Reference source not found' with 'Table 5-11'
- Page 100, section 6.2.4.2, line 3: change 'Zheng et al. 1999' to 'Zheng and Kruse 1999'
- Page 101, last paragraph, line 4 continued to line 5: replace ' $F_{35\%}$  is the recommended OFL control rule (see following section for simulation and results under Tier 3 and Tier 4 assumptions).' with ' $F_{35\%}$  is the recommended OFL control rule under Tier 3 assumption.'
- Page 102, Figure 6-2 caption, line 1: change 'EAI' to 'EBS'
- Page 139, paragraph 6, line 4: change ' have closed due to crab bycatch (NPFMC 2005)' to ' have been closed due to crab bycatch (NMFS 2005)'
- Page 158, Table 11-10, row EAI Tanner crab: change '0.693' to '0.683'
- Page 158, paragraph 1, line 2 continued to line 3: change 'Bristol Bay red king crab, snow crab, and EAI Tanner crab.' To 'Bristol Bay red king crab and snow crab.'
- Page 159, Table 11-11: remove AI Tanner crab row values
- Page 160, paragraph 4, line 9: change 'Table 11-9' to 'Table 11-12'
- Page 161: Table caption number: change 'Table 11-9' to 'Table 11-12'
- Page 161, section 11.7.2.2, paragraph 1, line 1: change 'Table 11-12' to 'Table 11-13'

Page 161, section 11.7.2.2, paragraph 1, line 7: change 'Table 11-12' to 'Table 11-13'

Page 162, paragraph 1, line 1: change 'Table 11-10' to 'Table 11-13'

Page 162, paragraph 1, line 8: change 'Table 11-10' to 'Table 11-13'

Page 163: Table caption number: change 'Table 11-10' to 'Table 11-13'

Page 163, last paragraph, line 1: change 'Table 11-9' to 'Table 11-10'

Page 164, paragraph 2, line 3: change 'Figure 4-6' to 'Figure 4-9'

Page 164, paragraph 2, line 9: change 'Table 11-9' to 'Table 11-10'

Page 165, paragraph 2, line 3: replace ' estimated  $F_{OFL}$  rate (as listed in Table 3-5) are  $F=0.36$ .' with ' maximum estimated  $F_{OFL}$  rates are  $F=0.36$ .'

Page 166, paragraph 5, line 6: change 'which is 7300 pounds greater than the proposed OFL...' to 'which is much less than the proposed OFL...' . and disregard the subsequent sentences in that paragraph.

Page 167, paragraph 3, last line: change 'Table 11-11' to 'Table 11-14'

Page 167, Table caption number: change 'Table 11-11' to 'Table 11-14'

Page 171 and 173, Reference section: Include references:

Barnhart and Rosenkranz 2003

NPFMC 2007

Page 185, last paragraph, line 3: change 'B.10 and B.11' to 'B.11 and B.12'



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**TECHNICAL MEMORANDUM**

DATE: August 28, 2007  
TO: Gary Painter, BSFRF  
FROM: Scott Goodman / Steve Hughes  
SUBJECT: *Preliminary BSFRF Opilio Results from 2007 NMFS Survey Data*

Gary:

Data from the 2007 NMFS survey for *opilio* has been provided to BSFRF by the NMFS as per the BSFRF/NMFS Joint Project Memorandum of Agreement. We have made our own BSFRF estimates of *opilio* abundance using those data and preliminary summaries are provided here. The official survey estimates of abundance will be made by NMFS and provided to ADF&G for use in the ADF&G stock assessment process. Those official estimates may differ from those that BSFRF have made and provided here.

In a nutshell, this year's survey results support last year's survey results with respect to "unmodeled" *opilio* abundance, again showing large male *opilio* crab numbers greater than 140 million animals. Details are provided in the table below.

This preliminary summary table reports 2007 abundances (numbers of crab) for *opilio* by size/sex category (consistent with the NMFS Report to Industry) and compares those to 2006 results. The overall *opilio* change from last year is relatively small (+ 2.4%). Large males showed a modest increase (+ 4.8%) but more significantly, both medium males and large females showed increases of around + 20%. Preliminary statistics run on the 2007 abundances also suggest a significant improvement in precision of abundance estimates of the large male *opilio*.

2007 Standard Area Survey Strata	Num of Stations in Strata	Num of Tows in Strata	Sq. Naut. Miles in Strata	Males				Females			Total Opilio
				Large (≥ 102 mm)	Medium (78-101 mm)	Small (< 78 mm)	Total	Large (≥ 50 mm)	Small (< 50 mm)	Total	
(MILLIONS OF CRAB)											
East Multi	1	2	401	0.000	0.033	0.033	0.066	0.000	0.000	0.000	0.066
East Single	227	227	91,027	92.371	238.988	718.702	1,050.061	761.759	251.402	1,013.161	2,063.222
Pribs Multi	25	45	10,025	27.070	19.512	18.753	65.335	66.636	0.018	66.654	131.989
StMatt Multi	17	27	7,218	16.143	55.518	130.972	202.633	144.596	37.022	181.618	384.251
West Single	68	68	27,268	15.255	30.090	289.777	335.122	271.374	145.604	416.979	752.101
2007 Totals	338	369	135,939	150.839	344.142	1,158.236	1,653.217	1,244.365	434.046	1,678.411	3,331.628
2006 Totals	---	---	---	143.900	288.400	1,106.900	1,539.200	1,045.500	669.800	1,715.300	3,254.500
07-06 Change			+/- # crab	+6.939	+55.742	+51.336	+114.017	+198.865	-235.754	-36.889	+77.128
			+/- % diff	+4.8%	+19.3%	+4.6%	+7.4%	+19.0%	-35.2%	-2.2%	+2.4%

While the current ADFG harvest strategy is somewhat complicated, a relative idea of interpreted results can be derived using survey results. Importantly, the transparency of the "process" from survey results (NMFS) to modeled results (ADFG) to announced TAC's (ADFG) still remains unclear in some elements, and therefore the results provided here should be considered as a "general idea" of interpreted results.

A direct application of the harvest strategy to survey abundance numbers from 2006 suggested a potential *opilio* 2006/07 TAC significantly higher than actual (> 60 million lbs versus ≈ 37 million lbs). Management decisions to reduce abundance inputs into the harvest strategy, while not fully explained, were highlighted in the 2006 NMFS Report to Industry and in the Stock Assessment of Eastern Bering Sea Snow Crab (Appendix A, 2006 Crab SAFE). The 100% increase in 2006 large males was "marked by extremely poor precision" (+/- 76%), and was qualified with a "high degree of uncertainty." Stock assessment modeled numbers were significantly lower for large male *opilio*. Further confusing a direct application of the harvest strategy, were anomalous shell condition rates for surveyed large male *opilio* (which is incorporated as an important factor in the harvest strategy). 2006 survey results reported a very low new hard shell percentage for large males (13%) where typically annual survey results show new hard shell rates greater than 50%. Consequently, ADFG harvest strategy results announced in the 2006/07 TAC news release were at the lower than anticipated level of approximately 37 million lbs.

Our analysis of preliminary 2007 numbers show three main positive signs for an expected increase in TAC;

- 1) Increases in all 3 size sex categories considered in the harvest strategy - large males (+5%), medium males (+19%) and large females (+19%).
- 2) Significantly improved precision around the abundance estimate for large males compared with 2006 results (+/- 76% versus +/- approx. 40%).

- 
- 3) Typical observed rates of new hard shell large male *opilio* during the survey (approx. 60%).

Barring management decisions or other unknowns that could again reduce abundances from the survey as direct inputs into the current harvest strategy, our (BSFRF) analysis indicates that the *opilio* TAC for 2007/08 would likely exceed 60 million lbs.

# North Pacific Fishery Management Council

Stephanie Madsen, Chair  
Chris Oliver, Executive Director



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June 29, 2007

Leo Erwin  
Chief, Financial Services Division  
United States Department of Commerce  
NOAA, NMFS  
1315 East-West Highway  
Silver Springs, MD 20810

RE: Limits on the use of the IFQ loan program in the Bering Sea/Aleutian Islands  
king and Tanner crab fisheries.

Dear Mr. Erwin:

At its June meeting, the Council received testimony from captain and crew interested in accessing the funds from the inchoate IFQ loan program in the Bering Sea/Aleutian Islands crab fisheries. Under the program, funds will be accessible only to persons active in the crab fisheries. Yet, some participants have expressed concern over the potential accessibility of funds to persons with substantial share holdings as vessel owners. At the meeting, the Council clarified that its rationale for development of the loan program was to support entry to the fishery. The Council further clarified that to fulfill this purpose, it intended that loan funds be accessible only to persons with less than a threshold amount of quota. Such a limitation would be similar to the limits on access to loan funds under the halibut and sablefish IFQ program, which was the foundation for the development of the crab loan program.

We respectfully request that you limit access to crab IFQ loan funds to persons that do not exceed a threshold amount of quota shares (similar or proportional to the threshold under the halibut/sablefish loan program) to ensure that these funds support entry to the fishery. Please let us know if such a limitation can be included in the loan program, or inform us as to what further action would be necessary to include the limitation in the program. Please contact myself or Dr. Mark Fina on our staff if you have questions regarding this letter.

Sincerely

A handwritten signature in black ink that reads "Chris Oliver". The signature is written in a cursive, flowing style.

Chris Oliver  
Executive Director

cc: Jessie Gharrett  
Sue Salveson  
Council members



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September 28, 2007

Mr. Chris Oliver  
Executive Director  
North Pacific Fishery Management Council  
605 West 4<sup>th</sup> Avenue, Suite 306  
Anchorage, AK 99501

VIA US EXPRESS MAIL and E-Mail

Ref: Crab Custom Processing RIR/IRFA: West Designated WAG

Dear Chris:

I am writing today to respond specifically to a number of errors and misstatements found in a letter to you dated September 26, 2007 from Adak Fisheries, LLC (ADAK). My remarks will focus specifically on these errors and misstatements. For Westward's views on the subject of crab custom processing caps generally, please rely on the written and oral testimony of Steve Minor and John Iani on behalf of the North Pacific Crab Association, of which we are members.

Having just yesterday received a copy of ADAK's letter I was obviously unable to submit a response to the Council in-time to meet the September 26<sup>th</sup> deadline for written comments and instead I have asked Steve to deliver this letter to you during the meeting along with sufficient copies for Council members and staff.

In their introduction ADAK admits to mixing together the on-going 18-month Council review (and it's defined scope) with the separate issue of custom processing caps. This allowed them to introduce their hypothesis that problems associated with harvesting all or part of the Western Aleutians Golden crab, West designated (WAG/West) resulted neither from market conditions, high costs nor ADAK's own monopolistic behavior as the sole plant located in the region but rather from:

**"the PQS system that adds an additional royalty cost into the equation in order for processing to occur in the west region in the face of the thin margins."**

Deliberately or inadvertently, ADAK then goes on to defend this hypothesis by standing on its head the reality of crab processing; the crab rationalization system and the facts about their own participation before and after Crab Rationalization, in order to conveniently arrive at the conclusion that the "real fix is to get rid of PQS for all AI crab delivered west of 174, and to maintain regional landing requirements", leaving unsaid of course that this leaves them in the enviable position of having a monopoly on buying all western area king crab.



Mr. Chris Oliver  
Executive Director  
North Pacific Fishery Management Council

The following is a look at several of the key assertions offered in support of their hypothesis and its conclusion that they receive a monopoly on Western Area king crab:

Royalties and ex-vessel prices

"It is important to note that the Adak community quota was harvested and processing in the Adak, despite the weak market and the higher costs, after the community agreed not to charge a royalty if the crab were delivered to Adak. Adak Fisheries paid \$1.75/lb last season, almost exactly the same as the average price for the WAG fishery as a whole (including Dutch Harbor) as shown in table 12."

ADAK first proposes that the Adak community quota was processed only because no royalty was charged. Throughout the late fall of 2006 Westward was negotiating to process the Adak Community quota and to pay a royalty for doing so, albeit not the royalty they originally proposed. In November we were asked if we would process their quota with no royalty, and of course, since we were negotiating in good faith to actually pay a royalty, we agreed that we would do so. Apparently the crab was ultimately processed by ADAK without a royalty, but was certainly not a requirement of getting the crab processed.

ADAK then proposes that their having paid \$1.75 ex-vessel is "almost exactly the same as the average price for the WAG fishery as a whole". In fact Westward paid an average of \$1.90 for EAG and WAG, so apparently the \$0.25 (\$0.15 divided by 59% recovery = finished value of the ex-vessel disparity) differential in finished product sales value went to ADAK rather than to the community or the fishermen. The Alaska Department of Revenue "2006 Statewide Average Price List for Crab" notes that the average ex-vessel prices paid for brown king crab were \$1.95 (Dutch Harbor) and \$2.10 (Adak and W. Aleutians) respectively.

Apparently after having received the right to process the community crab for free, ADAK then chose to pay less than market prices to its fishermen, behavior that does not inspire confidence in a firm seeking monopoly control of 3,000,000 pounds of king crab.

F/Y 2006/2007 Un-harvested WAG/West

"While it is true the market was weak, and processing cost are higher in the west region, this is NOT the primary reason WAG crab went un-harvested."

"What prevented 75% of the west region WAG crab from being harvested was the PQS system that adds an additional royalty cost into the equation in order for processing to occur in the west region in the face of the thin margins."

Here ADAK proposes that the PQS system, not poor market conditions, and certainly not their monopolistic position as the sole shore-based custom processor in the region as the root cause for leaving WAG/West uncaught and unprocessed. In Fishing Year (FY) 2005/2006 Westward incurred substantial losses while having our WAG/West custom processed. For FY 2006/2007 ADAK proposed to custom process our WAG/West for a fee of \$1.00 per finished

Mr. Chris Oliver  
Executive Director  
North Pacific Fishery Management Council

pound, by their own admission, \$0.25 - \$0.30 over current industry standards. ADAK suggested that the fee might be lowered if all or a large portion of WAG/West was processed by ADAK, and suggested the various IPQ holders coordinate to increase their custom processing volume. Such coordination, at least amongst the IPQ holders would be illegal. Considering that for our product, such a fee combined with poor market conditions and a difficult cost structure for the fleet would put us out of pocket again, we could not agree.

FY 2007/2008 WAG/West

At page six of their comment, ADAK offers the following remark about a proposal made by Westward:

"For example, we were offered a formula price custom processing contract this season by Westward. It offered a base price that is less than the actual cost of processing in the western region, supplemented by an amount to be determined based on two variables:

- 1) the ex-vessel price
- 2) the wholesale price of the product"

Westward concurs completely with the notion that we bear a responsibility to make our best efforts to ensure that all the WAG TAC is harvested. Consistent with that, for the 2007/2008 season Westward proposed to lease to ADAK it's WAG/West IPQ (486,210 pounds) on terms identical to terms under which we are leasing a much smaller amount of EAG. We proposed a royalty equal to 50% of net revenue after all costs were deducted (including a sales commission to Westward of 2.5%), including a processing fee of \$0.75. As you can see from ADAK's comments, they declined. Except for the sales commission, we were proposing to bear all the market risk. From their comments ADAK declined because of market and fish price uncertainty.

"It would be foolhardy for Adak Fisheries to accept the offer, unless we have some reasonable idea of what the values of the two variables are."

An odd response considering that if nothing else is true, market and fish price risk is at the very core of our business. If it costs ADAK more than \$0.75 in direct costs to process crab, then they have a much more fundamental business problem than can be addressed by the Council unless of course they are granted a monopoly, in which case they need not compete for raw material. If ADAK expects to recover a full overhead or indirect cost contribution from brown king crab then they fail to understand the commodity nature of the crab business these days. Westward has never been able to consistently allocate full indirect costs (e.g total indirect costs / pounds processed) to this product line. That has not kept us from paying competitive prices to fishermen or taking the normal market risk.

Of course it is just such a monopoly that ADAK seeks:

"The real fix is to get rid of PQS for all AJ king crab delivered west of 174, and to maintain regional landing requirements."

Mr. Chris Oliver  
Executive Director  
North Pacific Fishery Management Council

*Their objection to the current system apparently is that they have to compete. In ADAK's view competition for custom processing benefits only the PQS owner.*

**"The only real beneficiary of competition to be the low cost service provider to the PQS owner is the PQS owner."**

*In truth, as is supposed to be the case, competition for custom processing will primarily benefit the harvester. As we can see, the current lack of competition for custom processing in the west region has resulted in below market prices being paid to fishermen and the Adak Community forgoing any royalty on its quota. Obviously more competition, not less, is required.*

#### Excessive Shares

At page 3 of their letter, ADAK opines that:

*"one WAG PQS holder chose not to apply for WAG IPQ this year. The result is there was a pro-rata reallocation of IPQ, 90% of which went to Westward. So, now one company owns 90%, or three times the excessive-share cap, of WAG IPQ.*

*This outcome is totally inconsistent with the whole concept of excessive share caps.*

*If 90% of a limited access privilege isn't excessive, what is?"*

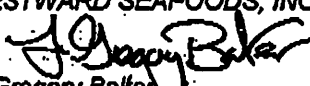
*The hyperbole here is obviously intended and inflammatory. In fact, Westward owns no more of the WAG PQS than it did upon the initial issuance of shares. When Royal Aleutian Seafoods declined to apply for brown crab IPQ, the RAM division simply followed regulatory procedures to ensure that adequate IPQ was issued to match with IFQ "A" shares and provide for the TAC to be harvested.*

#### Conclusion

*Westward, the industry and the former owners of the Adak facility supported the Council's west designation of 50% of WAG during the development of the crab rationalization plan, believing at the time that business arrangements would evolve to insure that all the TAC was harvested. The processing or use caps ultimately applied to the region and ADAK's unwillingness to compete at industry standard levels have now caused harm to harvesters who count on this product. If ADAK insists that the only solution is the establishment of a monopoly in their favor, the Council should act to protect competition for this product by either raising the use cap for this region or removing the west designation.*

Thank you for your time and consideration of these remarks.

Sincerely,  
WESTWARD SEAFOODS, INC.

  
F. Gregory Baker  
President



September 18, 2007

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Mr. Ludger Dochtermann  
P.O. Box 714  
Kodiak, Alaska 99615  
FAX: 907 486 2772

Dear Mr. Dochtermann:

We are in receipt of your September 13th and 17th letters expressing your concerns regarding the effect of the Nichiro – Maruha merger on Peter Pan Seafood's processor quota for crab.

We appreciate and respect the business relationship we've had with you over the past several years. It was with respect for that relationship that Dale Schwarzmiller let you know last week that due to the timing of the pending Nichiro – Maruha merger, Peter Pan Seafoods may not be able to share match with you for 2007 Bristol Bay Red King Crab.

As Dale explained, the Crab Rationalization Act specifies that processors cannot exceed specified "caps" of processor quota share (PQS) and individual processor quota (IPQ). Upon the effective date of the merger, the merged entity will be subject to PQS use caps. We have determined that in the event that the merger goes through, it is likely Peter Pan Seafoods may need to divest 4.04% of Bristol Bay Red King Crab PQS to avoid exceeding the 30% limit on ownership. Peter Pan Seafoods does not exceed the cap in any other crab fishery.

The Nichiro – Maruha merger is scheduled to take place in early October 2007, however it is uncertain whether the merger will be completed prior to issuance of IPQ for the 2007 King Crab season. How much IPQ is issued to Peter Pan Seafoods for the 2007 Bristol Bay Red King Crab season will be dependant upon National Marine Fisheries Service's (NMFS) determination of the effective date of the merger. It is possible that the Peter Pan Seafoods PQS will remain status quo for 2007, however we felt that since it is also possible that NMFS may require divestiture for this season, that we notify fishermen that we may not be able to share match with in order to give them time to match with another processor.

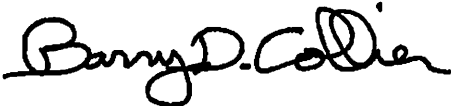
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Peter Pan Seafoods has initiated discussions with community representatives exploring ways of keeping the Bristol Bay King Crab PQS in question within the community for the long term, thus minimizing any adverse impacts on the community or harvesters with history in the area.

All of the IFQ holders that have share matched with Peter Pan have had significant historical or business relationships with us. It was a very difficult decision for our staff to have to let quota owners know that we may not be able to share match with them as we have in the past. However, we felt it was prudent to notify quota owners of this situation as they could be impacted.

We will keep you posted as to the final determination of this issue as soon as we can.

Sincerely,



Barry Collier  
President and CEO  
Peter Pan Seafoods, Inc.

Cc: Peter Pan Seafoods, Inc:  
Clyde Sterling, Executive Vice President  
Dale Schwarzmiller, Vice President Alaska Production  
Dale Schiffler, Secretary