

## Joint Groundfish/Crab Plan Team Report

September 16, 2009  
Alaska Fisheries Science Center  
Seattle, WA

A joint meeting of the BSAI and GOA groundfish Plan Teams and the Crab Plan Team convened Wednesday, September 16h at 8:30 am at the Alaska Fisheries Science Center in Seattle, Washington.

### Bering Sea/Aleutian Islands Groundfish

Loh-Lee Low	AFSC REFM(Chair)
Mike Sigler	AFSC (Vice chair)
Kerim Aydin	AFSC REFM
Lowell Fritz	AFSC NMML
David Carlile	ADF&G
Alan Haynie	AFSC
Jane DiCosimo	NPFMC (Coordinator)
Yuk W. (Henry) Cheng	WDFW
Brenda Norcross	UAF
Mary Furuness	NMFS AKRO Juneau
Grant Thompson	AFSC REFM
Dave Barnard	ADF&G
Leslie Slater	USFWS
Dana Hanselman	AFSC
Bill Clark	IPHC

### Gulf of Alaska Groundfish

Jim Ianelli	AFSC REFM (Co-chair)
Diana Stram	NPFMC (Co-chair)
Sandra Lowe	AFSC REFM
Jeff Fujioka	AFSC ABL
Jon Heifetz	AFSC ABL
Mike Dalton	AFSC
Cleo Brylinsky	ADF&G
Tom Pearson	NMFS AKRO Kodiak
Nick Sagalkin	ADF&G
Paul Spencer	AFSC
Leslie Slater	USFWS
Nancy Friday	AFSC NMML
Yuk W. (Henry) Cheng	WDFW
Steven Hare	IPHC

### Crab

Ginny Eckert	UAF/UAS, Vice-Chair/Acting Chair
Diana Stram	NPFMC (Coordinator)
Doug Pengilly	ADF&G-Kodiak
Gretchen Harrington	NMFS AKRO Juneau
Wayne Donaldson	ADF&G-Kodiak
Jack Turnock	AFSC-Seattle
Shareef Siddeek	ADF&G-Juneau
Herman Savikko	ADF&G-Juneau
Lou Rugolo	AFSC-Seattle
André Punt	UW
Bill Bechtol	UAF
Bob Foy	AFSC-Kodiak
Brian Garber-Yonts	AFSC-Seattle

Members of the Plan Teams present for the meeting included those listed below. Plan Team members who were absent included Ken Goldman (GOA Plan Team, ADF&G), Forrest Bowers (Crab Plan Team, ADF&G), and Josh Greenberg (Crab Plan Team, UAF).

### Introductions and overview information

The teams approved the agenda (attached).

## **Current Council activities**

Jane DiCosimo provided a written overview of current Council activities (NPFMC 2009 Highlights handout). She noted that she updates this document annually and it is posted on the Council website.

## **Accounting for total removals**

Mary Furuness informed the teams on progress towards including total removals in groundfish catch accounting in order to meet ACL requirements. Plan team members noted that the removals currently do not account for mortality in the halibut fishery and requested clarification on how these additional mortality sources will be included. Sarah Gaichas noted that authors have already begun to incorporate these removals in assessments where bycatch likely plays a significant factor. However, there should be a more comprehensive consideration on approaches that can be done consistently for these assessments.

Tom Pearson updated the teams on calculations and necessary assumptions made in order to account for removals of Pacific cod targeted for bait in crab fisheries. Team members requested that the crab observer program do some sampling of bait to assist in calculating the total removals from baiting pot gear. Brian Garber-Yonts commented that economic reports have some information on bait. Ed Poulson commented that crab fishermen now have maximum limit (10) on the number of pots fishing for cod as bait but it would be difficult to estimate effort prior to the season. Pre-season effort also depends on which crab fishery is considered (i.e., bait is caught for snow crab pre-season but bait purchased for king crab). It would be useful to have state observers collect additional information on this. Grant noted that further information on total removals of Pacific cod due to baiting of pots will be discussed under the P. cod agenda item on Thursday.

Some research catches are reported in some SAFE chapters. The main issues outside of this are bycatch of groundfish in halibut fishery and cod removals as bait in crab fisheries. Henry Cheng questioned how uncertainty is incorporated in the estimation of these removals. Sarah Gaichas commented that similar issues regarding assessing uncertainty arise in lumping data from difference sources in ecosystem modeling. Grant noted that in assessment models the most common assumption is that total catch is considered measured without error. Jack Turnock noted that while retained catch for crab fisheries are well estimated discarded catch is estimates are less certain. Some stocks with higher discards could be a higher percentage of the overall catch--sometimes as high as 20% of total catch. New catch numbers accounting for total crab removals are to be employed this year in this stock assessment cycle.

## **Role of economists in Council plan teams**

Mike Dalton and Alan Haynie presented a proposal from the current plan team economists for an approach to incorporating greater socioeconomic analysis into the plan team process and reports. Noting that a substantial quantity of social and economic analysis is performed in the course of Council decision-making, the SAFE documents themselves are comprised almost entirely of stock assessment material. In response to SSC recommendations made about the 2007 Economic SAFE, a variety of directives in both the BSAI Crab and BSAI/GOA Groundfish FMP's, and NMFS FMP and national standards guidelines, greater development of a socioeconomic fishery evaluation component of the respective SAFE documents is needed. Although this has been recognized for some time, progress has been limited due to the time constraints in the plan teams' schedules. There is also a lack of critical mass of social/economic scientists on any one plan team, and lack of specificity in regard to scientific and analytical objectives for fisheries evaluation relative to the biological metrics specified in the stock assessment process. To improve this process, the plan team economists propose that they form a working group to provide guidance to the plan teams on specific economic and social science products to be included in the SAFE documents and to serve as a technical review panel for socioeconomic science in the plan team process. It is anticipated that the ecosystem considerations appendices to the SAFE chapters will be used initially as a model for social and economic analyses to be produced for the plan teams. The working group will meet in November to develop a work plan and schedule for the next year, and will meet periodically as needed to complete

analytical and reporting tasks on an annual basis. It is likely that the efforts of the group will be produced for the September plan team meeting, but more consideration will be given to the most effective timing of the group's efforts.

### **Essential Fish Habitat**

Diana Evans and Matt Eagleton presented the planning for the 5 year review of EFH, due to the NPFMC in April 2010. Reviews of the EFH FMP text that have been requested of groundfish stock assessment authors are being collated, and will be discussed in November by the groundfish plan teams for a recommendation as to whether they warrant Council action. The EFH FMP text includes a description of EFH for each managed species, as well as an assessment of the habitat information available for that species; general information about distribution; life history; habitat, biological, and predator/prey associations; the fishery; reference literature; and a summary of the conclusions of the effects of fishing on that species' habitat. Crab stock assessment authors will be requested to review the Crab EFH FMP text in October, and the reviews will be discussed at the March 2010 crab plan team meeting. The NPFMC will see the summary report in April and will decide if revisions to or reevaluations of EFH are necessary. Any change to the EFH text will require an FMP amendment and associated analysis, and the need for an EIS will be assessed in April. The original model assessing the effects of fishing on EFH will not be re-run, but changes in patterns of fishery distribution and intensity or specific model parameters will be reviewed for the 2003-2007 period and compared to the 2005 EIS analysis, which looked at 1998-2002. The summary report will highlight new information that may warrant changes in EFH or additional EFH or HAPC conservation measures.

The Teams recommended that the stock assessment author be the lead for the stock-specific EFH review, and that s/he is encouraged to work with habitat experts for their summaries. Some team members (who would be assigned this task) expressed concern about the timing of the request and impacts on their other responsibilities for November 2009. Team members discussed whether the author was the most appropriate expert to provide species-specific EFH reviews. Others thought the author would be the most appropriate person because the author is the most familiar with the scientific literature on his/her species, and would have access to habitat experts.

In the original EFH EIS, minimum stock size stock threshold was used to gauge whether fishing impacts on habitat have affected sustainability of groundfish. The teams discussed a concern that the EFH review should re-assess different ways to measure fishing impacts on habitat. Diana and Matt responded that the summary report will identify areas of progress in EFH research over the last 5 years, and that the Council will have the opportunity to consider whether these merit re-evaluation of fishing impacts on habitat during its review.

### **HAPC proposal evaluation criteria**

Sandra Lowe presented a proposed new method for scoring HAPC proposals, for Plan Team review. The SSC and the Plan Teams both raised concerns about the criteria that were used to evaluate proposals during the 2004 HAPC process. The Council has identified that they will consider whether to set HAPC priorities, thus initiating a call for proposals for HAPC, in conjunction with the EFH 5-year review.

The proposed new method adds an additional option to rank a proposal as "0" for any of the four criteria, and tries to better define the scores within each criteria. Additionally, the new method changes the way data certainty is characterized in the proposal, using a red/green flagging system. The plan team suggested that 'structure', in the ecological importance column, be clarified as referring to three-dimensional structure. The Team also recommended that the data certainty system adopt an approach similar to that used by the National Standard 1 working group on vulnerability, and assign a data certainty rank to each individual criterion, but then use an average of the data certainty scores to assign color coding to the proposal. Finally, the Team also suggested that it might be worth going back and scoring the 2004 proposals with the new scoring method. The group discussed the rarity criterion, and whether it would be

appropriate to distinguish whether a habitat type was rare globally. Sandra pointed out that HAPC is supposed to be a subset of EFH in Alaska so that the global consideration of rarity does not really apply here.

## Annual Catch Limits

Grant Thompson provided a summary of National Standard 1 guidelines they relate to ACL setting and ABC control rules. He then provided an overview of two main approaches to uncertainty-based buffers between ABC and OFL in groundfish: the decision theoretic (DT) approach and the Probability-only (PO or P\*) approach. These approaches had been discussed in detail at the ACL workshop in May 2009 and the SSC had requested further analyses over the summer in order to refine these for possible use in establishing an ABC control rule for crab stocks which explicitly accounts for uncertainty. An ABC control rule for crab stocks will be necessary to comply with ACL requirements. When used to set the size of the buffer between ABC and OFL, neither approach considers uncertainty in catch estimation (this type of uncertainty would be incorporated into the ACL-ACT buffer instead).

The Teams discussed to what extent we are currently accounting sufficiently for uncertainty in groundfish. Two options were discussed:

- 1) Adopt the current accounting for uncertainty (and acknowledge future reevaluations would be forthcoming)
- 2) Propose immediate revision of current method to account for uncertainty.

The Teams noted that the current evaluation indicates that uncertainty is being accounted for sufficiently for Tier 1. Lowell Fritz commented that the current system looks at the risk of overfishing, but what about biomass-threshold risk? Grant noted that this has been studied to some extent, but not in conjunction with ACL evaluation.

André Punt provided a presentation on the application of these methods to crab stocks. In André's implementation, both methods, the probability-only (PO) and decision-theoretic (DT), are designed to account for variance but do not explicitly address the issue of bias (i.e. systematic differences between the true value for, for  $F_{MSY}$ , and the estimated value). The issue of bias may be important since retrospective analyses of crab biomass indicate that consistent overestimates for some stocks. The Teams discussed the uncertainty associated with an OFL and the need to characterize a distribution for the OFL, as required under the guidelines.

The Teams discussed the trade-off between using a constant buffer approach as compared to a constant P\* between stocks. Uncertainty that is external to the assessment can begin to dominate the buffer.

André commented that the Pacific Council is not choosing to use the DT method to establish buffers for two reasons: the workload requirements and the methodology is difficult to understand and communicate. Furthermore the DT method fails to link directly to the wording in the NS-1 guidelines.

One approach under consideration by the Pacific Council is a modified P\* approach that acknowledges a level of uncertainty in addition to that included in the assessment. The Teams discussed how to specify this additional uncertainty ( $CV_{extra}$ ). The idea is that this term accounts for how abundance estimates change over time due to factors other than regular input data (such as survey values). For example, simply getting new biological information which is treated as known in the stock assessment or new software or different models can change stock estimates but this will not be reflected in a measure of precision based on a fitted model.  $CV_{extra}$  is intended to account for these, and other, sources of variability.  $CV_{extra}$  could be estimated from the variability in biomass estimates from historical assessments from different stocks in a type of meta-analysis. Team members noted that some implementation issues (e.g., including older assessments which had a number of limitations due to computing power etc) would have to be addressed.

The Teams noted that  $F_{MSY}$  proxies (e.g.,  $F_{35\%}$ ) are used in OFL control rules but that, as implemented by André, the P\* methods fail to account for the uncertain related to suitability of the proxy itself. If  $F_{35\%}$  is

taken as a proxy for  $F_{msy}$ , would it be sensible to express the uncertainty in making this link? I.e., why not evaluate some alternative uncertainty scenarios with a distribution about the  $SPR_{F_{msy}}$  assumption? André noted that for crab stocks, a proxy is always used for  $F_{msy}$  and suggested that it would be difficult to quantify the uncertainty of the proxy. A second issue is whether the  $F_{msy}$  proxy should be evaluated relative to a sloping control rule or whether the value of  $F_{msy}$  (or proxy) should be used directly. For the Alaskan crab scenario, since OFL is defined by a sloping control rule, the buffer alternatives follow this pattern (where  $F_{OFL} \ll F_{msy}$  when stocks are below their target).

The Teams discussed ideas of grouping assessment CVs by evaluating the individual components in each assessment and the information available. A higher “CVextra” leads to a greater buffer. They also discussed the issue of splitting stocks into finer spatial and temporal units and the impact that doing so has on uncertainty. In cases where data are consistent, finer splits of stocks will generally increase uncertainty and hence increase the overall buffer.

Ideas were discussed regarding how to quantify some components in CVextra. If the CVextra approach were to be adopted, only those factors that will be applicable over the relevant frame should be included (e.g., for crab 1 yr ACL setting time frame so consider factors that are important over a one year period). The important consideration is then what can be quantified and what affects the ACL over the relevant time period.

Jack Turnock provided an overview presentation of his work on ACL estimation for Tier 4 crab stocks without a model. He showed tables of sources of uncertainty and the relationship between amount of uncertainty included in the analysis and the size of the buffer given pre-specified values for  $P^*$ . It was surprising that the impact of having a CV on biomass and a (different) CV on  $M$  was not equivalent to a CV equal to the square root of the sum of the squares of the two CVs. Additional uncertainty is included by going down in Tier level.

Siddeek suggested fixing  $P^*$  and then looking at the variability of buffer. Jack provided examples of fixing  $P^*=0.12$  and varying uncertainty. Grant requested clarification on why the probability of exceeding the OFL is so high with the Pribilof blue king crab stock and that it must have a specified OFL much higher than the median OFL. This would indicate that you can exceed the OFL more than half the time even if ABC is set far below the point estimate. Jack responded that the specified OFL was set at the mean rather than the median.

The Teams then discussed how to move forward with a  $P^*$  approach for crab and the need to determine a buffer and sources of uncertainty to include.

### **Plan Team recommendations regarding ACL compliance**

**Groundfish** The Teams agree that the current system is adequate to comply with current ACL requirements as they relate to NS-1 guidelines relative to incorporating uncertainty. However this determination was made with the understanding that further analysis and refinements to the groundfish FMP would be forthcoming sometime in the future. The Teams noted that uncertainty and sources of uncertainty should be assessed further and that this should proceed on an appropriate timeline unconstrained by the implementation timing requirements of the 2011 ACL requirements.

The Teams noted that lower tiers in particular should be evaluated in the future to attempt to incorporate uncertainty explicitly. The Teams also requested that the Council provide explicit direction on their objectives for risk aversion. The Teams agreed that providing the Council with results using a range of  $P^*$  values would help in setting risk aversion decision points for the Council. Objectives would then be discussed by the Council in conjunction with selecting their preferred alternative.

**Crab** The CPT recommends moving forward with a  $P^*$  approach for establishing maxABC. What the uncertainties are and how to move forward, practically speaking, with evaluating and defining these

sources of uncertainty by tier level is a priority, understanding that listing and quantifying uncertainty will be an on-going process.

The Team recommends evaluating a range of P\* and buffer values (i.e., present one set of alternatives based on constant P\* values and another set of alternatives based on constant buffer percentages) as well as a range of uncertainty incorporation. A range of alternative sources of uncertainty to evaluate could include:

- 1) assessment uncertainty only
- 2) assessment uncertainty + uncertainty on M
- 3) assessment uncertainty + uncertainty on M + additional sources of uncertainty (e.g., which years to use when defining  $B_{MSY}$  proxies) on relevant time frame as noted previously

It will be important to consider the practical aspects of how to evaluate uncertainty. For example, a “delphi-method” could be used to quantify uncertainty. Doug Pengilly suggested a process whereby the key dimensions of uncertainty (and the probabilities to be assigned to each state-of-nature) would be quantified by the CPT in May and this would be used when computing ABCs in September. Team members discussed how this could be accomplished. Suggestions included: voting, picking the centerpoint and distribution, and other methods. The Team noted that if agreement could be reached on the axis of uncertainty, then the other decision aspects were more of a process-type issue.

The Team suggests the following uncertainties to consider (if possible) by Tier:

Tier 1-3-model uncertainty and external (e.g., between assessment year) assessment uncertainty

Tier 4 –those aspects that affect the annual ABC should be characterized.

These include:

Uncertainty in B, M and Bref	Additional Catch uncertainty	Uncertainty in Biomass only	Uncertainty in B only and $B/B_{msy} > 1.0$
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Alternative P\* values to be considered include a range from 0.1 - 0.5 (including 0.5 as an upper limit is for display purposes only since this option implies a buffer of zero). Such a range of P\*s should assist with evaluating buffers. The Teams reiterated that the choice of P\* value is a policy decision by the Council. Analysis would need to consider a range of values, with a final decision made by the Council.

The Teams noted that the buffer and P\* are related one-to-one for any individual stock, which means that, given one of these two quantities, the other can be calculated. Citing the benefits of working with a constant buffer (less calculation involved and easy to communicate), the Team suggested that the Council consider a range of acceptable P\* values and have the analysis find the buffer that consistently satisfies that range (or lower bound). I.e., a buffer setting  $ACL = 0.72 \cdot OFL$  (or some other number) may satisfy an acceptable range of P\*s for all crab stocks

Some Team members expressed concern that the final choice of a P\* value may be driven by the results of the analysis rather than by an *a priori* determination of acceptable risk. It was noted that the selection of P\* and/or a buffer (with P\* in consideration) was at the Council’s discretion and that it is a policy choice. Another alternative would be to establish a set of stock-specific buffers that would remain fixed for a specified number of years or until new information indicates that one or more buffers should be re-evaluated.

**Attendance** Members of the public, and State and Agency staff who signed the attendance list included: Julie Bonney (AGDB), Lori Swanson (GFF), Anne Vanderhoeven (BBEDC), Mike Szymanski (FCA), Kenny Down (Freezer Longline Coalition), John Gauvin (Best Use Coop), Donna Parker (Arctic Storm), Glenn Reed (PSPA), Mark Maunder (Quantitative Resource Associates), Jack Tagart (Freezer Longline

Coalition), Jason Anderson (Best Use Coop), Mike Perry (Blue North Fisheries), Bob Lauth (NOAA AFSC), Chris Rooper (AFSC), Phil Rigby (AFSC), Dave Clausen (AFSC), Cindy Tribuzio (AFSC), Cara Rodgveller (AFSC), Chris Lunsford (AFSC), Kalei Shotwell (AFSC), Steve Barbeaux (AFSC/REFM), Ed Richardson (APA), Mark Zimmerman (AFSC REFM), Anne Hollowed (AFSC REFM), Pat Livingston (AFSC REFM), Gary Stauffer (FSA), Craig Faunce (AFSC/FMA), William Stockhausen (AFSC REFM), Suzanne McDermott (AFSC REFM), Martin Loefflad (AFSC), Lisa Rotterman (NMFS PRD), Dana Seagars (NMFS PRD), Steve Whitney (NMFS AKR), Tom Wilderbuer (NMFS AFSC), Teresa A' mar (UW/AFSC), Stefanie Zador (NMFS AFSC), Olav Ormseth (NMFS AFSC), Neal Williamson (NMFS AFSC), Melanie Brown (NMFS AKR SF), Todd Loomis (Cascade Fishing), Beth Stewart (AEB), Dave Benson (Trident and NPFMC), Joe Childers (UFA/WGOAF), Taina Honkalehto (NMFS AFSC), Cody Szuwalski (UW), Jan Jacobs (American Sefoods), Craig Cross (Aleutian Spray Fisheries), John Hocevar (Greenpeace), David Witherell (NPFMC), Frank Kelty, Jon Warrenchuk (Oceana), Carwyn Hammond (NMFS), Laura Slater, Erik Olson (Northwest Farm Credit), Ron Felthoven (AFSC), Jennifer Mondragon (AFSC) Stefanie Moreland (ADF&G), Karla Bush (ADF&G), Ed Poulson (F/V Arctic Sea), Scott Miller (NOAA AKRO), Matt Eagleton (NMFS AKRO), John Olson (NMFS AKRO), Diana Evans (NPFMC), and Bill Wilson (NPFMC).

**Adjourn** The meeting adjourned after 5 pm.

**Wednesday September 16  
(Joint meeting Groundfish and  
Crab Plan Teams)**

**Traynor Room**

8:30	Introductions	Introductions, joint agenda approval, Council/RO activities upcoming (other species), Review instructions to authors (ACL assessment removals, EFH by species, other), Role of economists on Council plan teams
9:30	EFH	5-year review process
10:45	<b>Break</b>	
11:15	HAPC	Review of HAPC criteria; recommendations for rating/proposal review
12:00	<i>Lunch</i>	
13:00	ACLs	Report from groundfish and crab analyses on progress towards application of uncertainty corrections
14:00		Proposed alternative ABC control rules for crab; direction for groundfish
15:00	<i>Break</i>	
15:15	ACLs (cont)	