

MEMORANDUM

TO: Council, SSC, and AP Members

FROM: Chris Oliver *CSO*
Executive Director

DATE: September 23, 2002

SUBJECT: Crab Management

ESTIMATED TIME
8 HOURS
for All C-1 Items

ACTION REQUIRED

(e) Crab Plan Team report and PNCIAC report

BACKGROUND

The Crab Plan Team met in Anchorage on September 19-20 to review the status of stocks and assemble the Stock Assessment and Fishery Evaluation Report (SAFE). Minutes of the meeting are attached as Item C-1(e)(1). There are positive signs of future recruitment for bairdi Tanner crab and Bristol Bay red king crab. For opilio crab, the survey indicated much fewer pre-recruit crab than expected. The Pribilof Islands blue king crab biomass was projected to be below a threshold level, so a rebuilding plan may be required. Members of the Plan Team will be on hand to summarize their findings.

The Pacific Northwest Crab Industry Advisory Committee (PNCIAC) met in Seattle at the Alaska Fisheries Science Center on September 13 to review GHs and make recommendations to ADF&G on management of the fishery. The PNCIAC also discussed rules of procedure for future committee meetings. Chair Gary Painter will report on the recommendations of the PNCIAC.

**DRAFT Minutes of the Bering Sea/Aleutian Islands Crab Plan Team
Meeting, September 19-20, 2002**

Members Present:

Doug Pengilly (ADF&G, chair)
Wayne Donaldson (ADF&G)
Forrest Bowers (ADF&G)
Herman Savviko (ADF&G)
Shareef Siddeek (ADF&G)

Bob Otto (NMFS)
Jack Turnock (NMFS)
Joshua Greenberg (UAF)
Dave Witherell (NPFMC)

The Bering Sea/Aleutian Islands (BSAI) Crab Plan Team met September 19-20 in Anchorage. The Team meeting was held to prepare the annual stock assessment and fishery evaluation (SAFE) report and review guideline harvest levels (GHLs). The meeting was based on the following agenda.

Agenda

Discussion of a stock assessment workshop and schedule
Request for Review of Bristol Bay red king crab harvest strategy
Status reports on development of biological reference points
Prepare and review SAFE report

Doug Pengilly agreed to be chair for the next 2 years. Wayne Donaldson agreed to give the plan team report to the Council in Seattle, as Doug has other commitments. Bob Otto also indicated he would attend and be able to give some overview of stock status if questions should arise.

Stock Assessment Workshop and Schedule

The limited time frame for analyzing survey data, running population dynamics models, reviewing results and estimating GHLs for crab stocks was discussed. The short time between when survey data are available and when GHL's are currently announced prohibits a thorough review and analysis of survey data and stock assessment modeling. Due to the current starts of fishing seasons for St. Matthew blue king crab and Pribilof Islands blue and red king crabs, announcements of GHL's cannot be moved to later dates.

The crab plan team recommends delaying announcement of GHL's for Bristol Bay red king crab and Bering Sea Tanner crab to no earlier than September 1, and Bering Sea Snow crab GHL to no earlier than October 1. Future scheduling of annual surveys and determination of seasonal opening dates and preregistration requirements should consider the need for sufficient time for stock assessment review. An annual stock assessment workshop (SAW) was suggested for reviewing stock assessment models and harvest strategies, which could occur in December of each year in conjunction with the annual interagency crab research meeting. Jack Turnock will be responsible for organizing the annual SAW. The SAW would review assessments in detail and make recommendations for improvement to assessments and recommend models to be used for setting future GHL's. The first SAW was scheduled for December 2002 to review the Bering Sea snow crab stock assessment model and harvest strategy. Other assessments and topics may be discussed as time allows.

Review of Red King Crab Harvest Strategy

The team received requests from Doug Wells, Gary Painter, and the Alaska Crab Coalition to consider an intermediate step in the Bristol Bay red king crab mature exploitation rate between 10% and 15%. This

request also had the support of 9 of 11 PNCIAC members. The team endorses evaluation of this proposal, and requests ADF&G to analyze the Bristol Bay red king crab harvest strategy relative to two alternatives:

- 1) a 12.5% exploitation rate when $ESB \geq 34.75$ million pounds and $ESB < 55$ million pounds.
- 2) a continuous linear function for the exploitation rate between 10% at threshold to 15% at $ESB = 55$ million pounds

Biological Reference Points

Siddeek provided the Team with a review of his work on biological reference point estimates for seven BSAI crab stocks. The estimates were based on a catch survey analysis model using published stock parameter values. His results indicated that F_{MSY} is higher than M in most cases and current maximum harvest rates for snow and Tanner crabs may be too high. The major recommendations are:

1. A modified MSY estimation method
2. Evaluate the current practice of equating F_{MSY} to M
3. Redefinition of MSST:
 $MSST = 0.7 SSB_{MSY}$ for king crabs
 $MSST = 0.6 SSB_{MSY}$ for Tanner and snow crabs

The discussion on his presentation pointed out the following:

1. Results depended on the choice of Tau and mating ratios, which are more difficult to determine. Although he had estimated a median value for probable Tau and mating ratios and plausible values of M , he could use Bayesian analysis to choose appropriate values of various unknown parameters: Tau, mating ratio, M .
2. A better approach may be to determine BRPs for two well studied stocks – Bristol Bay red king and Bering Sea snow crabs – and suggest proxies for other data poor stocks based on these results. Consider the following in the analysis:
 - a) Incorporate effects of terminal molt on BRPs of snow crab
 - b) Estimate BRPs based on sex, stage specific natural, bycatch, and fishing mortality
 - c) Do sensitivity analysis of BRPs to varying legal size limits, season, and season duration
 - d) Introduce process errors, including autocorrelated errors, to the stock-recruitment models and estimate distribution patterns of BRPs
 - e) Examine stock-recruitment independent estimate of proxy reference point fishing mortality rates
 - f) Investigate any insight on Tau value by looking at data from other areas that have been at prolonged low levels (e.g., Kodiak red king crab)
 - g) Highlight what knowledge gaps exist and what research needs to be done
 - h) Suggest a way to determine a practical virgin biomass
 - i) Use model output biomass values rather than area swept estimates to determine virgin biomass

The team found the approach to be worth further consideration as an alternative to the present method for determining overfishing rates, B_{msy} , and MSST. The team recommended that this approach be further considered when the team reevaluates overfishing and B_{msy} definitions in 2003.

SAFE Report

This year's SAFE report includes the beginnings of a new section with additional economic information on BSAI crab fisheries. The team anticipates that this chapter will be more fully developed in coming years.

Regarding status of stocks, the survey continued to indicate positive signs of future recruitment for bairdi Tanner crab and Bristol Bay red king crab. For opilio crab, however, the survey indicated much fewer pre-

recruit crab than expected. The Pribilof Islands blue king crab biomass was estimated to be below a threshold level, so a rebuilding plan will likely be required. The team discussed how to approach a rebuilding plan for this stock, which is not subject to any fishing mortality (fishery has been closed for years) or other sources of human disturbance (Pribilof Island Habitat Protection Area allows no trawling). An analysis will need to be done to determine if the current harvest strategy for this stock will result in rebuilding within the time frame allowed under National Standard guidelines (excerpt below):

These factors enter into the specification of the time period for rebuilding as follows:

- (1) The lower limit of the specified time period for rebuilding is determined by the status and biology of the stock or stock complex and its interactions with other components of the marine ecosystem, and is defined as the amount of time that would be required for rebuilding if fishing mortality were eliminated entirely.
- (2) If the lower limit is less than 10 years, then the specified time period for rebuilding may be adjusted upward to the extent warranted by the needs of fishing communities and recommendations by international organizations in which the United States participates, except that no such upward adjustment can result in the specified time period exceeding 10 years, unless management measures under an international agreement in which the United States participates dictate otherwise.
- (3) If the lower limit is 10 years or greater, then the specified time period for rebuilding may be adjusted upward to the extent warranted by the needs of fishing communities and recommendations by international organizations in which the United States participates, except that no such upward adjustment can exceed the rebuilding period calculated in the absence of fishing mortality, plus one mean generation time or equivalent period based on the species' life-history characteristics. For example, suppose a stock could be rebuilt within 12 years in the absence of any fishing mortality, and has a mean generation time of 8 years. The rebuilding period, in this case, could be as long as 20 years

The team adjourned at approximately 2:30 pm on Friday, September 20.

Others in attendance were: Tom Casey, Mark Fina (NPFMC), Wesley Loy.

Pacific Northwest Crab Industry Advisory Committee (PNCIAC)

PNCIAC September 13, 2002 Meeting Minutes

PNCIAC convened at 9:15 am on Friday, September 13, 2002, at NMFS Sandpoint Facility, Bldg. 9, Conf. Rooms A & B.

PNCIAC Members Present: Clyde Sterling, Dave Benson, Garry Loncon, Gary Painter, Gary Stewart, Keith Colburn, Kevin Kaldestad, Lance Farr, (By Phone from Dutch Harbor.) Larry Hendricks, Phil Hanson, and Rob Rogers.

PNCIAC Members Not Present: Arni Thomson. (Secretary)

ADF&G Present: (By teleconference) Wayne Donaldson, Doug Pengilly, and Forrest Bowers.

NMFS Present: Gary Stauffer, Jack Turnock, Russ Nelson, and Ken Weinberg at the facility. Bob Otto by teleconference.

Council Members Present: NPFMC member, Dave Fluharty.

Industry Present: Other than NMFS and ADF&G staff, there were app. 20 other industry members present. Only a few of the attendees signed the (attached) sign-up sheet.

Advertise PNCIAC meeting on Council Web Site

A member of the audience asked that PNCIAC meetings be advertised on the Council web site. (The Chair will work with Dave Witherell in accomplishing this request.)

Minute approval

The first order of business was a discussion on how the Committee should approve the minutes. The minutes reflect the Committee's deliberations and votes on industry issues. The minutes are then forwarded to NPFMC and ABOF. Many times, NPFMC and ABOF will decide industry issues prior to the next time that the Committee meets. Therefore, it is best for the minutes to be "approved" prior to the Committee's next meeting.

The Committee voted 11-0 in approval of a motion by Garry Loncon that the Chairman shall distribute draft minutes to all Committee members and allow for

additions or corrections. The minutes shall be considered as approved, unless one or more of the Committee members have an unsatisfied concern regarding the text. The formal approval of minutes not fully approved shall be dealt with at the next PNCIAC meeting.

Terms of Reference

The Council staff prepared a draft "Terms of Reference," based on the Crab Plan Team Terms of Reference, the FMP, and the State of Alaska Fish and Game Advisory Committee guidelines to help the Committee establish its own guidelines. Dave Witherell was the contact on this item, and the Committee talked with Dave on the speakerphone. Dave "walked" the Committee through the draft. During the time spent with Mr. Witherell, it was pointed out there was an existing PNCIAC "Framework." The Committee pledged to attempt to utilize both documents in coming up with a final draft to be presented to the Council, hopefully by the October, 2002 Council meeting.

The Committee then proceeded to discuss the draft. As not much time was left before a teleconference with ADF&G & NMFS biologists concerning the status of the Bering Sea crab stocks, the Committee was only able to decide a couple of issues.

Number of Members

The Committee voted 11-0 for a motion by Garry Loncon to cap the membership at 11 members.

Quorum

The Committee voted 11-0 to establish a simple majority quorum (6 currently.) for the transaction of business.

Election of Officers

A motion regarding the election of officers was tabled, because there was not adequate time to discuss this issue. (It would be dealt with at the same time as the rest of the "Terms of Reference.")

Status of Bering Sea Crab Stocks

- **St. Matthew Blue King Crab:** Fishery closed. The stock is above the fishery threshold, but at 772,000 lb, below the minimum (ABOF) harvest of 2.5 million lbs. The discussion pointed out that there was uncertainty about the survey because the area at St. Matt is very rocky, and nets cannot be towed in much of the area. The Committee suggested implementing a pot survey to correlate with the trawl survey. It was also pointed out by the Committee that a lower fishery threshold may be an option when Rationalization is implemented.
- **Pribilof Blue King Crab:** Fishery closed. Stock is below fishery threshold.

- **Pribilof Red King Crab:** Fishery closed. No formal harvest strategy has been developed for this stock. The Chair pointed out that: 1. The **stock estimate is well above the "rebuilt" level.** 2. That a formal harvest strategy needs to be developed for the stock. 3. That the Chair was sympathetic to concern by biologists, but that it was frustrating from the industry's point of view to have the season closed by what seem to be arbitrary decisions.

Larry Hendricks amplified on industry frustration saying that the current management strategy will keep these Pribilof king crab seasons closed more often than not, and he believed that a new management strategy was called for.

The Committee asked to have more tows made in this area to satisfy concerns about the precision of the survey. The Committee also suggested that a pot survey could be started with the intention of correlating it with the trawl survey.

- **BBRKC:** 9.27 M lbs. (including CDQ) based on harvest strategy. Garry Loncon asked that the biologists consider a stair step approach to the exploitation rate on mature males. He said that he felt there should be an interim rate between 10 and 15%, because the distance between the minimum ESB of 14.5 million and the 55 million that triggers the 15% rate is so great. The Chair pointed out that the BBRKC stock was well above the "rebuilt" level.
- **Tanner Crab:** Season closed. Stock below fishery threshold.
- **Snow Crab:** 11.5% exploitation rate of mature males computes to 25.605 M lbs. (including CDQ)

During the ensuing discussion by the Committee, it was pointed out that many stocks are low, that rationalization and policies such as that adopted for the 2002 Adak Red King Crab fishery (effort optimization) should give biologists and the Board of Fish confidence in allowing fishing at lower TAC's. And that concepts such as an interim step in the BBRKC exploitation rate should be explored, as those types of things could make the difference between economic survival and death.

Underbag Experiment

Ken Weinberg, from the Center made a PowerPoint presentation on Bristol Bay Red King Crab missed by the main net, and caught in a second net. (the underbag) Ken also showed us how NMFS uses an inclinometer on the footrope to estimate the height of the footrope off the bottom. (Generally, the higher the footrope is off the bottom, the greater chance for going over the top of crab.) The preliminary analysis indicated that for a couple of 5 mm size bins larger than 110

mm, catchability of male Red King Crab was as low as 80%, but averaging across all sizes above 110 mm the catchability averaged around 90%.

Comment by the chair was that all the crab harvest strategies encompass an exploitation rate on some portion of the mature biomass. If smaller crabs are not caught in the net as efficiently as large crabs, the smaller mature animals may be in significantly greater abundance than what is currently accepted for stock abundance estimates. This could skew abundance estimates.

Cooperative Research

Gary Stauffer then described budget money that the Center is receiving, which is delegated to cooperative research. He proposed industry input (cooperative) to decide upon the use of these funds. This year's funds had been used on the underbag experiment, which the industry had supported at its last PNCIAC meeting.

The industry consensus was to use the money for research on BBRKC, because those in attendance felt that had the best chance for the most immediate payback, and that is what is needed in these down economic times.

During the discussion, Bob Otto again told us that the survey that is used was designed to catch large males. This begs the question: Should a "new" survey be designed to more adequately assess the biomass upon which the current harvest strategies are based?

The industry also discussed raising money to fund additional (cooperative) research. It was tentatively decided to meet again at the mid-December Council meeting to further discuss cooperative research.

Net Viewing

Gary Stauffer took several of us to the warehouse where the survey nets are built, for a very informative show and tell about the "workings" of the survey net.

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