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MEMORANDUM

TO: Ms. Marit Carlson-Van Dort, chair
Alaska Board of Fisheries

DATE: March 4, 2021

FROM: Doug Vincent-Lang, Commissioner
Alaska Department of Fish and Game

SUBJECT: Emergency Petition

Pursuant to AS 16.05.270, the Alaska Board of Fisheries (board) delegated authority to the commissioner of the Alaska Department of Fish and Game (department), under board policy 2015-277-FB, to determine whether emergency petitions submitted to the board outside of the regular board cycle constitute emergencies under 5 AAC 96.625(f).

This letter provides my decision as commissioner of the Alaska Department of Fish and Game on an emergency petition from Northern Norton Sound Fish and Game Advisory Committee (NNSAC), dated February 18, 2021.

Action Requested

The petition requests the Norton Sound red king crab (NSRKC) commercial fishery be closed for the remainder of the 2021 season. The basis for this request is an assertion that closure of the fishery will provide for sustained yield and the highest beneficial use of fishery resources in the long term. The petition seeks to allow the NSRKC population to develop more mature males for reproductive purposes and provide a larger abundance of market-sized crab. The commercial market for NSRKC prefers 5-inch carapace width or larger crab, since crab with less than a 5-inch carapace width are worth roughly half the price.

Background

The department manages the summer and winter commercial seasons of the Norton Sound Section red king crab fishery in accordance with **5 AAC 34.080 Harvest Strategy**, and **5 AAC 34.910 Fishing season for Registration Area Q** as directed by the board under the **Norton Sound Section red king crab harvest strategy (5 AAC 34.915)**.

The NSRKC stock supports three fisheries: summer commercial, winter commercial, and subsistence with the summer fishery accounting for 80-97% of the total catch from all fisheries. Since commercial crab fishery registration became superexclusive in 1994 the summer fishery has averaged an annual harvest of 300,000 lb with an ex-vessel value of $1.180 million to an average of 33 permit holders. The winter fishery has averaged an annual harvest of 23,357 lb, with an ex-vessel value of $130,987 to an average of 18 permit holders. The summer subsistence fishery harvest averaged 2,766 lb (range 155-6,525 lb) from 2004-2019 while winter subsistence harvest has averaged 10,274 lb (range 558-20,525 lb) from 1994/1995-2019/2020. The board has made a

positive customary and traditional use determination for all shellfish in the Bering Sea Area (5 AAC 02.608); the board has not made a finding of amounts reasonably necessary for subsistence.

NSRKC biomass is projected annually using a male-only size structured model that combines multiple sources of survey, catch, and mark-recovery data using a maximum likelihood approach to estimate abundance, recruitment, catchability of the commercial pot gear, and parameters for selectivity and molting probabilities. Bottom trawl survey abundance and information from commercial harvests (including total harvest, catch per unit of effort (CPUE), shell condition, and carapace-length composition) are the largest drivers of the model that calculates the annual biomass projection of male red king crab. Legal male biomass (LMB) is projected annually as that portion of male crab within the total population biomass with a carapace width >4.75 inches.

Under provisions of the Federal Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP) NSRKC are managed jointly by the State of Alaska and the federal government. Under the FMP the North Pacific Fishery Management Council's (Council) Scientific and Statistical Committee (SSC) makes recommendations to the Council on the annual overfishing limit (OFL) and acceptable biological catch level (ABC) for NSRKC. Once OFL and ABC are adopted by the Council the department must set the annual guideline harvest level (GHL) and manage the fishery so that total crab mortality does not exceed the ABC.

The state GHL is set in accordance with **5 AAC 34.915 Norton Sound Section red king crab harvest strategy.** The harvest strategy establishes a minimum LMB threshold of 1.25 million lb to open the commercial fishery and directs the department to set the annual GHL based on a percentage of three tiers of annual LMB from low to high as follows: 1) GHL up to 7% of legal male red king crab biomass for LMB <2 million lb, 2) GHL up to 13% of legal male red king crab biomass for LMB between 2-3 million lb, and 3) GHL up to 15% of legal male red king crab biomass for LMB >3 million lb. Additionally, when setting the annual GHL the department accounts for dead loss, subsistence harvest, and sport harvest so that total annual red king crab harvest does not exceed the annual ABC set by the Council. Therefore, the GHL must be set sufficiently below ABC to account for subsistence harvests and incidental mortality of non-target crab discards.

For the 2020 season, the SSC recommended using a 30% buffer between OFL and ABC (an increase from the 20% buffer used in 2019) and the Council set ABC at 201,000 lb, and OFL at 287,000 lb. The 30% buffer between OFL and ABC was recommended to address uncertainty in the model estimate of biomass. In accordance with the **Norton Sound Section red king crab harvest strategy** the department set a conservative 7% harvest rate of the LMB in 2020 for a total commercial GHL of 170,100 lb. This was below the ABC of 201,000 lb to account for subsistence harvests and incidental mortality of non-target crab discards. However, at the March 2020 Statewide king and tanner crab meeting held in Anchorage, the board closed the commercial red king crab fishing season for the remainder of 2020 east of 167º West longitude. This closure was in response to a request from local stakeholders to close the fishery for the remainder of the season over concerns for the NSRKC resource. The board's action was based on substitute language found in RC39 for Proposal 273 which sought to change the opening date of the Norton Sound winter red king crab fishery.

Finding of Emergency

It is the state policy that emergencies are held to a minimum and are rarely found to exist. The Joint Board Petition Policy of 5 AAC 96.625 that the board uses to respond to emergency petitions states that an emergency petition "will be denied and not scheduled for a hearing unless the

problem outlined in the petition justifies a finding of emergency." The policy defines "emergency" as:

> an unforeseen, unexpected event that either threatens a fish or game resource, or an unforeseen, unexpected resource situation where a biologically allowable resource harvest would be precluded by delayed regulatory action and such delay would be significantly burdensome to the petitioners because the resource would be unavailable in the future.

Discussion

For the 2021 season, the Council met in early February to finalize OFL and ABC for NSRKC. The 2021 projected mature male biomass (MMB) of NSRKC is 5.04 million lb of male crab with carapace length >94mm, and the total catch OFL was set at 628,000 lb using a new assessment model that incorporates total catch rather than only retained catch in setting OFL. The 2021 projected LMB of NSRKC is 3.93 million lb of male crab with carapace width >4.75 inches.

For 2021 the Council's Crab Plan Team (CPT) proposed a 30% buffer between OFL and ABC to address uncertainty in the model estimate, lack of complete 2020 data, and insufficient information about the biology and ecology of NSRKC. The SSC reviewed the CPT's recommendation, and, based on additional concerns and public comments, increased the buffer between OFL and ABC to 40%. This resulted in the Council setting a 2021 total catch ABC of 377,000 lb of red king crab. Discard mortality for 2021 is estimated to be 27,000 lb leaving 350,000 lb as the retained catch portion of the ABC.

NNSAC's petition to the board indicates several concerns with current stock assessment as follows:

- The petition suggests there are model options available that would provide a more acceptable biomass estimate. A Generalized Model for Alaska Crab Stocks (GMACS) is being developed for this stock. The SSC reviewed this model in February and felt it was not ready to be utilized to calculate a biomass estimate.
- The petition highlighted the concern of pot loss during the winter commercial fisheries. This was addressed during the March 2020 board meeting in Anchorage when the board eliminated the ability to set replacement pots, ensuring fishermen can use no more than 20 pots for the winter season.
- The petition offers the 2020 bottom trawl survey as evidence the model is incorrect. The model estimates biomass from multiple years of data. Crab captured in previous years' trawl surveys are a part of future stock projections. For example, the large number of pre-recruit crab captured in the 2018 and 2019 trawl surveys recruit into the 2021 biomass estimate.
- The petitioner cited concerns over female clutch fullness from 2018 and 2019. The pattern of low proportion of full clutches in female red king crab was not recorded in the 2018 trawl survey but was seen in 2019 trawl data. In 2018 the proportion of barren females was similar to recent years while in 2019, the proportion of barren females was the highest in the history of the trawl survey. These proportions were likely due to an above average number of females close to the average size at maturity with a below average number of functionally mature males. In 2020 the males in the cohort detected in 2019 were larger than their cohort females allowing them to mate, which resulted in a decrease in the proportion of barren and an increase in the proportion of full clutch females to within their historical ranges. The petition also speaks to the presence of skip-molt small crab as a

concern. Historical trawl data indicates the proportion of skip-molts in the 2020 survey was not outside the range previously observed in Norton Sound.

- The petitioner indicated that the modeling methods applied do not adequately address handling mortality concerns. The SSC and CPT included an estimate of discard mortality and preferred market size into the calculation of ABC in 2021 to mitigate these concerns.

Overall, the petition suggests that a lack of confidence in the population model was the reason for selecting a 40% buffer between OFL and ABC (i.e., ABC = (1-0.4) * OFL). The buffer between OFL and ABC is flexibly designed to address uncertainties in the calculated biomass because of model parameter estimation or data limitations. Consideration of these concerns is the primary reason the SSC increased the buffer between OFL and ABC. Had the CPT and SSC agreed with the petitioners' concerns based on their scientific expertise, they could have increased the buffer much higher than 40%, to a level that would not allow the commercial fishery to occur.

For the department to close the fishery as directed by the board under provisions of the **Norton Sound Section red king crab harvest strategy,** the threshold level of biomass for legal male red king crab would have to fall below 1.25 million lb. The petition from NNSAC requests to close the fishery, indicating they believe LMB is below the threshold of 1.25 million lb and the model is overestimating LMB by approximately 70%. The projected LMB of 3.93 million lb is well above the 1.25 million lb minimum threshold. The department agrees with the precautionary approach taken by the SSC in their recommendation for a 40% buffer between OFL and ABC. The SSC and CPT also determined the NSRKC stock is not overfished nor is overfishing occurring. The department therefore set a 2021 GHL of 314,400 lb as directed by the board under the **Norton Sound Section red king crab harvest strategy**. This GHL was set to ensure total NSRKC fishing mortality remains below the 2021 ABC of 377,000 lb of red king crab and is set very conservatively using an 8% harvest rate applied to the LMB estimate. Under the board's harvest strategy, a harvest rate of up to 15% of LMB could have been used in setting the GHL, but this would have resulted in exceeding federal ABC.

In summary, the following three factors provides assurance that the 2021 NSRKC GHL is set conservatively in accordance with state regulations: 1) the department's approach of setting GHL used a harvest rate nearly 50% less than the maximum allowed under the current regulation, 2) the 2021 projected LMB is more than three times greater than the 1.25 million lb regulatory closure threshold, and 3) the more conservative 40% buffer between OFL and ABC was established by the SSC and adopted by the Council. If the 2021 fishery data indicate that LMB is not sufficient to sustain harvest of the full GHL the fishery will be closed inseason. This approach may allow for collection of some inseason fishery information on stock status with a backstop of emergency order authority being available to close the fishery early if stock status concerns arise.

Based on the information available to me, I cannot conclude that an emergency under 5 AAC 96.625(f) exists. Accordingly, I deny the emergency petition pursuant to AS 46.62.230.

cc: Glenn Haight, Executive Director, Alaska Board of Fisheries
Sam Rabung, Director, Division of Commercial Fisheries
Dave Rutz, Director, Division of Sport Fisheries
Aaron Peterson, Assistant Attorney General, Department of Law
Forrest R. Bowers, Deputy Director, Alaska Department of Fish and Game
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