



Serving the fisheries of the Bering Strait Region

Brevig Mission Diomede Elim Gambell Golovin Koyuk Nome Saint Michael Savoonga Shaktoolik Stebbins Teller Unalakleet Wales White Mountain

January 28, 2021

North Pacific Fishery Management Council
605 West 4th Ave, #306
Anchorage, AK 99501

Re: Agenda Item C5 – 2021 Norton Sound Red King Crab Fishery Specifications

Greetings Council Members,

Norton Sound Economic Development Corporation (NSED C) appreciates the opportunity to comment on Agenda Item C5 – Norton Sound Red King Crab (NSRKC) Fishery Specifications and respectfully requests consideration for increasing the conservation buffer to a total of 40% or 50% to be applied to the Overfishing Limit (OFL) for the 2021 season.

We were encouraged to see the Bering Sea Aleutian Islands Crab Plan Team (CPT) recommended the application of a 30% buffer to the OFL, as was recommended by the Council's Scientific and Statistical Committee (SSC) the previous year. However, we believe the current status of the stock warrants the Council further buffering the OFL an additional 10% to 20%. It is our contention that additional buffer is reasonable to fully address the CPT's concerns outlined in their meeting report and ensure that the NSRKC stock's reproductive potential is not irrevocably jeopardized.

Furthermore, there is considerable uncertainty regarding how many legal males will actually reach industry-preferred size of ≥ 5 inches in carapace width (CW) in 2021 which raises additional concerns with discard mortality. Impairing the resilience of the stock so quickly after the recent fishery collapse is avoidable. The preponderance of biological information suggests the NSRKC legal male spawning biomass is not yet ready to withstand pre-2019 exploitation levels. Our concerns are outlined in detail in this letter, but I think it's important to first point out the relationship we have with the resource as a primary steward and stakeholder, as well as what led to the recent NSRKC fishery failure.

Background

NSED C represents 15 member communities in the Norton Sound region from Stebbins to Wales, including those on Little Diomede and St. Lawrence islands. Revenue from our Bering Sea fisheries operations is used to provide economic development through education, employment, training, and financial assistance to these member communities. It would be hard to find a more impactful example of NSED C's economic development than the vessel and fishing gear financing for resident fishermen, the substantial investment in processing and tendering infrastructure and jobs, and the development of value-added markets for the seafood caught by resident fishers. The NSRKC fishery has been a keystone component of our in-region economic development as it had perennially been our most valuable fishery until its sudden collapse in 2019.

NSED C is also heavily involved in the research and scientific support of this fishery through both our staff scientists' work and research funding provided to other entities. It should also be noted that residents

of our member communities are heavily dependent on NSRKC for customary and traditional subsistence uses, and we therefore have multiple reasons to be concerned about the long-term health and trajectory of the stock.

Early in 2020, NSEDC decided it would not purchase NSRKC out of concern that the reproductive viability of the stock was imperiled based on:

- 1) Record low 2019 commercial fishery catch per unit of effort (CPUE),
- 2) Harvests falling well below the 2019 guideline harvest level (GHL), and
- 3) 2019 trawl survey data that showed record low legal male abundance (LMB), very high proportions of old-shell/skip-molt of both legal and sub-legal males, alongside depressed fertilization rates of mature female crab.

In response to this information, NSEDC, as the sole processor, elected to not purchase red king crab in 2020 to protect the stock's spawning biomass so that it could be rebuilt to levels that support sustainable harvests. Thankfully, the State of Alaska Board of Fisheries (BOF) agreed with these concerns and decided to close the commercial fishery in April 2020 for the remainder of the season.

Due to ongoing concerns identified in this letter, NSEDC has opted to again not purchase crab in the 2021 commercial winter fishery and has yet to determine whether to buy during the summer fishery.

Concerns about 2021

Newly collected data from the 2020 trawl survey is encouraging in that it shows the strong year class of juveniles first observed in 2018 surviving and growing to larger sizes in subsequent years. Results from the 2020 summer trawl survey showed a high proportion of pre-recruit crab (male crabs that are one or more molt increments away from recruiting to legal size) and improved fertilization rates among females, but an observed decline in LMB for the third consecutive season. Despite a substantial increase in projected legal male biomass for 2021, the Crab Plan Team (CPT) recommended the OFL again be buffered by 30% for 2021. In its report, the CPT explained that it increased the OFL buffer based on a combination of existing concerns combined with new concerns about the assessment, including:

- 1) The model's growth transition matrix has a tendency to overestimate growth.
- 2) Changes in the definition of legal crab based on new data used to define the relationship between carapace length (CL) and carapace width (CW). Depending on how this relationship is being computed, percentages of crab projected to reach legal and exploitable size CWs based on CL may be overly optimistic.
- 3) The fact that the current OFL is a retained-catch OFL versus a total-catch OFL. In other words, actual fishing mortality may exceed the retained-catch OFL depending on the level of discards that occur in the process of reaching the ABC. An overwhelming majority of catch will be sublegal for at least another year.
- 4) Persistent unusually large numbers of old-shell males. This has been the case since at least 2018. It is also noteworthy that the model's issue of overestimating growth could in part be due to skip-molting amongst the prerecruit-1 size class. Also, lack of competition for females within the LMB could lead to increased skip-molting of pre-recruit 1 crabs.
- 5) Below-average numbers of pre-recruits (<94 mm CL) in 2015-2018 suggesting that below-average recruitment to the fishery will be experienced for several more years, typically over a three-year interval. It will be some time before the next episodic recruitment event occurs. This only further underscores the need to be careful with the current cohort of

males entering the fishery in 2021 so that this cohort is optimized for reproductive potential and sustainable harvests. Intervals between recruitment events also necessitates the need to conserve a portion of the current mature males to ensure there is enough male reproductive potential available for the next cohort of mature females.

- 6) That the current OFL is calculated using the current legal size ($\geq 4 \frac{3}{4}$ " CW) rather than being calculated using a selectivity curve that is based on the 'exploitable' males (≥ 5 " CW) that are of industry-preferred size.

This last point highlighted by the CPT represents a huge source of uncertainty which has significant implications for sustainability, discard mortality, harvest efficiency, and potential impacts to the NSRKC market brand. Handling mortality, particularly during the winter fishery, is a huge concern. The process of sorting crab on the ice results in frost injury to the crab caught in the winter months. Non-target crabs are often returned to the water after the retained catch is removed from the pot, which increases their exposure time to subzero temperatures. Death is rarely immediate, but studies show their injuries result in death days to weeks later.

From our perspective, an estimate of the proportions of sub-5-inch males and 5-inch-plus-sized males comprising the projected LMB is the most critical piece of information for managers and stakeholders. If the proportion of exploitable males remains low, this could lead to unacceptably high discard mortality rates of non-target males that would otherwise have contributed to the spawning biomass and eventually grow to the higher-valued, industry-preferred size. For this reason alone, the current recommended buffer of 30% to the OFL may not go far enough to account for the uncertainty related to the 2021 LMB size composition.

Lastly on this point, NSEDC has spent the last two decades building a market for locally caught crab sections and live crab, and it is already challenging to develop a robust high-value market using crabs of the current industry-preferred size. A combination of a reduced retained size and higher than average old-shelled crab could impart both short-term and long-term adverse impacts on the NSRKC brand that might prove difficult to rectify. In short, we don't think this risk is worth taking, in both biological and market terms, especially with the stock still in recovery.

Increased Reliance of Fishery on Recruits a Major Concern

One last point that cannot be overstated is that there is a risk of making the NSRKC fishery overly reliant on annual recruitment events, depending on what happens these next few years. Facilitating a recruits-only fishery would be antithetical to the BOF's *Policy on King and Tanner Crab Resource Management* and National Standard 1 under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The BOF policy was established 30 years ago immediately after the Gulf of Alaska and Bering Sea red king crab fishery failures as a post-event critique of fisheries management.

A recruits-only crab fishery will most likely result in higher inter-annual GHV variability, greater frequency of fishery closures, and potential long-lasting impairment of the stock's reproductive potential. The BOF's policy mandates maintaining an assortment of different age and size classes to protect reproductive potential. Additionally, it goes without saying that keeping a diverse assemblage of spawners would serve as a bulwark against the potential for fishery-induced genetic selection for smaller size at maturity. The male crab size cohorts supporting the bulk of the reproduction are most likely to skip-molt due to competing energy demands between growth and mating. These cohorts have a higher mortality rate.

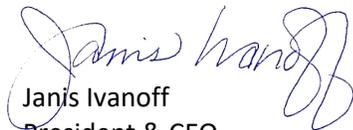
Depending on the amount of ghost fishing by derelict pot gear, actual fishing mortality of mature males could be underestimated. Conversely, this would also suggest spawning success could be overestimated

in years with high pot loss. Management is required to constrain all forms of harvest so that total fishery mortality remains well below the ABC. We believe the current paucity of post-recruit males since 2019 and the potential over-reliance on new recruits going forward warrants an increase to the buffer this year.

We are cautiously optimistic that the NSRKC stock is on the mend, but NSEDC is still concerned the resource remains in a vulnerable state following the recent precipitous decline. As such, precaution is necessary as the spawning stock biomass continues rebuilding. In practice, we contend that precautionary harvest rates and enhanced conservation buffers must be applied until more of the legal male population reaches the preferred industry size, as is expected beginning in 2022.

Going forward as an organization, NSEDC intends to be very active during the next BOF regulatory cycle beginning in April 2022 to help craft regulatory proposals related to the current harvest strategy, gear modifications that reduce discards of non-target crab, and any other potential measures that could lead to sustainable harvests and reduce the chance we have a repeat of the 2019 crash that has so severely impacted our region's stakeholders. In the interim, an increased buffer for the 2021 season is a vital tool to ensure the stock continues its trajectory toward these goals. Thank you for considering our concerns.

Sincerely,



Janis Ivanoff
President & CEO

cc Melanie Bahnke, President, Kawerak, Inc.
 Louis Green, Jr., Chairman, Seward Peninsula Subsistence Regional Advisory Council
 Charlie Lean, Chairman, ADF&G Northern Norton Sound Advisory Committee
 Morris Nassuk, Acting Chairman, ADF&G Southern Norton Sound Advisory Committee