

**SUBMISSION TO THE**  
**NUNAVUT WILDLIFE MANAGEMENT BOARD AND NUNAVIK MARINE**  
**REGION WILDLIFE BOARD**  
**FOR**

**Information:**

**Decision: X**

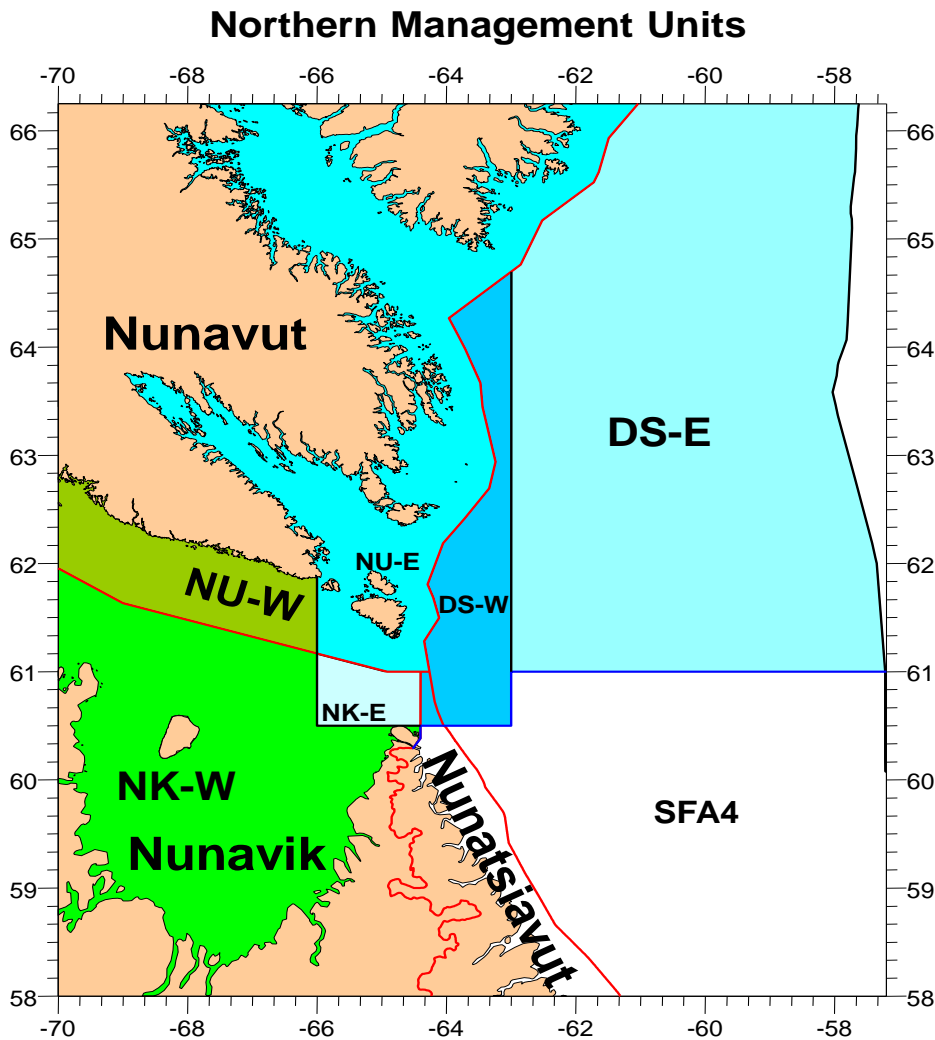
**Recommendation:**

**Issue: Revisiting 2019/20 Total Allowable Catch levels for Northern (*Pandalus borealis*) and Striped (*Pandalus montagui*) Shrimp in the Western Assessment Zone**

**Map:**

Blue areas – Eastern Assessment Zone.

Green areas – Western Assessment Zone.



## Background

The Department submitted a Briefing Note to the Nunavut Wildlife Management Board and the Nunavik Marine Region Wildlife Board (i.e. the Boards) in January 2019 for their joint decisions and recommendations on two species of shrimp in the Western Assessment Zone (WAZ) and Eastern Assessment Zone (EAZ). The Science results from the 2018 multi species survey that will inform the 2019/20 Total Allowable Catches (TACs) were not available at the time of submission.

The Department indicated it would return to the Boards should the Science results indicate a precipitous change in fishable biomass for either species in either zone. The Boards agreed that any change greater than 25% would be considered precipitous. The results of the 2018 Science survey have been received and indicate precipitous changes (increases) in fishable biomass in the WAZ for montagui (+77.7%) and for borealis (+101.1%). The results of the 2018 Science survey do not indicate a precipitous change in fishable biomass for either species in the EAZ.

The results of the full stock assessments submitted through this Addendum (summary at ANNEX A) will provide the Boards with additional information relevant to their recommendations and decisions for the Minister for the 2019/20 fishery.

### **Western Assessment Zone – For Decision**

#### Key Background Points

A new science survey in the WAZ was undertaken beginning in 2014. Consequently, the time series for this assessment zone is reset with the most recent 2018 survey representing year five.

Since the beginning of the new survey, the Boards agreed to rollover the TACs for both species in the WAZ, resulting in a range of exploitation rates (ERs) of 8% - 19.3% for Montagui, and 7.3% - 19.8% for Borealis (ANNEX B).

There is currently no Precautionary Approach framework for either stock in the WAZ, however a Science peer-reviewed process will be undertaken in 2019/20 to develop a Limit Reference Point (LRP) for each stock. The establishment of the LRP is undertaken unilaterally by Science. Resource Management will then work with Science, the Boards' staff and Nunavut and Nunavik industries to establish an Upper Stock Reference point (USR) for each stock that will then go to the Boards for approval. These reference points will delineate the Healthy, Cautious and Critical Zones, which can guide management actions to maintain or promote sustainable harvest levels. It is anticipated that the reference points could be applied to the TAC setting process in 2021/22, which coincides with the next full stock assessment for this area.

### **WAZ Borealis**

- The 2018/19 TAC was 2,080t and the ER was 19.8%.
- The 2018 survey indicated a stock increase of 101.1%, following two years of stock decreases (20% in the 2017 survey and 54% in 2016).
- A rollover of the current TAC would result in an ER of 9.9%

## **WAZ Montagui**

- The 2018/19 TAC was 6,138t and the ER was 13.7%.
- The 2018 survey indicated a 77.7% increase of fishable biomass, following a stock increase (42%) in the 2017 survey, and a decrease of 42.5% in 2016.
- A rollover of the current TAC would result in an ER of 7.7%

### **Primary Considerations for the Boards' Decisions**

- Five data points in the Science survey time series have now been established, however Science cannot detect trends for either stock at this time
- Precipitous increases have occurred for both species as per the 2018 survey
- A rollover of the current TACs would result in ERs less than 10%
- The WAZ has generally been managed in the order of a 10% ER, however ERs for both stocks have been above this general level since the 2017/18 fishery
- Past ERs have been as high as ~19% with no detectable impact on the stocks since the new survey began
- There is no PA for either stock in the WAZ, i.e. the stock statuses are unknown
- The accepted rule in other areas for stocks in the Healthy Zone is for a 15% maximum change to the TAC, unless there has been a precipitous change in fishable biomass
- A 20% ER for stocks in the Healthy Zone is the accepted maximum rate to maintain Marine Stewardship Council certification;

### **Recommendation for the WAZ:**

The Department requests that the Boards take into account the primary considerations as noted above in their decisions for TACs in the WAZ. The Department is of the view that the Boards' could reasonably consider increasing the TACs to an ER that falls within the previous ER range since 2015/16 (7.3% - 19.8% ER for Borealis, 8% - 19.3% ER for Montagui) for each species without impacting the sustainability of the stocks. A table is included at ANNEX B to illustrate possible scenarios for each species.

### **Interim Allocations**

Moving forward, should a final decision on TACs in the WAZ and EAZ not be made by the opening of the fishery on April 1<sup>st</sup>, the Department requests that the Boards authorize the release of interim Nunavut / Nunavik allocations in the settlement areas at 50% of the previous year's levels. This will allow fishing activity to begin in a timely manner to ensure a successful shrimp fishing season while the decision making process is underway. This decision could be made independently of the decision on TACs.

### **Summary of Request**

The Department is seeking the following decision from the Boards for the 2019/20 fishery:

- 1) A decision on TACs and allocations for both species in the WAZ at levels the Boards deem to be reasonable and sustainable.

- 2) By way of reminder and for ease of reference, as per the January, 2019 Briefing Note to the Boards, the Department also requests for the EAZ:
  - a) A recommendation on TACs for both species
  - b) A decision on harvest levels and sharing arrangements for Nunavut /Nunavik East management units
  - c) Recommendations on distribution of TAC between the Nunavut /Nunavik East and offshore Davis Strait management units
- 3) Moving forward, agreement to release interim quotas in the settlement areas at 50% of the previous year's levels

**Prepared by: Ecosystems and Fisheries Management, Fisheries and Oceans Canada**

**Date:** February 27, 2019

**ANNEX A SUMMARY: ASSESSMENT OF NORTHERN SHRIMP, *Pandalus borealis*, AND STRIPED SHRIMP, *Pandalus montagui*, IN THE EASTERN AND WESTERN ASSESSMENT ZONES, FEBRUARY 2019**

The assessment includes 2018 survey biomass, fishery data, and fishery exploitation rate indices for Northern Shrimp (*Pandalus borealis*) and Striped Shrimp (*Pandalus montagui*) from the Eastern and Western Assessment Zones (EAZ and WAZ).

**Eastern Assessment Zone *Pandalus borealis***

- Total catch varied without trend around 6,000 t from 1997 through 2018/19.
- The fishable biomass index was below the long term mean ( $62,412 \pm 13,735$  t) in both 2017 and 2018. It increased by 19.6% (from 39,198 t in 2017), to 46,900 t in 2018.
- The female spawning stock biomass (SSB) index was below the long term mean ( $38,592 \pm 9,688$  t) in both 2017 and 2018. It increased by 32.4% (from 24,800 t in 2017), to 32,842 t in 2018.
- The reported exploitation rate index has varied without trend since 2007/08 and in 2018/19 was slightly above the long-term mean of  $10.4 \pm 2.7\%$  with 64% of the TAC taken. Based on the 2018/19 TAC of 7,840 t, the potential exploitation rate index was 16.7%.
- The resource is currently in the Healthy Zone within the IFMP Precautionary Approach (PA) framework.

**Eastern Assessment Zone *Pandalus montagui***

- Total catch in 2018/19 was 150 t, 18% of the 840 t TAC.
- The fishable biomass index was above the long term mean ( $13,952 \pm 6,677$  t). It decreased by 16.3% (from 24,957 t in 2017) to 20,895 t in 2018.
- The female spawning stock biomass (SSB) index was above the long term mean ( $9,787 \pm 6,062$  t). It decreased by 16.5% (from 16,537 t in 2017) to 13,806 t in 2018.
- The reported exploitation rate index for 2018/19 was 0.7% with 18% of the TAC taken. Based on the 2018/19 TAC of 840 t, the potential exploitation rate index was 4.0%. Over the last three years, the resource remained in the healthy zone. Previously the resource has shown wide fluctuations year to year in the female SSB index. As a result, caution is advised when setting the TAC.

**Western Assessment Zone *Pandalus borealis***

- Total catch was 1,307 t in 2018/19, which is 63% of the 2,080 t TAC.
- The fishable biomass index increased in 2018 to the level above the long term mean ( $18,462 \pm 6,476$  t). It increased by 101.0% (from 10,487 t in 2017) to 21,088 t in 2018.
- The female SSB index increased in 2018 to the level above the long term mean ( $10,063 \pm 3,484$  t). It increased by 147% (from 5,216 t in 2017) to 12,884 t in 2018.
- The reported exploitation rate index for 2018/19 was 6.2% with 63% of the TAC taken. Based on the 2018/19 TAC of 2,080 t, the potential exploitation rate index was 9.9%.
- The resource is currently not assessed with a Precautionary Approach (PA) framework.

**Western Assessment Zone *Pandalus montagui***

- Total catch was 5,530 t in 2018/19, which is 90% of the 6,138 t TAC.
- The fishable biomass index was above the long term mean (52,228  $\pm$ 18,493t). It increased by 77.7% (from 44,915 t) to 79,835 t in 2018.
- The SSB index was above the long term mean (28,799  $\pm$ 9,980 t). It increased by 57.8% (from 30,305 t in 2017) to 47,834 t in 2018.
- The reported exploitation rate index for 2018/19 was 6.9% with 90% of the TAC taken. Based on the 2018/19 TAC of 6,138 t, the potential exploitation rate index was 7.7%.
- The resource is currently not assessed with a Precautionary Approach (PA) framework.

## ANNEX B

### Past Total Allowable Catches, Fishable Biomass and Exploitation Rates in the Western Assessment Zone by Fishing Year Since the New Survey

WAZ		2019/20	2018/19	2017/18	2016/17	2015/16
Montagui	FB (t)	79,834	44,915	31,724	55,194	77,078
	TAC (t)		6,138	6,138	6,138	6,138
	ER		13.7%	19.3%	11.1%	8%
Borealis	FB (t)	21,088	10,487	13,116	28,532	21,713
	TAC (t)		2,080	2,080	2,080	2,080
	ER		19.8%	15.9%	7.3%	9.6%

FB – Fishable Biomass

TAC – Total Allowable Catch

ER – Exploitation Rate

### Possible Scenarios

	Montagui				Borealis			
	TAC	Addition al quota	Increase in TAC	ER	TAC	Addition al quota	Increase in TAC	ER
Rollover TAC	<b>6,138t</b>			7.7%	<b>2,080t</b>			9.9%
10% ER	<b>7,983t</b>	1,855t	30%	10%	<b>2,109t</b>	29t	1.4%	10%
15% ER	<b>11,975t</b>	5,837t	95.1%	15%	<b>3,163t</b>	1,083t	52%	15%
19% ER	<b>15,168t</b>	9,030t	147%	19%	<b>4,007t</b>	1,927t	92.6%	19%
↑TAC by 15%	<b>7,059t</b>	921t		8.8%	<b>2,392t</b>	312t		11.3%
↑TAC by 25%	<b>7,673t</b>	1,535t		9.6%	<b>2,600t</b>	520t		12.3%