

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

**FOR**

**Information:**

**Decision: X**

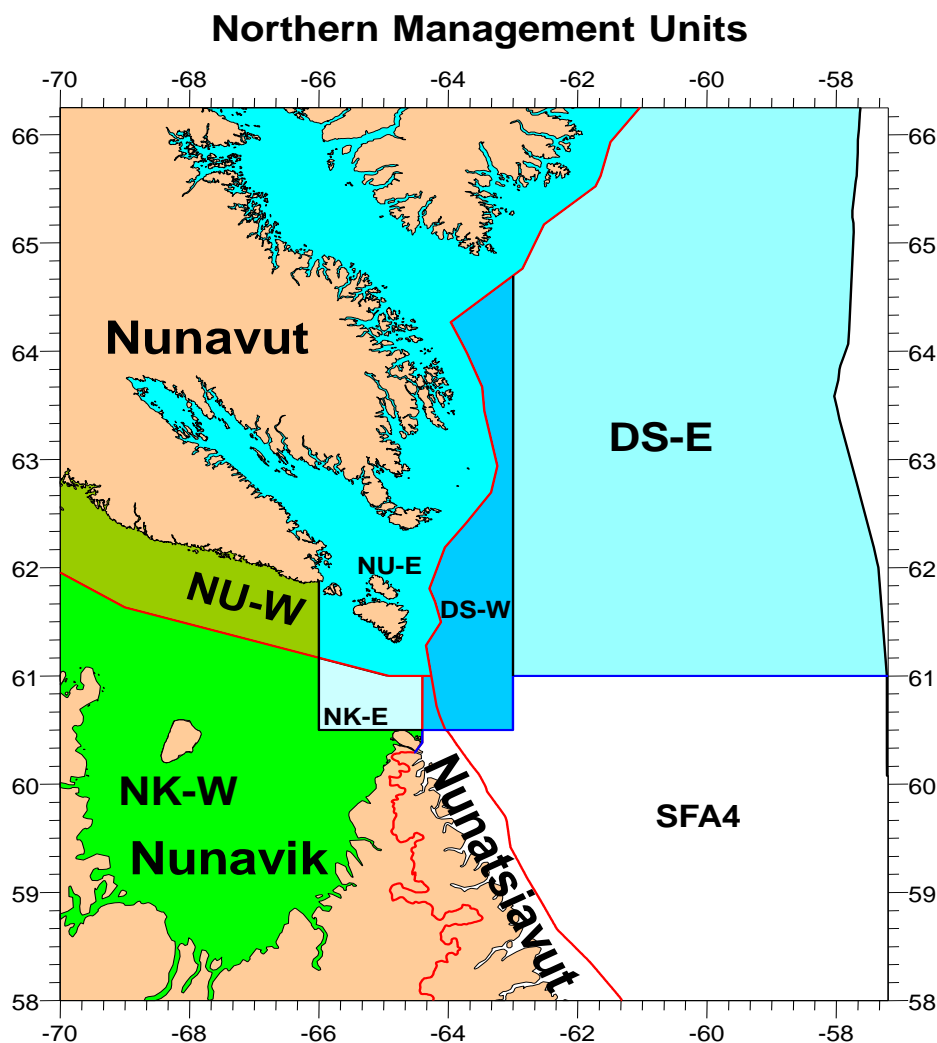
**Recommendation: X**

**Issue: Revisiting Total Allowable Catch levels for Northern (*Pandalus borealis*) and Striped (*Pandalus montagui*) Shrimp for the 2017/18 and 2018/19 season**

**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 in early February 2017 for their joint decisions and recommendations on two species of shrimp in the Western and Eastern Assessment Zones. The Science results from the 2016 multi species survey that will inform the 2017/18 Total Allowable Catches were not available at the time of submission.

The Department indicated it would return to the Boards to 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 2016 Science survey have been received and indicate precipitous declines in fishable biomass for borealis (54%) and montagui (42.5%) in the WAZ. The fishable biomass for montagui in the EAZ increased precipitously at 124.7%. Of note, EAZ borealis declined by 17%.

The Science results submitted through this Addendum will provide the Boards with additional information relevant to recommendations and decisions for the Minister for a two year period (2017/18 and 2018/19).

At the time this Addendum was submitted, the Science Advisory Report has not yet been approved in its entirety. However, the conclusion “bullets” for each species have been approved and can be found at ANNEX A. The Department will send a copy of the full Science Report once it is available.

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

Beginning in 2014, the science survey in the WAZ was undertaken by the Northern Shrimp Research Foundation (NSRF) and the Department. As such, the vessel and gear used to complete the survey, as well as the time of year the survey was conducted, changed. Consequently, the time series for this assessment zone is reset with 2014 as year one. Science advises that at least 3 – 5 reliable points on the time series are required to responsibly make any decisions to modify the TAC. As per the 2016 survey, borealis in the WAZ has decreased by 54% and montagui has decreased by 42.5% in the past year.

There is no Precautionary Approach Framework for either species in the WAZ. This survey represents the third point in the time series, the minimum amount advised by Science before any consideration is taken to modify the TAC. Science has indicated that three years is insufficient to establish a trend for the stock.

As agreed by the Boards and supported by affected stakeholders, a 10% ER was applied in the WAZ in 2013, 2014 and 2015. In 2016, the ER for WAZ montagui was slightly higher than 10% while the ER for borealis was slightly under 10%. A rollover of current TACs would result in ERs for borealis and montagui at 15.9% and 19.3% respectively.

### **Borealis**

- The stock decreased by 54% in 2016, following a 31% increase last year.

- A rollover of the current borealis TAC of 2,080t would result in an ER of 15.9%.
- Maintaining last year's ER of 7.3% would result in a TAC of 958t.
- Applying a 10% ER would result in a TAC of 1,312t.
- Applying a 15% ER would result in a TAC of 1,967t.
- Reducing the TAC by 15% would be 1,768t (13.5% ER).

### **Montagui**

- The stock decreased by 42.5% in 2016, and by 28% as per the 2015 survey.
- A rollover of the current montagui TAC of 6,138t would result in an ER of 19.3%.
- Maintaining last year's ER of 11.1% would result in a TAC of 3,521t.
- Applying a 10% ER would result in a TAC of 3,172t.
- Applying a 15% ER would result in a TAC of 4,758t.
- Reducing the TAC by 15% would be 5,217t (16.4% ER).

Considering the minimum number of data points have now been established, the Boards' could consider changing the TACs, or maintain them and gather additional information before considering any modifications. Should there be further precipitous declines next year, consideration to reduce the TACs could be taken at that time. The Boards could also respond to declines in fishable biomass this year by reducing the ERs / TACs to a more precautionary level (see table below).

<b>WAZ</b>	Change 2016	Change 2015	Rollover TAC	Rollover ERs	10% ER	15% ER	Reduce TAC 15%
Borealis 2,080t	-54%	+31%	15.9% ER	958t TAC	1,312t TAC	1,967t TAC	1,768t / 13.5% ER
Montagui 6,138	-42.5%	-28%	19.3% ER	3,521t TAC	3,172t TAC	4,758t TAC	5,217t / 16.4% ER

### **TACs:**

Option 1: Maintain both TACs at current levels, resulting in an ER of 15.9% for borealis and 19.3% for montagui. Should precipitous declines continue next year, reductions could then be considered.

Option 2: **Recommended:** Reduce ERs to 15%, which would result in a TAC of 1,967t for borealis and 4,758t for montagui. Should precipitous declines reoccur next year, additional reductions could then be considered.

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

A rollover of the TACs will result in high ERs for an area typically managed at 10%. Despite the three years of collected data points, a trend of the fishable biomass index cannot be identified for these stocks. However, at this juncture it is reasonable to consider precautionary responses to observed precipitous declines, given that the fishable biomass for borealis and montagui is down 40% and 30.5% respectively from the first point in the survey. The Department is of the view that the most reasonable way forward to ensure that shrimp harvesting inside the settlement areas remain within sustainable catch levels is to reduce both ERs in the WAZ to 15%. This action is a precautionary response as additional data points will be collected, and is unlikely to raise any conservation concerns despite the resulting ERs being above 10%. A further reduction in fishing pressure on

both species may be a necessary outcome following the collection of additional survey points.

### **Eastern Assessment Zone Montaguï – For Recommendation**

The EAZ falls both within and outside the NSA/NMR. This stock has been managed at an ER in the order of 15%. The 2016 science survey results indicate a precipitous increase in montaguï fishable biomass at 124.7%, while EAZ borealis declined by 17% (not precipitous). Thus, the Department is returning to the Boards to reconsider recommendations on the montaguï TAC incorporating the 2016 science survey results.

Since 2012, the montaguï resource has alternated between the Healthy and Cautious Zone of the PA framework, while the fishable biomass has fluctuated precipitously every year since 2012. In 2013, the stock increased by 272%, then decreased the following year by 88%. In 2015 the stock increased by 370%, which was followed by a 63% decrease last year. The status of the resource within the IFMP PA framework is uncertain because of the wide fluctuations in the female SSB index, despite its return to the Healthy Zone. As a result, caution is advised when setting the TAC.

The TAC for this stock has been 840t since 2014. A rollover of the TAC would result in an ER of 6.1%. Applying a 15% ER would result in a TAC of 2,069t.

The TAC for this stock has been 840t since 2014. Since this time, the fishable biomass has fluctuated between a low of 3,534t and a high of 16,600t.

#### **Recommendation:**

Considering the annual fluctuations of the montaguï stock have consistently been precipitous over the last 5 years, and considering the past decisions of the Board to maintain a TAC of 840t dated June 30, 2014, March 27, 2015 and June 30, 2017, when the fishable biomass ranged from 3,534t to 16,600t, the Department recommends maintaining the 840t TAC for 2017/18 and 2018/19.

In recognition that precipitous changes in fishable biomass are common for this stock, the Boards could agree that if the 2017 Science Update (i.e. next year's Science results) indicates a precipitous change to montaguï fishable biomass, the montaguï TAC will be set at 840t provided that the ER remains below 15% in the Cautious Zone, and provided that the fishable biomass does not exceed 16,600t (the highest fishable biomass when the TAC was 840t in 2015).

Any recommendation to increase the montaguï TAC should consider the potential need for a reduction next year should the stock further decline or return to the Cautious Zone.

The Northern Shrimp Advisory Committee will meet on March 9, 2017. At this meeting, the Department will consult with the offshore fleet, which has allocations in Davis Strait in the EAZ. The Department will seek recommendations from the Committee on TACs for both species in the EAZ. NSAC will be informed that DFO's recommendation to the Boards is to maintain the 840t TAC for montaguï.

### TACs:

<b>RECOMMENDED</b>	<i>Pandalus montagui</i>	<i>Pandalus borealis</i>
Western Assessment Zone	4,758t (15% ER)	1,967t (15% ER)
Eastern Assessment Zone	840t (6.1% ER)	9,488t (14.5% ER)

### Request

Considering this, the Department is seeking from the Board, for a two year period:

- 1) A recommendation on TACs for both species in the EAZ as per the original Briefing Note and this Addendum, considering that precipitous changes in the montagui resource have occurred in each of the last five years; and
- 2) Views on setting the 2018/19 EAZ montagui TAC at 840t as long as the resulting ER is less than 15% in the Cautious Zone, and the Science results indicate the fishable biomass is less than 16,600t; and
- 3) A decision on TACs for both species in the WAZ considering the precipitous changes in biomass in this third year of the new time series; and
- 4) By way of reminder and for ease of reference, as per the original Briefing Note to the Boards, the Department requests a decision on sharing arrangements between Nunavut and Nunavik within the settlement areas, and a decision on sharing between the NU / NK East and Davis Strait management units.

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

**Date:** February 27, 2017

## **ANNEX A**

### **Assessment of Northern Shrimp and Striped Shrimp in the Eastern and Western Assessment Zones, February 2017 - CONCLUSIONS**

#### **Eastern Assessment Zone *Pandalus borealis***

- Total catch varied without trend around 6,000 t from 1997 through 2016/17. Catch statistics in 2016/17 are preliminary.
- The fishable biomass index varied without trend around the long-term mean (64,954 t) and was 65,570 t in 2016.
- The female spawning stock biomass (SSB) index varied without trend around the long-term mean (40,125 t) and was 34,827 t in 2016.
- The reported exploitation rate index for 2016/17 was 8.4% with 59% of the Total Allowable Catch (TAC) taken. Based on the 2016/17 TAC of 9,488 t, the potential exploitation rate index was 14.5%.
- The resource is currently in the Healthy Zone within the IFMP PA framework.

#### **Eastern Assessment Zone *Pandalus montagui***

- Total catch in 2016/17 was 213 t, 25% of the 840 t TAC. Catch statistics in 2016/17 are preliminary.
- The fishable biomass index varied without trend around the long-term mean (12,713 t) and was 13,792 t in 2016.
- The female SSB index varied without trend around the long-term mean (9,037 t) and was 10,056 t in 2016.
- The reported exploitation rate index for 2016/17 was 1.5% with 25% of the TAC taken. Based on the 2016/17 TAC of 840 t, the potential exploitation rate index was 6.1%.
- The status of the resource within the PA framework is uncertain due to the wide fluctuations in the female SSB index. As a result, caution is advised when setting the TAC.

#### **Western Assessment Zone *Pandalus borealis***

- Total catch in 2016/17 was 641 t, which is 31% of the 2,080 t TAC. Catch statistics in 2016/17 are preliminary.
- The fishable biomass index declined from 28,532 t in 2015 to 13,116 t in 2016.
- The female SSB index declined from 14,710 t in 2015 to 8,015 t in 2016.
- The reported exploitation rate index for 2016/17 was 4.9% with 31% of the TAC taken. Based on the 2016/17 TAC of 2,080 t, the potential exploitation rate index was 15.9%.

#### **Western Assessment Zone *Pandalus montagui***

- Total catch in 2016/17 was 6,071 t, which is 99% of the 6,138 t TAC. Catch statistics in 2016/17 are preliminary.
- The fishable biomass index was 49,582 t in 2015 and 31,724 t in 2016.
- The female SSB index was 27,324 t in 2015 and 18,691 t in 2016.
- The reported exploitation rate index for 2016/17 was 19.1% with 99% of the TAC taken. Based on the 2016/17 TAC of 6,138 t, the potential exploitation rate index was 19.3%.