SUBMISSION TO THE
NUNAVUT WILDLIFE MANAGEMENT BOARD
December 2021

For

Information: **X** Decision:

Issue: Bowhead Carcass Update, Kitikmeot Region

Potential Issue(s) or impact(s):

- Eleven bowhead whale carcasses have been reported in the Gulf of Boothia, near the community of Kugaaruk, Nunavut since October 2020.
- Tissue samples from eight whales have been collected and investigations into potential causes and extent of mortalities are underway.
- Cause of death is currently unknown. Given the condition of the carcasses and the inability to travel to perform a necropsy, a final determination of cause of death may be unlikely. Possible causes for these mortalities include: contaminants, starvation (poor body condition), algae poisoning, disease, and killer whale predation.

Provincial / Territorial / International communications necessary / completed

- DFO has updated co-management organizations and Regional Communications as more information becomes available.
- Alaska has recorded bowhead Unusual Mortality Events in the past and has provided recommendations on response measures.
- The International Whaling Commission will be provided with an update upon completion of the ongoing research.

Science Response:

- Due to pandemic-related travel restrictions, Science staff were unable to visit the region to perform detailed necropsies. Samples provided by the communities from eight out of the eleven carcasses have been received at the Freshwater Institute and are undergoing various analyses.
- Tissue samples from seven of the whales were sent for inspection by a veterinarian and reports indicate no obvious underlying health concerns or evidence of starvation as a cause of death.
- To test whether the stranded whales are different, DFO will compare these whales with normal hunted whales:
  1. analysis of blubber will include inspection of fat cell relative size and will measure lipid content from both stranded and harvested whales to compare body condition as a test of whether the stranded whales may have died from starvation.

2. skin samples have been analyzed using epigenetic methods to estimate age. Results indicate that six out of eight sampled whales were subadults under the age of 20. This is notable as juvenile whales are more susceptible to predation from killer whales. The age/sex composition of the stranded whales will be compared to live whales.
3. samples of skin and muscle are being analyzed for dietary biomarkers (stable isotopes and fatty acids) and results will be compared with hunted whales to see whether the stranded whales had different diets.
4. baleen plates were collected from 5 individuals and will be analyzed for stable isotopes and hormones along the length of the plates and results compared with hunted whales.

- To assess the extent of mortalities within the southern Gulf of Boothia region, DFO purchased satellite images covering approximately 3-5% of the region's coastline. Weather and technical delays with the imagery provider have postponed completion of analysis. Preliminary analysis has confirmed that stranded whales are visible in the satellite images, though no additional carcasses have been confirmed beyond those previously reported by hunters. Satellite images have also provided length measurements for stranded whales.
- To assess possible contaminants, DFO is making arrangements with ECCC to have narwhal (or beluga) hunted in 2021 by Kugaaruk and Taloyoak hunters analyzed for contaminants.
- To assess possible harmful algal bloom poisoning, DFO has requested seal stomachs be collected by Kugaaruk hunters and contents will be assessed.
- Early indications suggest killer whale predation as the key cause of mortality based on hunter observations of missing tongues, scars, and the relatively small size (young) of whales.
- Future results from analyses will be communicated to the communities as they become available.

Media Attention:

- Some media attention in November when the first whales were observed, but none since.

Next Step(s):

- Continue laboratory analyses, prepare reports and provide updates to communities as results become available.
- An in-person meeting with Kurtairojuark HTA is being planned for January 2022.

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Date:

22 October 2021

Table 1. Bowhead whale carcasses in the Gulf of Boothia reported between October 2020 and April 2021.

ID	Date Reported	Sampled	Length (m)	Length (m) (satellite)	Sex	Age	Age Class
BM-2020-13	1-Oct-2020	Yes	21.3		F	32	Adult
BM-2020-14	1-Oct-2020	Yes	10.3	7.2	M	18	Juvenile
BM-2020-16	1-Oct-2020		15.8	14.5			Adult
BM-2020-15	1-Oct-2020	Yes	7.8	8.3	M	12	Juvenile
BM-2020-06	10-Nov-2020	Yes		10	F	19	Juvenile
BM-2020-01	10-Nov-2020	Yes		8.9	M	8	Juvenile
BM-2020-17	10-Nov-2020			7.5			Juvenile
BM-2020-03	10-Nov-2020	Yes		7.9	M	12	Juvenile
BM-2020-12	25-Nov-2020	Yes			F	43	Adult
BM-2020-18	26-Jan-2021	Yes			M	16	Juvenile
Taloyoak 2	14-Apr-2021						