

Halliday WD, Pine MK, Mouy X, Kortsalo P, Hilliard RC, Insley SJ (2020) The coastal Arctic marine soundscape near Ulukhaktok, Northwest Territories. *Polar Biology* 43: 623-636.

**What is the research about?**

- Ship traffic is increasing throughout the Arctic and may impact marine life, such as beluga whales.
- The underwater soundscape is a critical component of marine mammal habitat, as marine mammals such as beluga use sounds for many aspects of their lives, including for communication and hunting.
- Understanding the natural and human-caused influences on underwater sound levels in an important aspect of conservation planning and understanding the influence of underwater noise on marine life.

**What we did:**

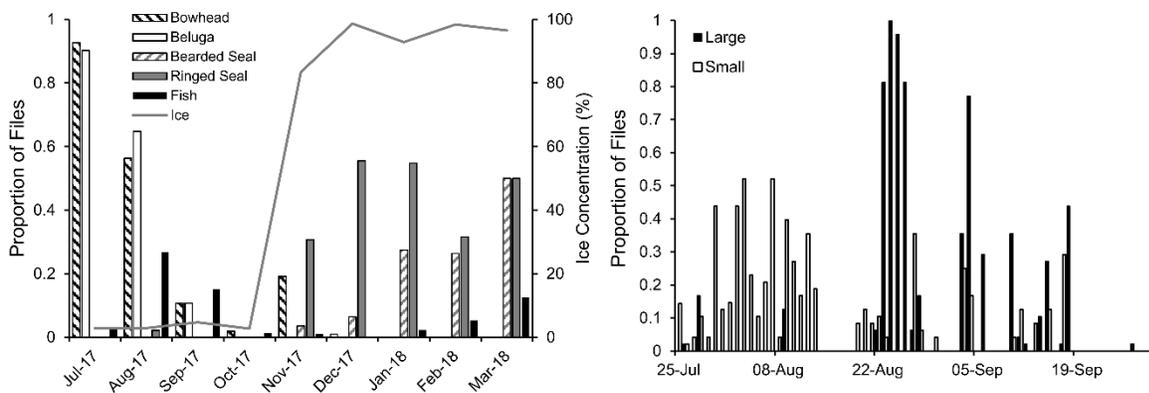
- We recorded underwater acoustic data near Ulukhaktok from July 2017 to March 2018.
- We analyzed the data for the presence of marine mammal and fish vocalizations and for noise from small boats and ships.
- We measured underwater sound levels, and determined how different factors, including environmental factors (wind speed and ice concentration), biological factors (animal vocalizations), and human noise (boats) influenced sound levels.

**What we found:**

- Bowhead and beluga whales were present in the summer, but were not recorded much after ice formation. Conversely, seals were the most vocal after the ice had formed. Boat and ship noise occurred in July through September, with a peak in small boat noise in early August and a peak in ship noise in late August.
- Boat and ship noise elevated sound levels significantly above background levels.

**Key result:**

This figure shows the seasonal patterns in marine mammal and fish presence (left) and presence of small and large boats (right) in the passive acoustic data collected near Ulukhaktok in 2017-2018. Listen to sounds of Arctic marine animals at <http://www.arcticnoise.ca/arctic-sounds.html>.



**Our recommendations:**

- Maintain acoustic monitoring sites (e.g., WCS Canada, DFO) to track the distribution of marine mammals and fish in the western Arctic, as well as monitor underwater noise from ship traffic.

**Why is this research relevant to the Inuvialuit people?**

- Marine mammals and fish in the region are a critical part of Inuvialuit food sovereignty and have been managed by Indigenous communities for millennia.
- Exposure to underwater noise from ships can negatively affect these species, so monitoring marine animals and their exposure to underwater noise is a crucial step in understanding the impacts of underwater noise on these species.

**Was the community involved?**

- Yes. The acoustic data were collected near Ulukhaktok, and we are grateful to A. Kudlak for assistance in the field, and support from the Olokhaktomiut Hunters and Trappers Committee to conduct this research.