

Halliday WD, Insley SJ, de Jong T, Mouy X (2018) Seasonal patterns in acoustic detections of marine mammals near Sachs Harbour, Northwest Territories. Arctic Science 4: 259-278.

What is the research about?

- The Arctic is changing rapidly and data are needed to assess how marine animals are responding.
- Species presence depends on sea ice, so sea ice loss caused by climate change could have important implications for the whereabouts of marine mammals.
- We collected data on marine mammal species distribution and composition as well as the timing of migration and movements within the study area.
- This information can be used to inform marine mammal conservation planning and management in the ISR.

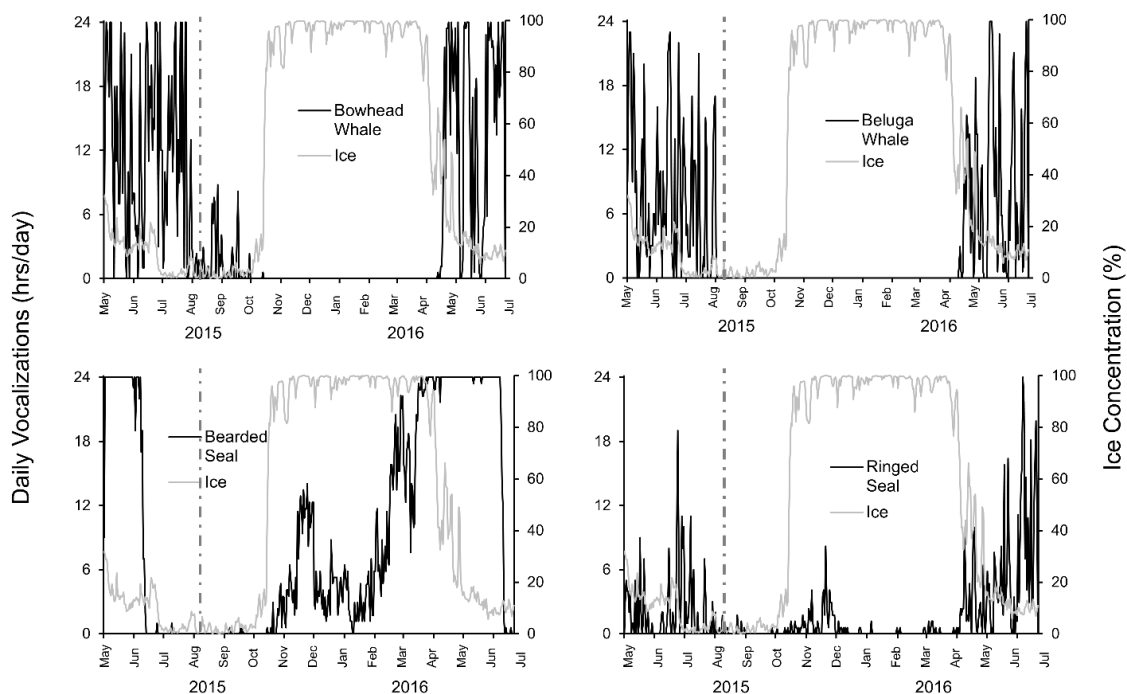
What we did:

- We used underwater passive acoustic monitoring to detect and classify marine mammals near Sachs Harbour from May 2015 to July 2016.
- We analyzed seasonal patterns in the presence of species as well as the effects of wind speed and ice concentration on species presence.

What we found:

- We detected bowhead and beluga whales as well as bearded and ringed seals.
- Both whales migrated into the region in late April as the ice broke up. Beluga whales migrated out in late August, while bowhead whales migrated out in October.
- Both whales migrated out of the area before ice formed in the autumn.
- Bearded seals started vocalizing in October as ice began to form, and started vocalizing 24 hours a day as ice started to break in the spring. They stopped vocalizing once the ice was mostly gone in July.
- Ringed seals were present, but they were generally quiet throughout the study period.

Key result:



In this figure, we can see the relationships between ice formation and break up (gray line) and number of each species

vocalizations (black line) throughout 2018. Both whale species were very vocal during ice breakup and open water periods. Both seals were vocal throughout the year, although bearded seals were quieter during July and the open water period compared to ringed seals.

Our recommendations:

- Continue data collection on species distribution and behaviour at key sites such as those established by WCS Canada and DFO in the ISR.
- Expand data collection and monitoring to more sites in the region (e.g., Amundsen Gulf, Darnley Bay, Viscount Melville Sound) to document the spatial and temporal distribution of these species.
- These data represent baseline information that can inform future work examining long-term patterns in distribution and migration timing and should be included in marine mammal management planning, such as the Beaufort Sea Beluga Management Plan¹ and the management plan for Bering-Chukchi-Beaufort bowhead whales² as well as marine spatial planning to protect marine mammals and areas of marine mammal concentration (e.g., AN MPA, TN MPA).

Why is this research relevant to the Inuvialuit people?

- Marine mammals such as bowhead whales, beluga whales, bearded seals and ringed seals live in the region and use sound to communicate, find food, mates, and avoid predators. They are also a critical part of Inuvialuit food sovereignty and have been managed by Indigenous communities for millennia.
- Any increase in marine vessel traffic has implications not only for the conservation of marine mammals, but all the Inuvialuit communities that depend on these mammals for nutrition, cultural, and spiritual values.
- Having scientific baseline information at this location will enable the Inuvialuit to make decisions regarding planning and mitigation due to impacts from increased noise and marine traffic on marine mammals in this region.
- Scientific baseline information on marine mammal behaviour could be complementary to Inuvialuit long-term observations and experiences of marine mammals to support conservation and management guidance and best practices in the ISR.

How was the community involved?

- This work was conducted out of Sachs Harbour. We are grateful to the Sachs Harbour Hunters and Trappers Committee, Wayne Gully, Betty Haogak, Terrence Lennie, Joe Kudak, and Jeff Kuptana.

Where can I get more information about this project?

- William Halliday and Stephen Insley are scientists with Wildlife Conservation Society (WCS) Canada (wccanada.org). You can reach them at sinsley@wcs.org and whalliday@wcs.org.
- Other information:
 - <http://data.nwtresearch.com/Scientific/16330>
 - www.arcticnoise.ca

1 <https://www.beaufortseapartnership.ca/wp-content/uploads/2015/04/Beaufort-Sea-Beluga-Management-Plan-2013.pdf>

2 https://www.sararegistry.gc.ca/virtual_sara/files/plans/mp_baleine_boreale_bowhead_1113_e.pdf