

Halliday WD, Pine MK, Insley SJ, Soares RN, Kortsalo P, Mouy X (2019) Acoustic detections of Arctic marine mammals near Ulukhaktok, Northwest Territories. Canadian Journal of Zoology 97: 72-80.

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 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 from October 2016 to April 2017 near Ulukhaktok, Northwest Territories.
- We analyzed seasonal patterns in the presence of species, and also the effects of wind speed and ice concentration on species presence.

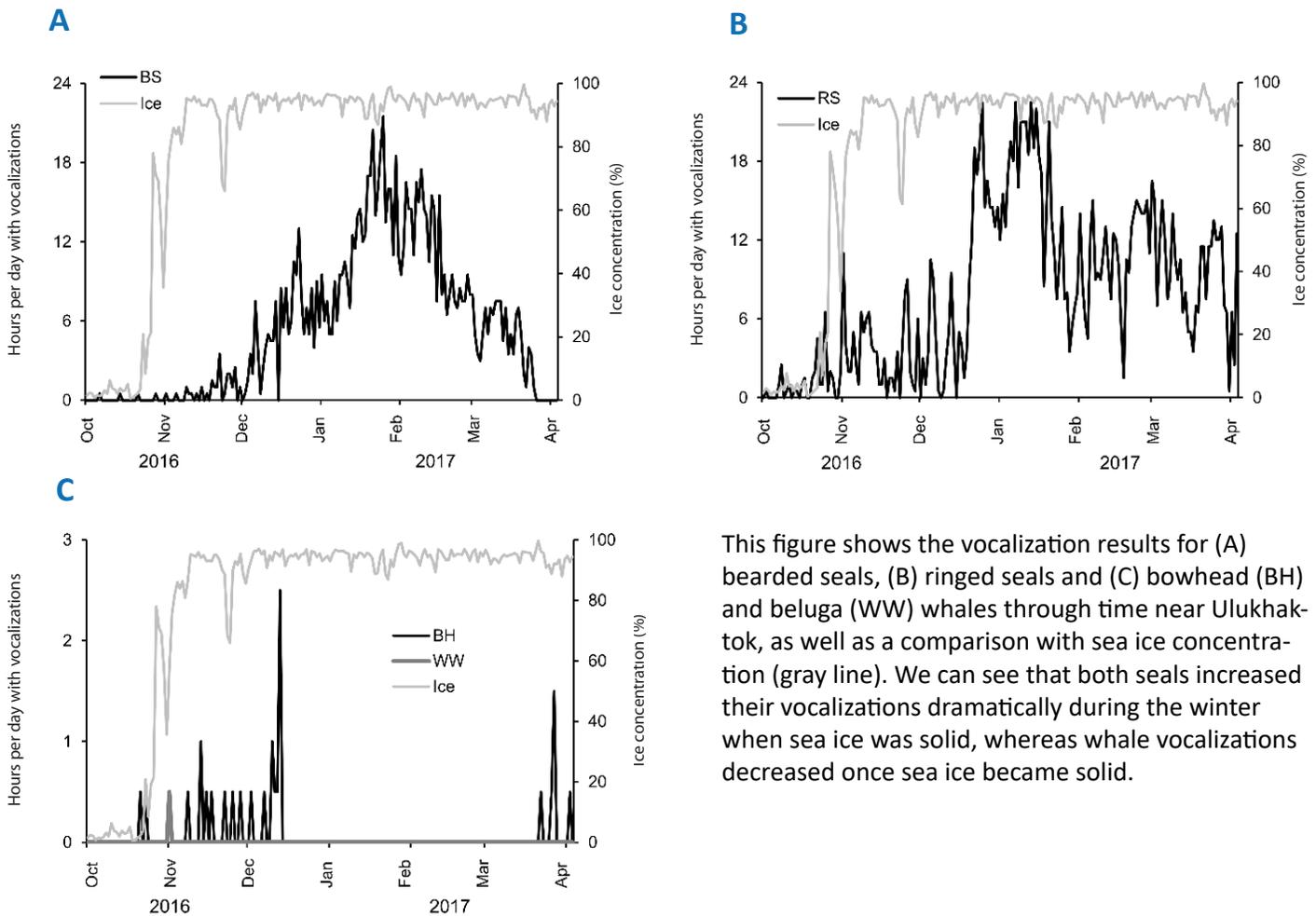
What we found:

- We detected bowhead and beluga whales, and bearded and ringed seals.
- Both whales were detected later into the autumn, but were not detected again in the winter. We detected bowheads again in early April.
- Both whales were detected later into the autumn than expected, with the last beluga detected on Nov. 12, 2016, and the last bowhead detected on Dec. 24, 2016.
- Bearded seals had rare vocalizations in November, were more common in December, and hit peak activity in January and February, with less vocalizations in March and April.
- Ringed seals were incredibly vocal at this site, with low vocalizations throughout the autumn, but very high levels of vocalizations throughout January, and many vocalizations from February through April.
- Overall, these data identify late season migrations of whales -- a unique scientific finding.
- The seal data are quite different than data from Sachs Harbour. Here, we have more ringed seal vocalizations, and fewer bearded seal vocalizations, in the recordings.



Bearded seal
vocalizations peaked in
January and February

Key Result:



This figure shows the vocalization results for (A) bearded seals, (B) ringed seals and (C) bowhead (BH) and beluga (WW) whales through time near Ulukhaktok, as well as a comparison with sea ice concentration (gray line). We can see that both seals increased their vocalizations dramatically during the winter when sea ice was solid, whereas whale vocalizations decreased once sea ice became solid.

Our recommendations:

- 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 Plan³ and the management plan for Bering-Chukchi-Beaufort bowhead whales⁴. This information is also important for current marine protected area management plans (e.g., AN MPA, TN MPA) as well as in the planning and management of any future MPAs.
- Research should include continued year-round monitoring for marine mammals at this site, as well as targeted and strategic deployment of acoustic recorders at other sites including farther south and west in the Amundsen Gulf and north in Viscount Melville Sound.

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.

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

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

- Scientific baseline information could be complementary to Inuvialuit long-term observations and experiences of marine mammal behaviour to support conservation and management guidance and best practices in the ISR.

How was the community involved?

- Yes. This work was conducted out of Ulukhaktok. We are grateful to Adam Kudlak, Bessie Inuktalik, and the Olokhaktomiut Hunters and Trappers Committee.

Where can I get more information about this project?

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



Ulukhaktok community members Adam and Mary Kudlak with a recently recovered acoustic recorder