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**Because marine mammals are sensitive to different sound frequencies, the impact of anthropogenic noise changes by species.**



As shipping traffic and human presence in the Arctic increases, so too does the impact on local wildlife. In particular, noise from shipping can disrupt marine mammals, who can be sensitive to the sounds produced and suffer health issues and communication problems. However, not all marine mammals are equally sensitive to the same sound; some animals, such as bowhead whales, are more sensitive to low-frequency sounds, while other animals, like narwhals, communicate mostly in high-frequency bands.

Sweeney et al. demonstrated a method for adjusting noise data to more accurately highlight its impact on different species with different frequency sensitivities. By adapting collected noise data, they were able to profile how each animal would perceive that noise.

“We felt it was important to highlight the differences in perceived noise by different species using a practical approach for discerning the detectability of shipping noise levels,” said author Sam Sweeney.

The researchers collected their data from underwater recorders placed in Milne Inlet in the Canadian Arctic, a seasonal shipping route. These unfiltered recordings were then adjusted using weighting functions to reflect the hearing abilities of bowhead whales and narwhals, as well as seals, which operate mostly in mid-frequencies.

Using these weighted frequency spectra, the team found that narwhals and seals were less affected by shipping noise, but bowhead whales were found to be particularly sensitive.

“These results highlight the importance of accounting for a marine mammal’s hearing abilities when assessing the relative influence and impacts of anthropogenic noise sources in their environment,” said Sweeney. “The stark differences in perceived noise by the different hearing groups in this study support this point of concern.”

**Source:** “Assessing potential perception of shipping noise by marine mammals in an arctic inlet,” by Samuel O. Sweeney, John M. Terhune, H  lo  se Frouin-Mouy, and Philippe A. Rouget, *The Journal of the Acoustical Society of America* (2022). The article can be accessed at <https://doi.org/10.1121/10.0009956>.

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