

# Listen to the Sounds of Narwhals That Have Been Elusive to Science

As melting ice opens east Greenland to petroleum prospectors and cruises, scientists are rushing to study the noises made by a remote population of toothed whales.



By **JoAnna Klein**

June 13, 2018



Researchers tagging a rare east Greenland narwhal. Carsten Egevang

You'd think that narwhals couldn't be more enchanting. These elusive, ice-dodging, deep-diving whales have 10-foot snaggletoothed tusks, and they see with sound.

But then there's the narwhal of east Greenland. It's kind of the narwhal of narwhals.

"Because they're so hard to access, we honestly hardly knew anything," said Susanna Blackwell, who studies the effects of human sounds on marine mammals for Greeneridge Sciences. "It's an animal that's been hidden from civilization for an awful long time."

Their genes are only slightly different than their western cousins. And since glaciers separated them some 10,000 years ago, this smaller population of about 6,000 narwhals, has lived relatively free from human contact amid sharp cliffs and mile-wide glaciers that break into huge, bobbing icebergs.

But as the ocean warms, ice caps melt and summers get longer in the Arctic, the once inaccessible habitat of east Greenland narwhals is opening up to scientists — as well as cruise ships and prospectors interested in minerals or offshore drilling. And because toothed whales like narwhals use sounds to orient themselves, Dr. Blackwell worries this potential activity will disturb the narwhal's acoustic way of life.

So she and a team attached acoustic sensors to narwhals to monitor their behavior while human sounds are still scarce. What they found, published Wednesday in a paper in the journal PLOS One, will be used as a baseline behavior for an upcoming study to test how narwhals respond to air gun blasts similar to the ones used by oil surveyors, and may help protect them in the future.

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Narwhals live only in the Arctic, where it's dark much of the time, diving thousands of feet to hunt, where it's dark all of the time. Scientists knew they used acoustics to echolocate and communicate from studies done on narwhals in west Greenland or Canada, but they didn't know much about the sounds of individual narwhals, especially the east Greenland population.

So they studied the narwhals who click, buzz and call their way through the icy, pristine depths of east Greenland's Scoresby Sound.

Say hi to Thora:

Frida:

Freya:

Eistla:

And Balder:

The team paid Greenlandic hunters to help them capture these skittish animals in a polar-bear-free fjord. Scientists attached suction cup tags to a cartilaginous part of the whale's back called the dorsal ridge, with a thread hooked to magnesium links — kind of like high-tech earrings. The links dissolved after a few days, releasing the sensors for the scientists to retrieve.

Analyzing the recorded sounds, they found that narwhals made their buzzing noises more often in the deep sea, in one fjord in particular, likely zeroing in on prey in this potentially important feeding ground.

But they made their call sounds more frequently near the surface where they spend most of their time, probably to communicate with other narwhals.

They also discovered that narwhals went silent for about a day before acting normal, suggesting that tags that only last a few hours may only record sounds of frazzled narwhals.

In the follow-up study, the researchers will gradually expose the narwhals to blasts from an air gun less powerful than industrial ones, figuring if they react to that, they'll react to the big stuff too.

But whether they'll respond is unclear. Narwhals are used to the enormous crashes of calving icebergs. In this sense, the man-made sounds that they experience could be among the quietest in their marine environment — for now, at least.

“Maybe air gun pulses sort of sound like icebergs for a narwhal — I have no idea — but if we don't have the data, we can't make sound decisions to make sure that we have narwhals in the future,” Dr. Blackwell said.