

# Researchers Discover Right Whales Singing for the First Time Ever

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An eastern North Pacific right whale, the world's most endangered great whale. The V-shaped exhale is unique to right whales.

Photo Credit: NOAA

- Right whales — three species of large baleen whales in the genus *Eubalaena* — have never been known to sing. As far as scientists knew, right whale vocalizations consisted entirely of individual calls, as opposed to the repeated, patterned phrases of true whale songs.
- But according to a study published in *The Journal of the Acoustical Society of America* this month, the extremely rare eastern North Pacific right whale appears to use its gunshot calls in a repeating pattern — the first instance ever recorded of a right whale population breaking into song.
- A research team with the US National Oceanic and Atmospheric Administration (NOAA) analyzed 17-years'-worth of data from autonomous recorders deployed in the Bering Sea and documented four distinct right whale song types at five different locations between the years 2009 and 2017.

Whales like humpbacks are famous for their mellifluous calls, typically referred to as whale songs. But right whales — three species of large baleen whales in the genus *Eubalaena* — have never been known to sing. As far as scientists knew, right whale vocalizations consisted entirely of individual calls, as opposed to the repeated, patterned phrases of true whale songs.

Gunshot calls — loud, concussive bursts of noise — are already known to be part of the North Pacific right whale's vocal repertoire, as well as what are known as screams, upcalls, and warbles. But according to a study published in *The Journal of the Acoustical Society of America* this month, the extremely rare eastern North Pacific right whale appears to use its gunshot calls in a repeating pattern — the first instance ever recorded of a right whale population breaking into song.

Jessica Crance, a marine biologist with the US National Oceanic and Atmospheric Administration (NOAA) and the lead author of the study, said that she and her colleagues first detected “a weird pattern of sounds” while doing a summer field survey in the southeastern Bering Sea in 2010.

“We thought it might be a right whale, but we didn’t get visual confirmation,” Crance said in a statement. “So we started going back through our long-term data from moored acoustic recorders and saw these repeating patterns of gunshot calls. I thought these patterns look like song. We found them again and again, over multiple years and locations, and they have remained remarkably consistent over eight years.”



Eastern North Pacific right whale.  
Photo credit: NOAA

Two summers ago, Crance and team were again working in the Bering Sea when they were able to visually confirm that the repeated patterns of gunshot calls were indeed coming from eastern North Pacific right whales.

“We heard these same songs during a summer survey in 2017, and were able to localize the songs to male right whales” in real-time using sonobuoys that can record audio underwater, Crance said. “We can now definitively say these are right whales, which is so exciting because this hasn’t been heard yet in any other right whale population.”

There are two groups of North Pacific right whales: in addition to the sub-population in the eastern North Pacific/Bering Sea, there is also a larger western population of 100 to 200 individuals in the Sea of Okhotsk. The roughly 400 North Atlantic right whales that still survive live mostly in the western North Atlantic Ocean, while the more abundant Southern right whale can be found mostly in the Southern Ocean.

All of the singing North Pacific right whales whose sex could be determined were male, according to the study. Crance and team analyzed 17-years’-worth of data from autonomous recorders deployed in the Bering Sea and documented four distinct song types at five different locations between the years 2009 and 2017.

“Each song type consists of a hierarchical structure of 1–3 different repeating phrases comprised predominantly of gunshot sounds; three of the four songs contained additional sound types (downsweep, moan, and low-frequency pulsive call),” Crance and the NOAA team write in the study. “Songs were detected annually (July–January); all song types remained consistent over eight years. Two different songs often occurred simultaneously, produced by different individuals; the same song was never detected simultaneously at the same location. The same song type was detected on the same day and time at two distant locations, indicating multiple individuals can produce the same song.”



NOAA Fisheries scientist Jessica Crance deploys a sonobuoy to acoustically monitor for North Pacific right whale calls.  
Photo Credit: NOAA.

These findings raise a number of new questions, Crance said: “Why is this population of right whales singing? Do the other populations also sing, and it just hasn’t been documented yet, or is this unique to our population?”

Working in the vast, remote expanses of the Bering Sea will make getting answers to those questions difficult, Crance noted, especially given that there are believed to be fewer than 30 whales left in the eastern sub-population of North Pacific right whales. The subspecies is listed as Endangered on the IUCN Red List as a whole, but the eastern sub-population has been assessed independently and listed as Critically Endangered.

We have very little data on the vocalizations of female right whales, Crance said, but lone male right whales have been found to make gunshot calls more frequently than females. Now that we have direct evidence that male right whales turn their gunshot calls into a song, Crance and team suspect that this behavior may be solely exhibited by males as a sort of reproductive display.

“With only 30 animals, finding a mate must be difficult,” Crance said. “Perhaps the 2:1 male ratio in the North Pacific has led to our males singing to attract females. But we may never be able to test that or know for sure.”

The NOAA team says that their next step is to look at the evolution of the newly discovered whale songs over time and to determine whether or not they’re seasonal and if certain songs are produced at specific times. “We also want to find out whether these songs contain individual-specific information,” Crance said. “There is so much I would love to know.”

You can listen to a couple of the recordings Crance and team made if you go to the online story:

<https://news.mongabay.com/2019/06/researchers-discover-right-whales-singing-for-the-first-time-ever/>