

Whale racket: Sounding out how loud the oceans were from whale vocalizing prior to industrial whaling

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Concern is growing that human-generated noise in the ocean disrupts marine animals that rely on sound for communication and navigation. In the modern ocean, the background noise can be ten times louder than it was just 50 years ago. But new modeling based on recently published data suggests that 200 years ago – prior to the industrial whaling era—the ocean was even louder than today due to the various sounds whales make.

California researchers Michael Stocker and Tom Reuterdaahl of [Ocean Conservation Research](#) in Lagunitas, Calif., present their findings at the 164th meeting of the Acoustical Society of America (ASA), held Oct. 22 – 26 in Kansas City, Missouri. Using historic population estimates, the researchers assigned "sound generation values" to the species for which they had good [vocalization](#) data. "In one example, 350,000 [fin whales](#) in the North Atlantic may have contributed 126 decibels – about as loud as a rock concert – to the ocean ambient sound level in the early 19th century," Stocker notes. This noise would have been emitted at a frequency from 18 – 22 hertz.

According to the researchers, use of whaling records to determine just how many [whales](#) were harvested from the ocean over the course of industrialized whaling is difficult because the captains were taxed on their catch and therefore had an incentive to "fudge" the numbers. Some captains kept two sets of books. After the collapse of the Soviet Union,

some of the real reports began surfacing. In one example the Soviets initially reported taking approximately 2,710 [humpback whales](#) from the late 1950s to the mid-1960s. The newer data reveal the actual number was closer to 48,000.

This more accurate data was supported by population estimates using mitochondrial DNA, which does not change through female lines of a species. Thus the current diversity in DNA can serve as a proxy for historic population numbers.

While their estimates suggest there was a whole lot of whale racket a couple centuries ago, Stocker says "we can assume that animals have adapted to biological noise over the eons, which may not be the case with anthropogenic noise. Anthropogenic noise is often broader band and differently textured than natural noise, so the impacts are likely different as well. Investigating these differences and their impact on marine life is the topic of intense research."

Provided by American Institute of Physics

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