

Blue whales singing with deeper voices

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Photo: Fred Benko - National Oceanic and Atmospheric Administration (NOAA) Central Library. Credit: Wikimedia Commons

(PhysOrg.com) -- Blue whales, the largest animals on earth, are singing with deeper voices every year, but scientists are unsure of the reason.

Whale Acoustics is a company that specializes in recording the songs of blue whales off the coast of California. According to their President, Mark McDonald, they have many recordings of blue whales, but each year they have had to recalibrate their [song](#) detectors to lower frequencies. Possible reasons include noise [pollution](#) at sea, new mating strategies, and changing [population dynamics](#), but none of these theories is convincing.

McDonald, along with John Hildebrand and Sarah Melnick of the Scripps Institution of Oceanography, have collected and analyzed

thousands of recordings of blue whales from the 1960s onwards, from populations around the globe, and have found the tonal frequency of the songs has reduced by fractions of a Hertz every year. This has been true even though the songs differ in different oceans and the populations seem quite distinct from each other. In the most studied populations, those off California, the pitch has reduced by 31 percent during the period.

McDonald originally thought the cause could be more noise pollution in the oceans through increased shipping traffic, since it is known that ambient noise in the oceans has increased by over 12 decibels in the last fifty or sixty years. However, McDonald said that if whales were trying to be heard above increased ambient noise, they would be expected to sing at higher frequencies rather than lower.

Another possibility is that sounds travel differently through water that is now warmer, more acidic, and contains more absorbed carbon dioxide than before, and the whales are responding to the changes. McDonald said he doubts this is the cause since the effects are so small, and the shift in frequency is relatively large.

Blue whales were hunted almost to [extinction](#) during the early twentieth century, and since hunting has stopped populations are recovering, and it has been suggested that the songs were higher pitched in the 1960s than they are now because they needed their songs to be louder to reach the more scattered populations. The problems with this idea are populations that were not hunted have also lowered the frequency of their songs, and low frequency sounds are known to travel further than high frequencies.

Another possible reason for the lowering of frequency may be connected with selection of mates, since only male blue whales sing, and larger, more mature whales tend to sing at lower frequencies. The hypothesis is that younger males may be trying to impress females by emulating their

seniors, but little is known about how blue whales use their songs, and their social dynamics are poorly understood.

The research paper was published in the October edition of *Endangered Species Research*.

More information: McDonald MA, Hildebrand JA, Mesnick S, Worldwide decline in tonal frequencies of [blue whale](#) songs, ESR 9:13-21, [Full text in pdf format](#)

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