

Discovery: Unusual deaths of hundreds of West Coast gray whales linked to lack of Arctic ice

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The deaths of more than 700 West Coast gray whales since 2019 is likely the result of low food supplies caused by a lack of sea ice in the Arctic.

A team of researchers led by Joshua Stewart of Oregon State University found there have been three “unusual mortality events” in the last 36 years, where the delicate balance of ice in the Arctic shifts, leaving the whales without enough food or access to food. The team’s findings were published Oct. 13 in the journal *Science*.

Stewart, an assistant professor at Oregon State University’s Marine Mammal Institute, has studied West Coast gray whale populations recorded since the 1960s, as well as environmental data related to their habitats. The whales pass the Oregon Coast each year on their 12,000-mile summer migration from breeding grounds in Baja, Mexico to the Arctic to feed.

Stewart and his team identified three unusual mortality events, beginning in 1987, 1999 and 2019, and found each was tied to food availability issues caused by ice fluctuations. In some years, too much ice blocked the

whales from accessing their traditional feeding grounds. In the current mortality event, the lack of robust ice means less algae is growing beneath ice sheets and falling to the sea floor. This has left the whales' prey, small shrimp-like crustaceans called amphipods, in smaller numbers because of a lack of nutrients and the habitat they need. Warmer Arctic waters and faster currents have also brought the arrival of other creatures to compete for nutrients at the bottom of the food chain, further reducing the number of calorie-dense amphipods that whales need.

Between 2016 and 2023, the population of eastern North Pacific gray whales has declined by nearly half, from a high of 27,000 to about 14,500 today, according to the most recent data from the National Oceanic and Atmospheric Administration, or NOAA.

Stewart said climate change has played a role in driving recent sea ice loss, impacting the food chain and leading to malnutrition responsible for hundreds of whales washing up on the West Coast during the last four years. Each of the three die offs Stewart's team has studied led to whale population declines of at least 25% in just a few years.

"We're hoping that by diving a little deeper into the causes we can maybe better predict what the future of the gray whale population will look like, and then take some lessons from that for other large whale species and populations that are maybe increasingly impacted by climate change," Stewart said.

West Coast gray whales have the longest migration of any mammal and are only found in the Pacific. They are among eight whale species in the Pacific. They were listed as endangered under the federal Endangered Species Act but recovered and came off the list in 1994.

Nevertheless, in 2019, 120 dead gray whales washed up on West Coast beaches. In the years that followed, about 600 whales washed ashore, appearing to be malnourished, according to scientists. Earlier this year, three gray whales washed up on Oregon beaches within two weeks, and in June, five washed up on shores in Washington. Most were malnourished. So far this year there have been 63 dead gray whales found on shores between the Baja and Alaska, according to NOAA data.

The current mortality event has gone on twice as long as the 1987 and 2019 events, Stewart said.

But there are signs it is coming to an end.

NOAA scientists in Baja found that gray whales in area lagoons are larger and healthier this year than in years prior. And for the first time in five years, the number of mothers with calves has increased.

Scientists have also counted fewer dead or stranded whales in Mexico and along the West Coast on their journey northward this year between February and May than in previous years.

"We need to stop human driven climate change, and even if we did stop that there's some degree that's probably baked into the system already, and will take quite a long time to reverse," Stewart said. "That's hard, right? I mean that's pretty depressing. I don't know what else to call it. It's a hard pill to swallow, when you just see these impacts that may not be reversible."

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