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The Marine Mammal Center suspects blunt force trauma due to vessel strike the cause of death for gray whale at Bolinas Beach

The necropsy response is the first in the San Francisco Bay Area in 2023 during the species' ongoing Unusual Mortality Event

(SAUSALITO, Calif. – March 30, 2023) – Scientists at The Marine Mammal Center, the world's largest marine mammal hospital, and their partners at the California Academy of Sciences suspect a gray whale that washed ashore at Bolinas Beach last week died from blunt force trauma due to vessel strike. By investigating deaths like this, the Center can identify and respond to rapidly changing environmental trends as well as human impacts on marine mammal populations.

"Gray whales are ocean sentinels due to their adaptability and foraging habits. They have a lot to tell us about the health of the ocean, so to see the species continue to face the added threats of human interaction should concern all of us," says Dr. Pádraig Duignan, Director of Pathology at The Marine Mammal Center. "This case reinforces the need for us to continue to perform both observational research of live whales as well as necropsy investigations so that this critical data can be shared with key decision-makers to find actionable solutions."

In a necropsy, or animal autopsy, conducted Saturday, March 25, a team of 15 scientists identified the whale as a 35-foot subadult male in normal body condition based on the fat stores and blubber layer and that there was a moderate amount of decomposition consistent with up to two days since time of death. Bruising and hemorrhage in the soft tissue on the left side of the whale's head around the left eye and extended back to the C1 vertebrae at the base of the skull. This is indicative of blunt force trauma that occurred while the whale was alive and the scale of the trauma is consistent with vessel collision as the cause of death. Due to the position of the whale, the team was only able to examine the left side of the spine and ribs as well as the abdomen in detail but there were no remarkable findings in these organs. The team did not discover any broken bones and noted minimal stomach contents.

"When a whale strands along the coast it allows us the unique opportunity to study the animal up close. It was a relief to see this young male gray whale in such good body condition with a thick layer of blubber and lots of fat and oil," says Moe Flannery, Senior Collections Manager of Ornithology and Mammalogy at the California Academy of Sciences. "Although it is the first stranding of the year in the Bay Area, we are hopeful the good body condition is an indicator that the species is doing better now compared to the last few years."

Elevated numbers of dead gray whales washing ashore in poor body condition since early 2019 across the species' entire migratory range caused the National Oceanic and Atmospheric Administration (NOAA) to declare an [Unusual Mortality Event](#) (UME) that is ongoing.

According to [NOAA](#), the number of gray whales migrating along the West Coast has dropped 38 percent during the UME to an estimated 16,650 whales since the last population assessment in 2015/2016, when whale numbers peaked at an estimated 26,960 whales.

Malnutrition, entanglement and trauma from vessel strikes are the most common causes of death in whales identified by the Center's research team in recent years. The Center's team participates as an investigator on NOAA's gray whale UME working group, which assesses those factors as well as the impacts from harmful algal blooms, infectious disease, natural predation, and other human interactions.

Researchers from the Center have observed at least four live gray whales in the San Francisco Bay since this year's first sighting on February 8. The whales are staying for longer durations as a layover on their migration than they did prior to the UME, and Center experts also documented them feeding in the Bay. Gray whales are currently in the process of migrating north along the Pacific west coast from their mating and birthing grounds near Baja, Mexico, to their traditional feeding grounds in Arctic waters.

It is critical for boaters and people on the water to keep a safe distance from whales and [report sightings](#) to the Center's website. All marine mammals are federally protected, and the public should not approach any whale, alive or dead.

The Center's researchers study the locations and behaviors of whales in San Francisco Bay so that informed decisions can be made to better protect whales. Public funding and support for this investigatory work is essential.

Scientists from The Marine Mammal Center and the California Academy of Sciences were able to collect a series of samples for ongoing research projects. Typically, the California Academy of Sciences archives various parts of each specimen (baleen, pelvic bones, blubber, muscle, etc.) in their scientific research collection thus making them available to scientists from around the world.

The team was first notified of the dead whale at Bolinas Beach east of Duxbury Point on March 23 and a small team of experts from the Center and the California Academy of Sciences responded the same day to take initial samples prior to the necropsy investigation. Due to the tide cycle and weather, the team of scientists had a limited window to conduct the investigation safely at low tide.

For more information about the Center's pathology work with dead whales, visit our [website](#).

2022 whale response information:

7 gray whales, 3 humpback whales

Necropsies: 1 malnutrition, 1 suspect orca predation, 4 ship strike, 4 undetermined

March 5, 2022: adult female gray whale, Limantour Beach, Point Reyes National Seashore; cause of death: malnutrition

April 4, 2022: subadult female gray whale, Muir Beach, Golden Gate National Recreation Area; cause of death: ship strike

April 5, 2022: adult male gray whale, Alameda; cause of death: unknown, only limited samples taken and no necropsy performed

April 29, 2022: adult male gray whale, Rockaway Beach, Pacifica; cause of death: ship strike

May 13, 2022: adult female gray whale, Fort Funston, San Francisco; cause of death: ship strike

May 20, 2022: adult male gray whale, Don Edwards National Wildlife Refuge, Mountain View; cause of death: unknown, only limited samples taken and no necropsy performed

June 19, 2022: adult male gray whale, Slide Ranch, Marin County, cause of death: unknown, only limited samples taken and no necropsy performed

July 14, 2022: humpback whale, North Beach, Point Reyes National Seashore, cause of death: undetermined

July 17, 2022: subadult female humpback whale, Sharp Park, Pacifica, cause of death: suspect orca predation

August 29, 2022: adult female humpback whale, Manhattan Beach, Half Moon Bay, cause of death: probable ship strike

ABOUT THE MARINE MAMMAL CENTER:

The Marine Mammal Center is a global leader in marine mammal health, science and conservation, and is the largest marine mammal hospital in the world. As a leading contributor to the global body of research and knowledge about marine mammal medicine and ocean health, the Center generates research findings and scientific outputs at volumes comparable to top academic institutions and prides itself on gathering and providing open research data that is free to access, reuse, repurpose and redistribute. The Center's teaching hospital and training programs operate globally with headquarters in Sausalito, CA. The Center has rescued more than 24,000 marine mammals from 600 miles of authorized rescue area along the California coastline and the Big Island of Hawai'i. The Center's mission is to advance global ocean conservation through marine mammal rescue and rehabilitation, scientific research, and education.

For more information, please visit MarineMammalCenter.org. Follow us on [Facebook](#), [Instagram](#) and [Twitter](#).