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**Two gray whale sightings off Hawai'i Island: the first records for the central tropical Pacific**

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# Two gray whale sightings off Hawai‘i Island: the first records for the central tropical Pacific

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In February 2022 a gray whale (*Eschrichtius robustus*) was sighted on two consecutive days off Hawai‘i Island, the first record of this species in Hawaiian waters and in the central tropical Pacific. On February 1, 2022 an individual gray whale was seen heading north in shallow water (<100 m) just south of Kaiwi Point (19.645°N, 156.02°W) during a commercial dive trip. On February 2 presumably the same individual was also seen heading north in shallow water north of Keāhole Point, Hawai‘i Island (approximately 19.73°N, 156.07°W), during a commercial whale watching trip. The two sighting locations were approximately 10 km apart. Video footage of the whale’s left side was taken with a Panasonic S1H during the first sighting and of the whale’s right side with a cell phone during the second sighting. Based on size noted in the field and the amount of barnacle scarring visible, this individual is likely a juvenile (A. Perez, pers. comm.). An examination of the video footage suggests the body condition of the individual may be compromised (A.L. Bradford, pers. comm.), but the resolution of the video<sup>1</sup> precluded a more precise determination (i.e., fair versus poor; Bradford et al. 2012). Comparisons of still photos taken from video (Figure 1) to the Cascadia Research Collective gray whale catalog from the eastern North Pacific (Calambokidis et al. 2019) and to the Sakhalin Island gray whale catalog have been undertaken with no matches (A. Perez, pers. comm.; O. Sychenko, pers. comm.).

Gray whales are primarily restricted to coastal waters during breeding, feeding, and migration, and this individual would have had to have crossed over 3,000 km of deep, open-ocean waters from the nearest area where this species is known to seasonally occupy, off the Aleutian Islands. The eastern North Pacific population breeds in shallow lagoons along the west coast of Baja California, Mexico, and feeds in shallow coastal waters from northern California north along the coasts of Oregon, Washington, British Columbia, Alaska, and Russia (Heide-Jorgensen et al. 2012; Lagerquist et al. 2019; Urbán et al. 2021). Migrating gray whales in the eastern North Pacific appear to largely remain on the continental shelf to and from their feeding grounds to the north (Lagerquist et al. 2019; Urbán et al. 2021). In the western North Pacific, gray whales feed in shallow waters off Sakhalin Island and the Kamchatka Peninsula in Russia, and historically would winter off southern China (Weller et al. 2008; Wang et al. 2015). More recent evidence shows that at least some whales from the western Pacific migrate east past the Aleutians and may cross through the deep waters of the Gulf of Alaska to the coast of British Columbia and Washington state before heading south along the continental shelf to breeding grounds in Mexico (Mate et al. 2015). Long-distance and open ocean movements of gray whales have been documented several times in recent years, including an individual seen off both Israel and Spain

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<sup>1</sup> <https://youtu.be/5nUifJmvZcE>

in 2010 (Scheinin et al. 2011), a different individual photographed and biopsy sampled off Namibia in 2013 (Elwen and Gridley 2013; Hoelzel et al. 2021), and a third individual seen off the Atlantic coast of Morocco, as well as off Italy, France, and Spain, in 2021 (IWC 2021).

Prior to the two sightings in February 2022 seven species of baleen whales had been documented in Hawaiian waters, a few of which are rarely seen (Baird 2016). While humpback whales (*Megaptera novaeangliae*) are abundant in nearshore Hawaiian waters in the winter, other baleen whale species primarily use pelagic waters (e.g., Bryde's whales, *Balaenoptera edeni*) and are only infrequently seen (e.g., fin whales, *B. physalus*, and sei whales, *B. borealis*). Blue whales (*Balaenoptera musculus*) have only been seen twice in Hawaiian waters, and North Pacific right whales (*Eubalaena japonica*) and minke whales (*B. acutorostrata*) on just a few occasions each (Bradford et al. 2017; Herman et al. 1980; Salden and Mickelsen 1999; Cascadia Research Collective, unpublished), although blue and minke whales are regularly detected acoustically in Hawaiian waters (Norris et al. 2012; Oswald et al. 2011; Stafford et al. 2001; Thompson and Friedl 1982). The February 2022 sightings suggests that there may be value in assessing existing acoustic archives from hydrophones in Hawaiian waters for the presence of gray whale calls (e.g., Guazzo et al. 2017).

Boat-based research efforts on cetaceans in Hawaiian waters began in the late 1960s (Norris and Dohl 1980), and for the last 35 years multiple research groups have worked with cetaceans off the main Hawaiian Islands each year. Despite this extensive effort, these first sightings of a gray whale in Hawai'i were made during commercial whale watching and dive trips, another demonstration of the value of community science to understanding whales and dolphins in Hawaiian waters.

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Figure 1. Images taken from video of a gray whale documented north of Keāhole Point, Hawai‘i, on February 2, 2022. The Blue Ocean Mariculture kanpachi (*Seriola rivoliana*) farm is visible in the background of the lower two images.