

2024 West Coast Whale Entanglement Summary

Each year, NOAA Fisheries' West Coast Region collects, verifies, documents, and <u>responds to reports of large whale entanglements</u> <u>along the U.S. West Coast</u> from a variety of sources including boaters, fishermen, law enforcement, marine resource agencies, and the public. This summary includes the reports received or known to have originated from U.S. West Coast sources in 2024, along with other developments related to entanglements. NOAA Fisheries also publishes <u>a separate</u> <u>annual summary of national data</u> on reports of confirmed entanglements and highlights the <u>U.S. Large Whale Entanglement Response Network's</u> emergency response activities to help entangled whales in U.S. waters.

Confirmed Entanglement Reports in 2024

In 2024, confirmed entanglement reports* in NOAA's West Coast Region were the highest since 2018. We confirmed 36 entangled whales off the coasts of Washington, Oregon, and California, or off the coast of other countries but entangled in U.S. West Coast commercial fishing gear. Similar to recent years, humpback whales continued to be the most common species entangled, with 31 separate entanglements confirmed in 2024. Four gray whales and one fin whale also were confirmed entangled.





* A confirmed entanglement report is an observation of a whale with human-made materials (including rope, net, monofilament line, buoys, traps, hooks, or debris) attached to it. Whale entanglement reports are reviewed to confirm the report and, if they do not meet the criteria, they are considered unconfirmed. Criteria used to confirm a report include: 1. Photos or videos were provided. NOAA Fisheries staff had direct visual observation. 2. The report came from a trusted source (trained

or professional reporting party). 3. An experienced network member or NOAA Fisheries expert interviewed the reporting party and the information provided is detailed and specific enough to confirm entanglement. 4. Multiple sources provided reports with detailed descriptions of the animal and the entanglement. Reports are deemed unconfirmed if they do not meet one or more of the listed requirements to be considered a confirmed entanglement.

Above: Figure 1. Number of confirmed entanglements by whale species reported to the West Coast Region each year from 2005 to 2024.

Left: Breaching humpback whale showing an entanglement with line through the mouth, a wrap around the right pectoral flipper, and trailing line along the side of the body. The whale was documented off Laguna Beach, California. Credit: Delaney Trowbridge Photography. Reports of entangled whales originated from throughout the U.S. West Coast in 2024 and were primarily concentrated in central California. Humpback whale entanglement reports were most common in both southern and central California (Figure 2). From late September through October, nine humpback whales were reported as entangled off Monterey. Entanglements also affect whales beyond U.S. borders. For example, gear from the Oregon commercial Dungeness crab fishery was documented entangling a humpback whale in Mexico, and Washington commercial Dungeness crab gear was successfully disentangled from a humpback whale in Canada.

LEGEND

Species, Fishery

- ✤ Fin Whale, Commercial Dungeness crab
- Gray Whale, Commercial Dungeness crab
- Gray Whale, Gillnet
- Humpback Whale, Commercial Coonstripe shrimp
- Humpback Whale, Commercial Dungeness crab
- O Humpback Whale, Gillnet
- Humpback Whale, Groundfish Trawl
- Humpback Whale, Unknown

Right: Figure 2. Map of actual or estimated locations where whales were first reported as entangled in 2024, color coded by species. Note: An entanglement report location may not be the same location where the whale became entangled, as whales can carry the entanglement for thousands of miles.





Below: Table 1. Summary of 2024 entanglement reports by species. Note: All fisheries of confirmed reports are commercial fisheries unless noted as recreational or tribal.

Species	Confirmed	Unconfirmed	Location of Confirmed Reports	Fisheries of Confirmed Reports
Humpback	31	1	21 California, 3 Oregon, 4 Washington, 2 Mexico, 1 Canada	11 Dungeness crab pot, 2 coonstripe shrimp pot, 1 groundfish trawl, 1 unidentified gillnet, 16 unknown
Gray	4		3 California, 1 Washington	2 Dungeness crab pot, 1 unidentified gillnet, 1 unknown
Fin whale	1		1 Oregon	1 Dungeness crab pot
Unidentified		2		

Entanglement Response Outcomes

- A response was initiated in 18 cases (two gray and 16 humpback whales):
 - In one case (humpback whale), all gear was removed.
 - In two cases (two humpback whales), some, but not all, of the gear was removed.
 - In 13 cases, no gear was removed (one gray and 12 humpback whales).
 - Responders documented one case where a gray whale partially self-released from the gear; however, the gray whale was later found dead.
 - Additionally, there were two cases in which the whales were found dead, so no response was initiated (one fin whale and one humpback whale).
- In nine cases, no response was initiated (two gray and 10 humpback whales); in one of these cases, a gray whale self-released from the gear.
- Four cases of non-NOAA-authorized entanglement interventions⁺ (all humpback whales) in the United States resulted in partial gear removal.
- In one case in Canada (humpback whale), all gear was removed by Fisheries and Oceans Canada.
- Three unconfirmed cases were reported; one response was initiated (one humpback whale), and in two cases there was no response (two unidentified whales).
- Three additional reports were subsequently determined to be not entangled (false alarm).
- ⁺ See non-NOAA authorized entanglement intervention highlights section for more information.

Alive/Dead

All confirmed entanglement reports were associated with live whales except one dead fin whale and one humpback whale. Additionally, one confirmed entanglement of a gray whale was initially reported alive, but the whale was later resighted dead. In addition to the confirmed entanglements, three live humpback whales and one dead stranded gray whale in California were documented through the Marine Mammal Stranding Network with wounds consistent with previous entanglement. This number represents a minimum estimate of strandings with wounds consistent with entanglements.

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The origins of commercial Dungeness crab gear entanglements were California (5), Oregon (3), Washington (4, one of which also had tribal Dungeness crab gear), both Oregon and Washington (1), and state unknown (1). Two humpback entanglements were reported from Mexico this year, both involving commercial Dungeness crab: one from Oregon and one from an unknown state. Canada reported one humpback whale entangled with Washington commercial Dungeness crab gear and other gear. The whale was fully disentangled by Fisheries and Oceans Canada.

Gear Characterization for Confirmed Entanglements

NOAA Fisheries investigates the source of entanglement for each report and works with fishermen and state fishery managers to gain more information such as identifying the geographic areas, times of year, types of fisheries, and possible gear configurations that resulted in the entanglement. Fifty-one percent (n=18) of confirmed cases in 2024 involved commercial fishing gear (i.e., buoys with identifiable marks, nets, and monofilament line). The remaining cases in 2024 (n=17) involved line that could not be directly attributed to a fishery or other source. Although various marine industries introduce gear into the ocean (such as ropes, lines, nets, chains, and cables), one of the most common sources of line is commercial and recreational fishing. Therefore, it is likely some of the cases involving only line or lines and buoys that could not be linked to a specific source were related to fishing activities.

- Documentation of entangled whales is often limited, so these statistics reflect what is visible to the reporting party or the entanglement response team.
- 17 confirmed whale entanglements were associated with unidentified entangling gear material (see Table 2.). Entanglements are considered "line only" if the only entangling material visible on the whale is line.

Entangling Material	Count (N=17)
Line only	9
Line + 1 buoy	3
Line + multiple buoys	4
Line + 2 buoys + high flyer	1

Table 2. Unidentified gear breakdown.

 In one case, identified as "line + multiple buoys," approximately 90 feet of line and two buoys were removed and reviewed, but the source of entanglement remains unknown.

Sources of Whale Entanglements



Above: Figure 3. Sources of whale entanglements.



Entanglement Gear Guide

To better understand and address entanglements of shared species, NOAA Fisheries' West Coast and Alaska regions teamed up to create an update to the 2010 WCR-based Fixed Gear Guide referred to as the "<u>Entanglement Gear Guide</u>." This guide describes the characteristics of fishing gear that NOAA Fisheries uses to identify the gear that may be involved in entanglements throughout the Eastern North Pacific Ocean. The guide complements the Marine Mammal Protection Act List of Fisheries, as it also represents a synthesis of our general knowledge and understanding of commercial fisheries in the West Coast Region and Alaska. Users can find relevant information about fishing gear type, geographic region, seasonality, and/or specific fishery.

The Entanglement Gear Guide is a valuable outreach tool for a wide range of stakeholders and the public for improving the descriptions of gear associated with entanglements and for providing transparency about how we approach gear identification along the West Coast and in Alaska.

Entanglement Response Highlights

In July, in 2024, the NOAA Fisheries West Coast Region, in partnership with NOAA's National Marine Sanctuaries and the National Marine Sanctuary Foundation, hosted an entanglement response training in Santa Barbara, California. In addition, NOAA staff provided training in San Diego, Orange, Los Angeles, and Marin counties. During the trainings, authorized entanglement responders practiced advanced response techniques and tested new tools and gear.

In July, off California, a response with many partners led to the <u>successful</u> <u>disentanglement</u> of a humpback whale off Dana Point. It was originally reported off Palos Verdes. Over the course of 6 days, response teams encountered the whale several times. However, the whale was evasive and skittish, making it difficult to cut the line wrapped over its tail. After several hours of tracking the whale with an aerial drone and slowly getting closer, the team used a specialized knife on the end of a carbon fiber pole to make the cut. This event required patience and collaboration from everyone involved, pulling together as a team.

Nine humpback whale entanglements were reported in Monterey County between September and October 2024. The weather was challenging, and often entanglements were reported late in the day, making response conditions less than ideal. The entanglements were well documented, allowing for the connection of resights, and one whale was partially released.

West Coast Take Reduction Team

NOAA Fisheries is establishing a <u>Take Reduction Team</u> to address the incidental mortality and serious injury of endangered and threatened stocks of <u>humpback</u> <u>whales</u> with the Federal sablefish pot fishery. Please reference the <u>West Coast</u> <u>Take Reduction Team website</u> for updates.

Right: NOAA led response team watches from a distance as the newly disentangled whale fluke up dives for the first time. Photo credit: Wendy Leeds, Entangled Whale Response Orange County. NOAA Fisheries Permit #24359.





Above: Humpback whale entangled in gillnetting reported off San Diego, California. The green monofilament is attached over the whale's head and back and trails behind the whale. Credit: San Diego Whale Watch. NOAA Fisheries Permit #24359.

Non-Authorized Entanglement Responses

In 2024, there were four non-NOAA-authorized entanglement responses, needlessly putting members of the public and the whales at risk. <u>Responses to entangled whales should only be conducted by trained</u> and authorized responders. Well-intentioned members of the public can accidentally worsen the whale's entanglement or reduce the ability of trained experts to disentangle the animal.

Responding to entangled large whales is inherently dangerous, the public should stay at least 100 yards away from an entangled whale (the length of a football field). Despite the large size of some whale species, weighing up to 200 tons, they are quick and flexible. People, including trained and authorized responders, have died while attempting to rescue an entangled whale. Boats have been damaged and overturned, and people have been pulled overboard during disentanglement attempts.



For example, removing trailing lines and buoys behind the whale may seem easy without special tools, but it is not usually the best choice to immediately help the animal. In fact, it may be counterproductive. If too much trailing line is removed, it makes it harder for trained rescue teams to reach and remove the more lethal wraps around the body. It might preclude options for teams to attach additional buoys and markers, including satellite tracking tags, that help trained responders resight or better handle the whale. Misplaced cuts may also diminish the whale's ability to shed the gear on its own.

Trained response teams thoroughly document the entanglement prior to making any cuts. This allows the responders to plan the best way to disentangle the whale, and gives NOAA Fisheries the best chance of identifying and perhaps retrieving the gear, and assessing how the whale became entangled. These data are used by fisheries managers to help prevent future entanglements.

Humpback whale entangled in Oregon commercial Dungeness crab gear reported off Los Cabos, Mexico in July 2024. The line wrapped around right pectoral fin, over the back, trailing to bundle of line and buoys over the fluke. The whale is very emaciated, has visible parasites, and lost half of both fluke lobes. Credit: Red de Asistencia a Ballenas Enmalladas.

Large Whale Entanglement Photo Documentation Checklists



Entangled whales are unpredictable and dangerous. Stay with the whale while reporting but keep a safe distance. Do not approach the whale.

To report entangled marine mammals call the Entanglement Reporting Hotline: 1-877-SOS-WHAL or 1-877-767-9425

Download the large whale entanglement photo documentation checklists: https://www.fisheries.noaa.gov/ resource/document/largewhale-entanglement-photodocumentation-checklist

Increased Humpback Whale Entanglements

Humpback whale entanglements doubled from 15 in 2023 to 30 in 2024, a spike likely driven by several factors. Shifting oceanic conditions appear to have drawn whales and their prey closer to Monterey Bay—an active coastal region with whale-watching tours, researchers, and more human activity. Late summer and early fall changes in ocean conditions, known as <u>habitat compression</u>, and a nearshore increase in adult anchovy (a main prey for humpback whales) contributed to this aggregation of whales. Habitat compression levels in 2024 were similar to those in 2015–16 off California, when confirmed humpback whale entanglements were at their highest. In September and October alone, 15 entanglements were confirmed, most around Monterey Bay. This concentration of whales attracted considerable attention from the whale-watching community and multiple entanglement reports further heightened vigilance.

Various gear types were involved in the September/October entanglements, including Dungeness crab pot and unidentified gear. In the two instances where gear could be traced to a specific fisherman, interviews suggested that entanglements likely occurred earlier in the year near San Francisco. Since whales can carry gear for months and travel long distances, these entanglements can persist and be first observed and reported far from where they originated.





Photos: Above: Humpback whale entangled in green line wrapped around the caudal peduncle, reported off Monterey in May 2024. After further examination of the gear and buoys (buoys not visible in this photo), the gear was attributed to the California commercial Dungeness crab fishery. Earlier that morning the whale was seen gear free, suggesting that this entanglement occurred a few hours before the whale was reported. Credit: Sydney Minges, Santa Cruz Whale Watching.

Top, right: Humpback whale entangled in line wrapped tightly around peduncle and flukes reported off Monterey, California in October 2024. The whale has poor skin condition and its fluke blades are twisted 90 degrees. Credit: Cascadia Research. NOAA Fisheries Permit #24359.

Bottom, right: Humpback whale entangled in bundles of line across both fluke blades, with several buoys attached reported off Palos Verdes in July 2024. Entanglement responders were able to make one cut of the line, then the remaining gear fell off the whale. Credit: Wendy Leeds, Entangled Whale Response Orange County. NOAA Fisheries Permit #24359.

Management Updates

The three state agencies of California, Oregon, and Washington have implemented multiple management strategies to reduce whale entanglement risk in their Dungeness crab fisheries, such as: vertical line reductions in the form of trap limit reductions, depth restrictions, seasonal area closures, fleet advisories, increased gear marking, updated fishing effort monitoring, and experimental fishing permits to test gear modifications. The Pacific Fishery Management Council voted this year to recommend a series of fishery management practices to reduce risk in the federal sablefish pot fishery as well. NOAA Fisheries' West Coast Region staff participated in an international workshop focused on exchanging information about whale entanglement response and mitigation with participants from Australia, Canada, Mexico, Italy, Scotland, South Africa, and multiple regions of the United States.



Publication Notes & Helpful Links

Modeling the spatiotemporal patterns and drivers of Dungeness crab fishing effort to inform whale entanglement risk mitigation on the U.S. West Coast. Riekkola et al. 2024. <u>https://www.sciencedirect.com/science/article/pii/S0301479723025239</u>

Aquaculture related humpback whale entanglements in coastal waters of British Columbia from 2008–2021. Storlund et al. 2024. <u>https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0297768</u>

Large whale entanglements in Mexico, a 25-year review from 1996 to 2021. Astrid Frisch-Jordán and Diana C. López-Arzate 2024. <u>https://onlinelibrary.wiley.</u> com/doi/full/10.1111/mms.13106

Gray whale (Eschrichtius robustus) post-mortem findings from December 2018 through 2021 during the Unusual Mortality Event in the Eastern North Pacific. Raverty et al. 2024. <u>https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0295861</u>