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FISHERIES**

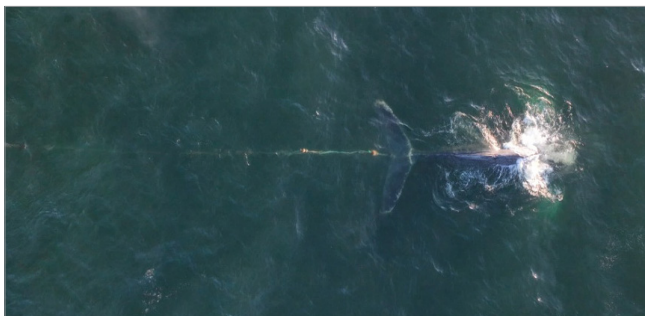
2023 West Coast Whale Entanglement Summary

Each year, NOAA Fisheries' West Coast Region collects, verifies, documents, and [responds to reports of large whale entanglements along the U.S. West Coast](#). We receive these reports from a variety of sources including boaters, fishermen, law enforcement, marine resource agencies, and the public. Included in this summary are the reports received or known to have originated from U.S. West Coast sources in 2023, along with other developments related to entanglements.

NOAA Fisheries publishes a separate national entanglement report that summarizes national data on reports and confirmed entanglements in U.S. waters, and highlights emergency response activities conducted by the [U.S. Large Whale Entanglement Response Network](#).

Confirmed Entanglement Reports in 2023

In 2023, we confirmed 27 entangled large whales off the coasts of Washington, Oregon, and California, or off the coast of other countries and states but entangled in U.S. West Coast commercial fishing gear. This remains above the numbers of reported entanglements prior to 2014, but continues a pattern of fewer reported entanglements compared to the high point of more than 50 in 2016. Similar to recent years, humpback whales continue to be the most common species entangled, with 16 separate entanglements confirmed in 2023. Nine gray whales and two transient killer whales also were confirmed entangled.



Above: Drone footage of an entangled humpback whale shows a line wrapped around the fluke and trailing two buoys belonging to the Washington coastal commercial Dungeness crab fishery. Credit: Jeff Harris, NOAA Fisheries.

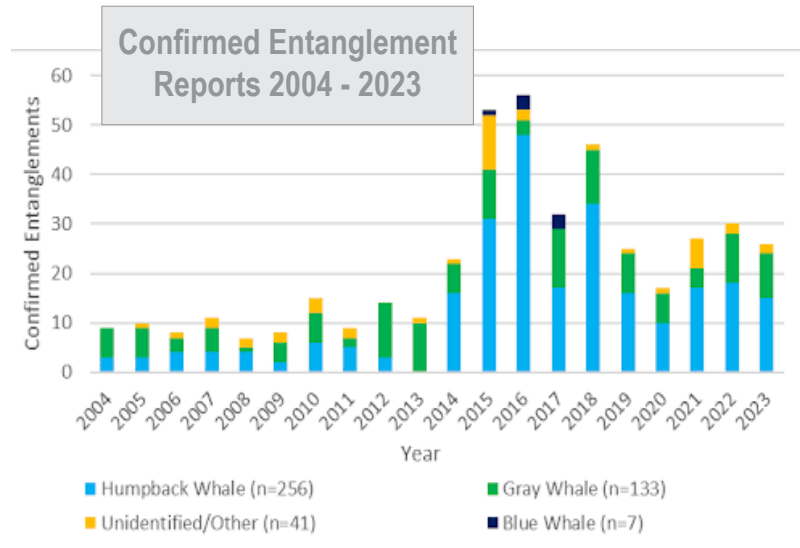


Figure 1: Number of confirmed whale entanglements by species reported to the West Coast Region each year from 2004 to 2023. The two transient killer whales are included in the "other" category.

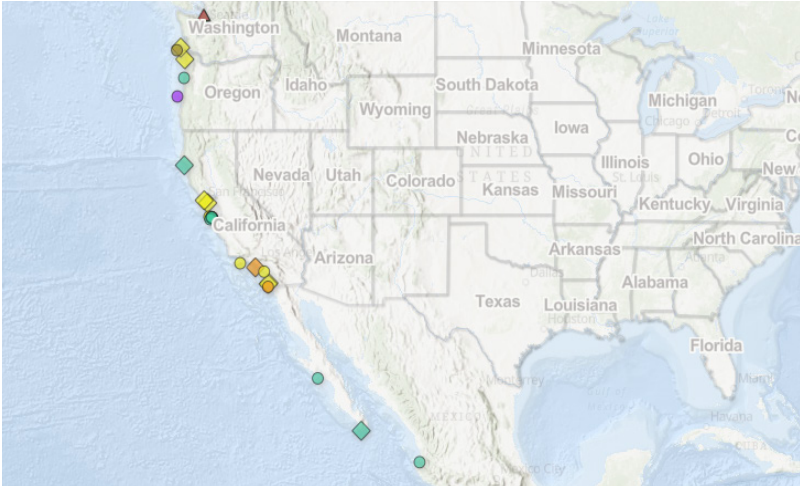


Above: An entangled humpback whale fluke with multiple wraps around the tail stock and a buoy belonging to the California commercial Dungeness crab fishery, documented off Monterey, California. Credit: Monterey Bay Whale Watch.

Most reports of entangled whales in 2023 came from California. Gray whale entanglement reports were most common in southern California, whereas reports of humpback whales were most common in central California. Two transient killer whale entanglements were reported in Puget Sound, Washington. Of note, whale entanglement response teams in Mexico successfully disentangled humpback whales from California and Oregon commercial Dungeness crab fishery gear, and a gray whale from and California commercial Dungeness crab gear.

Explore our Interactive StoryMap Online

Viewers can click on each icon on the map to learn more about each entanglement case. Find the storymap at: <https://www.fisheries.noaa.gov/resource/document/2023-west-coast-whale-entanglement-summary>



Above, Map: Actual or estimated locations where whales were first reported as entangled in 2023, color coded by species. Entanglement report locations are not necessarily the same location where the whale became entangled or where the entanglement occurred, as whales can carry the entanglement for thousands of miles.

Below, Table 1. Summary of 2023 entanglement reports by species. Note: All Fisheries of Confirmed Reports are commercial fisheries unless noted as recreational or tribal.

Species	Confirmed	Unconfirmed	Report Location of Confirmed Reports	* Fisheries of Confirmed Reports
Humpback	16	1	12 California 2 Oregon 1 Washington 1 Mexico	7 Dungeness crab, 1 spot prawn, 1 groundfish trawl, 1 halibut longline/sablefish pot, 1 unidentified gillnet, 5 unknown
Gray	9	2	6 California 1 Oregon 1 Washington 1 Mexico	2 Dungeness crab, 1 unidentified gillnet, 6 unknown
Transient Killer	2	0	2 Washington	1 recreational Dungeness crab, 1 tribal Dungeness crab
Fin	0	1		
Unidentified	0	2		

Entanglement Response Outcomes	Table Explanatory Notes
<ul style="list-style-type: none">A response was initiated in 16 cases (four gray, 10 humpback, and two transient killer whales), including:<ul style="list-style-type: none">Three (one gray and two humpback whales) where some but not all of the gear was removed.Ten (three gray and seven humpback whales) where no gear was removed.Three (one humpback and two transient killer whales) where the whale partially or fully self-released from the gear.No response was initiated in eight cases (five gray and three humpback whales).Three cases of non-NOAA-authorized entanglement interventions (all humpback whales) resulted in partial or full gear removal. However, these interventions needlessly put members of the public at risk. Responses to entangled whales should only be conducted by trained and authorized responders.Six unconfirmed cases were reported, and no responses were initiated for these cases (one fin, two gray, one humpback, and two unidentified whales).	<ul style="list-style-type: none">The state fishery origins of commercial Dungeness crab gear entanglements were California (7), Oregon (1), and Washington (1).Mexico reported three entanglements: one gray whale entangled with California commercial Dungeness crab gear, one humpback with California commercial Dungeness crab gear, and one humpback with Oregon commercial Dungeness crab gear.One humpback whale was simultaneously entangled with gear belonging to both the Pacific halibut longline and sablefish pot fisheries.In addition to the whale entanglements reported in 2023, a dead leatherback turtle was found entangled with California commercial Dungeness crab fishing gear off the Farallon Islands.
Alive/Dead	
All confirmed entanglement reports were associated with live whales, except two cases of dead stranded gray whales with entangling gear still attached (included in the table above). In addition to the confirmed entanglements, one live humpback whale and three dead stranded gray whales in California were documented with wounds consistent with previous entanglement. They are not reported in the data above.	

*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 video 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.

Program Updates

Advancing Location-Tracking Technology

NOAA Fisheries and The Nature Conservancy have developed a next-generation location tracking buoy called “[Scout](#).” It is designed as a safer and more effective tool for response teams to find entangled whales during responses that occur over multiple days. Scout is a lighter, more efficient tracking tool than the standard satellite tracking device that has been a reliable response tool for more than 15 years. Scout is a quarter of the weight of the traditional tag, producing about 35 times less drag on the whale. Scout’s smaller size also reduces the risk of serious injury to the whale and to response crews deploying it. The buoy broadcasts its GPS location in near real-time, giving teams on the water critical information needed to find the whale. Scout is currently undergoing final tests and approvals with the goal of developing a fleet of Scouts to equip response teams across the United States.



Above: Scout tag (left) next to the current satellite telemetry buoy (right). Credit: Stephanie Marcos, Marine Life Studies.

Right: Whale entanglement responders during a training in Monterey, California. Credit: Justin Greenman, NOAA Fisheries.

New Take Reduction Team

NOAA Fisheries is establishing a [Take Reduction Team](#) to address the incidental mortality and serious injury of Central America (endangered) and Mainland Mexico (threatened) distinct population segments of [humpback whales](#). As part of a settlement agreement with the Center for Biological Diversity, we committed to convene the first team meeting by November 30, 2025. We published a [scoping notice](#) in the Federal Register to solicit public input on whether commercial fisheries other than the federal sablefish pot fishery should be included, as well as other information that the agency should consider when establishing the new take reduction team. For planning purposes, we [announced](#) a preliminary scope of the West Coast Take Reduction Team. It includes three strategic marine mammal stocks and five commercial fisheries.

The team will build on our close collaboration with fishery managers, numerous fishing industry working groups in California, Oregon, and Washington, environmental groups, scientists, and others to address entanglements. Multiple entanglement reduction management measures are already in place for Dungeness crab fisheries, including gear reductions, depth restrictions, surface gear restrictions, and early season closures in California due to whale entanglement risk.

All three West Coast Dungeness crab fishery managers (California, Oregon, and Washington departments of fish and wildlife) continued coordination with us on developing their applications for Section 10 permits under the Endangered Species Act for the incidental take of listed species, including whales, in state-managed fixed gear fisheries.



Above: Whale entanglement responders training with the new Scout tag in Monterey, California. Photo credit: Justin Greenman, NOAA Fisheries.

Line Marking Research

In 2023, NOAA Fisheries’ West Coast Region, in partnership with NOAA’s Office of National Marine Sanctuaries and the National Marine Sanctuary Foundation, hosted multiple entanglement response trainings in California. During the trainings, entanglement responders practiced advanced response techniques and tested the visibility of the new line marking approaches from above and below the water. The new approaches, as proposed by state fishery managers, require color-specific lines for different fisheries, which should assist with fishery identification if a line is found on an entangled whale. More than half of whale entanglements are associated with unidentified gear; marking lines would help inform strategies to avoid entanglements. The line marking would be used in addition to other markings such as buoy numbers, letters, colors, and tags. The states of California, Oregon, and Washington worked

Table 2. 2023 Breakdown of unidentified entangling material.	
Entangling material	COUNT (N=11)
Unknown	2
Line only	5
Line + 1 buoy	4

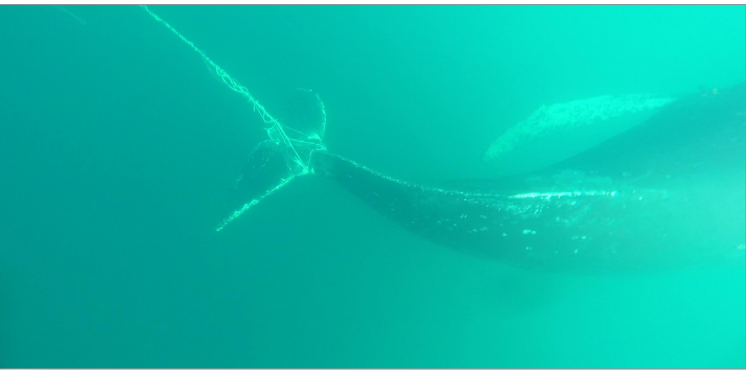


Photo: “Line marking” fishing line coiled on a fishing boat to be used for field tests to determine the visibility of markings from various documentation platforms. Credit: Lauren Saez, Ocean Associates

Photo: “Line marking” fishing line coiled on a fishing boat to be used for field tests to determine the visibility of markings from various documentation platforms. Credit: Lauren Saez, Ocean Associates



Above: An entangled humpback whale with multiple wraps of line around the head and a buoy belonging to the California commercial Dungeness crab fishery, documented off Monterey, California. Whale lice, seen on the back of the whale, are an indication of poor health. Credit: Marine Life Studies; MMRSRP Permit #24359.



Above: Underwater documentation of a humpback whale entangled with lines from two sets of fishing gear belonging to both the Pacific halibut longline and sablefish pot fisheries. Credit: Cascadia Research Collective, MMRSRP Permit #24359.

Transient Killer Whales Entangled in Dungeness Crab Fishing Gear

Two transient killer whale entanglements were reported within 3 weeks of each other in Saratoga Passage in Puget Sound, Washington. Both entanglements involved Dungeness crab fishing gear; one from a tribal fishery and one from a recreational fishery.

Both killer whales were able to self-release from the gear, with the entanglements lasting only 4 hours and 10 hours respectively. Compared to other large baleen whales, killer whales are more mobile, can turn easily, and quickly pick up on our approaches, so our disentanglement techniques for them needed to change accordingly. The documentation of these entanglements informs our best practices for killer whales. gear, with the entanglements lasting only 4 hours and 10 hours respectively. Compared to other large baleen whales, killer whales are more mobile, can turn easily, and quickly pick up on our approaches, so our disentanglement techniques for them needed to change accordingly. The documentation of these entanglements informs our best practices for killer whales.



Above: Killer whale entanglement documented in Saratoga Pass, Puget Sound, Washington. The killer whale was entangled with recreational Dungeness crab gear and self-released. Credit: Sealife Response, Rehabilitation and Research, MMRSRP Permit #24359.

Community Photo-ID App Helps Whales

Increased data sharing with photo-ID research partners can provide a snapshot of a whale's health before, during, and after entanglement. In some cases, it can also fill in gaps in an entanglement's timeline. This year, the West Coast Whale Entanglement Response Program used [Happywhale](#), an online citizen science photo-ID platform to confirm the identification of an entangled humpback whale sighted in California. The Happywhale catalog matched the whale to a photo originally taken in Mexico months earlier, which showed the whale was already entangled at that time. This data sharing allowed NOAA Fisheries to better understand the length of time the whale had been entangled.

Top Right: Humpback whale entangled with unidentified line wrapped around the tail stock and flukes, reported off Monterey, California, in April. Credit: Jack Barkowski, Cascadia Research Collective, MMRSRP Permit #24359.

Bottom Right: Humpback whale ID photo from the Happywhale catalog, submitted by a user in Mexico in February 2023. This photo helped determine that this whale (same as photo above) had been entangled for over two months. Credit: Angelika Ludwiczak, Happywhale.



Publications Notes & Helpful Links

Retrospective analysis of measures to reduce large whale entanglements in a lucrative commercial fishery. Riekkola, et. al., (2023)

<https://www.sciencedirect.com/science/article/pii/S0006320722004335>

Static management presents a simple solution to a dynamic fishery and conservation challenge. Free, et. al. (2023) <https://doi.org/10.1016/j.biocon.2023.110249>

Estimates of marine mammal, sea turtle, and seabird bycatch in the California large-mesh drift gillnet fishery: 1990-2022; Carretta (2023) NOAA-TM-NMFS-SWFSC-687; <https://repository.library.noaa.gov/view/noaa/52092>

Sources of human-related injury and mortality for U.S. Pacific West Coast marine mammal stock assessments, 2017-2021; Carretta et al (2023) NOAA-TM-NMFS-SWFSC-690; <https://doi.org/10.25923/qwf2-9b97>

Exposure of whales to entanglement risk in Dungeness crab fishing gear in Oregon, USA, reveals distinctive spatio-temporal and climatic patterns. Derville et al (2023) <https://www.sciencedirect.com/science/article/pii/S0006320723000897>

Large Whale Entanglement Photo Documentation Checklist

<https://www.fisheries.noaa.gov/resource/document/large-whale-entanglement-photo-documentation-checklist>

Entanglement Reporting Hotline:
1-877-SOS-WHAL or
1-877-767-9425

Large Whale Entanglement Photo Documentation Checklist
Humpback whale

1 Photograph Species, Overall Condition, & Entanglement

- ☐ Head (Box A above)
- ☐ Side view of dorsal fin (Box B above)
- ☐ Flukes, especially underside if raised
- ☐ Any part of the body where the entanglement or gear may be present
- ☐ Flukes (Box C above)

2 Photograph Fishing Gear

- ☐ Buoys (and other gear if present)
- ☐ Tags (color, numbers, and letters if present)
- ☐ Lines on the body
- ☐ Trailing lines including the distance from the whale
- ☐ Netting if present
- ☐ Line Markings - color, sections, etc. if present
- ☐ Other gear if present

3 Submit the photos and identifying information

Email photographs to wce.entanglement@noaa.gov. Underwater documentation can also be obtained but only by trained large whale entanglement responders.

Camera Specifics

A high quality camera (Single Lens Reflex (SLR) for example) is ideal to document an entangled whale as it results in higher resolution. A cell phone can also be used if that is the only option.

Entangled whales are unpredictable and dangerous.
Keep a safe distance. Do not approach the whale.
Watch for lines in the water that may entangle your boat.

Learn more about the West Coast Large Whale Entanglement Response Program:
www.fisheries.noaa.gov/west-coast-marine-mammal-protection/west-coast-large-whale-entanglement-response-program