

# Study finds reporting entanglements of leatherback turtles is critical for survival

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A leatherback sea turtle entangled in the buoy lines of pot/trap gear in Cape Cod Bay. Credit: Center for Coastal Studies

New research suggests that leatherback turtles entangled in fishing gear have a better chance of survival if the incident is reported quickly, giving trained responders the opportunity to fully disentangle the animals.

Researchers, led by Dr. Kara Dodge of the New England Aquarium, analyzed 15 years of data collected by a network of disentanglement responders with the aim of better understanding sea turtle bycatch and mortality. Of the 280 confirmed sea turtle entanglements documented from 2005 to 2019 in Massachusetts waters, 272 involved [leatherback turtles](#), with most wrapped in rope around their necks and front flippers. The study in *Endangered Species Research* found that, for those cases with sufficient photo/video documentation, 88% of completely disentangled [turtles](#) were predicted to have a low or intermediate risk of death based on their degree of injury. Among those turtles that were equipped with tags to definitively follow their outcome, many were confirmed to be alive weeks to years after being disentangled.

"This dataset gave us a unique opportunity to really dig into and understand leatherback turtle entanglement in buoy lines, which is critical to determining how entanglement happens and identifying workable solutions to solve this problem," said Dr. Dodge, Research Scientist in the Aquarium's Anderson Cabot Center for Ocean Life. "Bycatch of endangered species is rarely observed, so this dataset is an incredible testament to all the watchful mariners reporting these events and the disentanglement network consistently collecting high quality data for over 15 years."

Leatherback turtles are the largest and one of the most endangered sea turtle species on earth, sometimes reaching six feet in length and weighing over 1000 lbs. They are often called "living dinosaurs" because they have existed for nearly 100 million years. Leatherbacks range widely throughout the global oceans, often visiting the coast of Massachusetts to feed on jellyfish during the summer and fall.

"Our findings for leatherbacks mirrors what we have seen in whales. They are very likely to become entangled in whatever rope is most available to them. Reducing rope, which is not meant to mean reducing fishing, will be the best strategy for reducing entanglements," said coauthor Scott Landry from the Center for Coastal Studies, which leads entanglement response efforts in the region and collected the bulk of the data for the study.

To support better survival rates, researchers noted the importance of sea turtles being completely and safely disentangled, as turtles have a low chance of survival when only partially disentangled. The disentanglement network works collaboratively with fishermen to quickly respond to entanglements. It also relies on boaters to report entanglements immediately and stand by at a safe distance while a trained team responds. Mariners should never attempt to disentangle a turtle or whale on their own due to the danger posed to both people and the animals.

"We really want boaters to inform us as soon as possible when they encounter an entangled turtle so that we can assess the turtle's condition and provide [medical treatment](#) if needed," said Dr. Charles Innis, Director of Animal Health at the New England Aquarium and a coauthor of the study. "We have a mobile veterinary team available to help these turtles. When injured turtles are released by well-intentioned boaters without medical assessment and treatment, it may reduce their chance of survival, and it prevents us from learning more about the effects of entanglement."

The vast majority of turtles studied were caught in actively fished commercial gear, rather than ghost gear or debris. Potential solutions to reduce the risk of sea turtle entanglements include replacing single fixed-gear fishing traps with trawls to reduce the number of vertical lines in important feeding habitats for leatherbacks. The researchers also encourage the development of emerging technologies, particularly

"ropeless" fishing, which could be the key to a future in which fishing and sea turtles can coexist.

"Response by the trained and specially-equipped sea turtle disentanglement network has the highest chance of success in completely disentangling turtles, minimizing injury, and contributing to the survival of these endangered species," said Kate Sampson, Sea Turtle Stranding and Disentanglement Coordinator, Greater Atlantic Regional Fisheries Office, NOAA Fisheries. "The network also collects a great deal of data, including the type of gear involved, configuration of entanglement, and associated injuries, which are invaluable to understanding these events and informing potential management efforts. This information provides unique insight not available through other sources."

While the study focused on entanglements in Massachusetts waters, researchers emphasize that the challenges facing sea turtles are not unique to this area. Similar studies have shown that [entanglement](#) is also a serious problem for leatherbacks in Canadian waters. Scientists hope the study can serve as a model for other areas across the globe where sea turtles and fixed-gear fisheries share the ocean.

"The life-threatening entanglements observed locally are also seen around the world where turtles and fixed gear fisheries co-exist," said Brian Sharp of the International Fund for Animal Welfare. "The findings from this study can help catalyze innovative solutions, such as ropeless fishing, that can be used globally to reduce bycatch and help ensure that both turtles and fishermen can survive and thrive."

Dodge plans to compile more information about the survival of leatherbacks following disentanglement efforts. The New England Aquarium recently received funding from the NOAA Bycatch Reduction Engineering Program and the Massachusetts Environmental Trust to study post-release outcomes of disentangled leatherbacks on a

larger scale, which will continue to include collaboration with the disentanglement network and commercial fishermen to both understand the problem and identify workable solutions.

**More information:** KL Dodge et al, Disentanglement network data to characterize leatherback sea turtle *Dermochelys coriacea* bycatch in fixed-gear fisheries, *Endangered Species Research* (2021). [DOI: 10.3354/esr01173](https://doi.org/10.3354/esr01173)

Provided by New England Aquarium

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