

# Study identifies boat strikes as a growing cause of manatee deaths in Belize

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Antillean manatees near Caye Caulker Island, Belize. Credit: T. Yiftach

The endangered Antillean manatee faces a growing threat from boat

strikes in Belize, according to a new study that raises concerns about the survival of what had been considered a relatively healthy population.

Belize hosts a population of around 1,000 manatees. With the growth of tourism in recent decades, however, Belize has seen a substantial increase in boat traffic, making boat strikes an increasingly important cause of manatee deaths and injuries.

The new study, published June 1 in *Endangered Species Research*, used 25 years of data on manatee strandings (dead or injured animals), six aerial surveys of the manatee population, and two decades of boat registration data to quantify the impacts of increasing boat traffic on the manatee population.

First author Celeshia Guy Galves, now at the Clearwater Marine Aquarium Research Institute in Belize, led the study as a graduate student in the Coastal Science and Policy Program at UC Santa Cruz.

"This work has been shared with policymakers in Belize and will contribute directly to conservation planning, including protecting key areas for manatees such as the Belize River Mouth and the Placencia Lagoon," Galves said.

Galves found that with more and more boats in the water, the number of manatee strandings caused by boat strikes has increased over time, from 1 to 4 per year in the late 1990s and early 2000s to 10 to 17 per year by the late 2010s. Strandings were more frequent in areas of high boat traffic, high human population density, and mangrove habitats.

"We knew that boat strikes were happening, but this study provides strong quantitative evidence of boat strikes as an increasing source of mortality for manatees in Belize, and it shows the areas where the risk is greatest," said co-author Marm Kilpatrick, professor of ecology and

evolutionary biology at UC Santa Cruz. "These findings provide a basis for [conservation measures](#) that can be implemented to reduce the risk."

Conservation efforts should focus on reducing the number of boats and their speed within zones of high manatee use, the authors said. High priorities for conservation interventions include creating more [protected areas](#) with restrictions on boat traffic, including areas designated for non-motorized boating or restricted access, as well as speed restrictions in shallow seagrass habitats.

Like the Florida manatee, the Antillean manatee is a subspecies of the West Indian manatee. In addition to boat strikes, threats to the Antillean manatee population include habitat degradation and loss, poaching, pollution, and entanglement in fishing gear.

Celeshia Galves and her husband, co-author Jamal Galves, both work on [manatee conservation](#) at the Clearwater Marine Aquarium Research Institute in Belize, and Jamal Galvez is a 2023 graduate of the UCSC Coastal Science and Policy Program. Other co-authors include Nicole Auil Gomez at the Wildlife Conservation Society in Belize; Don Croll, professor of ecology and evolutionary biology at UCSC; and Kelly Zilliaccus, a research specialist in Croll's Conservation Action Lab at UCSC.

**More information:** CG Galves et al, Increasing mortality of endangered Antillean manatees *Trichechus manatus manatus* due to watercraft collisions in Belize, *Endangered Species Research* (2023). [DOI: 10.3354/esr01247](https://doi.org/10.3354/esr01247)

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