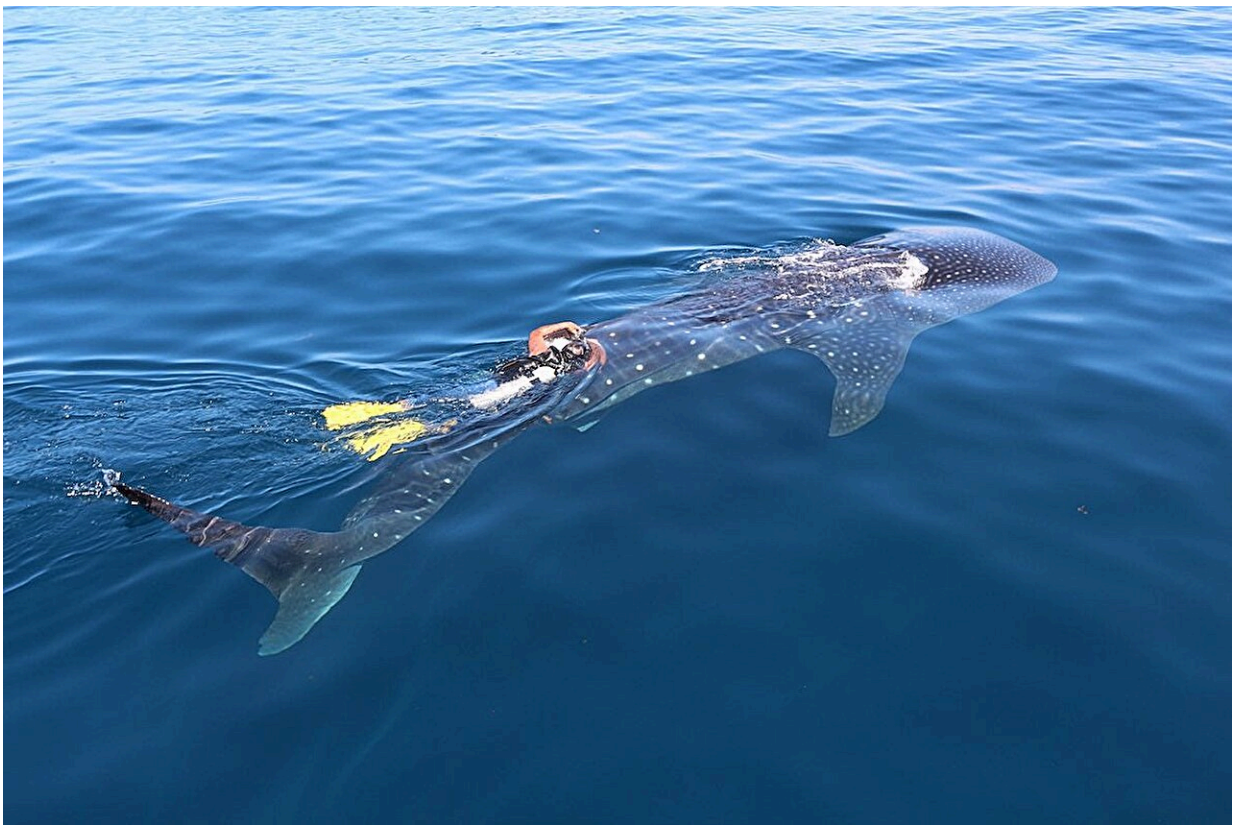


Female whale shark with satellite transmitter for record-breaking four years shows consistent migrations

July 24 2024



Rio Lady, a mature female whale shark, is tagged by Rafael de la Parra, executive director of Ch'ooj Ajauil AC and a collaborator on the study. Credit: University of Rhode Island

A team of researchers at the University of Rhode Island and Nova Southeastern University in Florida have been tracking a 26-foot endangered whale shark—named "Rio Lady"—with a satellite transmitter for more than four years—a record for whale sharks and one of the longest tracking endeavors for any species of shark.

Whale sharks, which live from 80 to 130 years, are the world's largest fish and third largest creature in the ocean—behind blue and [fin whales](#). The size of a small school bus, they inhabit [tropical oceans](#) and swim slowly near the surface, with their mouths wide open, scooping up whatever's in their path—small fish, fish eggs, and plankton.

Annually, they need to travel about 5,000 miles to find enough food to survive. Whale shark populations worldwide have declined, primarily as a result of interactions with humans, to the point where they are now listed on the International Union for Conservation of Nature Red List as Globally Endangered.

Researchers at URI and Nova Southeastern tracked Rio Lady for about 27,000 miles over nearly 1,700 days between 2018 and 2023. Her journey took her through the Gulf of Mexico, the Caribbean and out into the Atlantic Ocean south of Bermuda. A study conducted by the researchers was published in the journal [Marine and Freshwater Research](#), describing movement, migration and habitat use of Rio Lady.

"This was an amazing length of time to be able to track the movements of a wild animal," said lead author Daniel Daye, who graduated from URI in May 2023 with a master's degree in biological and environmental sciences. "Four years of data about the movements of even a single individual has allowed us to investigate whale sharks to an unprecedented degree and investigate questions that can't be answered with shorter tracks."

Rio Lady was tracked by satellite telemetry using a smart-position and temperature transmitter (SPOT) affixed to her dorsal fin. The tag provided location transmissions over four years of her life. Satellite telemetry has revolutionized the study of animal movement—particularly with marine species—allowing researchers to uncover long-term movement patterns and core areas for marine animals, the study says.

"As the biggest fish in the ocean, it is challenging to follow the movements of whale sharks over long periods of time," said Brad Wetherbee, assistant professor of biological sciences at URI and an expert on shark movement and migration, who consulted on the project. "But information on the movements of these endangered sharks is important for management of their populations."



The whale shark Rio Lady. Credit: University of Rhode Island

A primary challenge in managing large marine species, such as the [whale shark](#), said Daye, is that they are hard to follow. Whale sharks travel great distances and routinely dive deep, which makes studying the full extent of their habitat difficult.

"Since these sharks travel such great distances, it's important to identify when and where the sharks are located, along with what they are doing in each of these areas," said Daye. "This way, management can take a more targeted approach so that effort isn't wasted on areas when sharks are using habitats elsewhere. While Rio Lady is only one shark, the extremely long lifespan of the SPOT tag has allowed us to start examining some of these questions in more detail regarding what sharks do on a year-to-year basis, rather than a single year."

Rio Lady was first tagged in 2007 with a pop-up satellite archival transmitter affixed to her near the Isla Mujeres, in waters off Cancun, Mexico, that are frequented by hundreds of whale sharks annually from July through August. She was tracked for 150 days before her transmitter popped off. She was re-tagged in August 2018 in the same area by Rafael de la Parra, executive director of Ch'ooj Ajauil AC, an ocean conservation organization in Mexico. De la Parra also collaborated on the study.

During the study, Rio Lady was detected by satellite over 1,687 days—Aug. 30, 2018 to April 12, 2023. For a period of about 1,085 days—Aug. 30, 2018 to Aug. 18, 2021—1,354 locations were recorded at relatively frequent intervals. In that time, she traveled about 27,000 miles, covering about 25 miles a day.

Researchers found that Rio Lady occupied three distinct regions in the Gulf of Mexico and the timing of when these areas were used was pretty consistent, Daye said. Between July and August, she consistently returned to the waters near Isla Mujeres. In the area known as the Afuera, hundreds of whale sharks aggregate for the largest gathering worldwide—dining on an endless fish egg "buffet," said Daye.

After leaving the Afuera area, few detections were received during autumn and winter each year of the study. Rio Lady was believed to travel south into the Caribbean Sea, as far as Colombia for two of the years, before returning to the Gulf of Mexico early in the year. Researchers believe Rio Lady's seasonal migration may be typical for whale sharks that aggregate off the Isla Mujeres in the summer.

"This unprecedented track of Rio Lady sheds new light on long-term consistency of movements and illustrates the type of information that this technology can generate," said Mahmood Shivji, professor of biological sciences at Nova Southeastern University, who collaborated on the study.

Rio Lady's continued journey can be followed on the Guy Harvey Research Institute [tracking website](#), click on project 21.

More information: Daniel Daye et al, Tracking 4 years in the life of a female whale shark shows consistent migrations in the Gulf of Mexico and Caribbean, *Marine and Freshwater Research* (2024). [DOI: 10.1071/MF23147](https://doi.org/10.1071/MF23147)

Provided by University of Rhode Island

Citation: Female whale shark with satellite transmitter for record-breaking four years shows

consistent migrations (2024, July 24) retrieved 24 July 2024 from
<https://phys.org/news/2024-07-female-whale-shark-satellite-transmitter.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.