

Scientists used high tech ultrasound imaging to study tiger shark reproduction

February 29 2016



This is a female tiger shark (*Galeocerdo cuvier*) at Tiger Beach, Bahamas. Credit: Neil Hammerschlag, Ph.D.

Researchers from the University of Miami's Rosenstiel School of Marine and Atmospheric Science and the University of New England used the

same ultrasound imaging technology used by medical professionals on pregnant women to study the reproductive biology of female tiger sharks. The study offers marine biologists a new technique to investigate the reproductive organs and determine the presence of embryos in sharks without having to sacrifice the animal first, which was commonly done in the past.

In the study, the research team performed in-water ultrasounds on live tiger sharks (*Galeocerdo cuvier*) and took blood samples for hormone analysis to determine the reproductive status of females at Tiger Beach in the Bahamas, a site known for its year-round abundance of tiger sharks. The new method allows researchers to determine if the female sharks at Tiger Beach were mature and pregnant.

"Using the same [ultrasound imaging technology](#) used on pregnant women, we discovered Tiger Beach was important for females of different life stages, and that a high proportion of tiger sharks were pregnant during winter months," said James Sulikowski, a professor at the University of New England's Department of Marine Science.

"Our data suggests that Tiger Beach may function as a refuge habitat for females to reach maturity as well as a gestation ground where pregnant females benefit from calm, warm waters year-round that help incubate the developing embryos and speed up gestation," said study co-author Neil Hammerschlag, a research assistant professor at the UM Rosenstiel School and Abess Center for Ecosystem Science and Policy.



Researchers use ultrasound probe to scan for pups on the abdomen of a tiger shark (*Galeocerdo cuvier*). Credit: Jim Abernethy

Populations of many migratory marine predators such as sharks are experiencing large declines across the globe and fishing aggregations of pregnant females can significantly impact the health of local and regional populations. Tiger Beach is located within the Bahamas Exclusive Economic Zone, where shark fishing has been prohibited since 2011. The relatively high abundance of [tiger sharks](#) in the Bahamas compared to the rest of the Caribbean where populations are much lower could be attributed in part to the protection of mature and gravid females in the Bahamas shark sanctuary.

"It is crucial for [marine biologists](#) to understand their behaviors to provide information for resource managers to effectively protect and manage them," said Hammerschlag

More information: JA Sulikowski et al. Seasonal and life-stage variation in the reproductive ecology of a marine apex predator, the tiger shark *Galeocerdo cuvier*, at a protected female-dominated site, *Aquatic Biology* (2016). [DOI: 10.3354/ab00648](https://doi.org/10.3354/ab00648)

Provided by University of Miami

Citation: Scientists used high tech ultrasound imaging to study tiger shark reproduction (2016, February 29) retrieved 20 March 2024 from <https://phys.org/news/2016-02-scientists-high-tech-ultrasound-imaging.html>

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