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USVI Coral Reefs in Danger as Sea Urchin Die-Offs Linked to Microscopic Parasite

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Long spined sea urchins underwater on seabed of the Caribbean sea. By. GETTY IMAGES

Scientists have discovered a new threat to coral reefs, as a microscopic parasite causes massive die-offs of the long-spined sea urchin, *Diadema antillarum*, a release issued to the Consortium Wednesday has made known. This keystone species plays a critical role in maintaining healthy coral reefs by eating algae, which allows coral to thrive and support other marine life.

Researchers began investigating the issue in early 2022 when large numbers of long-spined sea urchins in St. Thomas started dying rapidly. The cause was identified as a scuticociliate protozoan parasite, similar to *Philaster apodigitiformis*. The parasite has since devastated sea urchin

populations across the Caribbean, including off the Florida coast.

Don Behringer, UF/IFAS professor of marine disease ecology and a member of the UF Emerging Pathogens Institute, led the research effort funded by a National Science Foundation RAPID grant. Behringer explained that the parasite caused the majority of long-spined urchins to be wiped out at specific sites within a couple of weeks.

These mass mortality events can drastically alter marine ecosystems, as seen in the 1983 die-off where 98% of sea urchins were lost in 13 months, with some coral reef systems still feeling the effects today. Researchers were unable to determine the cause of the 1983 die-off, leaving questions about how to protect reefs from similar events in the future.

The research team, which included scientists from Cornell University and the University of South Florida, successfully identified and confirmed the parasite as the cause of the die-offs through a series of experiments. They are now working to understand why the parasite emerged and its potential long-term impact on coral reefs.

Although the die-offs seemed to have ceased as of December 2022, new reports of dying urchins have recently emerged from the Cayman Islands and the U.S. Virgin Islands. Behringer said it is unclear if the same parasite is responsible, but the situation appears ominous.

The research project was supported by the National Science Foundation, Florida Sea Grant, National Oceanic and Atmospheric Administration, and the National Fish and Wildlife Foundation, along with numerous partners from various institutions.