

White-band disease, culprit in disappearing reefs, driven by rising temperatures

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White-band disease on coral in Jardines, Puerto Morelos, Mexico.

Over the last four decades, the iconic elkhorn and staghorn corals that dominated Caribbean reefs for millions of years have all but disappeared. According to a new study from Florida Institute of Technology, ocean warming has played a significant role in this dramatic decline.

The results of the study also suggest that limiting the rate of [ocean warming](#), which would require curbing [greenhouse gas emissions](#), could

support the recovery of these critical reef-building corals.

White-band disease is a widespread coral disease that affects elkhorn and [staghorn corals](#), and this disease has been plaguing these corals for decades. Florida Tech Ph.D. student Carly Randall and her faculty advisor, Robert van Woesik, studied the relationship between ocean temperatures and white-band disease and reported their findings in the February issue of *Nature Climate Change*.

Randall and van Woesik wanted to know if changes in [ocean temperatures](#) associated with climate change have contributed to the spread of the disease throughout the Caribbean. The answer, according to their research, was that the rising temperatures did affect the disease's spread.

"Our data show that [climate change](#) has helped drive down staghorn and elkhorn corals by boosting white-band disease," Randall said. "We still don't know if the disease is caused by a marine microbe, but now we do know that changes in the environment contributed to the problem."

The study also found that the disease is more common in places where the waters have been warming most rapidly and where the waters stay unusually warm in the winter season. The scientists think that without a cooling-off period, the effects of the hot summers linger, and the disease is more likely to worsen.

Corals build the foundation of [coral reefs](#), and these ecosystems provide critical services including shoreline protection and erosion prevention. Coral reefs also provide habitat for commercial and recreational fisheries.

Because of their decline, both the elkhorn and staghorn coral species are now listed as threatened under the U.S. Endangered species act.

White-band disease, which is named for the stark white bands that advance along the coral's branches, has been around for decades. Yet scientists have struggled to identify the causes of the disease. The results of this study are a critical step forward in our understanding of white-band disease.

"The discipline has been stumped for more than 20 years because the environment played a larger role than we first anticipated," van Woesik said. "We are a step closer to predicting where diseases are occurring because now we know why they are occurring."

More information: Contemporary white-band disease in the Caribbean corals has been driven by climate change, [DOI: 10.1038/nclimate2530](https://doi.org/10.1038/nclimate2530)

Provided by Florida Institute of Technology

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