

Coral researchers see 'mass mortality' amid Florida Reef bleaching crisis

October 9 2023, by Jack Prator, Tampa Bay Times



Credit: Unsplash/CC0 Public Domain

Battered by heat, washed out to a bleached, white hue and ravaged by disease, corals offshore of Key Largo, Florida, used what little energy they had left to spawn the next generation that could save their

populations.

These elkhorn and [staghorn corals](#)—recognized by their iconic branching arms that provide habitat for hundreds of species—are some of the most vulnerable among reefs.

Just weeks after spawning season, more than 90% of those parent corals are dead.

Elkhorn corals are already considered "functionally extinct" in the upper Keys, and other elkhorn and staghorn populations in the Florida Reef are following suit, according to Liv Williamson, an assistant scientist of marine biology and ecology at the University of Miami. That means there are a small number of individual corals left in the only living barrier reef in the continental United States—the world's third-largest. It stretches about 360 miles from Dry Tortugas National Park to the St. Lucie Inlet—but they can't reproduce enough in the wild to support a viable population.

Only a few hundred unique individuals of these corals are left in all of Florida: about 150 elkhorn and 300 staghorn, according to a July update from the National Oceanic and Atmospheric Administration.

Researchers have called this summer's record ocean temperatures the worst bleaching event in Florida's history, and they harvested corals from reefs in efforts to save them. Throughout the summer, scientists repeatedly warned that this loss of color could soon give way to loss of life. Now, the [death toll](#) is becoming evident.

"We just see a lot of corals that are fully dead at this point," Williamson said.

She returned to the same Key Largo reef every two weeks during the

summer. She said she's watched the animals she studies bleach and die.

The dying elkhorns and staghorns in Key Largo spawned in early August, providing new corals to rebuild reefs and a wave of hope among researchers.

Still, Williamson said it's difficult to be optimistic about restoring these populations.

"Those elkhorn and staghorn were the products of restoration efforts that had been really successful, and then this one summer just wiped them out," she said. "So what's to keep that from happening in the future?"

Staghorn and elkhorn corals declined throughout Florida and the Caribbean for decades, Williamson said. In the 1980s, the staghorn and elkhorn [coral](#) populations declined by 97% due to white band disease, which kills the coral's tissues, according to the National Oceanic and Atmospheric Administration.

Where there were once "vast thickets" of these corals, populations now consist "mostly of isolated colonies or small groups of colonies," the agency said. Only off the coast of the U.S. Virgin Islands is there habitat where elkhorn populations are considered stable, though few in numbers.

Climate change, fallout from coastal runoff and other human impacts were also to blame for both species' declines, Williamson said.

"In fact, they are really the first iconic species that we started to lose in big numbers in the region," Williamson said.

About 10 years ago, their dwindling population along the Florida Reef spurred intervention. A 2012 study showed elkhorn populations in the upper Keys dropped by 21% from 2004 to 2010.

Since then, the Coral Restoration Foundation—which helped restore Williamson's Key Largo reef—has planted more than 220,000 corals onto Florida's reef.

But now they are nearly wiped out—setting back years of restoration efforts, Williamson said. She estimates only 10% of the elkhorn and 5% of the staghorn in Key Largo survived. In the lower Keys, where waters are even hotter, entire reefs have been wiped out.

Coral Restoration Foundation teams visited Sombrero Reef in July and found "100% coral mortality," according to a news release. At the nonprofit's nursery in Looe Key, a popular dive spot, 5,600 staghorn and elkhorn corals had either bleached or died.

If the elkhorn and staghorn corals on Florida's reefs die, Williamson said, there would be nothing left of the species in the region.

"We are probably not there just yet, as I assume there will be a handful of elkhorn corals that survive this year, but we are teetering on the edge," she said.

Williamson said [heat stress](#) and bleaching weren't the only factors in the die-off. She's seeing disease wreak havoc on corals already weakened by hot waters.

"In some cases, the tissue actually still had a good amount of color, but there were these huge patches of tissue that were just sloughing off," she said.

The relationship between bleaching and coral diseases isn't fully understood, Williamson said, but studies show that reefs may be less susceptible to disease when bleached. This is because when corals bleach, they expel the algae that helps them photosynthesize. Diseases

attack the algae on corals, so if the algae have already left starving corals, they are not as much at risk of getting sick.

While some coral diseases are spreading across Florida's hot waters, researchers will be bracing for another round of mortalities once waters cool this fall and winter and algae return to the surviving corals.

"That's when I kind of worry about seeing disease take off more—sort of after recovery," Williamson said.

Researchers still don't quite know the exact toll heat and disease have already taken on Florida's corals this year. Williamson said it could be months before those numbers are crunched.

There's one big reason: It's still hot.

Surface water temperatures have returned to abnormally high levels after a brief cool-off brought by hurricane activity, according to Ian Enochs, who leads the coral program at the National Oceanic and Atmospheric Administration's Atlantic Oceanographic and Meteorological Lab.

There's no telling when the water temperatures will cool for the rest of the year.

"There's not like a seasonal cutoff date," Enochs said. "It depends on climate. It depends on the weather patterns."

Still, Enochs said he's seeing "signs of resilience," such as color returning to some corals and a better-than-expected spawning season.

"That doesn't mean we're out of the woods—far from it," he said.

About 84,000 elkhorn coral larvae were spawned this summer at the

Florida Aquarium, said Keri O'Neil, director of the aquarium's Coral Conservation Program. While that number doesn't break any records, it exceeded expectations for a population that has been under tremendous stress.

"We are raising, you know, thousands of new coral offspring to hopefully start rebuilding the reef," O'Neil said.

In addition to controlled spawning in coral labs, Williamson said spawning numbers in the wild are equally encouraging.

She joined efforts to collect wild baby corals from dying elkhorns and staghorns in August. Williamson said the corals are holding up well in their new, controlled lab environment.

"So far, we just don't see signs that these babies are impaired as a result of having had their parents be under so much stress," she said. "That's a huge relief."

While elkhorn and staghorn corals saw the worst death tolls this summer, Williamson stressed that populations are holding strong across other species. For instance, heat-tolerant, hard corals living in reefs offshore of Miami and Broward County aren't taking nearly as heavy losses.

Williamson said she has done as much as she can for the Key Largo reef; she spent the summer documenting which parent corals held up best against the heat, which could give a clearer picture of which baby corals have a better chance of survival if returned to open waters.

"Unfortunately, now that everything is dead at our site, there's kind of not a big point in going there again," Williamson said.

Instead, she said she'll start visiting other sites while searching for a way

to restock reefs with more resilient corals. While the state of these coral populations is dire, Williamson said not all parts of the Florida Reef look as wounded as Key Largo.

"Our coral [reef](#) is still here," she said. "It's just going to be significantly damaged."

2023 Tampa Bay Times.

Distributed by Tribune Content Agency, LLC.

Citation: Coral researchers see 'mass mortality' amid Florida Reef bleaching crisis (2023, October 9) retrieved 11 July 2024 from <https://phys.org/news/2023-10-coral-mass-mortality-florida-reef.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.