

Study: Climate change will hit some Florida reefs sooner than expected

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Parts of Florida's vast coral reefs, including a pristine tract in the Dry Tortugas, might get seared by climate change as early as 2030 - about a dozen years sooner than scientists previously projected.

That could mean that [coral bleaching](#) - a whitening that can be damaging and potentially deadly to colorful corals - might become an annual event in the Tortugas west of Key West but also in the middle Keys and reefs south of Turkey Point popular with divers.

The prediction comes from a just-released study by National Ocean and Atmospheric Administration climate scientists, who used a supercomputer to crunch piles of data on [sea temperatures](#) around the Gulf of Mexico and Caribbean already identified as vulnerable to bleaching outbreaks. Their findings not only confirmed what they already knew - bleaching could be widespread by midcentury - but revealed it might start to show sooner in some areas than others, including swathes off the South Florida coast.

The findings are important because scientists consider reefs an important earlier indicator of more serious trouble.

"They're the canary in a coal mine," said the study's lead author, Ruben van Hooidonk, a University of Miami coral expert and climate scientist at NOAA's Atlantic Oceanographic and Meteorological Laboratory.

On the flip side, the discovery that bleaching might happen more slowly

in some places offered a rare bit of hope on the climate front. Where temperatures remain lower for longer, the living creatures that create [coral reefs](#) might have time to acclimate to rising sea temperatures, Hooidonk said.

Coral reefs have long been identified as one of the ecosystems most vulnerable to climate change. Years of pounding from polluted coastal runoff, fishing and anchors have already done heavy damage, shrinking Florida's reefs to a fraction of their historic range. Swings in temperature, scientists say, just add to the stress.

Cold water can kill tropical reef gardens. But increases in temperature, even slight ones, can cause coral to spit out life-sustaining algae. Acidification, another malady linked to [climate change](#) and rising carbon in oceans, could also weaken reefs.

Up until now, bleaching has occurred periodically, but never regularly. The first documented wide-scale bleaching in the Keys occurred in 1983, followed by years of weakened reefs susceptible to diseases, said Billy Causey, regional director for NOAA's Office of National Marine Sanctuaries. In 1997 and 1998, an El Nino fueled the first years of back-to-back bleaching. But in the years since, the region struck a kind of balance, with no more loss of reefs. But also no gains.

Cool weather, like the recent cool front, has always given reefs a respite and chance to rebound.

"The Tortugas has looked great," said Frank Wasson, president of Spree Expeditions who captains the MV Spree to the remote islands some 70 miles west of Key West for dive trips in deeper waters where strong currents have helped keep reefs healthy. "Out on the bank, it has been incredibly healthy."

But that could change under new climate conditions. Last year, divers documented widespread bleaching throughout the Keys that could be worsened by forecasts for another El Nino weather pattern, said Chris Bergh, the South Florida Conservation Director for The Nature Conservancy. Divers are just now starting to assess damage, he said.

By mid-century, Hooidonk said yearly bleaching will likely occur along large swaths of reefs at the south end of Biscayne Bay past Key Largo and from the middle Keys south to the Dry Tortugas. Corals can survive bleaching if waters cool quickly enough to allow algae to return. But prolonged temperature spikes like those predicted by climate models could spell doom.

"Obviously, we can't go out there and move the corals out of the way, but there are a multitude of things we can do," Causey said.

Scientists are already on the lookout for corals that do better in inhospitable conditions, which they could use to graft onto colonies to fortify valuable reefs that bring in tourism dollars and provide the first line of defense for coastal cities against rising seas. Knowing which areas remain tolerable to the colonies could also help determine where to locate nurseries.

"So while we may be having more frequent bleaching, we may start to see more coral colonies acclimate," Causey said. "That's the Pollyannaish side of me."

More information could also improve existing conservation programs and heighten awareness about the dangers of coral bleaching, which is already a leading killer of Florida's reefs, Bergh said.

"Those things are already important but they become even more critical knowing that coral [bleaching](#) is going to become more of a problem in

the future," he said.

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