

Researchers find high counts of flesh-eating bacteria in gulf waters after Hurricane Ian

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There are a few reasons to avoid wading in the water after a hurricane—floating debris, backed-up sewage and downed power lines, to name a few.

But high numbers of flesh-eating [bacteria](#) that can cause potentially [deadly infections](#) are another concern, whether you're in floodwaters or the ocean, according to a new study from the University of Florida and the University of Maryland.

In October 2022, after Hurricane Ian pushed 12 feet of storm surge onto southwest Florida's coast, researchers collected [water samples](#) around Pine Island. More than a month after the surge had retreated, they weren't expecting to find many remaining traces of the harmful bacteria, said Antarpreet Jutla, a University of Florida professor of environmental engineering and co-author of the study.

"To our surprise, almost every sample was positive," Jutla said.

Vibrio vulnificus—a bacteria that got its moniker as a flesh-eater from its ability to kill healthy tissue around a wound—flourishes in brackish floodwaters that can linger after a hurricane's storm surge is long gone.

Warm waters, low salinity and high nutrient levels all collide as [fresh water](#) and salt [water](#) mix during intense storms, creating a perfect habitat for the bacteria to breed, Jutla said.

Bacteria belonging to the *Vibrio* family can cause an infection called "vibriosis," which typically enters the body when consuming raw or undercooked seafood or exposing a wound to seawater.

More of this bacteria in the gulf means a higher risk of a small open wound escalating to a life-threatening infection, he said. It also means there's more risk to local shellfish providers and consumers. After Ian, the team took water samples near three southwest Florida seafood wholesalers: Cutthroat Clams, Clam Key Seafood and White Booth Seafood. They also collected about 12 oysters in total, most of which tested positive for *Vibrio* bacteria, according to Jutla.

While the oysters weren't collected directly from the shellfish farms, they were found in nearby gulf waters.

"We don't know what is going to happen at the oyster farms or the shellfish farms," Jutla said. "We have a huge industry in Florida. Cedar Key is one of the biggest hubs of these."

The research team took water samples at Cedar Key, Horseshoe Beach and Suwannee in the days following Hurricane Idalia, a Category 3 storm that slammed into Florida's Big Bend region this past summer. They are still waiting for results to come in and aren't sure whether they'll find similarly alarming *Vibrio* numbers like those measured after Ian.

Jutla said the main reason for their uncertainty is the differences in the two regions' coastal ecologies—Cedar Key's aquaculture farming and nearby river systems differ greatly from Southwest Florida's beachy shorelines.

Warming waters and rising cases

The Sunshine State leads the nation in cases of vibriosis, according to a study from Florida Atlantic University. About 20% of these originate from the Indian River Lagoon region, a popular recreation site on the state's east coast.

Jutla said his study's results point to Florida's Gulf Coast as an emerging hot spot for the dangerous bacteria.

Last year, there were 74 *Vibrio vulnificus* cases and 17 deaths in Florida. So far this year, the state has counted 44 cases and 10 deaths. Fourteen of those cases and six of the deaths were reported in the Tampa Bay area, according to the Florida Department of Health.

"We need to be aware that there may be an abundance of these Vibrios in the water systems in and around the coast of Florida," Jutla said.

Since 1992, infections caused by the bacteria have risen by more than 500% across Florida, according to the study.

While the effects of climate change on the bacteria haven't been tested in the gulf, Jutla said a study published this year in *Scientific Reports* showed that as ocean temperatures rise, so has the number of *Vibrio vulnificus* infections across North America. Warming waters and an aging adult population mean infections could double by 2060, according to the study.

Jutla said his team was also surprised to find natural antibiotic resistance in the *Vibrio* samples they collected, which could make the bacteria more difficult to treat. Antibiotic residues found in wastewater can travel out to open waters, changing coastal ecosystems. The team suspects that the presence of antibiotics in the gulf environment could lead *Vibrios* to evolve and develop survival mechanisms for [antibiotic resistance](#) at a level not typically found in the wild.

"That basically puts a large swath of population in Florida at a little bit of a risk," Jutla said.

Norman Beatty, a professor at the University of Florida's College of Medicine and the study's co-author, said people who have [liver disease](#), hepatitis or are otherwise immunocompromised should take extra care in gulf waters.

Last year, about half of the state's *Vibrio vulnificus* cases were reported in southwest Florida. Officials attributed those 38 cases and 11 *Vibrio*-related deaths to Hurricane Ian. Beatty said many of the surviving patients had to be treated with up to three classes of antibiotics before

they were fully recovered.

Different antibiotic classes are needed because some studies have shown that, when treated with a single class, the condition of some patients will worsen and they may even need surgery. The heightened concern for drug resistance found in these Vibrios may explain why some infections are so difficult to treat, he said.

Alarmed by their findings, Beatty and Jutla have now shifted their focus to educating the public on the prevalence and danger of Vibrio infections. Anglers, disaster relief workers and emergency medical service providers who find themselves frequently in the water are at higher risk of a serious infection, they said.

"Folks who are going to find themselves near or in the water for any reason should be well aware of vibriosis, as well as ways that they can mitigate this risk," Beatty said. That means wearing protective gear and not entering waters with an open wound.

The research team is also working to develop a Vibrio prediction system. The algorithm would function similarly to a hurricane forecast, Jutla said, and it would flag potentially dangerous shorelines when conditions are ripe for the bacteria to be found in large numbers. While work on the prediction model advances, he said bringing awareness to the emerging waterborne pathogen is the best way to keep people safe.

"There is no need to panic," Jutla said. "But it's a work in progress. It will take some time."

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