

# Pace's Place At Redfish Pass:

Scientists Search For Signs Of Life Reef lures few fish, survey finds Areas slow to recover from red tide

By Kevin Lollar  
klollar@news-press.com  
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A surreal, ghost-town atmosphere enveloped Pace's Place artificial reef Tuesday during a fish survey conducted by Lee County scientists.

During the first dive, the scientists counted only a handful of fish from seven species on a structure that should have been swarming with hundreds of fish from up to 20 species.

At the same time, despite top-to-bottom visibility, the water was full of fist-size blobs of algae, and algae coated the structure like soft, red fur.

Pace's Place, a one-quarter-square-nautical-mile site in 35 feet of water five miles southwest of Redfish Pass, is home to several structures, including a barge, crane, concrete tetrahedrons and piles of concrete boxes and risers.

Divers from the county's Division of Natural Resources were at Pace's Place on Tuesday to supervise as McCulley Marine Services of Fort Pierce dropped 450 tons of limestone rock from a barge to create a new structure at the site.

The rock came from the jetty at the north end of Captiva, which is being replaced.

"Limestone rock is the closest mimic to the natural system," said Chris Koepfer, a Lee County natural resources supervisor. " 'Artificial' reef is a misnomer: This is as natural as it comes. It's what a natural ledge is made of, so what you get fish-wise is what you get in the natural system."

In addition to supervising the rock deployment, Koepfer and engineering technicians Mike Capps and Paul Stancati conducted two fish surveys at Pace's Place.

Diving on two structures, they saw few fish, live crustaceans, mollusks or sponges.

Some local reefs haven't recovered from last year's massive die-off, Koepfer said.

Behind that die-off were red tide and a thermocline - a layer of abrupt temperature change in a body of water.

*Karenia brevis* (or *K. brevis*), the red tide organism, doesn't like to swim through temperature changes, so when a thermocline forms, huge concentrations of *K. brevis* can be trapped beneath it.

The resulting red tide kills fish and other organisms beneath the thermocline; their decomposition sucks oxygen from the water, and the lack of oxygen kills more organisms.

In the meantime, if not enough light gets through the thermocline, *K. brevis* dies, rots, and adds to the oxygen depletion.

Last year, scientists found areas of no- and low-oxygen levels from Pasco County to Lee County.

"Red tide and no oxygen: A double whammy," Koepfer said. "We were watching fish die last fall during surveys. It was active death all around us. Anchovies were doing death spirals. They were falling like rain.

"Now we're seeing very few species and very low numbers. I don't know how many years it will take to get the reefs back to where they were."

Adding to the strangeness of the almost lifeless reefs were the unusually clear water, the thick streams of drift algae, which looked like floating phlegm, and the hairy carpet of algae covering the reef.

"I've never seen anything like this," Koepfer said. "It's very strange. When the water gets warm, we start getting algal blooms, but nothing like this."

Much has been made in recent months of inshore algal blooms caused by nutrients flowing down the Caloosahatchee River from Lake Okeechobee and nutrients from sources such as lawn and golf course fertilizers and septic tanks.

Nutrients flowing into the estuaries and Gulf increase with heavy rains, and the past two years have been wet.

"Look at the nutrient load discharged from land over the past almost two years," said Brian Lapoint, a senior scientist at Harbor Branch Oceanographic Institution in Fort Pierce.

"We're talking massive amounts of nitrogen and phosphorus. Some of it is being recycled from the sediments. We still have nutrient memory from past years of cumulative nutrient inputs."

But a massive algal bloom takes more than nutrients, said Paul Carlson, a research scientist at the Florida Fish and Wildlife Research Institute.

"The bloom on the reef is related to the extreme water clarity you noticed: You could see the bottom in 35 feet of water," Carlson said. "Macroalgal blooms are largely driven by light availability. That might not be the whole story, but you could have nutrients and no light and not have algae."

For two hours, the McCulley Marine front loader dropped 450 tons of rock into the clear Gulf water.

With all the rock off the barge, the reef ran 130 feet long with relief to 10 feet off the bottom.

"This'll be a good reef," Koepfer said. "If we can keep the water clean."