

## Scientists search for new ways to save damaged coral reefs in S. Florida

by David Fleshler  
Sun Sentinel - August 12, 2002

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**INSPECTION:** Ken Banks, manager of Marine Resources Programs for Broward County, takes a close look at the transplanted coral growing on artificial reefs off Dania Beach.

After ships ground on the reefs off southeast Florida, divers attempt to salvage damaged coral. They search the sea floor for fragments and reattach them to the reef with cement, hoping the tiny, endangered sea animals survive.

To make the biological rescue work more effective, scientists from Nova Southeastern University's Oceanographic Center have begun a research project to learn which types of coral are most likely to live on after such trauma. Using volunteer divers, they are collecting pieces of broken coral off Fort Lauderdale, attaching them to an artificial reef and studying the results.

Corals are tiny animals that draw calcium from the sea to create external limestone skeletons, which form reefs. Often compared to tropical rain forests in their diversity of species, coral reefs teem with fish, crabs, sea urchins, sponges and other creatures.

The reefs off southeast Florida, the only major coral reefs in the continental United States, face any number of threats -- disease, sewage, overfishing. But in an area teeming with cruise ships, pleasure boats and freighters, groundings are a serious problem.

In 1998, the Panamanian freighter Hind dragged its anchor during a storm, severely damaging two sections of the first reef off Fort Lauderdale. In 1993, the nuclear-powered attack submarine USS Memphis struck a reef off Hollywood, carving two

trenches into the reef and generating rubble over an area half the size of a football field. There have been many smaller accidents, most unreported.

After a grounding, the ship's owner is generally required to pay for environmental restoration work, including the salvage of coral.

"Managing a ship grounding is something tangible, something we can do," said David Gilliam, research scientist at Nova's National Coral Reef Institute, who is leading the coral nursery project. "We can at least do our best to minimize harm."

One Sunday a month, the Nova scientists and a group of volunteer divers from the Ocean Watch Foundation set out in two boats to the reefs off Fort Lauderdale. Prowling the ocean floor about 35 feet down, they collect bits of broken coral -- detached through natural processes such as erosion or storms. They try to collect about 20 pieces of coral a trip. The most common species: great star coral, starlet coral and maze coral.

Using a waterproof slate, graduate student Jamie Vernacchio writes down the depth, the conditions of the ocean floor where it was found, which side it was lying on. Once the corals are hauled to the surface, she records each species, how much of the coral is still alive and any signs of bleaching, disease or encrusting organisms.

Keeping the coral in coolers out of the sun, they sail to an artificial reef off John U. Lloyd State Park. Using scrub brushes and paint scrapers, the volunteers clear spots on the artificial reef on which to cement the corals. After the coral is secured in place, Vernacchio photographs it.

Vernacchio, who is doing her master's thesis on the project, plugs all the information about each piece of coral into a computer spreadsheet program. She returns to the artificial reef every few weeks to update the data, hoping to spot trends that will help in future coral transplants.



Do certain species do better than others? Does the size of the coral matter? Does it matter which side of the coral was resting on the ocean floor after it was knocked off?

Lisa Wetherington, executive director of the Ocean Watch Foundation, which provides the volunteer divers, said project will help prioritize salvage operations after a reef disaster and provide a source of corals to recolonize damaged reefs.

"If we have another Hurricane Andrew, and there's massive destruction of coral, there may be certain species that do better" after being detached, she said. "We can focus on species that do well. And once we have the nursery established, we can go to the nursery, pop off the corals and try to replenish the areas that have been damaged."

So far, more than 90 percent of the corals have survived their transfer to the artificial reef nursery.

"We're very pleased with the success," Gilliam said.

The research project is being done with the assistance of Broward County's Department of Planning and Environmental Protection. It is funded by the National Fish and Wildlife Foundation and the National Oceanographic and Atmospheric Administration.

David Fleshler can be reached at [dfleshler@sun-sentinel.com](mailto:dfleshler@sun-sentinel.com) or 954-356-4535.

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**TEAM Effort: David Gilliam, left, research scientist at Nova Southeastern University National Coral Reef Institute, inspects loose coral at the coral nursery off Dania Beach. Jamie Vernacchio, a research assistant, helps collect the coral for the nursery.**