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## SCIENTISTS LOOK FOR KEY TO REBUILD CORAL REEF

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FRONT PAGE

By SCOTT WYMAN

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When the USS Memphis attack submarine ran aground near Port Everglades seven years ago, it tore two long trenches through ancient reefs and left behind an underwater field of rubble where coral once thrived. Researchers are set to begin the long-awaited restoration of the reef, promised when Florida reached a \$750,000 settlement with the Navy. The work will include a cutting-edge experiment on building artificial reefs scientists hope pinpoints the best way to rebuild damaged reefs. In the shallow waters a mile off Dania Beach, researchers will test the success of transplanting coral against using iron and a form of algae to encourage coral growth. The goal is to find a way to shave time off a recovery process that can take up to 50 years. That answer could be vital to the future of the world's coral reefs because they are increasingly threatened by overfishing, coastal development, pollution and accidents such as the grounding of the Memphis. County commissioners are expected to sign a contract on Tuesday with Nova Southeastern University to conduct the restoration. The project will begin in September.

"Our coral reefs are being degraded worldwide, and we are going to prevent ships from running aground," said Richard Spieler, a professor at Nova's Oceanographic Center who will lead the four-year experiment. "But ships will continue to run aground, so we need to find ways to restore reefs. It's of extreme importance to our marine ecosystems."

The Memphis slammed into the reef in 24 feet of water on Feb. 25, 1993, while preparing to conduct tests with the U.S. Naval Warfare Center at the port. The 360-foot attack submarine carved two trenches in the reef and created tons of rubble over an area half the size of a football field before it dislodged 90 minutes later as the tide rose. The Navy first claimed national defense exempted it from paying for the damage, but then agreed in 1997 to the \$750,000 settlement. Navy officials blamed the accident on poor training. The settlement was not enough to pay for traditional restoration of the reef, said Ken Banks, manager of Broward County's marine resources division. Instead, the county will stabilize the reef to prevent further damage, add limestone boulders and other material to create new habitats for fish, and build the artificial reefs as part of the experiment. With more money, the county would have filled in the trenches with concrete foundation to mimic the reef structure. Broward's reefs are particularly sensitive because coral does not thrive here as well as it does in the Keys. The reefs are estimated to be

3,000 to 10,000 years old and are typically covered with stony corals, small star corals and brain corals. As part of the research, work crews will place 160 artificial meteor-like concrete balls just east of the reef with variations of iron, algae and transplanted coral attached. Each ball is about 3 feet in diameter. Transplanted coral is frequently used in reef restorations, including the work to repair the damage off Fort Lauderdale that occurred when a Turkish freighter ran aground in 1994 during Tropical Storm Gordon. Scientists said red coralline algae also attract baby corals, while iron is being tested because of the coral growth that is seen on ships. The hollow balls also have varying sizes of holes and interiors to create different habitats for fish.

The researchers want to see how different communities of fish affect coral growth, because even though some fish prey on newly settled coral, there seems to be a relation between the presence of fish and coral growth. "If it takes a reef 50 years to regain its coral community once it's damaged; knocking 10 years off that is gaining a lot," Banks said. "We want our coral community and fish community back the way it was." Florida's reefs are important to preventing beach erosion, play a vital role in attracting tourists and provide a habitat to a wide variety of tropical fish, lobsters and other marine life.

Walter Jaap, a scientist with the Florida Marine Research Institute, and Laddie Akins, executive director of the Reef Environmental Educational Foundation, said little work has been done on discerning the best way to restore reefs. "What they are trying to do is something unique," Jaap said. "When people have restored reefs, it's kind of a triage-type effort, where you come in after the fact and try to fix what has happened. But there isn't much analysis of what works best or what has the greatest effect."



*(Click for an enlarged graphic - 677K)*

### **Restoring a Damaged Reef**

Scott Wyman can be reached at [swyman@sun-sentinel.com](mailto:swyman@sun-sentinel.com) or at

954-356-4511

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