

# Good Grief! Dwindling Coral Reefs

Center for Marine Science and NOAA's National Undersea Research Center - University of North Carolina, Wilmington

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Topic: Benthic habitat monitoring of coral reefs and hardbottom in the Florida Keys.

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Scientists off the coast of Florida are taking the first detailed census of a local coral population in a study that may hold the key to the survival of the world's dwindling coral reefs. Experts estimate that 40 percent of the world's coral reefs will be lost by 2010 due to climate-related bleaching, pollution and disease, unless urgent action is taken. The team, which includes researchers from the University at Buffalo and University of Miami, is focusing on Conch Reef, located nine miles south of Key Largo, Florida. The scientists are analyzing the origin, mortality, growth rates and age structure of the reef's coral and comparing the colonies' genetic makeup with colonies located in other parts of the world to check for migration patterns. "This project seeks to determine the abundance and distribution of the major coral species on Conch Reef and to follow the demography of those species over time," wrote principal investigator Mary-Alice Coffroth in an e-mail sent from the underwater laboratory Aquarius. "The demographic data and the data on population structure will be used to generate a model that can be used to predict how these corals will grow in numbers and size," she added. "The information will be important to the future of reefs." If indeed, a future for coral is to exist. "It's clear that we're changing the chemistry of our oceans,

and coral reefs are the first ecosystems that are showing serious signs of deterioration. This should be setting off alarms," said Steve Miller, the director of the National Undersea Research Center at University of North Carolina at Wilmington. "The question we need to ask is: Where will the next generation come from?" Coral reproduction varies according to species, Coffroth said. In "brooder" colonies, male coral squirts clouds of sperm into the sea water, where it drifts over a female coral and fertilizes the eggs. In "broadcast spawner" colonies, both sexes squirt their reproductive cells into a water column where fertilization occurs. Embryos develop into swimming larvae or "recruits," which either settle near the parental colony or drift on the ocean currents for hundreds of kilometers to distant reefs. The future health of a reef is primarily based on the number of larvae found at a reef. More larvae means better potential for growth and regeneration. If the scientists determine that most of the recruits have come from distant reefs, for example, the discovery could pave the way for redoubled conservation efforts at the parent colony. The researchers, who concluded their 10-day mission on Wednesday, were based in the Aquarius laboratory, a school bus-sized facility located on a patch of sand 60 feet underwater at the edge of the Conch Reef. The lab is

owned by the National Oceanic and Atmospheric Administration and operated by the University of North Carolina at Wilmington. The underwater facility allows researchers to explore the reef's 115-foot canyons using a technique called saturation diving, which allows divers to work underwater for extended periods of time without surfacing.

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