

Coral Revival

In correlation with the International Year of the Reef, restoration efforts in South Florida and beyond seek to improve the future of coral reefs.

By Wendy Wood

Coral reef ecosystems are biologically valuable habitats to a vast biodiversity of marine species, including those admired and sought by marine aquarium hobbyists. Reefs are also economically and culturally beneficial to human beings around the world. As the world's reefs continue to be threatened, succumbing to disease, bleaching and human-caused stressors, these valuable ecosystems are being damaged, some beyond repair, resulting in their inability to host the marine life that has for millennia called them home. [Click image to enlarge](#)

Healthy coral reefs are vital for providing refuge and sustenance for an incredible array of marine species.
Photo courtesy of NOAA

Universities, nonprofit organizations, government agencies and groups like the National Coral Reef Institute (NCRI) are working to save coral reefs through rigorous research, innovative restoration programs, and education and outreach, including an international symposium scheduled for this July that will bring together groups from around the world that are committed to conservation of coral reef ecosystems. The International Coral Reef Symposium (ICRS) will be the keystone event of the 2008 International Year of the Reef (IYOR) public awareness campaign. [Click here to find out more about the NCRI.](#)

NCRI Background

The National Coral Reef Institute, based out of Nova Southeastern University (NSU) Oceanographic Center, Fort Lauderdale, Fla., was established by congressional mandate in 1998. That same year saw passage of the Coral Reef Conservation Act and the establishment of the United States Coral Reef Task Force. The primary objective of the NCRI is the assessment, monitoring and restoration of coral reefs through research, training and education. National Coral Reef Institute scientists conduct work all over the world, from the corals of South Florida to the distant reefs of the Pacific and Middle East.

Current NCRI studies include coral transplant and restoration in South Florida; mapping of coral reef habitats using remote sensing in Florida, the Caribbean, Red Sea and Persian Gulf (sometimes known as the Arabian Gulf among Arab states); and coral reef monitoring domestically in South Florida and internationally in such locations as Puerto Rico, Mexico, Honduras, Abu Dhabi (the coastal capital city of the United Arab Emirates) and Qatar. Additional research includes fish censuses on artificial reefs, surveying coral reef fish and the establishment of coral nurseries.

Captive Corals Hold Promise for Damaged Reefs

As corals continue to deteriorate worldwide, groups like the NCRI are researching innovative restoration options, including the breeding and transplanting of coral. Mustard hill coral (*Porites astreoides*) is being propagating in aquaria in the hopes it may help to heal damaged reefs. TOP: This specimen is seven weeks old. BOTTOM: After eight and half months this is what mustard hill coral looks like. Photos courtesy of Alison Moulding, Ph.D.

Focus on South Florida

The coral reefs of southeast Florida provide excellent research sites for NCRI researchers. Coral reef restoration is especially needed in South Florida, where ship groundings are common. Because of the close proximity of a major shipping port and its associated anchorage, the reefs of Fort Lauderdale have been damaged by more than 10 ship groundings in the last 15 years.

As a result, National Coral Reef Institute scientists are working diligently to find new and innovative ways to restore these and other damaged coral reefs.

Researchers Breed Corals

Some NCRI researchers are raising corals in captivity and assessing their use in restoring damaged coral reefs.

In May 2007, colonies of the mustard hill coral (*Porites astreoides*) were collected from a Florida reef a few days prior to the predicted larval release around the new moon. More than 100 juvenile mustard hill corals were successfully settled and are now being kept in indoor aquaria at the NSU Oceanographic Center.

In September 2007, gametes from the great star coral (*Montastraea cavernosa*) were collected. Eggs were successfully fertilized in the lab and more than 300 larvae settled. Both species of coral will be relocated to an outdoor coral husbandry system after a grow-out period in indoor aquaria. If the corals grow large enough in the outdoor system, they will then be transplanted to damaged reefs. The juvenile corals are doing well in the lab and continue to grow, and the NCRI hopes that the corals will be ready to transplant to reefs within a few years.

As the spawning season progresses, the NCRI plans to apply similar techniques to a number of other species, including the threatened staghorn coral (*Acropora cervicornis*). Coral breeding holds exciting potential for reseeding coral reefs with captive-raised colonies, but restoration would apply only to small spatial scales.

“This outstanding research is consistent with the National Coral Reef Institute’s mission of providing management-related research output on assessment, monitoring and especially restoration of coral reefs,” says Dr. Richard Dodge, executive director of NCRI and dean of the NSU Oceanographic Center.

[Click here to read more about the International Coral Reef Symposium.](#)

Transplantation Projects

The NCRI has been working on a multi-project study spanning several years that investigates methods to improve restoration efforts using transplanting coral to damaged reef sites. One of these projects — the Gorgonian Transplantation Project — started in spring 2007.

Gorgonians are a major component of the southeastern Florida reef community, but there is limited knowledge on how to go about restoring gorgonian populations following reef-damaging events. This project is looking at different transplantation methods using two species of local soft corals, or octocorals: the sea plume (*Pseudopterogorgia acerosa*) and the bent sea rod (*Plexaura flexuosa*). [Click image to enlarge](#)

Marine research by the NCRI promises to benefit not just wild reefs and fish but marine aquaria, too.

Photo by Clay Jackson

Clippings of each species were taken from local donor colonies and subsequently transplanted to a ship-grounding site. The 10-inch clippings were transplanted using two different attachment materials (epoxy and cement) and base treatments (stripping base tissue off to the axis versus not stripping). These transplants and donors will be monitored over the next two years to determine transplantation success.

The Case of Staghorn

In 2006, the staghorn coral (*Acropora cervicornis*) was listed as a threatened species under the Endangered Species Act. To begin efforts to restore southeast Florida’s *A. cervicornis* populations, the NCRI is starting a Staghorn Restoration Project. It will be partially funded by The Nature Conservancy and NOAA (National Oceanic and Atmospheric Administration).

Ten donor staghorn colonies have been mapped and tagged. More than 30 clippings from donor colonies were transplanted to a nursery site. After a grow-out period, fragments from the clippings will be transplanted to several reef sites. This southeast Florida effort is an expansion of a project underway in the Florida Keys and includes partners from The Nature Conservancy, University of Miami, Biscayne National Park and Mote Marine Laboratory. The project will set the groundwork for other regional coral reef restoration efforts.

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