

The National Coral Reef Institute (NCRI) was established by Congressional mandate in 1998. NCRI's primary objective is the assessment, monitoring, and restoration of coral reefs through basic and applied research and through training and education. NCRI operates at the Nova Southeastern University Oceanographic Center near Ft. Lauderdale, Florida.

2008 TO BE A BUSY YEAR FOR NOVA SOUTHEASTERN NATIONAL CORAL REEF INSTITUTE RESEARCHERS



NCRI Celebrates 2008 International Year of the Reef (IYOR)

The International Coral Reef Initiative (ICRI) International Year of the Reef 2008 (IYOR) is a worldwide campaign to raise awareness about the value and importance of coral reefs and threats to their sustainability. IYOR also aims to motivate people to take action to protect coral reefs. The first ICRI General Meeting of the Mexico-United States Secretariat was held the week of January 22nd. In addition to a celebration reception for the International Year of the Reef 2008, and a press briefing, there was an IYOR mini-symposium on January 25th. The purpose of the mini-symposium was to celebrate IYOR through a showcase of IYOR activities taking place around the world, and to allow ICRI participants to meet, share, brainstorm, and coordinate regarding their IYOR plans.

Dean of the NSU Oceanographic Center and Executive Director of the National Coral Reef Institute (NCRI), Dr. Richard Dodge, presented highlights and a status report of the 11th International Coral Reef Symposium (11th ICRS). Dr. Dodge is chair of the Local Organizing Committee of the 11th ICRS which is the keystone event of IYOR 2008.

For more information on IYOR, please visit www.iyor.org and for more on the 11th ICRS, please visit www.nova.edu/ncri/11icrs



Dr. Richard Dodge, NCRI Executive Director, with Tim Keeney, NOAA U.S. Deputy Assistant Secretary, and Beth Dieveney, NOAA U.S. Coral Reef Task Force Secretariat, at the World Bank reception launching the International Year of the Reef.



NCRI Announces Availability of Updated CPCe and Visual_HEA Software

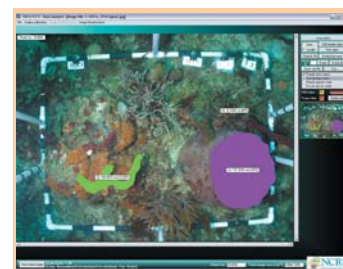
Coral Point Count with Excel extensions

NCRI is pleased to announce Version 3.5 of CPCe (Coral Point Count with Excel extensions). CPCe is a Windows-based program that provides for the determination of coral cover and diversity using transect photographs and the random point count method. Image calibration and area analysis are also program functions.

New features in V3.5 include an enhanced code file checker which gives users the ability to quickly spot and resolve errors in their customized species/substrate code file. This removes a common obstacle for first-time users. Area analysis is improved by a new mini-zoom function which enhances the image pixels surrounding the tracing cursor, allowing users to make more accurate traces.

CPCe is provided free for use.

More information is available at <http://www.nova.edu/ocean/cpce/>



Screenshot of CPCe area analysis screen.

Visual_HEA

NCRI is also pleased to announce the availability of Version 2.5 of Visual_HEA software.

Visual_HEA is a Windows-based program that provides a user-friendly graphical interface for applying the Habitat Equivalency Analysis method for the estimation of compensatory restoration resulting from injury to natural resources. The program accepts input of parameters necessary to determine long-term service loss from the injury and long-term service gain from the desired compensatory restoration action.

HEA results are highly dependent upon assumptions, and consequently it is useful to examine sensitivity of results to a range of parameter values. Visual_HEA offers an intuitive graphical interface that allows the user to input or modify input parameters and hence quickly create or alter the lost and gain service level shape functions. The ability to calculate results of many scenarios allows ready comparisons that may assist in determination of the most appropriate compensatory action.

The primary new feature in V2.5 is that calculations of lost and gained services are now made at mid-year service levels, rather than at end-year levels. This typically results in a more accurate estimation, and follows the protocol now used by the National Oceanic and Atmospheric Administration (NOAA).

Visual_HEA is provided free for use.

More information is available at http://www.nova.edu/ocean/visual_he/

NCRI SCIENTISTS WORKING LOCALLY AND ABROAD TO PROMOTE CORAL REEF RESEARCH AND CONSERVATION

NCRI Sponsors Environmental Conference in the Turks & Caicos

The National Coral Reef Institute was a proud sponsor together with the Ocean Conservancy of the first ever Environmental Conference to take place in the Caribbean islands of Turks and Caicos. Hosted by the Turks and Caicos Islands Government through the Ministry of Natural Resources, "Fostering a Green Culture in Small Island Nations", was held in Providenciales in the Turks and Caicos Islands on Nov. 18-20, 2007 and examined the mutual interdependency between local actions and global initiatives.

Dr. Richard Dodge, Executive Director of NCRI, participated on the panel "Coral Reefs and Climate Change". Dr. Bernhard Riegl, Associate Director of NCRI, served as moderator of the panel. NCRI researcher, Dr. Dave Gilliam, took part in the panel discussion "Climate Change and its Impact on the Sustainability of Fisheries Resources".



NCRI Associate Director, Dr. Bernhard Riegl, moderating the "Coral Reefs and Climate Change" panel at the "Fostering a Green Culture" environmental conference in the Turks and Caicos Islands.

Former US Vice President and Nobel Peace Prize Laureate Al Gore was the keynote speaker, giving his presentation "Thinking Green: Economic Strategy for the 21st Century", arguing that the physical changes in our planet will eventually influence our global economy. He encouraged audiences to consider broader issues – environmental, social and political – when planning economic strategy.

NCRI attendees look forward to participating in future endeavors by the Turks and Caicos on coral reefs and other natural resources.

"The National Coral Reef Institute at Nova Southeastern University is honored to be able to be a part of this far-thinking environmental related conference" said Dodge. "The coral reefs throughout Caribbean represent an extraordinary biological, geological, and economic resource. Far-thinking planning is needed for best research, management, and conservation to ensure preservation and persistence of these precious ecosystems."

NCRI Continues Support of the Southeast Florida Coral Reef Initiative

Continuing its close work with the Southeast Florida Coral Reef Initiative (SEFCRI), NCRI strengthens its liaison and participation with the LAS (Local Action Strategy) groups of the U.S. Coral Reef Task Force (USCRTF) Southeast Florida Action Strategy Team (SEFAST). This partnership also supports the management goals of the USCRTF and NCRI.

Many NCRI scientists and staff serve as Team Members of the SEFCRI working groups, including Land Based Sources of Pollution (LBSP), Maritime Industry and Coastal Construction Impacts (MICCI), and Awareness and Appreciation (AA).

Dr. Richard Dodge, NCRI Executive Director, was recently honored at the SEFCRI Team Member Recognitions and Video Premier. In addition to launching the SEFCRI public service announcements highlighting local coral reefs, one member of each team was acknowledged by team peers for his or her outstanding contributions. Dr. Dodge was recognized for his work with the LBSP working group.

NCRI hosts the biannual Technical Advisory Committee (TAC) meeting for the Land Based Sources of Pollution (LBSP) and Water Quality Working Group of SEFCRI, last held on November 29th and 30th at the NSU Oceanographic Center. Attending meetings are members of the TAC, the LBSP Advisory Committee, and interested members of the public.

The TAC is composed of representatives with expertise in pollution and water quality, representing federal agencies (including NOAA, EPA, and USGS), state officials, and industry scientists. Universities represented included NSU, University of Miami, FIU, and the College of Charleston. The Advisory Committee is comprised of resource management agency representatives and other experts, including those from the Florida Department of Environmental Protection (FDEP), South Florida Water Management District, and Broward County. Dr. Richard Dodge, NSU OC Dean and NCRI Executive Director, serves on the TAC. Many NCRI scientists and staff attended the meeting.

Presentations included "SeaKeeper 1000" Port Everglades Shipping Channel Sensor System", given by John Englander, Chief Executive Officer of The International Seakeepers Society and "Florida Area Coastal Environment Update" given by Dr. John Proni of NOAA.



From left. Chantal Collier, FDEP Coral Reef Conservation Program Manager; NCRI researcher Dr. Brian Walker, NCRI researcher and SEFCRI Team Member, Dr. Dave Gilliam; NCRI Administrative Coordinator and SEFCRI Team Member, Wendy Wood; and NCRI Executive Director and SEFCRI Team Member, Dr. Richard Dodge.

ADDRESSING CORAL REEF GENETICS AND CONTRIBUTING TO MANAGEMENT OF CORAL REEF RESOURCES WORLDWIDE

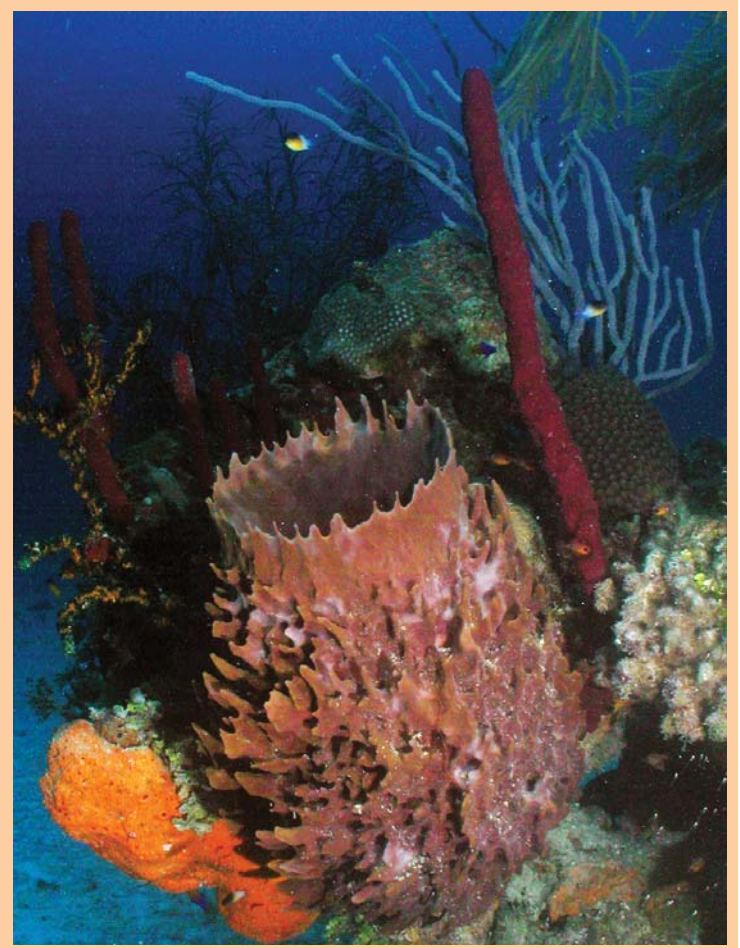
Using Sponge Genetics to Assess Connectivity Patterns within Florida and Caribbean Coral Reefs

Marine protected areas (MPAs) are being increasingly recommended and implemented as an important component of management efforts aimed at conserving coral reef communities. Determining the optimal location and size of MPAs requires knowledge of how reefs are connected to each other to identify which reefs are important larval sources, and which reefs possess unique genetic biodiversity so that they can be prioritized for inclusion in MPAs. Such information is largely lacking for Florida and Caribbean reefs, hindering planning for coherent, biological criteria-based MPA establishment.

Sponges are a dominant component of the Florida and Caribbean reef biomass, with species diversity often exceeding that of scleractinian corals. Additionally, sponges are important structural components of reefs, provide habitat for a large diversity of reef community species, play important roles in maintaining reef water quality by filtering large volumes of water, and are potentially important sources of specialized chemicals of pharmaceutical interest. Because of their substantial ecosystem value, sponges are important candidates for the assessment of reef connectivity and biodiversity patterns to aid in MPA design.

Determining connectivity patterns among sponge communities, however, is complicated by the fact that it is difficult to directly track movements of their larvae. An alternative method by which reef connectivity can be inferred is to assess the genetic relationships among sponges in different reef locations. To this end, NCRI scientists are using three common coral reef sponges (the giant barrel sponge, *Xestospongia muta*; the branching vase sponge, *Callyspongia vaginalis*; and the brown tube sponge, *Agelas conifera*) as models to assess genetic connectivity within the Florida reef tract and between Caribbean-wide reefs. Two types of genetic markers (mitochondrial DNA sequences and nuclear DNA microsatellites) have been developed and are being used to obtain a robust inference of connectivity patterns.

The DNA results thus far indicate that reefs within 465 km of the Florida reef tract (Palm Beach to the Dry Tortugas) are generally well connected due to sufficient gene flow (larval movement) among them. In contrast, results show at least for these three common sponge species, connectivity between Florida and Caribbean reefs and among Caribbean reefs is largely non-existent, with reefs at each geographic location examined representing a pool of unique genetic diversity. These results also indicate that recruitment of sponges to reefs is largely “locally” driven, and that recovery of degraded reefs by long distance larval transport from distant reefs is unlikely.



Giant barrel sponge, *Xestospongia muta*, located in the Bahamas.



Branching vase sponge, *Callyspongia vaginalis*, in Broward County, FL.



Collecting branching vase sponges in Curaçao.

NCRI RESEARCHERS HOPE TO RESTORE DAMAGED CORAL REEFS BY GROWING NEW CORAL FROM THE LARVAL STAGE

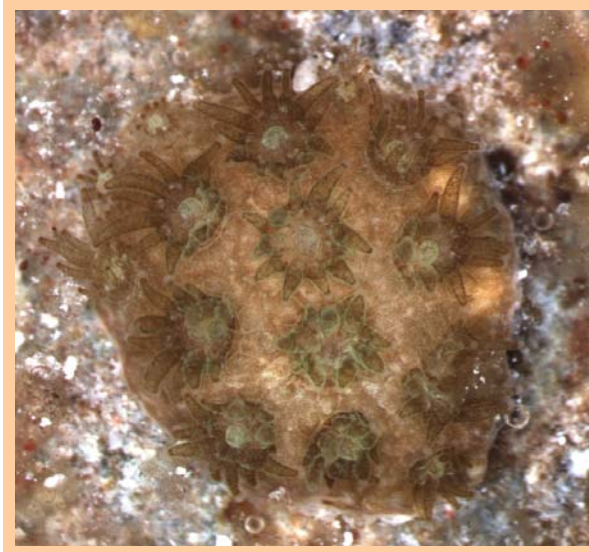
NSU's Oceanographic Center Corals Continue to Flourish

In May 2007, NCRI researcher Dr. Alison Moulding, collected colonies of the mustard hill coral, *Porites astreoides*, from a reef off Broward County a few days prior to the predicted larval release around the new moon. Over 100 juvenile mustard hill corals were successfully settled and are currently being kept in indoor aquaria at the NSU Oceanographic Center. In addition, gametes were collected from the great star coral *Montastraea cavernosa* in September. Eggs were successfully fertilized in the lab, and over 300 larvae successfully 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 successfully grow large enough in the outdoor system, they will be transplanted to damaged reefs. "This outstanding research is consistent with NCRI's mission of providing management related research output on assessment, monitoring, and especially restoration of coral reefs" stated Dr. Richard Dodge, Executive Director of NCRI and Dean of the NSU OC.

Coral reef ecosystems are economically, biologically, and culturally valuable. There is evidence that many coral reefs are deteriorating rapidly worldwide, and practical solutions to restoring and reinvigorating coral reefs are needed. This research aims to develop one of the tools in the manager's tool box to help address critical issues. "NOAA strongly supports research that will help managers develop new tools to address coral restoration. In this Year of the Reef such innovative approaches may provide a new way forward to protecting these valuable resources," said retired Navy Vice Admiral Conrad C. Lautenbacher, Ph.D., Undersecretary of Commerce for Oceans and Atmosphere and NOAA administrator.

The juvenile corals are doing well in the lab and continue to grow. NCRI hopes that the corals will be ready to transplant to reefs within a few years.

As the spawning season progresses, Dr. Moulding plans on applying similar techniques to a number of other species the threatened staghorn coral *Acropora cervicornis*. Coral breeding holds exciting potential for reseeding coral reefs with captive raised colonies although it will likely only be applicable for restoration at small spatial scales.



Left Mustard hill coral, *Porites astreoides*, at 7 weeks old.

Right Mustard hill coral, *Porites astreoides*, at 8.5 months old.



Registration still open! Register by March 14th for discount!

Visit www.nova.edu/ncri/11icrs to register for the

11th International Coral Reef Symposium - July 7-11 in Ft. Lauderdale, FL!

Now accepting conference registration, hotel and field trip reservations!



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