

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 research and education. NCRI operates at the Nova Southeastern University Oceanographic Center near Fort Lauderdale, Florida.

NATIONAL CORAL REEF INSTITUTE BEGINS NEW DECADE WITH EXCITING RESEARCH AND GRANT



NSU Oceanographic Center Receives NIST Award to Build the Center of Excellence for Coral Reef Ecosystems Science Research Center

In January 2010, Nova Southeastern University (NSU) received \$15 million in federal stimulus money to construct America's largest coral reef research center. The 86,000-square-foot Center of Excellence for Coral Reef Ecosystems Science Research (CoE CRES) facility will house local, national, and international coral reef research. The CoE CRES will be located at NSU's Oceanographic Center at John U. Lloyd Beach State Park in Dania Beach, FL and operated by the National Coral Reef Institute (NCRI). It will be the only research facility in the nation dedicated to coral reef ecosystem research.

At a price-tag of roughly \$30 million, the Center is expected to create 22 new academic jobs and 300 construction jobs, employ 50 graduate students, and preserve 22 existing academic jobs.

"I am thrilled that Nova Southeastern University has this opportunity to continue its leadership role in Florida's science and research economy. This type of research infrastructure is urgently needed to support economic growth and environmental sustainability in our region. It builds on NSU's multi-disciplinary research mission and will provide an anchor for the creation of hundreds of new jobs in addition to the direct academic, research and construction jobs it will provide." said NSU Chancellor Ray Ferrero, Jr.

Coral reef ecosystems throughout the world are extremely valuable biologically, environmentally, and economically. Florida coral reefs represent the majority of all coral reefs in the U.S. These living creatures have been in existence for over 215 million years. They provide employment, food, recreation and coastal protection. Millions of tourists and residents enjoy SCUBA diving, snorkeling and fishing on coral reefs --- activities that provide a major source of income for the Sunshine State and its coastal communities. Coral reefs represent enormous biologically and economically valuable national resources, contributing over \$6 billion in income and 71,000 jobs annually in South Florida alone. Unfortunately, U.S. and world-wide reefs are under extreme threat from both global and local stressors. Research is urgently needed for improved understanding, management, and conservation of these vital national resources. The center will protect and expand jobs in Florida that depend on healthy reef systems.

The CoE CRES Facility will be a multi-disciplinary center which will address national and international priorities in coral reef research in five areas: 1) Impacts of global and local stressors; 2) Geospatial analysis and mapping; 3) Deep sea coral reefs and biodiversity; 4) Genetic and genomic connectivity; and 5) Hydrodynamics. The new facility aims to find management and conservation solutions to these pressing issues.



Perspective sketch of Center of Excellence for Coral Reef Ecosystems Science Research Facility looking west toward Port Everglades.



Oblique perspective looking northeast of Nova Southeastern University Oceanographic Center campus following completion of the CoE CRES Research Facility.

The center will have space for researcher offices, laboratories, collaboration, research training, and fieldwork staging. It is designed to promote research by current and new faculty, researchers, visiting scientists, post-doctoral fellows and graduate students. (cont. on pg. 2).

11th ICRS Proceedings Now Available

The official Proceedings for the 11th International Coral Reef Symposium (11th ICRS) are now available. Electronic copies, via CD, were sent to all registered attendees in February 2010 and hard copies for those who requested, are shipping in March 2010. The Proceedings can also be accessed at <http://www.nova.edu/ncri/11icrs/proceedings/index.html>. Orders for additional copies of both the CD and hard copy can also be placed from the 11th ICRS website, from the same link.



Center of Excellence for Coral Reef Ecosystems Science (cont.)

As one of NOAA's external institute partners, NCRI has long supported NOAA's mission by providing outstanding scientific research to support federal, state, and local managers in addressing local solutions to the global crisis. The new center fits perfectly within NOAA's mission and provides both urgently needed physical facilities and expanded scientific capacity to support NOAA's mission both regionally and nationally. The contributions of NCRI and the other coral reef institutes was also recognized by Congress in the Fiscal Year 2010 appropriations bill.

Dr. Richard Dodge, Dean of NSU's Oceanographic Center and Executive Director of NCRI, said this represents recognition of the tremendous value of coral reefs to the nation and also the considerable threats and stressors that are now impinging upon them. The CoE CRES aims to find management and conservation solutions to these pressing issues. "The location is ideal, as a NOAA study recognizes that 84 percent of the nation's (potential area) reefs are located in Florida. These are incredibly valuable resources both in terms of economic impact and ecological diversity. Roughly 25 percent of the ocean's fish species emanate from coral reef habitats," Dodge said.

Sadly, about 20 percent of the world's coral reefs are lost, and another 50 percent are in danger of imminent and irreparable degradation. NSU's Center of Excellence for Coral Reef Ecosystems Science Research Facility aims to reverse this trend and preserve coral reefs for future generations to enjoy.

The award was announced on January 8th by the Department of Commerce's National Institute of Standards and Technology (NIST). A nationwide competition was made available through the American Recovery and Reinvestment Act funding passed by Congress last year. The NSU grant, was one of twelve out of 167 proposals submitted and one of two to receive the largest amount awarded at \$15 million.

The South Florida Congressional Delegation, including Representatives Debbie Wasserman Schultz (D-20) and Ron Klein (D-22) and Senators Bill Nelson (D-FL) and George LeMieux (R-FL) recognized the value of the application. Citing compelling new evidence of widespread mounting threats to coral reefs in U.S. waters, the Congressional delegation united in support, calling it "...absolutely critical that Congress and the Obama administration continue their bipartisan efforts to invest in coral reef research and institutional infrastructure." The South Florida Congressional Delegation led by Reps. Ron Klein and Debbie Wasserman Schultz saw the urgency of the problem, Dodge said, and the importance of coral reef ecosystems and the jobs they support.

In addition to Wasserman Schultz and Klein, House supporters included Rep. Alcee L. Hastings (D-23), Rep. Ileana Ros-Lehtinen (R-18), Rep. Kendrick B. Meek (D-17), Rep. Mario Diaz-Balart (R - 25), Rep. Lincoln Diaz-Balart (R - 21), and former Rep. Robert Wexler (D-19).

NSU is planning to contribute \$15 million, 50 percent, of the center's construction cost, as well as another \$7 million in necessary start-up costs. The CoE CRES will be completed by December 2011.

NCRI Research Scientist, Dr. Alison Moulding with Florida Governor Charlie Crist, on his recent visit to the NSU Oceanographic Center for a briefing on the new Center of Excellence for Coral Reef Ecosystems Science. Dr. Moulding's research on coral reef restoration will be one focus area of the new facility.



From left: Dr. Richard Dodge, NCRI Executive Director; NCRI Research Assistants Elizabeth Larson and Allison Brownlee; Florida Governor Charlie Crist; NCRI Research Assistant Abby Renegar and Dr. Alison Moulding, NCRI Research Scientist.



Discussing the new Center of Excellence in Coral Reef Ecosystems Science, from left: Dr. Richard E. Dodge, NSU Oceanographic Center Dean and NCRI Executive Director; NSU President George L. Hanbury II, Ph.D.; U.S. Senator Bill Nelson (D-FL), and NSU Chancellor Ray Ferrero, Jr, J.D.

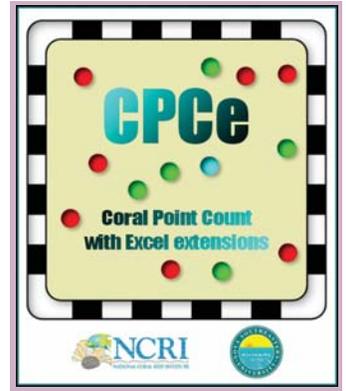


NIST Award Press Conference on January 11, 2010. From left: US Congresswoman Debbie Wasserman Schultz (D-FL 20th District); US Congressman Ron Klein (D-FL 22nd District); NCRI Associate Director, Dr. Bernhard Riegl; NSU Chancellor Ray Ferrero, Jr, J.D.

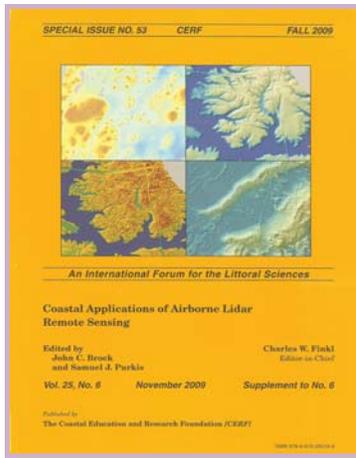
State Agency to Adopt NCRI CPCe Software

As part of their Coral Reef Evaluation and Monitoring Project (CREMP), the Fish and Wildlife Research Institute (FWRI), a division of the Florida Fish and Wildlife Conservation Commission (FWC), will begin using Coral Point Count with Excel extensions (CPCe), a software program created and distributed by NCRI. CPCe allows the rapid estimation of benthic cover using the point count method, and has been used worldwide by coral reef researchers since its introduction in 2004. CREMP has monitored the condition of coral reef and hardbottom habitats annually throughout the Florida Keys since 1996, the Dry Tortugas since 1999, and south-east Florida since 2003 (the NCRI-based SECREMP project). It is one of the longest running coral reef monitoring projects in south Florida and has been extremely important in documenting the temporal changes that have occurred in recent years.

Kevin Kohler, NCRI researcher and author of CPCe, has been working with FWC personnel to modify the program in order to analyze and archive data in a manner compatible with that collected during the past 14 years. The modified version of CPCe will address the specialized needs of FWRI, and will increase the ease of both data analysis and archiving. After extensive testing, the modified version of CPCe is expected to be made available to all interested researchers by mid-2010.



NCRI Scientist Promotes LiDAR Remote Sensing Technology



National Coral Reef Institute scientist Dr. Sam Purkis and United States Geological Survey (USGS) Program Manager Dr. John Brock, have collaborated to present a journal Special Issue on the use of laser remote sensing for coral reef science. The issue, which appears in the Fall 2009 release of the Journal of Coastal Research (Special Issue 53), comprises ten papers that investigate the use of LiDAR for remote sensing in coastal research and resource management. NCRI scientists Greg Foster, Dr. Brian Walker, and Dr. Bernhard Riegl also present work in the Issue. LiDAR, short for Light Detection and Ranging, is an optical method very similar to SONAR, Sound Detection and Ranging. Instead of using sound, light is used to determine distances (for example to make bathymetric charts) or to study the optical properties of a medium (water or air). LiDAR for marine applications is usually flown from an aircraft, but can also be deployed stationary on land to scan a mountain-side, for example. So, essentially, a LiDAR can be likened to a landscape-scanner.

As a spin-off from the collaboration, Purkis and Brock will chair an invited session at the February 2010 AGU Ocean Sciences Meeting in Portland, Oregon. This session, also concentrating on LiDAR technology, further cements the relationship between the NCRI and the Coastal and Marine Geology Program of the USGS. The work of Purkis and NSU doctoral student Gwilym Rowlands has attracted much attention and will be featured in a special press conference at that meeting by the American Geophysical Union.

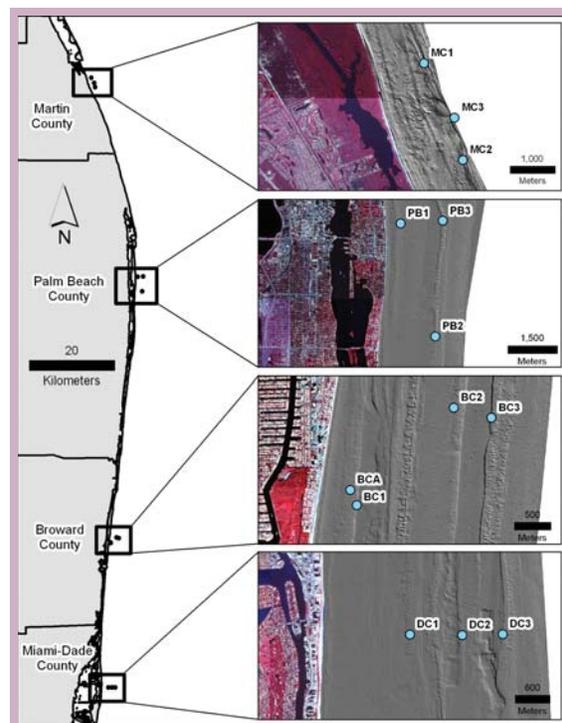
NCRI Local Partnerships Continue with Water Quality Monitoring Project

In the fall of 2009, National Coral Reef Institute researchers initiated the Southeast Florida Coral Reef Water Quality Monitoring Project, which involves quarterly sampling efforts to monitor water quality at specific offshore sites in four Florida counties - Miami-Dade, Broward, Palm Beach, and Martin. In collaboration with Florida International University (FIU), data acquired from this project will be incorporated into a much larger dataset that includes the Florida Keys, Florida Bay, and the inland waterways of South Florida.

This dataset will aid decision making regarding how best to respond to water quality and pollution issues as related to regional southeast Florida coral reef ecosystems. Water quality sampling is conducted from small boats and with the aid of specialized water collection and monitoring devices; CTD (Conductivity, Temperature, Density) array that takes continuous hydrographic measurements as it is lowered through the water column from the surface to the sea floor, and a Niskin bottle that is designed to take samples of water at a specific depths.

Funded by the Southeast Florida Coral Reef Initiative (SEFCRI), the purpose will be to establish a period of record that serves as a baseline for an eventual larger program which will assist in evaluating coral reef condition, as well as conservation and restoration efforts across the northern end of the Florida Reef Tract. The long-term program will also assist in identifying potential impacts on water quality from upstream water management activities.

The first monitoring effort took place in December of 2009, and subsequent trips are planned for March, June, September, and December of 2010. Dr. Dave Gilliam is the NCRI PI on the project.



Graphic representation of offshore sampling points in Martin, Palm Beach, Broward and Miami-Dade Counties for the Southeast Florida Coral Reef Water Quality Monitoring Project.

NCRI Researchers Continue Partnership and Research in Saudi Arabia

In November 2009, NCRI scientists travelled to Saudi Arabia to attend a meeting of a select group of Red Sea marine experts in the coastal city of Jeddah. The meeting was convened for the purpose of communicating findings to Saudi Arabia that were developed during a four year collaboration between the NCRI and the Khaled bin Sultan Living Oceans Foundation (KBSLOF). The centerpiece of this effort is benthic habitat maps covering more than 10,000 km² of the exceptional coral reefs that fringe the Saudi Arabian coast of the Red Sea. There, they have produced one of the largest and most complete satellite-based mapping product of coral reefs that exists for any country in the world. To do this, they have developed a suite of instruments, algorithms, and software tools and are now capable of providing large-scale maps at a fraction of the cost, but at higher resolution, than any government agency. NCRI scientists are now engaged in developing models and algorithms that will allow them to hindcast disturbances and forecast the ecological trajectories of the coral reef communities. These maps and the ecological prediction tools, will aid Saudi Arabia in responsibly managing one of the world's richest coral reef coastlines. NCRI is proud to be contributing to this effort.

During this visit, Drs. Purkis and Riegl also had the opportunity to visit the recently opened King Abdullah University of Science and Technology (KAUST), which buoyed by an unrivalled financial endowment, is aiming to become one of the world's leading research venues. Accompanying the tour was Dr. Sylvia Earle, who, along with the NCRI scientists, has a seat on the KBSLOF scientific advisory board. Further meetings were held with several government agencies in Saudi Arabia, which plan to use the results provided by the NCRI project as the basis for the designation of marine protected areas and fisheries management initiatives along the fragile Red Sea coast.



Delegates of the meeting with the King Abdullah University of Science and Technology. From left to right, Dr. Sam Purkis, NCRI Research Scientist; Dr. Sylvia Earle, Explorer-in-Residence with the National Geographic Society; Dr. Bernhard Riegl, NCRI Associate Director; Captain Phil Renaud USN (Ret), KBSLOF Executive Director.

NCRI Become Official Members of the International Coral Reef Initiative (ICRI)



From left: Wendy Wood-Derrer, NCRI Administrative Coordinator and NSU Oceanographic Center Assistant Director of Development; Laurent Stefanini, French Ambassador for the Environment; Faalavaau Perina Sila, Assistant Chief Executive Officer, Samoan Ministry of Foreign Affairs and Trade; Dr. Richard Dodge, NSU Oceanographic Center Dean and NCRI Executive Director, at the ICRI Meeting in January 2010 in Monaco.

The National Coral Reef Institute has become an official member of the International Coral Reef Initiative (ICRI). NCRI was recognized as a new member at the last ICRI meeting in early January 2010 in Monaco. NCRI has attended the past four meetings of ICRI and looks forward to working with this internationally recognized group. At the Monaco meeting, Richard Dodge, NCRI Executive Director, presented on the work of NCRI, the new Center of Excellence for Coral Reef Ecosystem Science, and the Proceedings of the 11th International Coral Reef Symposium.

ICRI is a partnership among governments, international organizations, and non-government organizations. It strives to preserve coral reefs and related ecosystems by implementing Chapter 17 of Agenda 21, and other relevant international conventions and agreements. The ICRI was announced at the First Conference of the Parties of the Convention on Biological Diversity in December 1994, and at the high level segment of the Intersessional Meeting of the U.N. Commission on Sustainable Development in April 1995. ICRI was originally initiated by the governments of Australia, France, Japan, Jamaica, the Philippines, Sweden, the United Kingdom and the United States of America. Additional partners from governments, United Nations organizations, multilateral development banks, environmental and developmental NGOs, and the private sector have subsequently joined the original founders and are currently collaborating in the International Coral Reef Initiative.

The secretariat of the Initiative is currently co-hosted by France, assisted by Monaco, and Samoa. The next ICRI meeting will be held in November 2010 in Samoa.



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