South Florida Caribbean CESU News & Updates

FALL 2007

Message from the Director

The South Florida Caribbean CESU (SFC CESU) is now in its 7th year of operation. It has expanded from its original three federal partners to six, with the addition of NRCS, USFWS, and ACOE and from its original ten academic and NGO partners to thirteen (now including FAU, FIT and IRC). Total funding through the SFC CESU has increased from about $1.7 million in the first year to more than $5 million last year (values reflect NPS $ only).

The University of Miami (UM) continues to be staffed ably by Carol Daniels (NPS) and Bonnie Townsend (UM Sponsored Programs). Carol is trying something new this year, she has used funds to hire a journalism graduate student, Juliana Accioly, to produce the SFC CESU newsletter. Juliana has put together this edition of the newsletter with editorial assistance from Carol, cover design by Erin Daniels and page layouts from Janet Paredes, our volunteer from Miami Springs High School. Additional issues will be published on a quarterly basis. For this we will need your input. Specifically, we would like to include a profile of a SFC CESU researcher in each issue (we have highlighted Courtney Drayer of UM in this issue) and present research projects from different partners. Please send me or Carol your stories and/or ideas and we will pass them on to Juliana.

Egrets in a Cypress Swamp
Courtesy National Park Service

To aid in our continued growth, SFC CESU members and advisory team members joined us at FAU on October 26th for a science planning workshop. Our goal of developing a SFC CESU research plan which everyone can buy into has advanced as a result of the workshop. Our next step is to develop an integrated research project that includes our various partners. More on this later.

Peter K. Swart, Ph. D.
SFC CESU Director

INSIDE THIS ISSUE:

Fish is the New Man at the Helm of CESU Network

Thomas Fish was appointed the new National Coordinator of the Cooperative Ecosystem Studies Unit (CESU) Network on September 17, 2007. "The CESU Council members worked very hard to find someone with just the right skills to lead the network at this time in its development," said Dr. M. Soukup, a member of the CESU Council and former National Park Service Associate Director for Natural Resource Stewardship and Science. "Tom's personality and background enable him to create and maintain the vital partnerships necessary to produce the timely and relevant information needed to make decisions on biological, physical, social, and cultural resource issues."

Dr. Fish, who holds a Ph.D. in conservation biology from the University of Minnesota, has worked in natural resource management, planning, research, and education for 20 years. Since 2000, he has directed professional development training, technical assistance programs, and applied research projects aimed at the integration of social and biophysical information for the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center in Charleston, South Carolina.

SFC CESU Expands List of Partners

Since its inception in 2000, the SFC CESU has included in its list of partners 6 federal agencies and thirteen universities and organizations. This year the SFC CESU experienced three new additions: Florida Institute of Technology (FIT), the Institute for Regional Conservation (IRC), and the U. S. Army Corps of Engineers (ACOE). In an ongoing effort to enhance diversity of scientific knowledge and infrastructure involved in the preservation of natural resources, these partnerships are designed to provide support for research by linking the institutions, scientists and the communities to which they are connected. The addition of partners represents a formal collaboration that brings together varied technical expertise to address issues in research and education.

"While the institutions have expertise and equipment that help conduct studies needed to gain information for problems that are being addressed, the CESU contributes by directing and refining the research. By helping determine specific problems and what questions should be asked, it ensures the development of research that can be applied to real issues."

- John Stiner, Resource Management Specialist , Canaveral National Seashore.

Wildflowers in South Florida
Photo by Keith Bradley IRC

The Institute for Regional Conservation
Conservation of rare plants, animals, and ecosystems

In an existing alliance with the National Park Service the IRC has completed a monitoring project of the endangered "semaphore" cactus species and compiled the *Floristic Inventory of South Florida* (FISF) - which includes more than 2,400 species of plants in South Florida. Under the new partnership the institute will undertake two new projects. One will entail monitoring of candidate plant species and vegetation in the lower Florida Keys pine rock lands including assessments of fire history and hurricane impacts to determine the distributions and population sizes of rare plant species.

The data collected will help determine best management practices at the National Key Deer Refuge in the Florida Keys such as the use of prescribed fire.

The second project, "Vegetation Mapping in the 10,000 Islands National Wildlife Refuge," will produce a detailed vegetation map, at 5 meter resolution, for the plant communities throughout the refuge. A submeter GPS (Geographic Positioning System) will be used to map vegetation underground and distributions of exotic and rare plant species. The data collected will make possible the evaluation of long-term changes in vegetation due to factors such as sea level rise, make management of exotic pest plants and rare plants more efficient, and provide data to other researchers studying hydrological restoration in southwest Florida.

Florida Institute of Technology—

Celebrating its 50th year anniversary, the Florida Institute of Technology (FIT) will to bring some unique capabilities in Ocean Science and Ocean Engineering to the SFC CESU– such as special know-how in applied research in coastal oceanography combining monitoring and modeling capabilities in remote sensing, meteorology, and oceanography. With a nationally ranked program in coastal engineering, the institute located in Melbourne, FL, focuses its research in numerical modeling and monitoring of wave and tide generated hydrodynamics with particular focus on tidal inlets.

FIT also offers capabilities in ocean instrumentation, remotely operated vehicles (ROV) and autonomous underwater vehicle (AUV) robotics. "We are looking forward to have collaboration with federal agencies facilitated by our alliance with the SFC CESU," said Gary Zarillo, Professor of Oceanography in the Department of Marine and Environmental Systems at FIT. "We also envision exchange with the other member universities on projects or short-term exchange of faculty."

Protecting Biscayne Bay

Perils of Anthropogenic Activity

Vanishing Florida Panther

Endangered Coral Reef

Mangroves at Risk

Biscayne Bay extends nearly the entire length of Miami-Dade County, boasting an exotic combination of emerald islands, fish abundant coral reefs, green parklands, and dense mangrove. A real sanctuary of biological communities, it is home to endangered species such as the Florida panther and the American alligator and a fauna of at least 512 fish and more than 800 invertebrate species.

A burgeoning human population— expected to increase by more than a million people in the next 20 years—poses a severe threat to the fragile ecosystem of Biscayne Bay. Agricultural practices and urbanization of the contiguous Florida Bay and the Everglades have led to actions such as regional drainage, mosquito ditching, rock mining, landfills, and the construction of highways and roads, which have contributed to alterations of the estuarine character of Biscayne Bay. Vessel traffic along with canals, rivers, and other factors have increased turbidity levels and caused damage to the benthic communities.

Courtney Drayer

However, while humans are the cause they can also be the solution to the issues surrounding the preservation of the bay's natural resources.

The study "High Resolution Temporal and Spatial Sampling of Nitrogen Isotopes in Biscayne Bay," conducted by Courtney Drayer a Marine Geology and Geophysics Ph.D. student at the University of Miami concerns the unregulated and unquantified nitrogen inputs to the bay from anthropogenic sources such as canal discharges, landfill leachate, atmospheric deposition, surface water runoff, and groundwater discharge.

The stable isotopes of nitrogen, ^{14}N and ^{15}N, have been dubbed by scientists the "DNA of sewage nitrogen."

Drayer and Michelle M. Sanchez—an Earth Sciences graduate student at Florida International University, utilize procedures previously used by scientists to claim evidence of pollution. They collect quarterly samples of benthic macro algae, sediment, and seawater from four ocean sites and 11 different sites in Biscayne Bay. The algae and sediments are decarbonated, filtered, and run in an ANCA 20/20 CN analyzer for carbon and nitrogen isotopes. Nitrate is converted to nitrite through cadmium reduction and later to nitrous oxide with a 1:1 azide and acetic acid solution. The gas is analyzed on a stable isotope ratio mass spectrometer and isotopic values for individual nitrogen species are then determined from a weighted average calculated from nitrite concentrations.

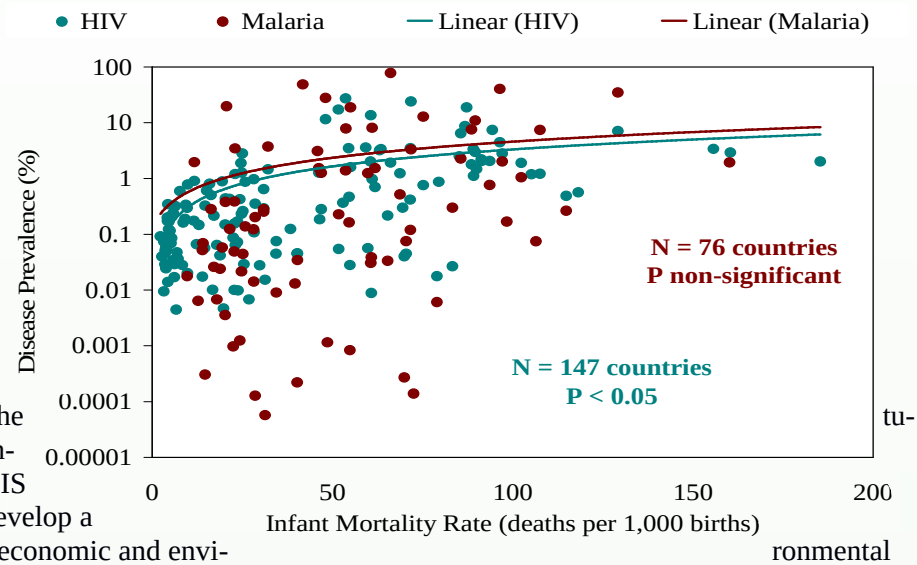
Drayer and Sanchez have examined more than 1,000 algae samples to date. Courtney has presented her findings in a symposium entitled "The Biogeochemical Cycling of Nitrogen at Various Spatial and Temporal Scales" at the American Chemical Society 234th National Meeting and Exposition held in August at the Boston Convention and Exhibition Center. Findings so far have shown the highest values - indicative of an anthropogenic activity - nearshore and in canal waters. Their final sampling is planned for January 2008.

Geospatial Patterns in Human Health

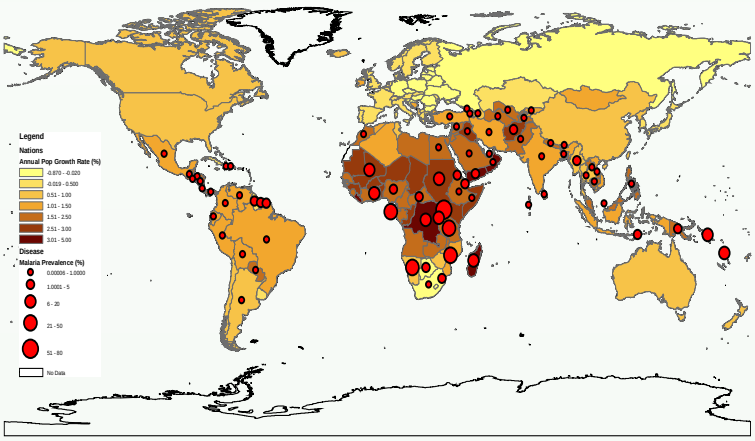
Sumera Ackbarali uses GIS mapping to analyze geospatial patterns in human health.

In a globally-warming world, might we soon find tropical diseases such as malaria moving into higher latitudes? How do demographic and economic variables affect the spatial distributions of infectious diseases today? Researchers at Barry University are using GIS mapping to analyze these sorts of geospatial patterns in human health.

Global warming could result in tropical diseases moving into higher latitudes.



Sumera Ackbarali (B.S., 2007) wrote her senior honors thesis on the global distributions of malaria and AIDS/HIV using GIS mapping. Under the tutelage of Biology Professor Jeremy Montague, Sumera spent six months using GIS ArcMap and Excel spread-sheeting to develop a sophisticated database of demographic, economic and environmental variables— the latter gleaned from international databases covering 206 countries world-wide. Dr. Montague reported their findings in March 2007 at the 71st Annual Meeting of the Florida Academy of Sciences in St. Petersburg.



"It's amazing to see the disease patterns emerge from the map layers," explains Sumera, "but it takes a lot of data entry and software tweaking to make it all happen."

Contributed by Jeremy Montague

Corps of Engineers Archaeologist Realizes Dream of Investigating Ancestral Finds on Bottom of Lake

LAKE OKEECHOBEE, FL – The recent discovery of the remains of ancient settlements on the bottom of drought-stricken Lake Okeechobee has fascinated the nation, and perhaps no single person more so than Jacksonville District archaeologist Natalie Garrett.
"I am half Creek Indian," said Garrett, an Oklahoman who came to the district last year from the Bureau of Indian Affairs. "My people are related to the Seminoles, so these discoveries have a personal meaning that is very difficult for me to put into words, as an archeologist and a Native American."

Garrett recently visited a number of the sites and personally found shards of pottery and other remnants of the past. Since March, the lower water levels have exposed 21 archaeological sites on the lake. Thousands of artifacts have been unearthed, including pottery, shell pendants, candle holders, arrowheads and fishing weights. Palm Beach County is the lead government tal agency in the archaeological mission, and the state of Florida is tasked with safeguarding, documenting and informing local tribal officials of the discovery of human remains and graves. This discovery in fact is something special to a person in my profession," she said. "And for a person of my heritage, it is something I'll never forget and that I hope to repeat in my lifetime."

Garrett and Corps biologist Yvonne Haberer located pottery dating to 2000 BC and other artifacts, including mound earth works, dating to 500 BC. Most of these pieces were found in Reaches 1 and 2 of the lake, generally around Pahokee and Clewiston.

Not all of the discovered pieces were prehistoric. Garrett and Haberer were shown the remains of a steam dredge, circa 1928. The vessel was powered by a giant and somewhat still intact boiler. An old catfish boat was also exposed by the low water levels. Garrett said both are eligible for registration with the National Historic Registry. Another feature that Garrett and Haberer marveled at seeing was the original riverbed at the southern end of Lake Okeechobee.

"Seeing the riverbed and everything else is a once-in-a-lifetime experience," Garrett said. "Anyone who goes there does not want to leave."

For more information, contact the Jacksonville District Corporate Communication Office by Phone: 1-800-291-9405 or visit the Jacksonville District web site.

Jacksonville District archaeologist Natalie Garrett holds some artifacts she discovered on the dry lake bed of Lake Okeechobee. Photo by US Army Corps of Engineers

This feature story was originally featured at http://www,saj.usace.army.mil/cco/featureStory.htm.

904-232-2236, or by e-mail, or visit the Jacksonville District web site.

A TELLTALE STUDY

An Ethnographic Assessment of Cape Lookout National Seashore

Jim Sabella and Barbara Garrity-Blake, researchers in the Anthropology Department at the University of North Carolina, Wilmington (UNCW) have completed the first phase of a two-year ethnocgraphic investigation that will produce a report identifying communities traditionally associated with Cape Lookout National Seashore. Data is being gathered primarily through the analysis of oral histories from a National Park Service (NPS) collection, including recorded interviews of old timers and accounts of current residents. This information will build upon the existing ethnographic data on Harker's Island, Shackleford Banks, and adjacent areas archived in the Anthropology Department at UNCW. The final report will summarize and synthesize existing ethnographic information on the present and recent cultures of these communities.

Harkers Island Fisherman Elbert Gaskill

Used primarily for recreation today, Cape Lookout National Seashore is a 56 mile long section of the Outer Banks of North Carolina running from Ocracoke Inlet on the northeast to Beaufort Inlet on the southeast, consisting of three undeveloped barrier islands – North Core Banks, South Core Banks and Shackleford Banks. Located 3 miles off the mainland coast and occupying more than 29,000 acres of land and water, Cape Lookout National Seashore protects one of the few remaining natural coastal barrier island systems in the world - some of it remains a pristine line of sand dunes.

" A vibrant community for much of the 20th century, Harkers Island since 2006 holds no fishing-related activities."

People historically used the barrier islands of the national seashore in many ways, but the harsh maritime environment discouraged extensive, dense settlement of the banks. Nonetheless, a number of maritime communities historically based upon trade and commercial fishing are associated with the Seashore.

Locals are discovering that their property is worth more than a lifetime of wages from commercial fishing or boat building, and now find it hard to resist selling their property and moving off the island to cheaper land. The site has important historical significance, old timers recall watching ships explode offshore during World War II as German submarines sank oil tankers and other vessels passing by the Outer Banks - the closest World War II came to U.S. shores.

Harkers Island Yeoman's Seafood House

Findings so far are mainly related to Harkers Island, located in the immediate vicinity of park headquarters. A vibrant fishing community for much of the 20th century, since 2006 the site no longer supports any fishing-related activities. Curiously, Harkers Island has eight churches— quite a few for a small community. Religion is of prime importance, as is singing, which is expressed in church, school, and at home. Harkers Islanders still have a tremendous attachment to Shackleford Banks, from where their ancestors came, and make frequent pilgrimages to this barrier island.

The ethnographic view and assessment are part of the NPS efforts to highlight cultural features of Cape Lookout National Seashore. Park interpreters will take the information from Sabella and Garrity-Blake's report and put together programs to present to the public as a tool to raise awareness and appreciation for the cultural history of the area.

The 11th International Coral Reef Symposium, July 7-11, 2008 is the world's major coral reef science meeting and is held every 4 years. This has a history of almost 40 years, and was last held in the continental United States in 1977. We expect a large attendance from the U.S., Caribbean, and Latin America as well as from the Pacific, Europe, Asia, and other areas. The Symposium will feature plenary lectures, mini-symposia, poster sessions, public outreach displays, regional workshops, and field trips. Educational exhibits and exhibits of scientific equipment, supplies, tools, and publications, and services will be a major feature.

The goals of the Symposium are:

- to provide a scientific basis for coral reef ecosystem management by articulating the state of the science with respect to current and emerging stressors;
- to improve the understanding of reef condition, function, and productivity; and
- to grow the field of coral reef ecosystem science and encourage multidisciplinary research by facilitating the exchange of ideas.

Registration

Registration is Open – **please visit our web site to register**: **http://www.nova.edu/ncri/11icrs/registration.html**

Plenary Speakers

Photophysiology, Bleaching and Adaptation: Roberto Iglesias-Prieto, Universidad Nacional Autónoma de México, Mexico.

Climate Change: Joan Kleypas, National Center for Atmospheric Research, USA.

Fisheries Management and Socioeconomics: Daniel Pauly, University of British Columbia, Canada.

Coral Reef Diseases: Drew Harvell, Cornell University, USA.

Reef Connectivity: Bob Cowen, Rosenstiel School of Marine & Atmospheric Science, USA.

Lessons from the Past: Malcolm McCulloch, The Australian National University, Australia.

Stipends to attend the 11th ICRS

Students, scientists, conservationists, and managers who are expected to benefit professionally from attendance at this symposium will receive consideration for support for travel and living expenses. Stipends will be for a minimum of US $500 to a maximum of US $3,500. The application Deadline is ***December 1, 2007***. **http://www.nova.edu/ncri/11icrs/stipends.html**

Exhibits

This will be the 1st time the International Coral Reef Symposium will be having an extensive exhibit function. Exhibits will be open: Tuesday, July 8 - Thursday, July 10, 2008

Field Trips

There are 19 field trip opportunities, held pre and post Symposium in a variety of Florida and Caribbean locales.

Posters

There will be several evening poster receptions. Posters will be displayed during the week and
are an integral part of the Science Program.

Photo Contest

Underwater Photography Contest will be open to all 11th ICRS participants as an excellent opportunity to showcase your photographs.
Categories include the beauty, science, and perils facing the world's coral reefs. The top three entries for each category will be announced at the 11th ICRS. Prizes will be awarded to the winners and images displayed.

http://www.nova.edu/ncri/11icrs/photocontest.html

Upcoming Events

"Climate Activism Training" on Thursday, November 29, 2008 at Miami Dade College, Rm. 3210, Bldg. 3000, Wolfson Campus. Bill McKibben is the keynote speaker. Sponsored by the Earth Ethics Institute and others.
http://www.mdc.edu/wolfson/GeneralInfo/campus_map.asp

Water Conservation Summit. Tuesday, December 4, 2007, 8:30 a.m. to 3:00 p.m. B-1 Auditorium, South Florida Water Management District, West Palm Beach, FL. RSVP 1.800.432.2045 ext. 6192. Live webcast and more info:
http://www.sfwmd.gov

The Abess Center of the University of Miami will host "Measuring Success: Ecosystem Restoration in the 21st Century" on campus from Thursday, December 6, 2007 through Saturday, December 8, 2007.
http://www.cesp.miami.edu/

"Global Climate Change and Sea-Level Rise in Florida, a Conversation Between Scientists and the Media," on Wednesday, February 6, 2008 in St. Petersburg, FL. Keynote address by Robert Bazell, NBC Chief Science Correspondent at 7 p.m. on February 5, 2008, in Maffey Theater, University of South Florida, St. Petersburg.
http://www.scienceandthemedia.org/

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"Update your profile in the SFC CESU Expert Database today."

For the SFC CESU Database visit:
http://mgg.rsmas.miami.edu/sfcesu/database.asp

South Florida Caribbean CESU