

Fall 2002

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NSU Oceanographic Center

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# Currents



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## Saving the Rainforests of the Seas

By Dave Gilliam and Kathy Maxson



Coral reefs are under stress all over the world, especially in Florida. Without reefs, there would not be the beautiful fish, colorful sponges, or soft corals that wave back and forth. Additionally, there would not be any sand for beaches. Nova Southeastern University Oceanographic Center (NSUOC) researchers are trying to do something about this. Researchers are collecting corals of opportunity (i.e., overturned, loose, or dislodged coral colonies), which might perish due to being detached from the reef, as part of the Nurseries for Reef Fisheries Habitat Project (or Coral Nursery Project).

Established in 2001 as a cooperative effort among scientists from NSUOC's National Coral Reef Institute (NCRI), marine resource managers from Broward County Department of Planning and Environmental Protection (DPEP), and community members from Ocean Watch Foundation Dive Club (OWF), the project has three goals. It aims to create a nursery for corals of opportunity that may be used to help restore damaged reefs in the future, provide reef managers with coral-species-specific and colony-size-specific success information, and recruit volunteers from the community with interest in diving and the marine environment to assist with the project and learn about coral identification, data collection, and transplantation procedures.

The project generally involves one field day per month (on a weekend) with a team of 10 people. This team consists of two scientists from NSUOC/NCRI, two



Collecting coral of opportunity (photo by Dave Gilliam)

managers from DPEP, and six volunteers from OWF. They make two dives each day using the NCRI research vessel, *Researcher* and the DPEP research vessel, *Monitor*. During the first dive, the team locates and collects the corals of opportunity and transports them to an artificial reef that serves as the substrate for the nursery. During the second dive, the corals are tagged, transplanted to the substrate, and monitored for growth and survivorship. Each coral colony is photographed the day it is transplanted and photographed and monitored quarterly. The team discusses coral reef ecology, coral identification, data collection, and transplantation procedures.

More than 220 coral colonies have

been transplanted to the nursery so far. The success rate for the transplants has been very good with more than 95 percent of the colonies surviving the transplantation process. Corals from this nursery can serve as a source of transplant donors for future restoration of coral reef habitats. The data from the Coral Nursery Project will be used to compare the growth and condition of different transplanted coral species and colony sizes as well as the control corals that are growing naturally on the reefs.

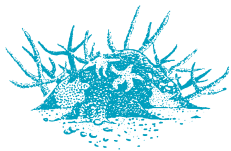
An additional project benefit has been increased local public awareness and education about marine conservation. This project has received extensive coverage in

(Continued on page 2)

(Continued from page 1)

major local newspapers such as the *Sun-Sentinel* and the *Miami Herald* as well as the *Tampa Tribune*. It even evoked an editorial endorsement by the *Miami Herald* for continued funding of this project.

Those involved from NSUOC are researchers **David Gilliam**, Ph.D.; **Richard Dodge**, Ph.D.; and M.S. student **Jamie Vernacchio**. Funding is provided by the National Fish and Wildlife Foundation (NFWF) and its federal partner, the National Oceanic and Atmospheric Administration (NOAA) Fisheries Community-Based Restoration Program. Matching funds and support come from Broward County Department of Planning and Environmental Protection and Ocean Watch Foundation. 🐠



*Transplanting coral  
of opportunity  
(photo by Dave Gilliam)*

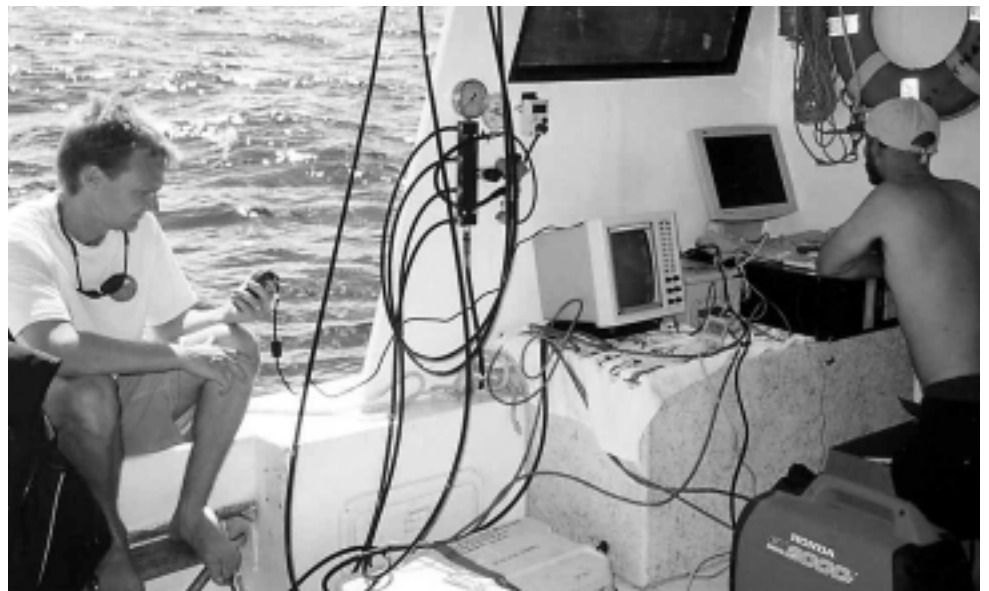


## NCRI Spans the Globe

The year 2002 has proven to be a very successful one for NCRI. Staff members have participated in conferences and workshops in Hawaii; Miami, Florida; Cambridge, England; Denver, Colorado; University Park, Pennsylvania; St. Petersburg, Florida; Cuba; San Juan, Puerto Rico; and Malaysia. The NCRI has also started collaborating on successful national and international scientific projects that have given NCRI good exposure and strong partners. This has helped in realizing several grant opportunities; the program is well-funded and is looking optimistically into the future.

**Ryan Moyer** went to Panama in June for a coral reef assessment project. In October, he visited several islands in the lesser Antilles for coral reef assessment and core drilling. He also presented at a conference in Cuba in September (see pages 3 and 4 for these stories).

Gregory McIntosh and **Bernhard Riegl** worked in Kodiak, Alaska, in July with the Alaska Department of Game and Fisheries to investigate acoustic bottom discrimination tools. Just prior to the trip, Riegl visited Quester Tangent Corporation—the supplier of some of NCRI's equipment, in Sidney, British



*Brian Walker and Bernhard Riegl aboard the Playmate, performing acoustic seafloor discrimination survey in the Dry Tortugas.*

Columbia, Canada—to learn more about the technology. (This story was in the last issue of *Currents*.)

In August, Ryan Moyer, **Brian Walker**, and Bernhard Riegl, together with a team of scientists from NASA's Goddard Space Center (PI Wayne Wright); the USGS's St. Petersburg office (PI John Brock); Florida Atlantic University's SEATEC (PI

Edgar An); and the University of Maine (Emanuel Boss), worked in Biscayne Bay National Park. NASA acquired data with their new EAARL LIDAR; and USGS characterized the optical qualities of the water column over the reefs in order to calibrate satellite imagery, while NCRI acquired acoustic bathymetry and ground discrimination data. 🐠

## U.K. Coral Reef Symposium

The ninth International Society for Reef Studies (ISRS) meeting was held this year in Cambridge, England (September 4–7). The Cambridge Coastal Research Unit at the University of Cambridge hosted the meeting. NSUOC attendees were **Richard E. Dodge, James D. Thomas, Joshua S. Feingold, David S. Gilliam, Bernhard M. Riegl, Bernardo Vargas-Ángel, Kevin Kohler; Ph.D. candidates Kevin P. Helmle and Brian K. Walker; and M.S. students Elizabeth A. Glynn, Heather A. Halter, and Jamie A. Vernacchio.**

Oral and poster presentations were made as follows:

- Feingold J. S. “Facultative corallivory by the cushion starfish *Pentaceraster cumingi*, Galapagos Islands, Ecuador.”
- Gilliam D. S., Thornton S. L., Fisher L. E., and Banks K. “Higher latitude coral reef communities off densely populated Southeast Florida, USA.”
- Riegl B. “Extreme climatic events and high-latitude reef-building: what consequences from global climatic change?”
- Thomas J. D. “Predicting biodiversity hotspots in coral reefs: combining amphipod phylogenies and geotectonics as a proxy to identify areas of composite evolutionary diversity.”
- Vargas-Ángel B. and Thomas J. D. “*Acropora cervicornis* assessment in a high latitude environment off the coast of Fort Lauderdale, Florida, USA.”
- Vernacchio J. A. and Gilliam D. S. “The use of coral nurseries as a coral reef management tool off the coast of Southeast Florida, USA.”
- Glynn E. A., Quinn T. P., Fahy D. P., Spieler R. E. “Growth and survivorship of scleractinian coral transplants and effectiveness of plugging core hole sites.”
- Halter H. A. and Riegl B. “A short-term spatial comparison of net carbonate change and percent cover of small-scale bioaccreters and bioeroders on Holocene tiles placed on the reefs off Fort Lauderdale, Florida, USA.”
- Hoke S. M., Colley S. B., and Feingold J. S., “Sexual reproduction in the

elliptical star coral, *Dichocoenia sotkesi*, Milne-Edwards & Haime, (Cnidaria: Scleractinia).”

- Moyer R. P. and Riegl B. “Determination of different benthic reef communities in Broward County, Florida, USA, using acoustic remote-sensing and *in situ* techniques.”
- Walker B. K. and Dodge R. E. “Correlating Quaternary sea-level rise to probably ancient Holocene reef morphology using remote sensing techniques.”
- Helmle K. P., Kohler K. E., and Dodge R. E. “Relative optical densitometry and the Coral X-radiograph Densitometry System (CoralXDS).”

## Eighth Meeting of the U.S. Coral Reef Task Force

The U.S. Coral Reef Task Force held its eighth meeting in San Juan, Puerto Rico, on October 2 and 3, 2002. Those attending from the NSUOC were **Richard E. Dodge**, dean of the Oceanographic Center and executive director of the National Coral Reef Institute (NCRI); **Gregory S. McIntosh**, NCRI director of Caribbean and Latin American region; and **Carol R. Fretwell**, NCRI coordinator for administrative operations. McIntosh also participated in the two-day Caribbean regional workshop on Coral Fisheries Management that preceded the task force meeting. While there, the NCRI displayed information and handouts for the two days of the meeting. During the meeting, seven new resolutions were adopted by general consensus regarding such topics as improvement of Coral Reef Task Force procedures, assessment of coral reef mitigation measures, and coral reefs and climate change. The resolution of improvement to task force procedures is of much interest to those at NCRI, because it marks the beginning of inclusion of academia into the activities of the task force as opposed to only federal or state agencies. The changes were made in order to move along with the process of implementing the National Action Plan to Conserve Coral Reefs (NAP). To see a complete listing of the progress made at this meeting, visit <http://coralreef.gov/dec2002.cfm>.

## Cuban Coral Reef Symposium

M.S. candidate **Ryan Moyer** recently traveled to Cuba on behalf of the National Coral Reef Institute (NCRI) in order to attend the Symposium on Coral Reefs: Together for Their Conservation. The international conference was held September 16–20 at the Hotel Tryp de Cayo Coco located on the northern coast of the Ciego de Avila province in Cuba. The event was sponsored by the United Nations Development Program, the Global Environmental Facility/Sabana-Camaguey Project, Environmental Defense, and Cubanacan Nautica. While at the conference, Moyer gave a talk on behalf of **David Gilliam, Ph.D.**, and M.S. candidate **Jamie Vernacchio** entitled “The Coral Nursery Project: An Integrated Approach to Coral Reef Restoration Off the Coast of Southeast Florida, USA.”

The conference served as a unique forum where representatives from scientific, legal, and recreational dive communities from around the world could discuss information; develop strategies; and identify priorities critical to coral reef management, conservation, and protection both within Cuba and around the world.

As exciting as it was to be a part of an international dual-language conference with each phrase translated to either English or Spanish as needed, the excitement level increased as Hurricane Isidore bore down on Cuba. Airports were shut down for a period of time, but soon alternative transportation by bus was found. This enabled conference participants to explore the Cuban countryside while safely making it back to Havana. Flights resumed after the worst of the storm had passed.



The Museo de Revolucion, one of the many historic buildings in old Havana, Cuba. (Photo by Ryan Moyer)

## Panama AGRRA Survey

M.S. candidates **Ryan Moyer** and **Heather Halter** participated in an AGRRA (Atlantic and Gulf Rapid Reef Assessment) survey of the Caribbean waters of Panama this summer in conjunction with a group from the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences (RSMAS) led by Robert N. Ginsburg, Ph.D. Moyer conducted benthic surveys of the islands of Bocas del Toro from June 8 to June 14, 2002, staying at the Smithsonian Tropical Research Institute (STRI).

Halter cruised to the Archipelago de San Blas aboard the Smithsonian's research vessel, *Urraca* and conducted benthic surveys from June 15 to July 3, 2002. 🐠

*Ryan Moyer at the STRI dock in Bocas del Toro, Panama. (Photo by Marilyn Brandt)*



## NSU Part of United Arab Emirates Coral Reef Study

National Coral Reef Institute (NCRI) scientist, **Bernhard Riegl**, Ph.D., and Mohammed Abdul Rahman Hassan, head of the Marine Environment and Sanctuaries Unit at the Environment Department of the Dubai Municipality are leading an international team of marine scientists to conduct a series of groundbreaking studies on coral reefs at the Jebel Ali Marine Sanctuary. The two project leaders have been working jointly in the area since 1995 and have maintained a coral-monitoring program. The new project is an extension of their mutual cooperation in this field. The studies would prove useful while obtaining data on coral reefs that could be beneficial locally as well as worldwide.

The reefs at Jebel Ali are of high scientific value. They have suffered severely during the 1996 and 1998 positive sea-surface temperature events, but are recovering now due to the management of the Dubai Municipality. The scientists are using these reefs to analyze how they will react worldwide to global climatic change. Ray Wolcott, recent graduate of NSUOC, will be studying sea urchin dynamics in a related study.

The Jebel Ali Wildlife Sanctuary is located in the coastal lowland between Jebel Ali and Ras Ghantoot, spread over an area of 80 square kilometers. The coastline is relatively straight without major headlands. Corals are found over most of the area in variable density, diversity, and surface cover.

The commercial value of coral reefs for tourism, as a collector's item, or as a source of seafood is enormous. About 392 total species of wild fauna and flora have been reported to exist in the sanctuary so far. These include 34 species of coral, 52 species of marine mollusks, 91 species of fish, and 37 species of birds.

The project in the United Arab Emirates (UAE) and Oman in September was a collaborative remote-sensing and reef assessment project with The Free University of Amsterdam (Jeron Kenter and Sam Purkis), Karl-Franzens-University Graz (Werner Piller), Dubai Municipality (Mohammed Abdul Rahman Hassan, Hamdan Khalifa al-Shaer, and Shahed Mustafa), and the UAE Environmental Research and Wildlife Development Agency (Nasser Shadoor al-Shaiba). While on site, the team witnessed the massive 2002 Arabian Gulf coral bleaching event, which resulted in them posting a

Web alert. Interestingly, their work in Musandam, Oman, showed an absence of bleaching in the northernmost Arabian Sea, while the central Arabian Sea showed bleaching at the same time. First evidence for genotypic adaptation to high-frequency bleaching events was collected on Sir Abu Nuair Island (Sharjah Emirate, Arabian Gulf) and the work will be followed up in future trips. Other work in the UAE consisted of acoustic ground discrimination and optical water column measurements by Sam Purkis and Jeroen Kenter (VU Amsterdam) for the ground-truthing of satellite imagery, which had been obtained by NCRI in collaboration with Serge Andrefouet of the University of South Florida. 🐠

*(Some of the above information was taken from an article titled "Global Experts to study Dubai Coral Reefs" published in the Khaleej Times, September 5, 2002.)*

## ICRI Workshop in Mexico

**Bernardo Vargas-Ángel**, Ph.D., recently presented a poster coauthored by **James D. Thomas**, Ph.D., entitled "Population Ecology and Propagation Dynamics of *Acropora cervicornis* off Fort Lauderdale, Florida, USA" to the

International Coral Reef Initiative (ICRI) Regional Workshop for the Tropical Americas and the Caribbean in Cancun, Mexico (June 12–14). This event was hosted by the Mexican government through Comision Nacional de Areas Naturales Protegidas (CONANP), the United Nations Environment Program Caribbean Regional Coordinating Unit (UNEP-RCU), and the ICRI Secretariat. While at the workshop, he also had the opportunity to display a copy of the NCRI exhibit poster. This generated much interest, which may lead to further opportunities for NCRI. 🐠

## Capital Hill Oceans Week

Members of NCRI were invited to attend Capitol Hill Oceans Week 2002, sponsored in part by the National Marine Sanctuary Foundation. The gathering was held on June 5 and 6 in Washington, D.C., as a two-day meeting for distinguished coral reef scientists and resource managers to discuss with lawmakers and their staff members information concerning the present coral reef crisis and the possibility of finding solutions to end this crisis. The emphasis for the June 5, 2002, symposium in the Hart Senate Office Building was focused on bringing information to the public so that they will be more educated on the issues surrounding oceanic problems. Scheduled for the symposium were a series of keynote speakers and panel discussions regarding both formal and informal educational opportunities. The next day, events emanated from the House of Representatives side of the capitol, with “Coral Reefs at Risk: Challenges and Solutions” headlining the conference at the Sam Rayburn House Office Building. Those attending from NSUOC were **Richard E. Dodge**, dean of the Oceanographic Center and executive director of the National Coral Reef Institute (NCRI); **Gregory S. McIntosh**, NCRI director of Caribbean and Latin American Region; and **Carol R. Fretwell**, NCRI coordinator for administrative operations. During the second day, NCRI exhibited its usual display of scientific posters and other material in the foyer of

the Sam Rayburn Building. In addition, NCRI unveiled a sample of its virtual benching mapping capabilities by displaying a virtual “fly-by” video created by Ph.D. candidate **Brian K. Walker**. 🐠

## Pew Oceans Commission

On June 9, 2002, the Pew Oceans Commission came to South Florida to meet with the public at the International Game Fish Association (IGFA) Hall of Fame and Museum in Dania Beach. Founded and funded by the Pew Trust in early 2001, the Pew Ocean Commission is an independent group of eighteen nationally known scientists, business leaders, elected officials, fishermen, and environmentalists who meet with the public and their counterparts to discuss current issues concerning today’s ocean fish and wildlife. The goal of these meetings is to present a dialogue on the policies needed in order to protect marine resources in U.S. waters. A report on this dialogue is to be presented to the public and to Congress by the year 2003.

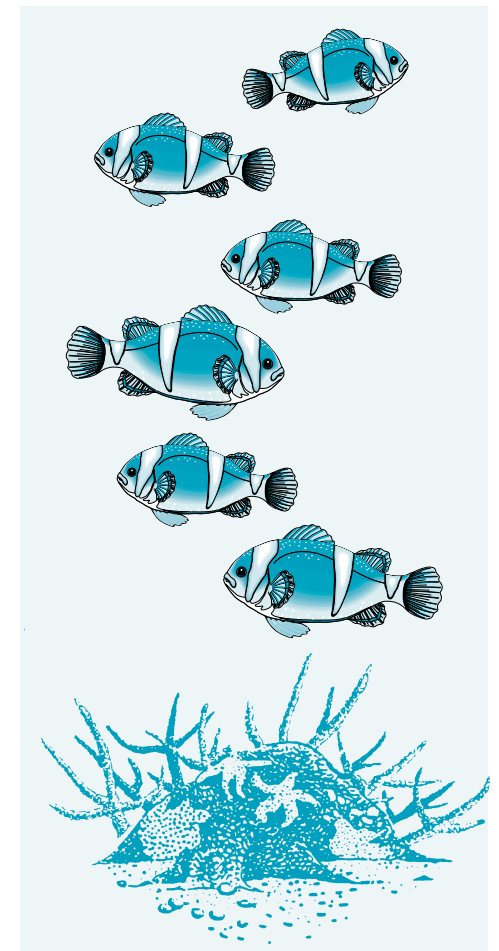
Three of the committee members recently arrived in South Florida to hold a panel with concerned citizens of the area. One of the presenters was **Richard E. Dodge**, Ph.D. His presentation was titled “Coral Reefs, A National Treasure.” The presentation focused on the ecological and economical value of coral reefs, the degradation of coral reef systems, what is being done to protect them, and what needs to be done to protect them in the future. This presentation can be viewed on the Pew Oceans Commission Web site at [www.pewoceans.org/activities/2002/07/12/activities\\_28977.asp](http://www.pewoceans.org/activities/2002/07/12/activities_28977.asp). 🐠

## World Bank Meeting

World Bank is developing a targeted research project “Effects of Localized Anthropogenic Stress and Compounding Impacts of Climate Change on the Sustainability of Coral Reef Ecosystems and the Implications for Management.” One of the six working groups within this initiative is focusing on reef remediation/restoration. **Richard Dodge**, Ph.D., was invited to participate—as one of only 10

scientists from the United States, the United Kingdom, Israel, Australia, the Philippines, and Singapore—and attended an October meeting in Singapore. The role of this working group is to review and evaluate the state of remediation/restoration and to develop a research proposal that will address the more important questions arising from the review. The scope of the working group includes an examination of the scientific protocols necessary to design and implement restoration strategies, baseline data for developing effective criteria, and the efficacy of restoration/remediation techniques. The proposal development process is managed for the World Bank by an international NGO known as ICLARM, the International Center for Living Aquatic Resource Management.

This World Bank project is the result of a series of meetings and consultations held around the world including an April 1999 meeting in Fort Lauderdale, hosted by the National Coral Reef Institute. 🐠





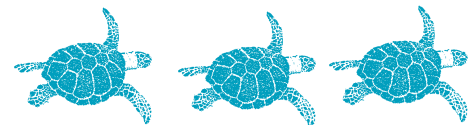
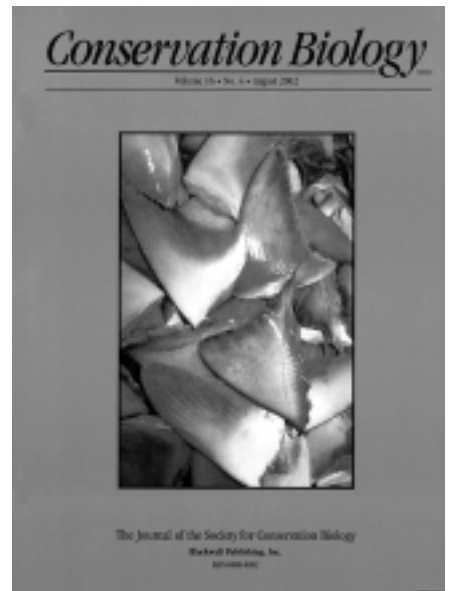
## Guy Harvey Research Institute News

Oceanographic Center shark genetics research receives international recognition.

Shark-fin soup and the resulting impact on sharks worldwide has prompted a study scientists hope will offer a quick and cheap genetic test that will enable them to recognize individual shark species. The purpose of such a test would be to facilitate good fisheries management and help enforce fishery closures, quotas, and minimum-size requirements. Commercial fisheries that hunt sharks for meat, gut the sharks and remove their tails, fins, and heads, leaving little for enforcement officials to identify for reporting purposes. Research on shark conservation genetics conducted by **Mahmood Shivji**, Ph.D., and his students in the Guy Harvey Research Institute have produced a genetic test for six species of shark: blue, dusky, porbeagle, silky, and long- and shortfin mako. The tests can be done using dried or fresh shark body parts.

The research has been reported widely in the national and international press. A recent scientific paper from Shivji's laboratory published in the journal *Conservation Biology* (see below for reference) has received wide media coverage, including in *Science*, *Nature*, *The New Scientist*, *Science News*, *the New York Times*, the British Broadcasting Corporation (BBC), *National Geographic*, *Discovery*, the Environmental News Network, *Wired News*, and the *South China Morning Post*. This research has also been cited by the Convention on International Trade in Endangered Species (CITES) Secretariat to support their case for uplisting basking sharks from Appendix III to II. 🐡

Reference: M. Shivji et al. 2002. Genetic Identification of Pelagic Shark Body Parts for Conservation and Trade Monitoring. *Conservation Biology* 16(4): 1036–1047.



## Scholarship Awarded

Oceanographic Center graduate student **Jennifer Magnussen** has been awarded the Dr. Nancy Foster Scholarship by NOAA. This is a highly competitive award, which provides up to four years of stipend and cost-of-education allowance (\$32,000 per year) to students in oceanography, marine biology, or maritime archaeology. There were only four recipients of this award nationally this year. As an indication of the notice and prestige associated with this scholarship, Magnussen first heard of her award from a congratulatory telephone call from U.S. Senator Bob Graham's office. Since then, she has also received a congratulatory letter from U.S. Congressman Peter Deutch.

Magnussen came to NSU with a bachelor's degree from the University of North Carolina and is a member of the Guy Harvey Research Institute. She is conducting her graduate research with **Mahmood Shivji**, Ph.D., in the area of conservation genetics as applied to understanding the global shark fin trade. In addition to excelling in academics, Magnussen also holds the title of master certification spe-

cialist in the fitness industry (there are only 16 such specialists in the world) and is an accomplished flute player—performing with the Broward and Deerfield Beach Symphonies and Florida Gold Coast Opera. A brief description of the Dr. Nancy Foster Scholarship is provided below. 🐡

The National Oceanic and Atmospheric Administration's Dr. Nancy Foster Scholarship Program recognizes outstanding scholarship and encourages independent graduate level research—particularly by female and minority students—in oceanography, marine biology, and maritime archaeology. Congress authorized the program—as described in the National Marine Sanctuaries Amendments Act of 2000 (Pub. L. 106-513)—soon after Foster's death in June 2000 as a means of honoring her life's work and contribution to the nation. The program is administered through NOAA's National Ocean Service and funded annually with one percent of the amount appropriated each fiscal year to carry out the National Marine Sanctuaries Act.



Jennifer Magnussen in her laboratory. Congratulations to Jennifer Magnussen for this well-deserved scholarship!

## People on the Move

**Charles Messing**, Ph.D., presented the following paper, coauthored with David Meyer (University of Cincinnati) and Greg Rouse (South Australian Museum, Adelaide), at the Annual Meeting of the Geological Society of America in Denver, Colorado (October 26–30): “Modern, Soft-bottom, Shallow-water, Tropical Crinoid Fauna, with a Comparison between Living *Comatula rotalaria* and Fossil *Uintacrinus socialis* (Echinodermata: Crinoidea).”

**Edward O. Keith**, Ph.D., participated in the National Day of the Manatee celebrations in Mexico, September 6–7. He spoke on the status and conservation of the Antillean manatee (*Manatus trichechus trichechus*) during a workshop in the Veracruz Institute of Culture (September 6) as well as at the festival of the manatee in the fishing village of Alvarado, Mexico (September 7). This activity was described in the online periodical from the University of Veracruz [www.uv.mx/universo/75/centrales/centrales2.htm](http://www.uv.mx/universo/75/centrales/centrales2.htm).

**Alexander Soloviev**, Ph.D., gave a lecture at the Geophysical Fluid Dynamics Summer School, at Woods Hole Oceanographic Institution in July titled, “Sharp frontal interfaces in the near-surface layer of the ocean.”

Soloviev also presented two seminars in October. One, “Energetic supertidal baroclinic oscillations on the shelf off southeast Florida” was given at the University of Miami’s RSMAS Coastal Oceanography Seminar Series. The other, “Observation of wave-enhanced turbulence in the near-surface layer of the ocean” was presented at Scripps Institution of Oceanography, Physical Oceanography Research Division, La Jolla, California.

In October, **Bernhard Riegl**, Ph.D., left to undergo some serious schooling at Penn State’s short course program and sat in on “Underwater acoustics and signal processing,” a graduate- and professional-level program that reviewed the key elements of underwater acoustics. Although NCRI has

no plans or need to detect submarines, the course helped spawn new ideas for improved acoustic ground discrimination techniques and a possible future passive acoustic reef-monitoring program.

Riegl also recently returned from GSA’s “Science at the Highest Level” Symposium held in Denver, Colorado. There he presented a paper titled, “Biogeotech: Multi-platform investigations into the historical, geological, and biological consequences of early Holocene reef building in Broward County (FL),” which he presented at the joint research program with FAU, University Graz, the Lamont-Doherty Earth Observatory at Columbia University, and the Broward County DPEP. He, **Richard Dodge**, and Greg McIntosh were coauthors on the USGS’s Tonya Clayton talk “Remote sensing for coral reefs studies: testing the waters at Biscayne National Park.”



## Other News

**James D. Thomas**, Ph.D., was elected to the rank of AAAS fellow by the American Association for the Advancement of Science (AAAS) “for outstanding research contributions to the systematics, biogeography, and evolution of the pericarid Crustacea, for innovative ideas in advancing critical research directions and collaborations on biodiversity, and for innovative teaching in exposing undergraduate and graduate students to coral reef and mangrove forest biology in Belize and other sites.” Each year the council elects members whose “efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished.”

Thomas was also selected by the National Academy of Science to act as chair of the marine and geosciences panel. Thomas and 24 scientists met in Washington D.C. October 23–24 to make funding recommendations to NAS personnel. As panel chair, Thomas led the panel in discussing, ranking, and pri-

oritizing a series of scientific proposals that had been submitted for funding consideration. The results of the panel reviews are submitted to the NAS for funding consideration.

**Veljko Dragojlovic**, Ph.D., received a summer fellowship in the amount of \$7,000 from the Petroleum Research Fund (administered by the American Chemical Society) for the project “Manganese  $\eta^2$ -Bond as a Solid-Phase Traceless Linker for the Expedited Synthesis of Olefins.”

He made three presentations at the 223rd American Chemical Society National Meeting and Exposition, Orlando, Florida, April 7–11, 2002.

■ **Janne T. Nielsen** and Veljko Dragojlovic, Oxidation of an Unknown Cycloalkene, Cycloalkanol, or Cycloalkanone to a Dicarboxylic Acid: Discovery Oriented Experiment for Organic Chemistry Students (oral presentation). (Janne Nielsen is an M.S. candidate.)

■ Robert Duarte and Veljko Dragojlovic, Synthesis of Chemi-luminescent Esters—A Discovery Based Experiment for Organic Chemistry Students (oral presentation).

■ Leyda Su Ham, Wen Chi Chou, and Veljko Dragojlovic, Ruthenium Tetroxide Oxidation of Iodoalkanes (poster)

**Alexander Soloviev**, Ph.D., was awarded an Office of Naval Research (ONR) one-year continuation grant in the amount of \$100,000 for his project titled, “Environmental Array and Data Analysis” (Year 4).

**Bernhard Riegl**, Ph.D., and **Richard Dodge**, Ph.D., were awarded \$400,000 in two grants from NOAA and the St. John’s River Water Management District for acoustic mapping of sea floor biota.





## Publications

A. V. Soloviev, R. Lukas, and H. Matsuura, 2002. Sharp frontal interfaces in the near-surface layer of the tropical ocean. *Journal of Marine Science—Special Issue on Ocean Fronts* (in press).

B. Vargas-Ángel and J. D. Thomas. 2002. Sexual reproduction of *Acropora cervicornis* in nearshore waters off Fort Lauderdale, Florida, USA. *Coral Reefs*, 21(1), pp. 25–26.

D. D. Turgeon, R. G. Asch, B. D. Causey, R. E. Dodge, W. Jaap, K. Banks, J. Delaney, B. D. Keller, R. Spieler, C. A. Matos, J. R. Garcia, E. Diaz, D.

Cantanzaro, C. S. Rogers, Z. Hillis-Starr, R. Nemeth, M. Taylor, G. P. Schmahl, M. W. Miller, D. A. Gulko, J. E. Maragos, A. M. Friedlander, C. L. Hunter, R. S. Brainard, P. Craig, R. H. Richmond, G. Davis, J. Starmer, M. Trianni, P. Houk, C. E. Birkeland, A. Edward, Y. Golbuu, J. Guitierrez, N. Idechong, G. Paulay, A. Tafleichig, and N. Vander Velde. 2002. *The State of Coral Reef Ecosystems of the United States and Pacific Freely Associated States: 2002*. National Oceanic and Atmospheric Administration/National Ocean Service/National Centers for Coastal Ocean Science, Silver Spring, Maryland. 265 pp.

N. W. Rasser and B. Riegl. 2002. Holocene coral reef rubble and its binding agents. *Coral Reefs*, 21(1), pp. 57–72.

B. Riegl. 2002. Effects of the 1996 and 1998 positive sea-surface temperature anomalies on corals, coral diseases, and fish in the Arabian Gulf (Dubai, UAE). *Marine Biology*, 140(1), pp. 29–40.

B. Hubmann, W.E. Piller, and B. Riegl. 2002. Functional morphology of coral shape and passive hydrodynamic self-righting in recent *Manicinia areolata*. *Senckenbergiana Lethaea*, 82(1), pp. 125–130. 🐠

## Annual Chili Cook-off Heats Up

Eleven different types of chili were entered in the Third Annual Chili Cook Off held on October 11 by students and faculty and staff members of the center. Capt. Lance Robinson started the cook off, and ever since, he and Bart Baca have been in a heated battle for the best chili each year.

The winners were

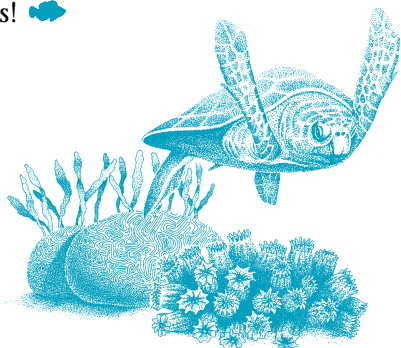
**First place**—Capt. Lance Robinson, harbormaster and dive program director, for his Texas chili.

**Second place**—Bart Baca, director, aquaculture, for his shrimp chili.

**Third place**—Kathy Maxson, librarian, for her two-meat, two-bean, four-pepper chili.

**Honorable mention**—Capt. Bob Franks of SeaTech for his traditional chili.

Needless to say, the event was a “hot” success! 🐠



The winners!! (L-R) Bart Baca, Kathy Maxson, Bob Franks, and Lance Robinson.



Entrants in the chili cookoff

Front: Abe Smith, Cathy Mattison, Bob Franks, Kathy Maxson, Lance Robinson, and Mike Hourihan.  
Back: Bart Baca, Christi Foster, Sean Gill, Dan Fahy, Jack Seubert, Amy Hall, and Arlo Hemphill.



# MASTERCURRENTS

## INSTITUTE OF MARINE AND COASTAL STUDIES

### Winter Term Classes January 6–March 28, 2003

#### Aspects of Marine Pollution, CZMT-0790/MEVS-5100

Deals with various forms of environmental pollution as they affect both the land and maritime environment. Focus on the role of microorganisms as causes and indicators of toxicity. Sources, measurement, and control of pollution in marine and coastal environments are discussed. Lab Fee: \$25. Meets Wednesdays, 6:30–9:30 p.m. Instructor: Don McCorquodale

#### Concepts of Physical Oceanography, OCOR-5601

This course deals with the basic physical properties of seawater, the temperature and salinity structure of the oceans; major current patterns; and the influences of waves, tides, and winds. Lab Fee: \$25. Meets Mondays, 6:30–9:30 p.m., Instructor: Alexander Yankovsky

#### Plankton Ecology, OCMB-5606

Traditionally, plankton have been dealt with under two broad headings: phytoplankton and zooplankton. While this categorization is useful, it does not reflect current research emphasis of the smaller members of the plankton community; bacteria (picoplankton) and the grazing protozoa (nanoplankton). This course will deal with these smaller members of the plankton community. Plankton Ecology will begin with a summarization of the plankton environment in lakes, oceans, and estuaries. It will continue with the essential aspects of the biology and physiology of bacteria and protozoa. It will finish with the exploration of the functional role of these organisms within aquatic ecosystems. Lab Fee: \$25. Meets Tuesdays, 6:30–9:30 p.m., Instructor: Andrew Rogerson

#### GIS and Remote Sensing, CZMT-0639/MEVS-5023/OCMB-6100

This course provides hands on training with the latest techniques in geographic information systems (GIS) and remote sensing. Course work includes lecture and

M.S. Degree specialties are marine biology, coastal zone management, and marine environmental science. Each course carries three credit hours or may be audited. Tuition is \$499 per credit hour (50 percent less for audit). Classes meet once a week from 6:30 to 9:30 p.m. at the Oceanographic Center (unless otherwise specified.) The winter term runs from January 6–March 28, 2003. Registration (\$25 nonrefundable fee) is December 2, 2002–January 10, 2003. Teachers may take courses for recertification credits for \$800 (non-degree-seeking status). For further information, call Andrew Rogerson, Ph.D., or Melissa Dore at (954) 262-3610 or 800-396-2326, or email [imcs@nova.edu](mailto:imcs@nova.edu). More information can be found at the Web site [www.nova.edu/ocean](http://www.nova.edu/ocean).

hands-on computer training. Areas covered (using both ERDAS Imagine 8.3 and ESRI Arcview 3.0) include GIS/remote sensing theory, image georeferencing and mosaicking, image enhancement and classification procedures, accuracy assessment procedures, importing GPS polygons, establishing database and multimedia hot links, importing tables, joining, building queries, charting, and map creation. Instruction of class will be centered on application of these techniques to actual environmental case studies. *This course is strongly recommended to students. The majority of all job openings currently require at least a passable knowledge of GIS/remote sensing.* Lab Fee \$125, limit 20 students. Meets Mondays, 7:00–10:00 p.m. on the main campus. Instructor: Stacy Myers

#### Scientific Writing, CZMT-0800/MEVS-5300/OCMB-8500

**What makes a good proposal? Take this course and find out. A good proposal stems from a good concept.**

This course is designed to provide tools, resources, and approaches to improve a student's ability to write in a scientifically precise and accurate manner and to interrelate complex conceptual issues in a coherent manner. The skills acquired while learning to write a grant proposal are very similar to the skills needed to write a project plan or scientific paper. Thus, by building grant-writing skills, general scientific writing skills are improved in equal measure. This course is an intensive introduction of how to prepare, write, edit, and review a standard grant proposal.

Participants in this course will be expected to write a grant proposal in their field of interest as a class project. The following topic areas will be presented and developed

- how to identify viable research topics
- how to assemble relevant information and data into an outline identifying funding sources
- writing abstracts and summaries
- different writing styles for various audiences
- targeting proposals to specific funding agencies
- editing and reviewing for scientific content
- improving both oral and written presentations of research projects
- understanding the peer review process, role-playing

Proposal writing is essential in the competitive scientific job market, but it can be intimidating for the novice. There is nothing worse than staring at a blank piece of paper or computer screen with the sinking feeling that so much is riding on the prose you must create. This course will provide the tools and procedures to write and submit a competitive grant proposal. Participants in this course will be expected to be motivated and willing to improve their written and verbal communication skills. There will be an abundant writing load and outside class assignments. Lab Fee: \$50. Meets Thursdays, 6:30–9:30 p.m. Instructor: Jim Thomas (*Class enrollment is limited to 12 to allow for adequate interaction between students and instructor.*)

(Continued on page 10)

(Winter Term, continued)

### **Aquaculture Systems,**

CZMT-0810/MEVS-5010/OCMB-6205

This course covers the engineering and mechanics of both freshwater and marine aquaculture systems. Students will study the major aquaculture methods for food species and aquarium hobby culture, including system design and construction. Students will learn to use aquaculture materials such as fiberglass, PVC, and concrete. Systems studied will include indoor; recirculating; outdoor; high intensity; tank culture and pond culture; and the aeration, water treatment, and filtration components of these systems. Course lectures will be supplemented by field trips to representative facilities. Lab Fee: \$100. Meets Thursdays, 6:30–9:30 p.m., Instructor: Bart Baca 🐡

## Winter Term Distance Education Courses

The mission of the Oceanographic Center is to carry out innovative, basic, and applied research and to provide high-quality graduate and undergraduate education in a broad range of marine science and related disciplines. The center also serves as a community resource for information, research, and education on oceanographic and environmental issues. Towards this end, the Oceanographic Center has offered flexible, accessible, and learner-centered distance learning courses since 1993. NSU online distance students enjoy access to Distance Library Services (DLS), a department of the Nova Southeastern University library system that provides off-campus students with most of the library services available on campus.

Our distance courses may be taken individually for general interest, for undergraduate or graduate credit (M.S.), or as part of our Graduate Certificate in Coastal Studies Program. For more information, please see our Web site at [www.nova.edu/ocean](http://www.nova.edu/ocean) or contact Jane Dougan at [douganj@nova.edu](mailto:douganj@nova.edu) or (954) 262-3621.

## Winter Term Distance Education Courses

**Marine Mammal Management,** OCMB-6330 (33972) The course is designed to serve as a source of information and ideas providing an introductory awareness of a diversity of issues including the morphology, physiology, adaptation, and behavior of these species and their interaction with humans and other predatory mammals. A secondary objective is how marine mammal species are interconnected to the rest of the natural environment. A third objective is to help the student to begin to consider the linkages between the ways in which we regard marine mammals and our actions towards them. Two papers are required. **This Course is CD-ROM-Based.** Instructor: Keith Ronald

### **International Integrated Coastal Zone Management,** CZMT-0614 (33991)

This Web-based distance education course focuses on the international dimensions of integrated coastal zone management. Students will first examine the major big picture issues affecting the world's coastal areas and oceans, examining seven case studies that will help to bring alive the grave problems of mismanaging coastal and economic resources: the Black Sea, the Grand Banks and Newfoundland, the Louisiana Region, the Mississippi River and the Gulf of Mexico, Belize, the Marshall Islands, and Antarctica. The second part of the course will provide students with the opportunity to study major international conferences, treaties, and policy principles (including the Law of the Sea). In the final third of the course, students will examine regional and selected country coastal-zone policies. Students completing this course will be familiar with the most important aspects of Integrated Coastal Zone Management globally and will have a basis for comparison of these policies. Students will also be in a position to assess the costs and benefits of different coastal zone management strategies around the world. Instructor: Steffen Schmidt

### **Internship in Coastal Policy** (available year round with approval of supervising professor) CZMT-0664

Students enrolled in this course are expected to invest the equivalent of three hours per week for 14 weeks (i.e., at least 42 hours) in their internship. This can be

done at a research organization; private company or consulting firm; local, county, state, or federal agency; or other approved venue that is related to coastal zone activities. In addition to hands-on work, each intern will also keep an academic journal of internship activities. The journal will be submitted for review for the final grade. The student's supervisor at the internship venue will also evaluate the student. Permission and approval of supervising professor is required before you enroll in this class. Instructor: Steffen Schmidt

### **Coastal Zone Interpretation,** CZMT-0667

Throughout our lives we often find ourselves in situations where we interpret nature to others. Think of the number of times a parent interprets aspects of nature to a child, or you interpret the area in which you live to a visitor. While we may think of nature interpretation as really taking place in the context of a job—such as a park naturalist—there are many other times when skills in nature interpretation are put to the test. Indeed, commenting on a beautiful coastal sunset is an interpretation of nature. Just what is the definition of nature interpretation? What theories support nature interpretation? Is interpretation a science or an art? How can we develop our skills as interpreters? How can we apply interpretive techniques in our daily lives and careers? This Web-based course aims at providing opportunities for you to find answers to these and other questions. Instructor: Alan Watson

### **Resolving Environmental and Public Disputes** (Introduced in winter 2003), CZMT-0675

A Web-based course focusing on the theoretical bases, practical applications, process orientations, and actual intervention into complex multiparty, multi-issue public disputes regarding management of the coastal zone. The emphasis is on social/environmental interactions and sources of political and economic conflict over human health environmental protection and natural resource scarcity. Instructor: Jean Marie Pinto 🐡



## Spring Term

April 7–June 27, 2003

Marine Geology, OCOR-5601

Biostatistics, OCOR-5606

Molecular Marine Biology

Belize Field Course (trip dates:

March 29–April 5, 2003)

Plankton Ecology

Conservation Biology

## Ph.D. Degree Offered

The Oceanographic Center offers the Ph.D. degree in oceanography. The program requires a minimum of 66 credits beyond the baccalaureate, 42 of which may be applied from the master's degree program. The remaining credits are made up of at least 24 dissertation research credits and 6 credits from upper-level course work, usually taught in the tutorial mode. Tuition is \$3,413 per quarter.

## Seminars and Defenses

### Seminars

Arthur Mariano, Ph.D., from the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences (RSMAS), gave a seminar titled, "Predictability of Lagrangian Motion in the Ocean," on October 28.

Pierre Flament, Ph.D., from the Dept. of Oceanography, University of Hawaii, gave a seminar titled, "Tropical Instability Waves: from Physics to Ecosystem Modulation" on September 9.

### Theses

**Jennifer M. Hartwig**, "Effects of Beach Renourishment on Loggerhead Sea Turtle (*Caretta caretta*) Nesting and Hatching Parameters." Committee Members: Curtis Burney, Edward Keith, and Stephen Blair (Miami-Dade Department of Environmental Resources Management). October 25.

**Michelle Lajti**, "Macroinvertebrate Community Structure in MDOS Mesocosms: The Role of Vegetation and Response to Marsh Dry-Out." Committee members: Jana Majer Newman (South Florida Water Management District), Andrew Rogerson, and Curtis Burney. October 4.

### Capstone Reviews

**Amanda Burgos**, "A Review of Marine Protected Areas: Their Objectives, Design, and Success." Committee Members: Curtis Burney and Stacy Myers. September 27.

**Karen Walby**, "The Effects of Nest Relocation on Hatching Success with Analysis of Unsuccessful Eggs (1999–2001) of Loggerhead Sea Turtle (*Caretta caretta*) Nests in Broward County, Florida." Committee Members: Curtis Burney and Edward Keith. September 25.

## Fall Student Party

Twenty-five new students for the fall term were welcomed at the OC's annual fall term party. Approximately 100 old and new students and faculty and staff members attended the chicken and shrimp barbeque on September 25. A new student orientation preceded the party.



Barbara Dodge, Dean Richard Dodge, and faculty member Sasha Yankovski enjoying the party.



New students sampling the fare at their first student picnic.



**NOVA SOUTHEASTERN UNIVERSITY**  
 Oceanographic Center  
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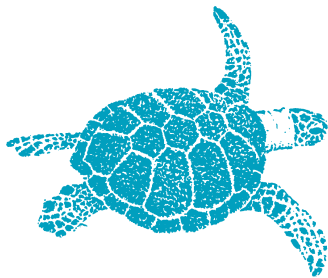
*Currents, Fall 2002*



*NASA plane used for flying EAARL Lidar with GPS ground station in foreground.*



*Lots of people and lots of food at the annual fall term party.*



Editor: **Kathy Maxson**



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