

Fall 2006

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NSU Oceanographic Center

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# Currents



Fall 2006 • Volume XXI, Number 4

## Oceanographic Center Professor Discovers One of the World's Rarest Crustaceans!

**James Darwin Thomas**, Ph.D., has discovered a new species of deep-sea amphipod crustacean that is among the rarest crustaceans known to science. Thomas found the small, shrimp-like crustaceans living in mated female-male pairs in a glass sponge at 3,700 feet of water off the central Florida coast. Tentatively placed in the family Didymochelidae, only three specimens of this enigmatic crustacean family have ever been collected. Previously known only from deep Antarctic waters, the new genus from Florida is the first recorded outside Antarctica and the first recorded from the northern hemisphere.

Sandra Brooke, Ph.D., chief scientist for the cruise, along with **Charles Messing**, Ph.D., of the NSUOC, collected the sponge using a remote-controlled arm of the *Johnson SeaLink* submersible deployed from the *RV Johnson* research vessel, Harbor Branch Oceanographic Institution. The sponge was placed in a sealed container for the trip to the surface. In the onboard lab, Thomas carefully dissected the amphipods from the interior canals of the sponge using thick gloves and foot-long tweezers. Glass sponges, called hexactinellids, occur in deep water and consist of a matrix of glass spicules that form the skeleton and can cause painful swelling and stinging if they penetrate the skin.

"The ability to collect intact specimens from such depth allows us to investigate ecological relationships that would otherwise go undiscovered," stated Thomas. Because mated pairs of amphipods are "trapped" inside its glass-like host once they enter,



*New amphipod species discovered on cruise*

Thomas plans to name the new genus after Aida, a character in Verdi's opera. Aida, an enslaved Egyptian princess, conceals herself in a crypt to join her lover, Radames, in the afterlife. "As taxonomists, we have the ability to add an interesting back-story when we describe species," declares Thomas. "Amphipods enter the sponge as small juveniles and become trapped in a delicate glass 'crypt' as they grow too large to escape. The fact that these amphipods are so rarely collected reflects how little we really know of the deep-sea environment." There exists a vast amount of undiscovered diversity

in deep-reef assemblages. With the advent of submersibles that can delicately pluck fragile specimens from the bottom, we can explore the deep sea in ways unavailable to earlier ocean explorers.

**Messing**, in 2005, served as chief scientist for the NOAA-sponsored Florida Deep Corals cruise. Additional information is available at the NOAA Web site for the cruise: [www.oceanexplorer.noaa.gov/explorations/05deepcorals/welcome.html](http://www.oceanexplorer.noaa.gov/explorations/05deepcorals/welcome.html).

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**Thomas** was instrumental in organizing and hosting a workshop at NSU from July 1–24. Eight international scientists involved in “The Amphipod Crustaceans of Lizard Island, Great Barrier Reef” project gathered at Nova Southeastern University’s main campus in Fort Lauderdale and at the Oceanographic Center for the workshop. The aim of the project is to study tropical Australian amphipods using Lizard Island Research Station (LIRS) as a collecting base. The goals of the workshop were to provide taxonomic updates and progress reports in describing and illustrating the numerous new species of Lizard Island amphipods.

Scientists involved in the project are in the process of describing more than 180 species from Lizard Island and adjacent areas, more than half of which are new species. Jim Lowry from the Australian Museum in Sydney and Alan Myers of University College, Ireland, are the project leaders. The project began in February 2005 with a two-week collecting effort in the waters around Lizard Island Research Station. During the Fort Lauderdale workshop, Thomas made his extensive Australian amphipod collections available to the participants, which turned up a number of additional new species for the project.

The Australian government initiated the research project because so little is known about the invertebrate fauna of the GBR, despite the area being the largest protected marine area in the world. The results of the project will more than triple the number of known amphipod species from the GBR and influence further work on Australian amphipods and amphipods in the Indo West Pacific area. The results, which will include species descriptions and identification keys, will be produced electronically in a special book volume of the journal *Zootaxa*. The volume, with interactive identification guides, will be freely available online.

During the week, participants discussed data standards and protocols, checked for consistency of terminology, and worked on database problems and formats. They also sampled the food, night life, and local amphipod fauna of the Fort Lauderdale area. At the end of the week, all participants took an afternoon airboat tour of the Everglades. 🐟



SeaLink submersible pilot Tim Asker, Jr., and James Thomas preparing for a dive



Bumblebee amphipods, one of the many news species being described



James Thomas (blue shirt) standing in the middle of a group of workshop participants before an airboat tour of the Everglades

## People on the Move

The Oceanographic Center's National Coral Reef Institute (NCRI) team has returned from the Middle East. As part of its international outreach, NCRI scientists **Bernhard Riegl**, Ph.D., and **Sam Purkis**, Ph.D., and researchers **Kristi** and **Greg Foster**, spent part of September aiding in the organization and running the Middle Eastern Coral Conservation workshop in Abu Dhabi, hosted by World Wildlife Fund and the Environment Agency of Abu Dhabi. Scientists from all gulf states provided status overviews of the coral reef resources in their countries, and NCRI scientists demonstrated what had been learned in a two-year, joint-capacity building project between NCRI and the Environment Agency of Abu Dhabi. A model for the forecasting of coral community state in regenerating reefs was developed, as well as detailed maps of the location and status of Arabian Gulf coral communities. The Fosters remained in the Middle East to continue working with the environmental agencies of Abu Dhabi and Qatar.



Bernhard Riegl (far left) with Dubai team



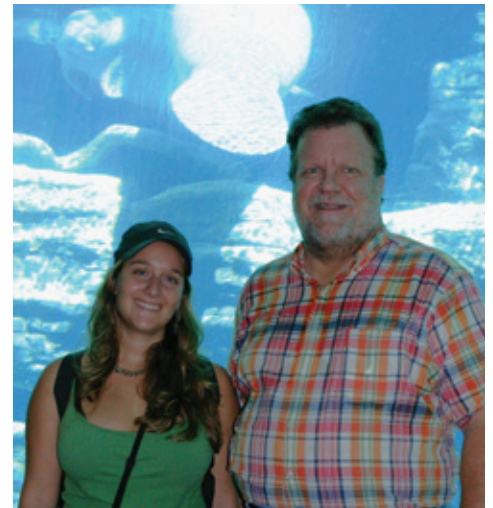
Sam Purkis in classroom training session at the Environment Agency of Abu Dhabi

Funded by a grant from the Smithsonian Institution, NSUOC professor **James Thomas**, Ph.D., and former graduate student **Kris Klebba** traveled to Carrie Bow Caye, Belize, to continue their research on commensal amphipod crustaceans from Belizean reefs. During a two-week period in September, they sampled deep-reef habitats by SCUBA, discovering three new species of amphipods. Over the two-year project, Thomas has discovered 13 new species of leucothoid amphipods. Eight of these species are described or their descriptions are in press, and efforts continue to publish descriptions of the remaining taxa.

**Edward O. Keith**, Ph.D., was very busy once again from late summer through fall. August 6–11, Keith attended the Mercury 2006 conference, held in Madison, Wisconsin. There, he presented a poster with his collaborator Jane Guentzel, Ph.D., from Coastal Carolina University. It was entitled “Mercury exposure in riverbank communities of the Alvarado Lagoon System, Vera Cruz State, Mexico.” This poster described the results of studies by Keith and Guentzel of mercury contamination of water, fish, sediments, and the human inhabitants of a large wetland where Keith has been involved with studies of Antillean manatees (*Trichechus manatus*) for the past five years. This work was supported by an NSU President’s Faculty Research and Development Grant entitled “Mercury Analysis in the Alvarado Lagoon System, Vera Cruz State, Mexico” awarded to Keith in May 2004.

From August 29 through September 12, **Keith** was host to Milena Mercuri, a graduate student at the Interdisciplinary Center for Marine Sciences in La Paz, B.C.S., Mexico. Mercuri is examining the relationship between oceanographic conditions, such as sea surface temperature and chlorophyll content, and marine mammal strandings on the west coast of Baja California. Keith is serving as the outside adviser on her Ph.D. thesis committee. While in Florida, Keith and Mercuri visited marine mammal rehabilitation facilities at Sea World, in Orlando, Florida, and Mote Marine Laboratory, in Sarasota, Florida. They also visited Gainesville, Florida, where they toured the College of Veterinary Medicine

at the University of Florida, which has one of the few marine mammal veterinary programs in the United States, as well as the USGS Sirenia Project, for which scientists maintain a number of ongoing studies of Florida manatees (*Trichechus manatus latirostris*), including the photographic identification scar catalog. In addition, Keith and Mercuri attended the Interagency/Oceanaria meeting organized by the U.S. Fish and Wildlife Service in Homosassa Springs, Florida. Keith presented an update on his Manatee Avoidance Technology research, which seeks solutions to a primary cause of manatee mortality in Florida, boat strikes.

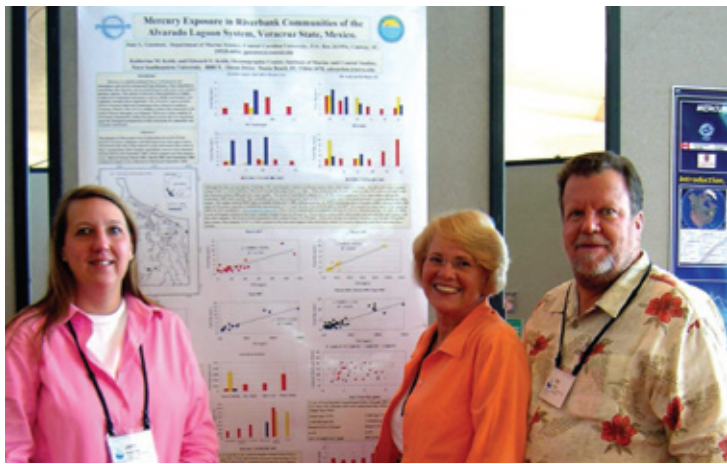


Mercuri and Keith at Sea World

From September 30 to October 13, **Keith** was in Vera Cruz, Mexico, pursuing a number of projects and attending a major international scientific conference. From October 4–8, Keith attended the Fourth North American Ornithological Conference. At this conference, he presented a poster entitled “Field Ornithology as a Risk Factor for Hypersensitivity Pneumonitis and Interstitial Lung Disease” that describes a human disease that susceptible individuals can acquire by working with birds, either as a hobby or professionally. This disease starts as an allergic reaction to a bird antigen and, with continued exposure to birds, can progress to lung inflammation (pneumonitis) and the destruction of lung tissue. Co-authors on this poster included Keith’s wife, Kathy, and his father, James, whose death in May 2006 was due in part to this disorder.

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Edward O. Keith with collaborator Jane Guentzel (left) from Coastal Carolina University in Conway, South Carolina, and his wife Kathy (center), presenting their poster at the Mercury 2006 Conference in Madison, Wisconsin

One of Keith's graduate students, **Sarah Maurer**, also presented a poster at the conference. Entitled "Seasonal Dynamics of Osprey (*Pandion haliaetus*) in Port Everglades, Florida," it described the results of her thesis research.



Keith and Maurer in front of her poster

After the Ornithology Conference, Keith spent several days in the Alvarado Lagoon System, with his collaborator Enrique Portilla, Ph.D., with the University of Vera Cruz. They continued their studies of the seasonal movements and habitat use of Antillean manatees there. This work is supported by an NSU President's Faculty Research and Development Grant entitled "VHF Tracking of Captive-Release Manatees in the Alvarado Lagoon System, Vera Cruz, Mexico" awarded to Keith and Portilla in 2005. Portilla and his students have recently determined that clam divers in the lagoons are a good source of information about manatees, because they encounter them frequently by virtue of the nature of their work, being in the water almost continuously. Keith and Portilla also visited a nearby freshwater marshland, La Popotera, where manatees can be found, but little is known of their movements and abundance.

At the end of this lengthy and productive trip to Mexico, Keith met with colleagues from the NSU Oceanographic Center who arrived to begin studies of the coral reefs near Vera Cruz in

collaboration with Elvira Carvajal, Ph.D., director of the Vera Cruz Coral Reef National Park. Ph.D.s **Richard Spieler**, **Mahmood Shivji**, and **David Gilliam** and graduate students **Brian Walker** and **Vince Richards** arrived to spend several days diving on the reefs with staff members from the Coral Reef National Park and the Vera Cruz Aquarium. This project is supported by an NSU President's Faculty Research and Development Grant entitled "Assessment of the Fishes and Corals of Vera Cruz, Mexico: A Comparative Study" awarded in 2006 to Spieler and Carvajal. Keith's involvement included logistical support and translation services.

From November 5–9, **Keith** attended the joint annual meeting of the Sociedad Mexicana de Mastozoología Marina (SOMEMMA) and the Sociedad Latinoamericana de Especialistas de Mamíferos Acuáticos (SOLAMAC) in Mérida, Yuc., Mexico. He presented a poster entitled "Ecology and Conservation of Cetaceans in southern Tañon Strait, Philippines" with his collaborator Lemuel Aragonés, Ph.D., at the University of Miami and the University of the Philippines. This poster described the results of their studies of dolphins and whales in the Tañon Strait, which have been supported by an NSU President's Faculty Research and Development Grant awarded to Keith and Aragonés in 2003 and by grants from the Sea World/Busch Gardens Conservation Fund in 2005 and 2006. Keith was also an author on two other papers, the first entitled "Behavior and serum cortisol levels of the California sea lion (*Zalophus californianus*) in two zones of the rookery on Los Islotes, B.C.S., Mexico" presented by his collaborator Vanessa Labrada-Martagón from the Interdisciplinary Center for Marine Sciences in La Paz, B.C.S., Mexico. The second was entitled "Status and recovery of the Antillean manatee (*Trichechus manatus*) in the Alvarado Lagoon System, Vera Cruz, Mexico," and was presented by his collaborator Enrique Portilla, from the Institute of Biological Investigations at the University of Vera Cruz, Xalapa, Vera Cruz, Mexico.

**The International Society for Reef Studies European meeting** was held September 19–22 in Bremen, Germany, at the University of Bremen's Center for Tropical Marine Ecology (ZMT). Leading coral reef scientists and students were on hand to present and discuss scientific results, education, and outreach. Four scientists and six graduate students from NSUOC and its National Coral Reef Institute (NCRI) attended.



Dinner in Bremen, Germany (L–R): Abby Renegar, Melissa Phillips, Nicole Stephens, Vanessa Brinkhuis, Lance Jordan, Dave Gilliam, Alison Moulding, and Lindsey Klink

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The following oral and poster presentations were given:

In the session “State of Indian Ocean and adjacent sea-reefs”

- Associate Professor **Bernhard Riegl**, Ph.D., gave the oral presentation “Slow recovery of coral populations after three bleaching events (1996, 1998, 2002) in the southeastern Arabian Gulf (Abu Dhabi, Qatar),” co-authored by Sam Purkis<sup>1</sup>, Ph.D.; AL Cibahy A<sup>2</sup>; Abdel-Moeti A<sup>2</sup>; AL Mubarak R<sup>2</sup>; and Launay F<sup>3</sup>.

<sup>1</sup> National Coral Reef Institute, Nova Southeastern University

<sup>2</sup> Supreme Council for Environment and Natural Reserves

<sup>3</sup> Environment Agency of Abu Dhabi

In the session “Long-term large-scale observations of changes in reef communities II”

- Assistant Professor **Sam Purkis**, Ph.D., gave the oral presentation “Large-scale, multisite analysis of reef spatial architecture: Order out of the chaos,” co-authored by Kevin Kohler<sup>1</sup> M.S.; Rohmann SO<sup>2</sup>; and Bernhard Riegl<sup>1</sup>, Ph.D.

<sup>1</sup> National Coral Reef Institute, Nova Southeastern University

<sup>2</sup> U.S. National Oceanic and Atmospheric Administration

- Senior programmer **Kevin Kohler**, M.S., presented the poster “Development of a Hybrid Mapping Tool (HMT) for the characterization of coral reef landscapes,” co-authored by Sam Purkis<sup>1</sup>, Ph.D.; Rohmann SO<sup>2</sup>; and Bernhard Riegl<sup>1</sup>, Ph.D.

<sup>1</sup> National Coral Reef Institute, Nova Southeastern University

<sup>2</sup> U.S. National Oceanic and Atmospheric Administration

In the session “Reef rehabilitation”

- Research Scientist **Alison Moulding**, Ph.D., gave the oral presentation “Evaluation of methods to enhance reef restoration,” co-authored by David S. Gilliam<sup>1</sup>, Ph.D.; Vladimir Kosmynin<sup>2</sup>; and Richard E. Dodge<sup>1</sup>, Ph.D.

<sup>1</sup> National Coral Reef Institute, Nova Southeastern University

<sup>2</sup> State of Florida Department of Environmental Protection

- M.S. student Nicole Stephens presented the poster “Stony coral removal and transplantation associated with a shore protection project,” co-authored by



(L–R): Dave Gilliam, Abby Renegar, and Vladimir Kosmynin enjoy the view from a mountainside in the Alps overlooking Neuschwanstein Castle.

David S. Gilliam, Ph.D., and Richard E. Dodge, Ph.D.

In the session “Stress responses in corals”

- Ph.D. candidate **Abby Renegar** gave the oral presentation “Ultrastructure analysis in the elucidation of disease in reef-building corals,” co-authored by Patricia Blackwelder<sup>1</sup>, Ph.D.; Ritchie KB<sup>2</sup>; Gochfeld DJ<sup>3</sup>; Alison Moulding<sup>4</sup>, Ph.D.; Bernhard Riegl<sup>4</sup>, Ph.D.; Portnoy DA<sup>1</sup>, M.S. student; and Alsayegh H<sup>1</sup>, M.S. student.

<sup>1</sup> Nova Southeastern University

<sup>2</sup> Mote Marine Laboratory

<sup>3</sup> University of Mississippi

<sup>4</sup> National Coral Reef Institute, Nova Southeastern University

In the session “Reef protection and management”

- M.S. student **Lindsey Klink** presented the poster “An overview of international mooring buoy programs and the effect of mooring buoys on coral reefs offshore Broward County, Florida, USA,” co-authored by David S. Gilliam<sup>1</sup>, Ph.D.; David Stout<sup>2</sup>; and Richard E. Dodge<sup>1</sup>, Ph.D.

<sup>1</sup> National Coral Reef Institute, Nova Southeastern University

<sup>2</sup> Broward County Environmental Protection Department

In the session “Modern reef development and environmental impacts on carbonate production”

- Ph.D. candidate **Lance K.B. Jordan**, M.S., presented the poster “Characterization of sedimentation on a high-latitude reef system off Southeast Florida, USA,” co-authored by David S. Gilliam<sup>1</sup>, Ph.D.; Lindsey H. Klink<sup>1</sup>, M.S. student; Melissa Phillips<sup>1</sup>, M.S. student; Nicole Stephens<sup>1</sup>, M.S. student; Vanessa Brinkhuis<sup>1</sup>, M.S. student; Fisher LE<sup>2</sup>; and Richard E. Dodge<sup>1</sup>, Ph.D.

<sup>1</sup> National Coral Reef Institute, Nova Southeastern University

<sup>2</sup> Broward County Environmental Protection Department

In the session “Reef ecological processes”

- M.S. student **Melissa Phillips** presented the poster “Factors influencing southeast Florida coral reef community composition,” co-authored by David S. Gilliam<sup>1</sup>, Ph.D.; Lance K.B. Jordan<sup>1</sup>, M.S.; Richard E. Dodge<sup>1</sup>, Ph.D.; and Lou Fisher<sup>2</sup>.

<sup>1</sup> National Coral Reef Institute, Nova Southeastern University

<sup>2</sup> Broward County Environmental Protection Department

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Assistant Professor **David S. Gilliam**, Ph.D., and M.S. student **Vanessa Brinkhuis** of the National Coral Reef Institute were also in attendance.

NCRI researchers **Sam Purkis**, Ph.D., and **Kevin Kohler**, senior programmer, recently visited the St. Petersburg office of the United States Geological Survey (USGS) to explore collaborative opportunities. Three possible projects discussed were 1) the use of NCRI-developed spatial algorithms to characterize land loss in the Mississippi delta, with particular emphasis on post-Katrina impacts; 2) the creation of a full-time NSU student technician position to work up USGS geographic products; and 3) the adaptation of NCRI-developed Coral Point Count (CPCe) software to support classification of photographs acquired using the USGS Along-Track Reef-Imaging System (ATRIS). The meetings paved the way for an expanded collaboration between NCRI and the USGS in the form of innovative data products and enhanced analysis capabilities.

Private and government researchers from Florida, the Caribbean, and the U.S. Pacific islands converged on St. Thomas, VI, for NOAA's U.S. Coral Reef Task Force October 25–27. Richard Dodge, Ph.D., executive director of NSUOC's National Coral Reef Institute (NCRI), was among those on hand to discuss the weakening of coral reefs. He was one of several scientists quoted in the South Florida *Sun-Sentinel* explaining damage that has been done to the reefs in south Florida. All the researchers were concerned about rising sea temperatures and predicted that 60 percent of the world's coral could disappear within a quarter century. 🐟



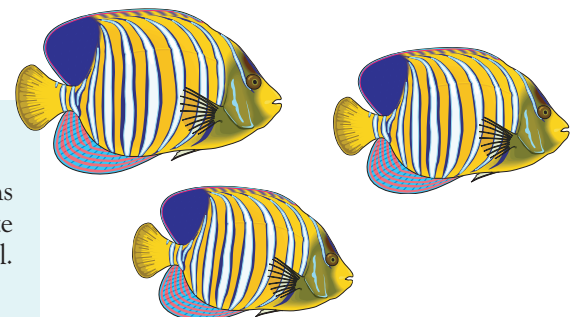
(L–R): Dick Dodge, Bernard Riegl, Dave Hilmer (NOAA), Mahmood Shivji, and Dave Gilliam posing on the beach in St. Thomas



Wendy Wood, coordinator, Administrative Operations for NCRI, standing next to the NCRI display at the U.S. Coral Reef Task Force meeting

## Publications

**Kohler, K.E.** and **S.M. Gill**. 2006. Coral Point Count with Excel extensions (CPCe): A Visual Basic program for the determination of coral and substrate coverage using random point count methodology. *Computers and Geosciences*, Vol. 32, No. 9, pp. 1259–1269. DOI: 10.1016/j.cageo.2005.11.009 🐟



# MASTERCURRENTS

## INSTITUTE OF MARINE AND COASTAL STUDIES

### Winter Term Courses

#### Core Course

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

This course covers basic ocean physics. Topics include the physical properties of seawater; temperature and salinity structure of the oceans; major current patterns; waves and tides; and influences of the wind, El Niño, and tropical oceanography.

**Lab Fee: \$15.** Instructor: Alexander Soloviev, Ph.D. Meets: Tuesdays.

#### Electives

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

Deals with various forms of environmental pollution as they affect both the land and maritime environment. Focuses 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: \$15.** Instructor: Don McCorquodale, Ph.D. Meets: Mondays.

##### Marine Mammals OCMB-6340/MEVS-5017

This course provides an overview of the anatomy, biomedicine, evolution, husbandry, natural history, pathology, and physiology of the cetaceans, pinnipeds, sirenians, and allies. The course consists of lectures, laboratory exercises, field trips, and a research paper.

**Lab Fee: \$25.** Instructor: Edward Keith, Ph.D. Meets: Wednesdays.

##### Ecology and Evolution of Invasive Species, OCMB-6240/MEVS-5125/ CZMT-0705

Biological invasions are recognized as one of the most important agents of human-driven global change. Invasions are responsible for losses in biodiversity and important changes in ecological processes and ecosystem

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 \$639 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 2–March 23, 2007 (unless otherwise specified). Registration (\$25 nonrefundable fee) is from December 4, 2006–January 5, 2007. (This is an early start date due to the end of year holidays.) For further information, call Richard Spieler or Melissa Dore at (954) 262-3610 or 800-396-2326, or email [imcs@nsu.nova.edu](mailto:imcs@nsu.nova.edu). More information can be found at the Web site: [www.nova.edu/ocean](http://www.nova.edu/ocean).

function. Invasive species also provide scientists with great opportunities to test ecological and evolutionary theory. When species are introduced or translocated, they disrupt natural communities, creating and experiencing novel conditions, species interactions, and selection pressures. The objective of this course is to provide students with an overview of the key ecological, evolutionary, genetic, and behavioral questions surrounding the study of invasive species. Emphasis will be placed on the current literature examining how species invade, interact, and impact recipient communities.

**Lab Fee: \$15.** Instructor: Jennifer Rehage, Ph.D. Meets: Thursdays.

##### 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: \$25.** Instructor: James Thomas, Ph.D. Meets: Wednesdays, Schure Conference Room.

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## Two Week Afternoon Course

### Coral Reef Geology and Evolution OCMB-7015

Throughout earth history, bioconstructions, reefs being the most noticeable, have been focal points of organismal evolution, which is recorded in the fossil record as well as the growth fabrics and lithologies of the reef rocks. Organism-environment and environment-sedimentology feedbacks create distinct signatures that allow us to gain detailed insight into the ecological functioning of reef communities long gone and the environment they lived in—if only we can make the rocks talk.

**Lab Fee: \$45.** Instructor: Bernhard Riegl, Ph.D., Meets: March 5–16, 2007, Monday–Friday 1:00–5:00 p.m.

## Distance Education—Graduate and Undergraduate

### Environmental Sustainability CZMT-0665

This Web-based distance education course highlights more than 25 years of international discussion, debate, and ideas with regard to the state of the environment and our actions towards it. Key considerations and voices are included, from both North and South. This course examines, in a cross-cutting approach, the environmental and social issues that effect our lives. Students become part of an international learning community, by participating in online closed discussions. The emphasis is on presenting an international range of perspectives and case studies, linking the issues and ideas to up-to-the-moment occurrences as they effect students, when they happen and wherever they are.

Instructor: Jane Dougan

### International Integrated Coastal Zone Management, CZMT-0614

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. They will examine seven case studies that will help to bring alive the grave problems of mismanaging coastal and economic resources such as the Black Sea, Newfoundland, the Louisiana Region of 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, Ph.D.

### Marine Mammal Management CZMT-0636

An interdisciplinary approach to examining the state of the relationship between marine mammals, people, and the environment as it has evolved over time, as it stands today, and as it is likely to be for the future, whether by default or design. The marine mammal and environment relationship is extremely complex and fluid. It changes depending upon place and time, and the rate of this change is accelerating with related developments such as population and economic growth, technological capacity, and our expanding use of the world’s oceans and waterways. We will look at the position and influence of marine mammals within the environment, as well as the development of physical conditions, values, and economic activities that have led to their present situation.

Instructor: Keith Ronald, Ph.D.

### Marine Chemistry\*\* OCOR-5605

A Web-based study of the properties, composition, and origin of seawater and the importance, distribution, relationships, and cycling of the major inorganic nutrients, dissolved gases, carbonate species, trace metals, radiotracers, and organic compounds. The course is designed for students pursuing careers in marine biology or coastal zone management. It includes unit quizzes, online discussions, a literature research paper, and a final exam.

Instructor: Curt Burney, Ph.D.

\*\* For Coastal Zone Management and Graduate Certificate students only ➡

## Out with the old, in with the new!

Another icon of the Oceanographic Center is gone. The last of five or six identical trailers that were put up around 1970 served many functions on the OC campus. Its many uses included serving as an electronics lab, the Air Sea Survival classroom with Wayne Williams’s office, and then, as student offices. It’s most recent configuration was the turtle office, but with storage and dive gear on the other side. With space at a premium, the trailer was replaced with a large, six-unit modular building.

Due to hurricane damage from the last two years, the houseboat was damaged and removed, which meant all the students with offices there had to find space elsewhere, including the Forman building kitchen. The roomy, new modular will house offices and labs. ➡



Old trailer



Gone!



The new modular was set up on the site of the old trailer.

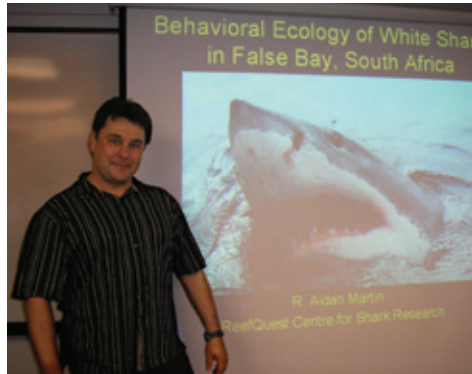
## Seminars and Defenses

### SEMINAR

**R. Aidan Martin**, Ph.D., director of the ReefQuest Centre for Shark Research, and research associate of the Zoology Department of the University of British Columbia, gave a seminar titled, “The behavioral ecology of white sharks in South Africa” on October 30.

Martin is an adjunct professor at NSUOC who is an internationally recognized expert in shark biology and behavior. He has studied elasmobranch fishes (sharks and rays) for more than 30 years in some 40 countries or island states. His main areas of research are the evolution, phyletic relationships, functional morphology, life history, behavioral ecology, distribution, and conservation of elasmobranchs.

A prolific writer and illustrator, Martin has published more than 130 scientific and popular articles and 4 books. He has also organized international scientific symposia on the biology of deep-sea cartilaginous fishes and the biology and conservation of freshwater elasmobranchs.



**Mikhail Gilman**, Ph.D., Moscow Center for Continuous Math Education, gave a talk on November 10, which was part of the Physical Oceanography Seminar Series. His talk was titled, “Radar imaging of the sea surface: remote sensing the processing of radar images and the ‘experimental’ approach to remote sensing.”

### THESIS

**Adrienne Patricia Carter**, “A spectral modeling strategy for the analysis of mixed pixel (Broward County, Florida).” Committee: Samuel Purkis, Ph.D.; Richard

Dodge, Ph.D.; and James Goodman, Ph.D. (University of Puerto Rico). Oct. 6.

**Elizabeth Anne Lacey**, “Ecological assessment of the coral reef community in northeastern Diego Garcia, British Indian Ocean Territory (BIOT) archipelago.” Committee: Bernhard Riegl, Ph.D.; Samuel Purkis, Ph.D.; and Emily Schmitt, Ph.D. Oct. 13.

### CAPSTONE

**Rachel Ariane Sayer**, “A historical review and present status of marine mammal Morbillivirus” Committee: Keith Ronald, Ph.D., and Curtis Burney, Ph.D. Sept. 14.

**Lauren S. Floyd**, “The biology and ecology of shallow tropical western Atlantic Gorgonians.” Committee: David Gilliam, Ph.D., and Howard Lasker, Ph.D. Oct. 4.

**Angela L. Delaney**, “Issues concerning endocrine disrupter chemicals (EDCs) associated with coastal areas.” Committee: Don McCorquodale, Ph.D., and Curt Burney, Ph.D. Nov. 7.

## Alumni News

**James Sulikowski**, Ph.D. (M.S. 1996), is an assistant professor at the University of New England and the resident ichthyologist and area shark specialist. Sulikowski’s research focuses on the biology and physiology of fish. This research includes aspects of fisheries biology such as reproduction, maturity and age, and growth in elasmobranchs. Recent interests have also included the physiological responses to stress and how this influences by-catch mortality and aquaculture practices in teleosts. Sulikowski’s dissertation research at the University of New Hampshire examined the age, growth, and reproductive biology of the winter skate in the Western Gulf of Maine and was aimed, not only to learn more about the biology of this species, but also to contribute to the development of a rational strategy to prevent the over-exploitation of this skate stock in the northwest Atlantic. His postdoctoral research used physiological techniques to improve stock enhancement methods for winter flounder

in southern New Hampshire. Along with those accomplishments, he holds two master’s degrees—one from NSUOC and the other from DePaul University. Sulikowski’s thesis at NSUOC was titled, “A preliminary study of the population density, size distribution, age, and growth of the stingray, *Urolophusjamaicensis*, in Southeastern Florida.”

Sulikowski believes that the collection of basic life history information—such as age-length relationship, growth rates, age at maturity, and fecundity—are crucial to understanding the population dynamics, and hence to successful management of any fish species. Obtaining this knowledge becomes even more crucial for organisms that have slow rates of growth, low fecundity, and take many years to reach sexual maturity. When this information is coupled with by-catch mortality estimates, our ability to evaluate how a population may respond to both indirect and direct fishing pressure at different levels and on different age classes or groups of age classes becomes much more substantial. One portion of Sulikowski’s current research

focuses on acquiring this knowledge in order to gain a better understanding of the susceptibility of a species to overfishing.

Sulikowski lives in Saco, Maine, with his wife and his two children, Paiten Grace and Addisen Faith. 🐟



James Sulikowski, holding thorny ray found in Gulf of Maine in October

## Flotsam and Jetsam

On November 4, participants from NSUOC joined with thousands of people as far away as Australia and London in Greenpeace's **Project Hot Seat** to bring attention to global warming. Librarian

**Kathy Maxson** and her grandson, Dylan; M.S. students **Erin Hodel**, **Gabriela Wisnieski**, and **Melissa DiBiase**; and recent graduate **Adirenne Carter** sat in the sand at John U. Lloyd Park to help

form the two pictures shown below. The area marked in the first picture is where the six sat as a helicopter hovered, taking the pictures. The designs were created by human aerial artist Jon Quiggley.



View from the sky—The image depicts a person underwater holding an umbrella. (Photo by Robert Visser, Greenpeace)



A closer look at our OSC people in the umbrella picture above



Outline of Florida being washed over by the ocean. Surfers make up the Florida Keys (Photo by Robert Visser, Greenpeace).

The **Fall Student Orientation/ Barbeque** for new and old students was held on September 23. Sixty new students were registered for the fall term. **Richard Spieler**, Ph.D., director of the program, welcomed them at their orientation, which was followed by tours of the laboratory and a brief introduction to the library. We give a warm welcome to them all! 🍀



(L-R): Brian Buskirk and Kirk Kilfoyle manning the grills while new student, Anastasios Stathakopoulos, waits to be served



The buffet table



The party was still going strong, even after the sun went down.



NSUOC's entry in the main campus Halloween costume party held at the University Center. (L-R) Sharks: Peggy Oelrich (nurse), Kathy Maxson (cat), Wendy Wood (hammerhead), Joanna Walczack (lemon), Nicole Dean (tiger), Greg Jacoski (bull), and Missy Dore (angel).



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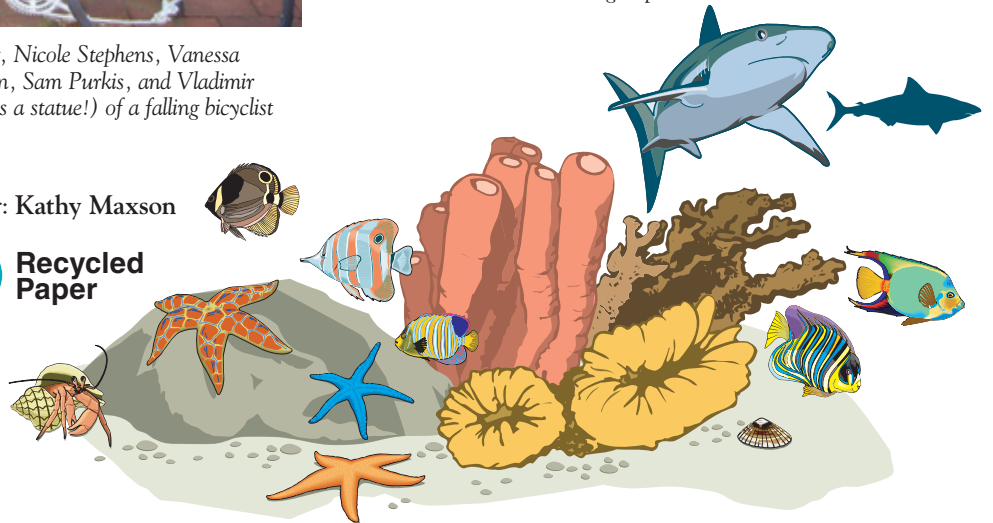
(L-R): Dave Gilliam, Abby Renegar, Alison Moulding, Nicole Stephens, Vanessa Brinkhuis, Melissa Phillips, Lindsey Klink, Lance Jordan, Sam Purkis, and Vladimir Kosmyrin posing in Bremen, Germany, by a statue (yes a statue!) of a falling bicyclist



One of 101 cow statues that can be found in Madison, Wisconsin. This one is painted with a picture of the Manona Center, where the 2006 Mercury Conference (attended by Edward Keith) was held. CowParade® is the world's largest public art event.

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