Another Banner Year for SMEE

Ecosystems Exhibit celebrates 5 years... and much more!

Laura Diederick, Marine Biology Educator

It was a busy year around the Smithsonian Marine Ecosystems Exhibit (SMEE) and there is much to show for it! New exhibits were completed, new signage was installed, new programs and events were initiated… and all this before the Exhibit celebrated its five year anniversary at the end of August.

With the approaching threat of what became Tropical Storm Ernesto, the reception in honor of SMEE’s anniversary was pushed back to September 13. This, however, did little to dampen the spirit of the festivities. Over 80 supporters from throughout the community, including Fort Pierce mayor, Bob Benton, city and county commissioners, and Representative Gayle Harrell, came together to applaud the efforts of the many individuals who worked so hard to bring the Exhibit to Fort Pierce and who have continually supported the expansion and improvement of the educational opportunities available.

Attendees viewed several exhibits and displays new to SMEE this year. Aware that many first-time visitors do not know of the connection between the Smithsonian Marine Station (SMS) and the Exhibit, SMEE education staff set out to resolve the unfortunate dilemma. Current research projects being conducted by SMS scientists are now showcased in the classroom and also in a large display cabinet near the building entrance. Other exhibits completed in 2006 include a sea turtle display funded by the Sea Turtle Grants Program, a traveling outreach piece on a NOAA Research Cruise to study deep coral ecosystems around Florida, and the life-size recreation of a deepwater Oculina Reef, complete with informational signage and interactive, flip-up quizzes.

Exhibitry isn’t all that is new around SMEE, however. Several new programs were implemented and proved extremely popular. In an effort to accommodate the seasonal residents in the community, SMEE began offering “seniors only” versions of the heavily attended “Breakfast with the Animals” programs several weekdays in February and March. Although IDs were not required for entrance, the “ooohs”, “ahhhs”, and giggling throughout these programs left SMEE staff questioning the “senior” status of some participants. It’s true that you are only as old as you feel, and a trip to SMEE will bring out the child in anyone!

The first Thursday in June is World Oceans Day and SMEE made a splash along the Treasure Coast by celebrating this unofficial holiday with fervor. Just fewer than 200 visitors came out to enjoy hands-on activities, guided tours, touch tank talks, and animal feedings. The overwhelming response for the event guaranteed a repeat in 2007!

The last, and most exciting, of the new programs was the first-ever Smithsonian Marine Science Camp, held the last week of June. Fifteen marine enthusiasts ages 8 to 12 enjoyed a week of snorkeling, seining, kayaking and more. “My son wanted me to hurry driving to camp each morning,” one camper’s mother reported, “he said that he didn’t want to miss a minute [of camp].”

With all the new programs and exhibits available at SMEE, visitors won’t want to miss a minute of the excitement either. For more information on all the educational opportunities available for 2007, including monthly family-friendly programs, be sure to stay tuned to future newsletters or visit the Exhibit’s website at www.sms.si.edu/smeec.

SMS Research Technician Woody Lee deploys a Secchi disc from the R/V Sunburst to show SMEE summer campers one way scientists measure water clarity.

SMEE supporters enjoy an after hours glimpse at the Mangrove Ecosystem during the anniversary reception.
Ocean Warming and Coral Larvae Health

Cliff Ross, Postdoctoral Fellow

As coral reefs decline on a global scale it is important to understand exactly how environmental stresses influence their survival and reproduction. Many stresses, such as an increase in ocean temperature or anthropogenic pollution, have a direct affect on coral reef community structure by causing mortality and loss of reproductive viability.

In recent years, much progress has been made in identifying the biochemical processes that are disrupted in adult corals when subjected to environmental stressors. However, it is not understood exactly how these stressors affect the larvae. The early stages of a coral life cycle is planktonic, therefore larvae are likely exposed to multiple stressors in the water column before they settle to the benthos and metamorphose.

In conjunction with Dr. Valerie Paul (SMS) and her team of researchers, we recently conducted a study in an effort to better understand the affect of heat on coral larvae at the cellular level using the coral Porites astreoides as a model system. Our results demonstrate that even a short term exposure of larvae to elevated temperatures (3.5°C above ambient ocean temperature for 4.5 hours) significantly reduced larvae settlement and increased mortality. Using commercially available biotechnology kits to quantify the “state of stress” of coral larvae, we found that the larvae responded by mass-producing two major antioxidant enzymes. Typically, such a drastic increase in the production of these enzymes has been used as a biomarker of pathogenosis, or disease development, of many human maladies. Now for the first time we can use this technology to evaluate the health of coral larvae.

Marine Station Honors Dr. Mary Rice

Julie Piraino, Laboratory Manager

On Friday October 27, 2006, the Smithsonian Marine Station honored its former director, Mary E. Rice, by hosting a scientific symposium on “The Evolution and Development of Marine Invertebrates,” Mary’s field of study for many years.

Dr. Rice retired from the Smithsonian in 2002 after 36 years of service, the bulk of which she spent in Fort Pierce. She now continues her work on sipunculans (peanut worms) and other marine invertebrates as an Emeritus Research Scientist.

Mary celebrated her 80th birthday earlier this year and the staff at the Marine Station knew the best way to honor her on her milestone birthday was to follow the long-standing mission of the Smithsonian by adding to the “increase and diffusion of knowledge.” Accordingly, many members of the Smithsonian research community, former SMS postdoctoral fellows, Mary’s colleagues from around the U.S., and local students and researchers convened at the Indian River Community College for a full day of presentations on a variety of topics in marine science. Approximately 80 people attended the 14 talks and evening banquet, and over 100 symposium participants, friends and local dignitaries honored Dr. Rice at the reception held at the Smithsonian Marine Ecosystems Exhibit, where Fort Pierce Mayor Bob Benton awarded her with a key to the city. It was an invaluable opportunity to make and renew acquaintances and to exchange a wealth of information on current studies. The event was generously funded by the Sumner Gerard Foundation.
Friends of SMS Visit Smithsonian Behind-the-Scenes in D.C.

In May, Peter and Jeanne Tyson of Vero Beach spearheaded the formation of the “Friends of the Smithsonian Marine Station” and began brainstorming ways to increase funding for research and educational activities at SMS. The kick-off fundraiser was a drawing that sent winners Roger and Marjorie Schultz of Miami Beach on a four-day, behind-the-scenes tour of the Smithsonian in Washington, D.C. Accompanied by SMS Director Valerie Paul and the Tysons, highlights included the National Air and Space Museum, the newly renovated Portrait Gallery, the National Museum of Natural History (NMNH) and an afternoon at the National Zoo to see the new panda exhibit. Stay tuned for details on the 2007 drawing!

SMS Predoc Receives Top Honors

Governor Jeb Bush was truly impressed with SMS Predoctoral Fellow Theresa Meickle’s poster entitled “Isolation of Bioactive Compounds from Marine Cyanobacteria from Florida”! Theresa was one of only three individuals to be awarded Best Student Poster at the Florida Marine Biotechnology Summit V in Gainesville on November 14-15, 2006. Her work is being supported by the Florida Sea Grant College Program. Congratulations Theresa!

Karen Arthur received a PhD from the University of Queensland in Australia, studying the impacts of cyanobacteria on green sea turtles. Her work as a Postdoctoral Fellow at SMS will continue her work with *Lyngbya* blooms here in Florida, tracing the movement of their natural toxins through food chains.

Cris Ryan joins the Marine Station as the new Marine Biology Educator at the Smithsonian Marine Ecosystems Exhibit. Cris previously worked at the Harbor Branch Oceanographic Institution with the marine education program leading student groups and assisting with summer camp.

Senior Postdoctoral Fellow Sarath Gunasekera comes to SMS from Harbor Branch Oceanographic Institution. As a senior scientist with their Division of Biomedical Marine Research, Sarath studied marine natural products chemistry and will continue his efforts here at the Marine Station.

Valerie Paul received an award of $54,000 from the NOAA Ecology and Oceanography of Harmful Algal Blooms program (through the University of North Carolina at Chapel Hill) for the continuing project, “LyngbyaHAB: Ecology of Toxic Marine Cyanobacteria *Lyngbya spp.* in Florida Estuarine and Coastal Waters.”

An award of $13,500 was received from The Link Foundation for three marine science graduate student fellowships in 2006 and 2007.

An award of $30,000 was received from the School Board of St. Lucie County for the project, “Developing a Collaborative Education Program with the School Board of St. Lucie County” to support the dual enrollment program courses in marine science.

Selected Publications


Exotic Species Invade IRL Inventory

Laura Diederick, Marine Biology Educator

The Smithsonian Marine Station became the repository for the Indian River Lagoon (IRL) Species Inventory in 1997, and since that time has taken great strides to expand the inventory’s content, improve its utility and increase its usage, and has been monumentally successful in each aspect. Over 280 expanded species reports and a field guide of over 300 species are now available, an additional 700 IRL species have been documented, a library of over 2,000 scientific references and 5,000 photographs was compiled, and an interactive glossary was added, resulting in an average of over 15,000 additional visitors to the website each month. Such an impressive list of accomplishments would make any parent organization proud, however, that doesn’t mean the wind of change is blowing any lighter.

Through the ongoing support of the Indian River Lagoon National Estuary Program, the IRL Species Inventory has become the single most authoritative source of IRL species information available on the internet today and the Marine Station will soon be bringing an innovative dimension to the inventory by adding a strong focus on invasive species. While many people are aware that the remarkably high biodiversity of the IRL is largely due to the overlap of the temperate and subtropical climate zones, few realize how susceptible the ecosystem is to biologically invasive species. The same elements of Florida living that are attractive to people – warm weather, mild winters, expansive waterways – are also the reasons that non-native plants and animals are able to easily enter and take up residence in the lagoon. When organisms are introduced outside their native ranges, they may thrive in the absence of natural predators and diseases, and potentially out-compete native wildlife for food and space, disrupt food chains, or introduce diseases.

The topic of invasive species is a critical one and has the potential to affect both commercial industries and individuals throughout the state. Prevention and monitoring of marine biological invasions are two ways that everyone can help control exotics. For more information on this ever-increasing problem, visit the IRL Species Inventory at: http://www.sms.si.edu/irlspec/index.htm. SMS