Throughout its history, the research efforts of scientists at the Smithsonian Marine Station (SMS) have supported the mission of the National Museum of Natural History (NMNH), its administrative home within the Smithsonian, and thus the Institution as a whole. SMS is also a member of the Smithsonian Marine Science Network (MSN), providing a vital link between temperate and tropical research stations. With the advent of a new pan-Institution strategic plan this past year, SMS was afforded the opportunity to highlight the value of its research programs to the broader Smithsonian community, and scientists and staff did not disappoint.

The framework of the new strategic plan is made up of four areas of focus, what the Institution has termed “Grand Challenges.” As would be expected, each Grand Challenge is broad in scope and critical to addressing issues facing the world today. The strengths of SMS and its research programs leave the station poised to make significant contributions in “Understanding and Sustaining a Biodiverse Planet.”

One aspect outlined in this Challenge aims at quantifying the planet’s biodiversity and comparing such across geographical regions. SMS Director, Dr. Valerie Paul, and Dr. Chris Meyer, Curator of Mollusca at NMNH, are nearing the end of a year-long project in which their team deployed standardized collecting modules throughout the Indian River Lagoon (IRL) to assess the diversity of invertebrates. Units were retrieved after six and twelve months underwater and all the organisms living in and on them were counted and catalogued. Similar projects using the same modules have been conducted around the globe, providing a baseline of comparison among the different sites.

Increasing knowledge about the effects climate change has on both individual species and ecosystem functions is another objective outlined under this Challenge. Carlos Gomez Soto and Jonathan Craft, both former Link Fellows at SMS while working on their Masters degrees, are working with Dr. Paul to conduct studies on how ocean acidification, the decrease of the pH of seawater as a result of increased CO₂ absorption, affects the calcification of several species of soft corals and algae. Many marine plants and animals construct calcium carbonate “skeletons” for protection, absorbing dissolved minerals from the water column. Results show that more acidic seawater reduces the ability of the soft corals and the green algae to calcify. Studies are underway to also see how the natural chemical defenses of these organisms and their survival might be affected.

In October, the Smithsonian’s Under Secretary for Science, Dr. Eva Pell, visited SMS, along with Dr. Cristián Samper, Director of NMNH, and Dr. Jonathan Coddington, Associate Director for Research and Collections at NMNH. Dr. Pell provided insight into the development of the strategic plan, stressed the value of pursuing the Grand Challenges, and reaffirmed the significant contributions SMS can and will have on meeting the Institution’s objectives.

While 2010 was a productive year at SMS, the research and education programs continue to set ever more ambitious goals. In addition to those studies outlined here, projects in ecosystem monitoring, larval development and life histories, ecological functions of chemical products, and a statewide education network have been and will remain important in the Smithsonian’s overall mission of “the increase and diffusion of knowledge.”

To view the Smithsonian’s 5-year strategic plan, visit www.si.edu/about and click on the “Strategic Plan” link.
New Waves in Marine Science Education
Laura Diederick, Education Specialist

A new grant from the National Science Foundation (NSF), “COSEE Florida: Water as Habitat,” awarded to Dr. Valerie Paul, is part of a regional collaboration with Indian River State College, Ocean Research and Conservation Association, and Florida Institute of Technology and will provide innovative education experiences to a wide range of audiences.

COSEE (Centers for Ocean Science Education Excellence) is a national NSF-funded network of ocean scientists, universities and informal science education facilities. A major objective of the network is to bring current research in marine science to a broad audience through ocean scientist-educator partnerships.

In collaboration with the other regional partners, staff at SMS will be offering community lectures and hands-on teacher workshops, as well as supporting a statewide learning community. Other initiatives supported by the new COSEE-Florida include training for ocean scientists and the creation of a marine science track for undergraduates pursuing a degree in science education. SMS

Teacher workshops will give educators direct contact with researchers and hands-on experience with science.

SMS Welcomes Friends, New and Old

The staff of SMS extends a warm welcome and a big “thank you” to new and renewing members of Friends of the Smithsonian Marine Station who provide critical support for research and educational programs. Members receive SMS News, invitations to lectures and special events, as well as additional benefits. For information on how to become a Friend, call 772.462.0977.

Robert & Frances Bangert - Hugh & Carolyn Benninger - David & Ursula Blackburn
Eugene Detmer, Jr - Marilyn Link - Whitney & Elizabeth MacMillan - Eleanor Sexton - Sumner Gerard Foundation - Peter & Jeanne Tyson

Busy First Year for New CCRE Staff
M. Scott Jones, CCRE Program Coordinator

It has been an exciting year for the Caribbean Coral Reef Ecosystems (CCRE) program under the direction of the new management team. Dr. Valerie Paul took over as CCRE director in October 2009 and was joined by Station Manager Zachary Foltz in December and Program Coordinator Scott Jones in February 2010.

Despite this administrative transition, scientific activities at Carrie Bow Cay did not slow down, with over 60 scientists visiting the field station on the Belize barrier reef. The island also hosted station managers, photographers, and an author, while numerous groups of students, teachers, and tourists were treated to tours and demonstrations by station managers and visiting researchers. Notable guests included U.S. Ambassador Vinai Thummalapally and five others from the U.S. Embassy in Belize on August 30, 2010. This distinguished group was greeted at Carrie Bow Cay by Valerie Paul, Zachary Foltz, and Melanie McField, after which they toured the research facilities and went snorkeling on the reef. The ambassador’s visit presented a valuable opportunity to discuss the variety of conservation issues facing the barrier reef and the importance of the research conducted at Carrie Bow Cay.

The Mesoamerican Barrier Reef in Belize has enormous ecological and socio-economic value to the region. The government of Belize has taken a number of measures in response to the threats posed by overfishing, including the establishment of the South Water Cay Marine Reserve (www.swcmr.org), an 117,878-acre protected area. A substantial portion of the reserve, including the area surrounding Carrie Bow Cay, is completely off-limits to fishing. The CCRE program is taking advantage of this transition in ecosystem management by developing a reef monitoring initiative that will track the status of threatened coral species, follow the dynamics of coral disease, and evaluate the effects of such a reserve on the whole coral reef ecosystem. The opportunity to monitor changes on the reef is one way the CCRE program staff can answer the Smithsonian Institution’s Grand Challenge of “understanding and sustaining a biodiverse planet.” Visit CCRE’s website at www.ccre.si.edu for more information and to view the 2010 Annual Report. SMS
New Grants
Valerie Paul received an award of $124,288 from National Science Foundation for the project, “COSEE Florida: Water as Habitat”.
Valerie Paul received an award of $26,050 from South Florida Water Management District for the project, “Indian River Lagoon Species Inventory FY2011”.
Melanie McField received an award of $81,909 from The Summit Foundation for the project, “Healthy Reefs for Healthy People III”.
Bjorn Tunberg received an award of $38,907 from St. Johns River Water Management District for the project, “Benthic Infaunal Monitoring in the Indian River Lagoon FY 2011”.

Selected Publications
Upgrades and Enhancements Abound at SMEE

Cristin Ryan, Marine Biology Educator

Transformations of our public space continue at the Smithsonian Marine Ecosystems Exhibit (SMEE). Earlier this year, the classroom activities area underwent a family-friendly facelift with the addition of puzzles, coloring stations, animal models and more. This space now has freshly painted walls and new flooring to create an even more welcoming feel for visitors. The Pacific Coral Reef display, home to “Nemo” and “Dory,” was recently upgraded to a larger tank to allow more space for multiple species of corals that have grown so much they had become overcrowded in their old home.

SMEE closed to the public for a week in November so that staff could complete some long awaited work on the Caribbean Coral Reef Model Ecosystem. Exhibit Manager Bill Hoffman and Ecosystems Technician Bryan Olson, along with a dedicated staff of volunteers, took on the arduous task of dismantling the top section of the reef, carefully pulling out each individual rock and coral colony and placing them gently in refuge tanks and troughs of seawater so as not to disturb the fragile organisms. “Dismantling and rebuilding this structure was essential to reestablishing diversity on the top section of the reef,” said Bill. “When the tank was established almost 10 years ago, an encrusting gorgonian was added to act as living cement and hold the reef together by forming a crust over individual rocks. This organism has been a little too successful over the years and started to outcompete several other corals in the tank, leading to decreased diversity. By removing the rocks covered with the gorgonian, we are acting as a ‘human hurricane’ to disrupt the system and prevent one organism from dominating the area.”

SMEE also continues to expand the volunteer program, setting a new record of hours contributed with more than 3,500 volunteer hours logged in 2010. Volunteers provide essential support to education and husbandry staff and also assist with behind-the-scenes projects from photography to office duties. For more information, please contact Cristin Ryan at 772-465-3271 or ryanc@si.edu.