



Florida Sea Grant College Program
Directory of Research and Programs

2008
through
2010



Florida Sea Grant is a statewide program based at the University of Florida that partners NOAA Ocean and Atmospheric Research with Florida universities, marine research organizations, businesses, governments and citizens.

Florida's incomparably beautiful coast supports a broad range of commercial and recreational activities. Through its Web site (www.flseagrant.org), Florida Sea Grant informs scientists, resource managers, educators, citizens and communities of Florida's important opportunities and issues related to the economic and environmental sustainability of our coast.

The Web site gives those who manage, use and enjoy coastal resources access to current research, educational programs and timely publications on coastal topics. Emphasis is placed on issues considered most critical to the state's future, including fisheries, seafood safety, the protection of water quality and coastal habitats, aquaculture, boating and waterways, and storm preparedness.

The site also provides access to tools and materials that support the scientific research of its investigators. Funded researchers or those seeking funding may use the Web site to find new opportunities, proposal guidelines, and interactive forms related to the grant application process. Researchers may also review current research profiles, and the strategic issues that drive the research funding process.

Florida Sea Grant online provides support to undergraduate and graduate students by listing scholarship and fellowship opportunities funded through Florida Sea Grant, the National Sea Grant program, NOAA and philanthropic organizations in the state. There is a continually updated directory of marine education and research organizations in Florida that can provide information about careers in marine science.

Sea Grant publications are regularly published in full-text format on its Web site and available for download. Links to the National Sea Grant's repository of electronic publications give visitors access not only to the entire Florida Sea Grant library, but to the thousands of publications of the 31 other Sea Grant programs. Selected Florida Sea Grant publications may now also be accessed through the University of Florida's Electronic Data Information Source, or EDIS.

Cover photos (top to bottom, left to right): Charlotte Harbor boating (Florida Sea Grant); Underwater growth on artificial reef (Florida Sea Grant); Scalloping in Homosassa (Citrus County Tourism); Fort Lauderdale sunset (UF/IFAS).

Back cover: Great blue heron (UF/IFAS); Sunray venus clam aquaculture (Leslie Sturmer).



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Table of Contents

Introduction	2
Participating Institutions	3
Strategic Focus Areas.....	4
Planning for the Future.....	4
Program Management.....	6
Advisory Council.....	6
Campus Coordinators.....	6
Research.....	8
Aquaculture.....	10
Biotechnology.....	14
Coastal Hazards.....	15
Ecosystem Health.....	17
Fisheries	19
Seafood Safety	20
Waterfront Communities.....	23
Extension	23
Communications	25
Education.....	25
Florida Sea Grant Contact Information.....	28
Florida Sea Grant Online	IFC
How You Can Invest in Florida’s Coast	IBC

Introduction

With over 1,350 miles of coastline and nearly 80% of its 18 million residents living within 50 miles of either shore, Florida truly is a state whose future depends on how people interact with the coastal lands and sea. Over 78 million visitors come to Florida each year to enjoy our beautiful beaches, diverse fisheries, coral reefs, recreational boating opportunities, and the many other marine resources the state has to offer. People also exert considerable pressure on the coastal and marine resources. Thus there is a need for objective information to guide people's actions and support resource managers to help sustain our coasts. Florida Sea Grant partners with research institutions, universities, state and federal agencies, businesses and citizens to carry out its mission, which is:

To enhance the practical use and conservation
of coastal and marine resources in Florida
to create a sustainable economy and environment.

The Sea Grant partnership, linking university research with the public's wise use of coastal and marine resources, was conceived nationally in 1966 by federal legislation creating the National Sea Grant College Program. Today, 32 Sea Grant programs, based within the academic structures of their coastal states, form a nation-wide network.

Florida Sea Grant addresses problems that are important both nationally and in Florida. Solving these problems typically requires some combination of research, education, extension or technology transfer for successful resolution. Florida Sea Grant has a demonstrated record of success in designing the best possible solutions for coastal and marine issues.

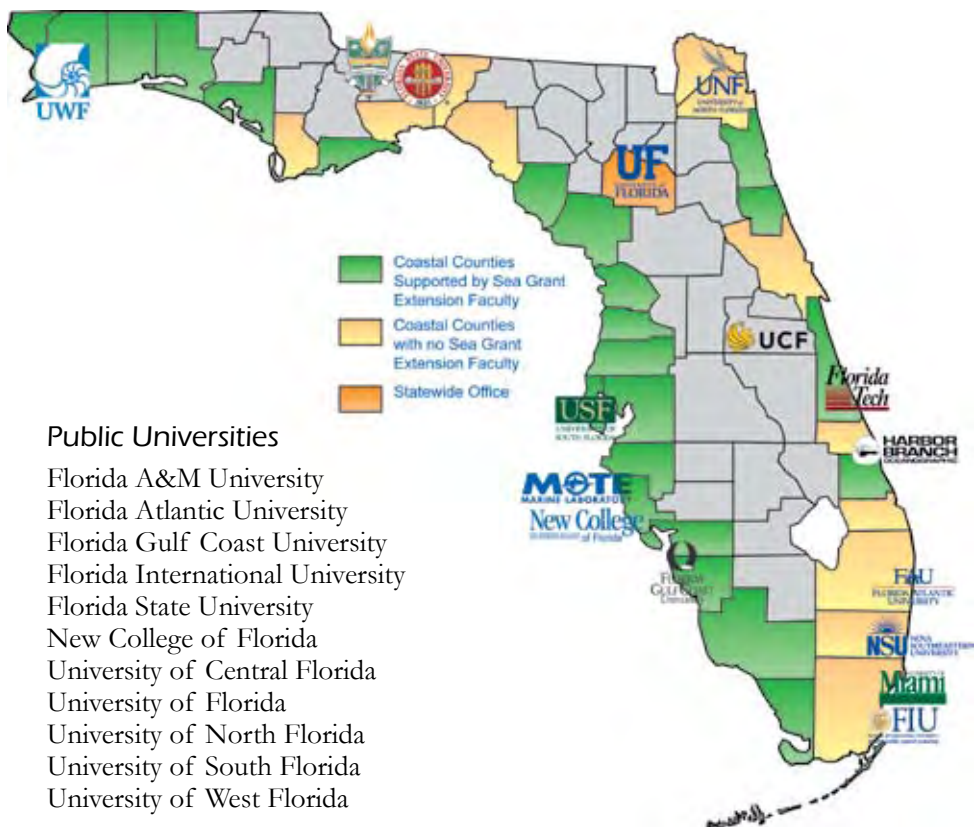
Every Florida Sea Grant activity must satisfy three simple but tough criteria: be based on a strong rationale; demonstrate scientific or educational merit; and produce results that are clearly useful and applicable in industry, management or science. These activities are guided by priorities developed through a statewide strategic planning process that includes the input of hundreds of Floridians representing industry, academia, coastal communities and government. A complete description of the current strategic plan can be obtained at the Florida Sea Grant Web site (flseagrant.org).

The year 2008 marks Sea Grant's 38th year in Florida. This directory provides a summary of research, extension and education programs, including core research projects that are ongoing or that have specific ending dates in 2008 or beyond. Participating institutions are listed along with contact information for all Florida Sea Grant staff members.

The directory also showcases recent success stories from programs and projects which have had major impacts related to coastal sustainability, and provides a look at the ongoing strategic planning that will result in a retooling of our major program focus areas.

Participating Institutions

Florida Sea Grant is a statewide university research and education program housed at the University of Florida. All of the public and private universities and the research laboratories shown here are a formal part of the program. Representatives of these sixteen institutions form our state campus coordinator network (see pages 31-32). Many researchers from these institutions participate in the Sea Grant program, particularly through marine and coastal research.



Private Universities

- Florida Institute of Technology
- Nova Southeastern University
- University of Miami

Research Laboratories

- Harbor Branch Oceanographic Institution
- Mote Marine Laboratory

Strategic Focus Areas

Florida Sea Grant research, extension and education are guided by a strategic plan that was developed in 2005, covering the period from 2006 through 2009. That strategic plan identified programmatic goals and objectives under seven focus areas: Aquaculture, Biotechnology, Coastal Hazards, Ecosystem Health, Fisheries, Seafood Safety and Waterfront Communities. There also were two over-arching focus areas in Graduate Education and Marine Education. These nine areas collectively encompass the major issues affecting the economic and environmental sustainability of Florida's coasts. Florida Sea Grant is in the process of developing a new strategic plan for 2009 to 2013, and input from Florida stakeholders has been used to identify new strategic goals and objectives within the context of our program capabilities and recently identified regional and national priorities.

Planning for the Future

Florida Sea Grant is developing a new strategic plan for 2009-2013 with a process that includes considerable public input, via a survey of marine agent advisory council members and a two-day strategic planning workshop with over 80 participants representing local, state and federal government, non-governmental organizations and the private sector. Based on the responses from the stakeholder survey and in consideration of program capabilities and identified regional and national priorities, the new strategic plan will direct program activities into four broad areas:

Seafood Production and Safety – sustainably harvesting seafood from the ocean and aquaculture facilities and the development and implementation of technologies to ensure that the seafood is safe for consumers.

Sustainable and Hazard-Resilient Coastal Communities – smart coastal living and sustainable use of coastal land and water that will result in improved quality of life for residents, increased economic prosperity, and resistance and resilience to hurricanes and other coastal hazards.

Healthy Coastal and Marine Ecosystems – protection, restoration and long-term sustainability of marine ecosystems, including increased understanding of forcing functions such as water quality and quantity and physical loss of habitat. Ecosystem-based fisheries management is encompassed by this focus area.

Climate Change: Impacts and Adaptations – effects of climate change on marine and coastal ecosystems and their services to society, impacts to human quality of life and economic prosperity and societal adaptations to mitigate impacts.

Participants at the strategic planning workshop will identify major goals, objectives and strategic actions that Florida Sea Grant can take to have significant impacts in these focus areas, as well as partnership opportunities with state and

federal agencies, non-governmental organizations, local and regional governments and the private sector that are dealing with the same suite of issues.

The four new focus areas relate to the seven strategic goal areas of the 2006-2009 Florida Sea Grant strategic plan as identified in this table.

	2009-2013 Florida Sea Grant Focus Areas			
2006-09 Florida Sea Grant Goal Areas	Seafood Production and Safety	Sustainable and Hazard-Resilient Coastal Communities	Healthy Coastal and Marine Ecosystems	Climate Change: Impacts and Adaptations
Aquaculture				
Biotechnology				
Coastal Hazards				
Fisheries				
Healthy Ecosystems				
Seafood Safety				
Waterfront Communities				

Likewise, the four new strategic focus areas align with focus areas identified in the 2009-2013 National Sea Grant Strategic Plan in the following manner:

	2009-2013 Florida Sea Grant Focus Areas			
2009-2013 National Sea Grant Focus Areas	Seafood Production and Safety	Sustainable and Hazard-Resilient Coastal Communities	Healthy Coastal and Marine Ecosystems	Climate Change: Impacts and Adaptations
Safe and Sustainable Seafood				
Sustainable Coastal Development				
Healthy Ecosystems				
Hazard Resilience				

The Florida and National Sea Grant programs use research, extension and education across these goal areas to produce sound, objective science, develop an informed citizenry, and support an objective, science-based decision process regarding the sustainable use and protection of coastal and marine resources.

Program Management

The Florida Sea Grant program management office plans, implements, monitors and provides accountability to the public for all Florida Sea Grant activities. The Director, Associate Director for Research, Associate Director for Extension and Education, Communications Director and Assistant Director for Program Services represent the core leadership team. With support from staff, hundreds of faculty and a dedicated group of sixteen campus coordinators, overall management duties range from strategic planning to research project review and selection to fiscal management of public and private funds. All management activities are judged against both quantitative and qualitative goals and a small program development fund allows a timely response to special needs or opportunities as they arise.

Florida Sea Grant also depends heavily on strategic partnerships with federal, state, regional and local agencies as well as industry and private citizens. Each federal Sea Grant dollar must be matched on a 2:1 ratio, making the strategic partnerships critical to program success. This also contributes to program accountability and success through working with groups who will directly implement research results or educational opportunities in their everyday lives and professions. It is not possible to mention all our partners in this directory. For additional information about our management process, or our partners, please contact the management office or our Web site at flseagrant.org.

Advisory Council

The Florida Sea Grant Advisory Council is comprised of leaders from the private sector, non-governmental organizations, local governments and state and federal agencies who are actively engaged in issues related to the sustainable management of Florida's coastal and marine economies and natural resources. They serve a term of four years, concurrent with the time line of the four year strategic plan, and they generously provide their time, knowledge, experiences and ideas to help Florida Sea Grant maintain excellence and relevance in its research, extension and education at state, regional and national levels. We sincerely thank the council members for their willingness to help the program. Council membership for 2009-2013 can be found on the Florida Sea Grant Web site (flseagrant.org). Every Florida Sea Grant Marine Extension Agent also has an advisory council comprised of local and regional citizens who advise them on their extension and education programs. This high degree of input from stakeholders, at all levels of the program, ensures that activities of Florida Sea Grant remain connected to the needs of Floridians.

Campus Coordinators

Florida Sea Grant relies heavily on its group of Campus Coordinators. Appointed by the president of each participating institution, they provide both



Gulf Breeze Guide Service photo

Sustaining Fisheries

New Gulf of Mexico reef fish regulations enacted in 2008 affected some 3.3 million recreational and commercial fishermen. Florida Sea Grant's fisheries extension effort has been demonstrating components for the regulations through a statewide fisheries education program promoting catch-and-release tools and techniques intended to reduce fish mortality.

Through train-the-trainer workshops, cooperative outreach with state and federal fisheries agencies, and enhanced online content, Sea Grant extension faculty have demonstrated the use of newly required gear, and explained the benefits of catch-and-release to the sustainability of Gulf fisheries. In the last decade, Florida Sea Grant has funded research in the development of a venting tool and venting procedure to improve survival of snapper and grouper. The new regulations require fishermen to have onboard and use venting tools, dehooking devices and circle hooks.

valuable advice in the management of the Sea Grant program and a liaison with faculty and students on each campus to Florida Sea Grant statewide.

The Campus Coordinators meet at least biennially, depending on need and advice of the group. They provide programmatic and administrative direction to the program. Florida Sea Grant management requests their input on major issues such as the annual or biennial proposal review process, how best to communicate with the 700-800 faculty statewide who are interested in Sea Grant, and development of the strategic plan. All Campus Coordinators maintain on-campus e-mail lists for communicating with faculty regarding calls for proposals and distributing Florida Sea Grant's bimonthly Director's Notes and News. A directory of the Campus Coordinators begins on p. 31.

Research

Florida Sea Grant research is issue-oriented, as our mission drives strategic use of resources to support the economic well-being and environmental sustainability of the coast. Sea Grant research goals are specific to Florida but represent a subset of those pursued by the National Sea Grant College Program. Research is funded from two principal sources. Every two years, Florida Sea Grant research awards research grants in areas defined as high priority in our strategic plan. A competitive application and rigorous peer review process determines which proposals are funded. The normal ratio is about one project funded for each five proposals submitted. In addition, competitive research grants are awarded at the national level in specific program areas defined by the National Sea Grant Office and by federal appropriations. Projects listed in this directory represent a mix from both funding sources. A third source of project funding is special projects funded by agencies and competitions outside the normal Sea Grant federal process. Only such projects having statewide or regional mandates are included here. (See flseagrant.org for other projects and collaborations).

The following paragraphs identify areas where research is particularly required and are followed by a listing of the specific ongoing projects.

Florida leads the nation in terms of the economic value from all uses of its marine fish and shellfish. However, Florida's fisheries are affected by multiple use conflicts, global trade, overfishing and coastline development that contributes to habitat loss. Objective information is needed to inform the public and guide decision makers so that actions sustain these valuable resources.

Aquaculture provides only a small amount of Florida's fish and shellfish; however, there is considerable potential for growth in this segment of the seafood industry, as well as potential for growth in the marine hobby sector.

Florida has about 375 seafood processors and wholesalers and thousands of retail outlets. They range from the nation's largest firms to many small independent businesses. All are attempting to respond to seafood safety issues, increasing



Don Behringer photo

Waterways Management

Florida Sea Grant has supported the development of a web-based waterfront policy tool kit that coastal governments now can use in comprehensive legal analyses of their coastal policy making authority. Project leader Tom Ankersen is working with communities around Florida to adapt and apply this tool kit to meet their local needs and future circumstances, including shoreline changes that may occur with climate change and sea level rise.

demand, shifts in seafood supply, increasing international trade and competition, new regulatory inspection mandates and environmental concerns.

Marine biotechnology represents an opportunity for university scientists and biotechnology companies to have an impact on the growth and duration of this field. Using natural products from the sea to create pharmaceutical compounds of commercial importance is just one example. Biotechnology also plays an integral role in advanced approaches to addressing seafood safety, coastal water quality and ecosystem protection.

Managing coastal development is a critical challenge facing water-dependent enterprises in Florida, particularly in the context of hurricanes and sea level rise. Traditionally, small businesses engaged in tourism and the marine trade are at risk and need to increase their efficiency by adopting new technologies, adapting to regulatory changes, and maintaining access to coastal waters.

Florida estuaries, where fresh water from the land meets saltwater from the sea, are characterized by enormous ecological, social and economic diversity. Florida Sea Grant's role is to complement existing state and federal agency programs, and create greater faculty interest in management-oriented research. In this area, Florida Sea Grant will build upon its academic strengths and emphasize long-term research, testing of hypotheses, innovative data analysis, multidisciplinary approaches and training of students.

The Florida coastline also is at risk from a variety of natural hazards, most notably the winds, waves and floods generated by hurricanes and tropical storms. Risks to life and property from these recurring hazards will increase with the anticipated growth of coastal populations over the next several decades, and there is evidence that hurricane frequency is linked with climate cycles and long-term climate trends. There needs to be a dedicated effort to reduce the economic and social costs of natural hazards. All stakeholders share an interest in pursuing loss (or cost) control which is a proven risk management technique.

AQUACULTURE

Enhancing Production of Cultured Hard Clams in Florida by Triploidy (R/LR-A-39). A hardier clam strain in Florida is needed to help mitigate losses that result from prolonged hot summers. Triploid clams were studied as a potential solution to this problem as they are virtually sterile, spawning does not occur, and energy may be available during this stressful period for basic metabolism. (2008) Principal investigators: *John Scarpa, Harbor Branch Oceanographic Institution, JScarpa@hboi.edu; Shirley Baker, University of Florida, sbaker25@ufl.edu; Leslie Sturmer, University of Florida, LNST@ufl.edu.*

Developing Improved Hatchery Technology for Marine Ornamental Fish Using Stage-specific Feeding Management Regimes (R/LR-A-43). The goal of this study is to develop effective and sustainable hatchery technology for the difficult-to-raise marine ornamental fish species *Centropyge flavissimus* (lemonpeel



Stock photo

Shark Conservation

In the face of intense fishing for the international fin trade, shark conservation in the U.S. and worldwide requires comprehensive management and trade monitoring on a species- and population-specific basis. But there is little of the kinds of reliable information resource managers depend on to develop management plans and monitor the fin trade fishery. Mahmood Shivji's research is developing DNA sequences of several key shark species that for the first time provides resource managers with the genetic stock structure information necessary for global shark management and conservation. In the course of his research, Shivji has also documented the first case of asexual reproduction ability in sharks, a finding that has sparked a new line of research to explore if this form of reproduction is becoming more common in nature as a result of overfishing of male sharks. If so, it raises concerns that a less genetically diverse shark population may be more susceptible to disease and reproductive problems. Shivji's shark DNA forensics work is now being featured in the newly opened Sant Ocean Hall of the Smithsonian National Museum of Natural History in Washington, D.C.

angelfish) and *Liopropoma carmabi* (candy basslet). These species demand a high price in the aquarium trade and have been successfully spawned in captivity. Researchers are using a novel approach that integrates the development of feeding kinematics, feeding mechanisms and feeding performance in the development of stage-specific feeding regimes that will enhance survivorship during the larval rearing of these species. (2008) Principal investigators: *Ralph Turingan, Florida Institute of Technology, turingan@fit.edu; LeRoy Creswell, University of Florida, creswell@ufl.edu; K.E. Gaines, Ocean Reefs and Aquariums-Harbor Branch Oceanographic Institution, gaines@hboi.edu.*

Sunray Venus Clam: A New Species to Diversify the Florida Aquaculture Hard Clam Industry (R/LR-A-44). The Florida clam industry is built on a single species. Diversifying the shellfish culture industry by developing farming technology and markets for other bivalve species will increase economic stability and growth of the industry. The sunray venus clam, *Macrocallista nimbosa*, is an attractive venerid clam distributed from South Carolina to Florida and the Gulf states. The study goal is to develop, test and demonstrate biological and technical methods to spawn and culture the sunray venus clam. (2008) Principal investigators: *John Scarpa, Harbor Branch Oceanographic Institution, JScarpa@hboi.edu; Leslie Sturmer, University of Florida, LNST@ufl.edu; LeRoy Creswell, University of Florida, creswell@ufl.edu.*

Marine Baitfish Aquaculture: Development of Controlled Spawning Protocols for Year Round Production of Pigfish (PD-08-4). This project is developing methods to raise marine baitfish year-round to support Florida's growing marine sport fishing industry. (2008) Principal investigators: *Cortney Ohs, University of Florida Institute for Food and Agricultural Sciences, cohs@ufl.edu; Andrew Rhyne, University of Florida, arhyne@ufl.edu.*

Development of Diagnostic Test and Pilot Cross Infection Study for New Exotic *Perkinsus* Isolated From Vietnamese Tridacnid Clams Imported Into the USA (PD-08-6). This project is developing a rapid genetic test for the pathogenic protozoa *Perkinsus*, recently found in certain shellfish imported from Asia. (2008) Principal investigators: *Barbara Sheppard, University of Florida College of Veterinary Medicine, sheppardb@mail.vetmed.ufl.edu.*

Mechanisms of Oyster Colonization by Salmonella, a Model Human Pathogen (PD-08-7). This project is collecting preliminary data for a potential new method to determine how *Salmonella* bacteria colonize oyster beds. The information ultimately can be used to protect the safety of the important marine food resource. (2008) Principal investigators: *Max Teplitski, University of Florida, maxtep@ufl.edu; Anita Wright, University of Florida, acw@ufl.edu; Clayton Cox, University of Florida, cec9@ufl.edu.*

Species Diversification in Florida Shellfish Aquaculture: Nursery and Grow-Out of the Sunray Venus Clam (R/LR-A-45). This is phase two of the aforementioned project. The objective is to develop methods that the aquaculture industry can use to grow sunray venus clams out to market size in a cost-effective



Florida Sea Grant photo

Safer Boating

Florida's many inland bays and coastal waterways have attracted increasing numbers of boaters from all over the country, as well as a growing diversity of boating-related activities. More congested waterways translate into greater risks to boating safety, public safety, and maritime property.

New methods of evaluating this risk are being developed by Florida Sea Grant in partnership with the Florida Fish and Wildlife Conservation Commission to provide a more objective way to manage boating safety zones. Historically, safety zones have been identified from the number of complaints received, and then established on a case-by-case basis. This new method uses a more objective approach to analyze factors such as waterway characteristics, existing signs and zones, vessel traffic patterns and accident reports. Those criteria are mapped within a geographic information system (GIS) to produce maps which better illustrate the relative risk levels along waterway segments. In turn, state agencies can write more appropriate safety zone rules. Florida Sea Grant has tested the methodology in Martin and Palm Beach counties, and is now working with FWC to expand its use in the state.

manner. Field trials are being conducted in collaboration with four industry partners at clam lease areas in two counties to develop, test and demonstrate biological and technical methods to culture the new product. (2010) Principal investigators: *John Scarpa, Harbor Branch Oceanographic Institution, JScarpa@hboi.edu; Leslie Sturmer, University of Florida, LNST@ufl.edu; R. LeRoy Creswell, University of Florida, creswell@ufl.edu; Charles M. Adams, University of Florida, cmadams@ufl.edu.*

BIOTECHNOLOGY

Chemical Variation in Marine Cyanobacteria for Drug Discovery (R/LR-MB-22). Marine cyanobacteria provide an exceptional resource for new natural products because of their tremendous biological and chemical diversity, and this project will be the first systematic approach to studying benthic cyanobacteria from Florida coastal waters for biotechnological applications. The goal is to discover new natural products from Florida benthic marine cyanobacteria that will be useful as drugs in the treatment of human disease. (2008) Principal investigators: *Valerie Paul, Smithsonian Marine Station, paul@sms.si.edu; Clifford Ross, Smithsonian Marine Station, ross@sms.si.edu; Lyndon West, Florida Atlantic University, lwest@fau.edu; Hendrik Luesch, University of Florida, luesch@cop.ufl.edu.*

Profiling the Marine Sponge (*Discodermia*) Transcriptome Enriched for Secondary Metabolite-coding Messages (R/LR-MB-23). This project aims to develop a novel approach to recombinant production of potent bioactive compounds produced by the marine sponge genus *Discodermia*. The resulting molecular sequence data will serve as a novel genetic resource (e.g. toolkit) for research and industry, enabling future experiments and sustainable production of unique marine natural products. (2008) Principal investigators: *Jose Lopez, Harbor Branch Oceanographic Institution, Lopez@hboi.edu; Robert Feldman, SymBio Corporation, rfeldman@sym-bio.com.*

Development of an Immortalized Sponge Cell Line for Sustainable Supply of Marine Bioproducts (R/LR-MB-25). Marine sponge cells lines will be developed for use in producing marine-derived bioproducts. Over 2,600 novel chemicals have been isolated from sponges, but their low levels preclude commercial development. If successful, this work will make a significant breakthrough in addressing the supply problem for marine biotech products. (2010) Principal investigators: *Shirley A. Pomponi, Harbor Branch Oceanographic Institution, pomponi@hboi.edu; Rene H. Wijffels, Wageningen University, Rene.Wijffels@wur.nl; Susan H. Sennett, Harbor Branch Oceanographic Institution, sennett@hboi.edu.*

Development of a Sustainable Biological Production Method for the Potent Cytotoxic Agent Leiodermatolide (R/LR-MB-26). This study will develop methods to sustainably produce an anti-tumor compound recently discovered in marine sponges. (2010) Principal investigators: *Peter McCarthy, Harbor Branch Oceanographic Institution, pmccarthy@hboi.edu; Amy Wright, Harbor Branch Oceanographic Institution, wright@hboi.edu.*

Coral-associated “Probiotic” Bacteria: Exploring Mechanisms for Potential Applications in Biocontrol of Coral Diseases (R/LR-MB-27). Scientists will identify how corals use beneficial bacteria to protect themselves from disease, contributing to the information needed to sustainably manage Florida coral reefs and their associated multi-billion dollar per year economy. (2010) Principal investigators: *Max Teplitski, University of Florida, maxtep@ufl.edu; Kim Ritchie, Mote Marine Laboratory, Ritchie@mot.org; Nicole Horenstein, University of Florida, horen@chem.ufl.edu.*

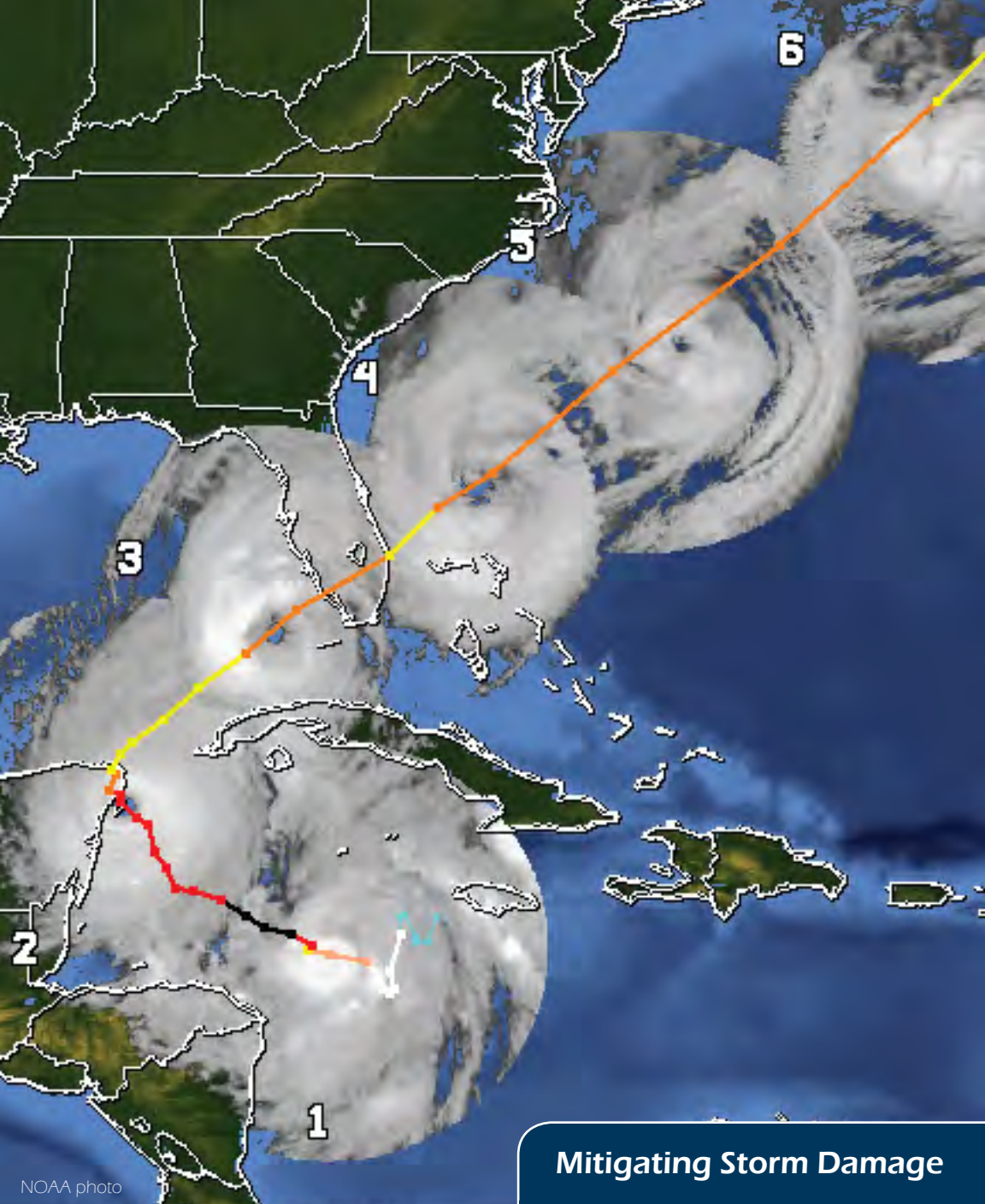
Carboxylated Neuroprotective Agents from Cone Snails (R/LR-MB-28). Marine biotechnology researchers will isolate biological compounds from cone snails and conduct assays to evaluate the potential for new therapeutic agents. (2010) Principal investigators: *Frank Mari, Florida Atlantic University, mari@fau.edu; Jang Y. Wu, Florida Atlantic University, jwu@fau.edu.*

COASTAL HAZARDS

Field Measurements of Hurricane Wave Processes (R/C-S-46). Hurricane damage from waves and storm surge can be more disastrous than wind damage. However, the quantity of wave data near the coast is not adequate to improve predictions and thus planning and construction. The goal is to quantify and improve descriptions of hurricane wave transformation near the coast and its effects, and to evaluate the accuracy and suitability of common existing wave transformation models during hurricane conditions. (2008) Principal investigators: *Andrew Kennedy, University of Florida, abkenn@ufl.edu; Kurtis Gurley, University of Florida, kgurl@ce.ufl.edu; Alexandru Sheremet, University of Florida, alex@coastal.ufl.edu.*

Integrated Prediction of Hurricane-Induced Inundation and Shoreline Change (R/C-S-47). Much of the damage from hurricanes is associated with storm surges and coastal flooding. This study will validate a new storm surge and coastal flooding model, which will be coupled with a model for shoreline erosion, with extensive data obtained in 2004. This research will significantly advance our predictive ability of coastal hazards (flooding, erosion, and rip current) to mitigate damages to coastal communities. Outcomes of the research will directly benefit NOAA’s effort to improve its storm surge models. (2008) Principal investigator: *Y. Peter Sheng, University of Florida, pete@coastal.ufl.edu.*

High Resolution Coastal Inundation Mapping to Enhance Hurricane Resiliency in Florida (R/C-S-49). High resolution data on coastal flooding, collected by the USGS during recent hurricanes, will be used to fine-tune storm surge models for emergency managers and coastal planners. Accurate models can save lives and minimize economic losses from the tropical storms that impact our coasts. (2010) Principal investigators: *Y. Peter Sheng, University of Florida, pete@coastal.ufl.edu; Justin Davis, University of Florida, davis@coastal.ufl.edu; Alexandru Sheremet, University of Florida, alex@coastal.ufl.edu.*



NOAA photo

Mitigating Storm Damage

Florida Sea Grant has supported improvement and testing of models of coastal storm surge, a leading cause of property damage and fatalities during hurricanes. Project leader Peter Sheng used a research grant from Florida Sea Grant to improve the modeling of both storm surges and coastal inundation. His forecast results now are being used in Florida's annual hurricane planning exercise.

A Spatial Hazard Index of Semi-Permanent Rip Currents in Northwest Florida (R/C-S-50). Field observations and computer models will be used to more accurately characterize rip currents along Pensacola Beach. Improved understanding of rip current behavior will allow better forecasts of conditions that are hazardous to swimmers. (2010) Principal investigators: *Chris Houser, University of West Florida, chooser@uwf.edu; Klaus Meyer-Arendt, University of West Florida, kjma@uwf.edu.*

ECOSYSTEM HEALTH

A Portable Enterococcus Sensor for Monitoring Coastal Water Quality (R/C-E-52). Health related management of recreational coastal sites is currently undertaken by monitoring fecal bacteria by membrane filtration. This standard indicator monitoring has a time lag of 24-48 hours between when the sample is collected and when the data become available. The goal of this research is to develop portable sensor technology for rapid, sensitive and specific detection and quantification of fecal bacteria in coastal water, providing health officials and coastal managers with near real-time data for decision making. (2008) Principal investigators: *Stacey S. Patterson, University of South Florida, spatters@marine.usf.edu; John H. Paul, University of South Florida, jpaul@marine.usf.edu; David Fries, University of South Florida, dfries@marine.usf.edu; Andrew Farmer, University of South Florida, afarmer@marine.usf.edu.*

Assessing the Importance of Substrate Composition and Novel Marine By-Products in Enhancing the Mitigation of Essential Fish Habitats (R/C-E-53-PD). The worm *Phragmatopoma lapidosa* contributes to the construction of natural near-shore reefs along Florida's coast that provides habitat for many marine species. These worms extract and glue sand together to make sand tubes, forming vast worm reefs in intertidal and shallow sub-tidal water from Cape Canaveral to Key Biscayne. Their formation is impacted by such things as sediment transported offshore from beaches naturally, and from beach restoration projects, and mitigation techniques have not been consistently successful. Researchers will test the applicability of a marine byproduct to aid in the recovery and recruitment of worms and reef formation. (2008) Principal investigator: *Daniel A. McCarthy, Jacksonville University, dmccart1@ju.edu.*

Preliminary Data Analysis to Test Land-Use Influence on Red Tides in Choctawhatchee Bay, Florida (PD-08-5). New genetic methods are being developed to identify links between red tide events that recently have been occurring along the Atlantic coast of Florida with specific sources of water pollution. (2008) Principal investigators: *Matthew Schwartz, University of West Florida Department of Environmental Studies, mschwartz@uwf.edu; Wade Jeffrey, University of West Florida, wjeffrey@uwf.edu.*

Advanced Molecular Techniques for Quantifying Coral Health: A Workshop for Florida's Reef Researchers (PD-08-8). Training workshops are being conducted with staff of state government agencies on use of new molecular techniques for assessing the health of coral reef communities. (2008) Principal



UF/IFAS photo

Restoring Coastal Habitat

Sponges are living, valuable components of Florida's coastal ecosystems, providing habitat that is essential to many kinds of marine creatures, including the commercially important spiny lobster. Sponges have also made significant contributions to the cultural and economic legacy of several Florida coastal communities. Florida Sea Grant extension faculty John Stevely (left) and Don Sweat have completed research related to sustainable harvesting of marine sponges. Their research documents that when sponges are harvested by cutting, rather than using a hook on the end of a long pole to tear sponges free from the bottom, survival and regeneration exceed 70%, versus only 41% when hooked. Not only has their work improved understanding of the role sponges play in coastal ecology, it has led to new rules regarding commercial sponge harvesting in Florida.

investigators: *Joshua Voss, Harbor Branch Oceanographic Institute at Florida Atlantic University, jvoss2@fau.edu; Sara Edge, Harbor Branch Oceanographic Institute at Florida Atlantic University, sedge4@fau.edu; Dennis Hanisak, Harbor Branch Oceanographic Institute at Florida Atlantic University, dhanisak@fau.edu.*

Predicting Impacts of Coastal Habitat Degradation on an Economically Important Fish (R/C-E-54). Effects of degraded coastal creek habitat on the survival of juvenile snook will be determined in this study. Snook are a prized sport fish in Florida coastal waters, and understanding how land development affects their habitat is important to both survival of the species and the marine fishing-related economy. (2010) Principal investigator: *Aaron J. Adams, Mote Marine Laboratory, aadams@mote.org.*

Projected Reorganization of Seagrass Communities in Response to Altered Freshwater Flow in Florida Bay (R/C-E-55). Scientists will predict and map changes in seagrass expected to occur in Florida Bay if there are changes in sea level, salinity and nutrient inputs. That information will help managers successfully implement the Comprehensive Everglades Restoration Plan, particularly in regard to reaching decisions about future water flows to the Bay. (2010) Principal investigators: *Darrell A. Herbert, Florida International University, Darrell.Herbert@fiu.edu; James W. Fourqurean, Florida International University, Jim.Fourqurean@fiu.edu; Christopher Madden, South Florida Water Management District, cmadden@sfwmd.gov.*

FISHERIES

Passive Acoustic Measurement of Black Drum Spawning Output (R/LR-B-58). Many fisheries scientists throughout the southeast U.S. have been using passive acoustics to identify spawning habitat of sound-producing fishes. This study will determine whether sound analyses can yield quantitative data on the number of eggs spawned. It will serve as a test case that can be used as a model for future studies of other important species, such as red drum and spotted seatrout, where issues such as egg transport and egg identification may be more difficult. (2008) Principal investigator: *David Mann, University of South Florida, dmann@marine.usf.edu.*

Recruitment Dynamics and Population Connectivity of Gray Snapper, *Lutjanus griseus*, Among West Florida Estuarine Systems (R/LR-B-59). This project will develop an approach to evaluate essential fish nursery habitat by linking nursery-specific juvenile production with eventual recruitment to adult habitat. The study will examine population dynamics specific to gray snapper, but also will establish a quantitative, process-oriented approach to assessing habitat value that could be applied to any finfish species with a life history that includes distinct nursery and adult habitats. (2008) Principal investigators: *William F. Patterson, University of West Florida, wpatterson@uwf.edu; Richard S. McBride, FWC Fish and Wildlife Research Institute, richard.mcbride@fwc.state.fl.us; Robert Allman, NOAA Fisheries SEFSC, bob.allman@noaa.gov.*

Developing a Multiple Genetic Marker Approach to Assess Global Scale Population Structure and Mating Systems in High Fin-market Demand Shark Species (R/LR-B-60). Conservation of sharks in the U.S. and worldwide in the face of intensive exploitation for the international fin trade requires comprehensive management and trade monitoring on a species and population-specific basis. The goal of the project is to support shark conservation, management, and trade monitoring on a species and population-specific basis by providing a comprehensive, multi-genetic marker assessment of global population structure in fin-trade sharks, determining the population of origin of market derived shark fins, and elucidating shark mating systems. (2008) Principal investigator: *Mahmood S. Shivji, Nova Southeastern University, mahmood@nova.edu.*

The Possible Effects of Commercial Trap Fishing on a Lethal Viral Disease (PaV1) in Spiny Lobsters (R/LR-B-61). Spiny lobsters are one of the most economically valuable fisheries in Florida. The results of this work will help the fishing industry and state agencies manage lobster populations in a manner that helps control viral infection. (2010) Principal investigators: *Donald C. Behringer, University of Florida, dbehr001@odu.edu; Mark Butler, University of Florida, mbutler@odu.edu.*

SEAFOOD SAFETY

Gulf Oyster Industry Program: Product Characterization to Advance the Use of Post Harvest Treatments (PHT) for Raw Oysters (R/LR-Q-28). The oyster industry is faced with federal mandates requiring implementation of new post-harvest treatments (PHT) to yield safer oyster products destined for raw consumption. Researchers will develop and implement the use of sensory product characterization as a tool to better direct commercial practices and marketing efforts for raw oysters, particularly for the new PHT products. This work is part of a Gulf-wide effort involving expertise at University of Florida, Mississippi State University and Louisiana State University, to address all major regions of oyster product in the Gulf of Mexico. (2008) Principal investigator: *W. Steven Otwell, University of Florida, otwell@ufl.edu.*

Gulf Oyster Industry Program: Consumer Market Research of VAP and PHP Oyster Products to Increase Gulf Oyster Consumption and Reduce *V. vulnificus* Related Illnesses (R/LR-Q-29). Safer oyster products for the consumer market include value-added products (VAP) and post-harvest processed (PHP) oysters. These can be identified and marketed as a complementary approach to augment FDA mandated Risk Management Plans and their educational components aimed to reduce *Vibrio vulnificus* induced illness resulting from the consumption of raw or undercooked shellfish. Researchers will conduct market segmentation studies, consumer and product testing, and a public education campaign in addition to disseminating findings through the Gulf Oyster Industry Council. (2008) Principal investigator: *Judy L. Jamison, Gulf & South Atlantic Fisheries Foundation, Inc., judy.jamison@worldnet.att.net.*



Florida Sea Grant photo

Ensuring Safe Seafood

The inaugural University of Florida “Oyster School” provided more than 20 key retailers in the U.S. seafood industry with comprehensive and practical training for marketing raw oysters from harvest to table. The workshop was held in Apalachicola, the historic Panhandle community that produces 90 percent of Florida’s oysters and 10 percent of the supply nationwide. The school is a hands-on experience for buyers to learn about the harvest and processing of fresh oysters. Participants took part in a demonstration run aboard a working vessel, a tour of dockside processing facilities, and classroom time learning techniques to evaluate the taste, texture and appearance of fresh oysters. One session focused on post-harvest processing methods for fresh oysters that have virtually eliminated the kinds of bacterial contaminants responsible for illnesses and deaths formerly associated with oyster consumption by at-risk segments of the public. The school has been developed in cooperation with shellfish processors in Apalachicola, state and federal regulators, and Florida Sea Grant. This yearly program is expected to grow substantially over time, as occurred with the Shrimp School, after which this event is patterned.

Evaluation of QPCR Methods for Detection of *Vibrio vulnificus* (R/LR-Q-30). FDA recently mandated PHP validation and verification protocols for oysters that quantify *V. vulnificus* before and after treatment. However, standard assays are time-consuming, labor intensive, expensive and unreliable. Direct comparison of quantitative PCR (QPCR) assays to standard methods is needed to establish the most effective approach for the seafood industry to address the validation and verification of PHP for reduction of *V. vulnificus* in oysters. Research will provide experimental analysis and field-testing of improved QPCR methods designed to provide the seafood industry with more accessible, practical, and cost-effective analysis of *V. vulnificus* in PHP oysters. (2008) Principal investigators: *Anita Wright, University of Florida, acw@ufl.edu; Gary Rodrick, University of Florida, ger1005@ufl.edu.*

Oyster Demand Adjustments to Alternative Consumer Education and Post Harvest Treatments in Response to *Vibrio vulnificus* (R/LR-E-19-PD). Science-based direction, that supports and augments current research on developing and implementing educational and outreach programs, is needed to better inform consumers of the potential risks associated with *Vibrio vulnificus*. Researchers will develop methodology and determine consumer behavior toward seafood safety information across different media sources. Consumer responses will be measured and their relative impact on consumer behavior quantified. (2008) Principal investigators: *Ash Morgan, University of West Florida, amorgan@uwf.edu; William L. Huth, University of West Florida, whuth@uwf.edu; Gregory S. Martin, University of West Florida, gmartin@uwf.edu.*

Objective Quantification of the Extent of Aquatic Food Product Enhancement with Carbon Monoxide (R/LR-Q-31). The possibility, extent and quantification of color enhancement data using CO is non-existent. Computer machine vision, electronic nose, microbial analysis and sensory panel tests will be conducted to generate a complete data set regarding possible color enhancement of various fish. This type of data is needed to give regulatory agencies a scientific basis for decision making and to guide the industry to develop effective CO treatment methodologies without the potential pitfalls and disadvantages of this technology. (2008) Principal investigators: *Hordur Kristinsson, University of Florida, hordur@ufl.edu; W. Steven Otwell, University of Florida, otwell@ufl.edu.*

Preliminary Genomic Sequencing of Environmental *Vibrio vulnificus* Strain 99-520 DP-B8 (PD-08-3). Data are being collected on the gene sequence of *Vibrio*, the leading cause of death from seafood contamination in the US. Little is known about how this organism causes disease and this new research, when combined with ongoing work sponsored by the National Institute of Health, will lead to improved detection, treatment and safety of seafood. (2008) Principal investigator: *Paul Gulig, University of Florida College of Medicine, gulig@college.med.ufl.edu.*

WATERFRONT COMMUNITIES

Planning for Sustainable Coastal Communities and Waterways (R/C-P-29). The Florida Sea Grant Boating and Waterway Management Program will broaden the scope of the existing efforts to: (1) enhance smart growth planning and implementation in Florida by identifying and pursuing opportunities for smart growth collaboration with Florida's coastal communities; (2) provide science-based information, planning models, and innovative tools and methods to state and local decision-makers to encourage sustainable growth and waterway management in coastal communities; (3) use Geographic Information Technologies to provide solutions that foster sustainable shorefront development and waterway management; and (4) develop training opportunities for Sea Grant and UF/IFAS Extension faculty who will use the information in their individual educational activities. (2010) Principal investigators: *Michael S. Spranger, University of Florida, spranger@ufl.edu*; *Robert S. Swett, University of Florida, rswett@ufl.edu*.

State and Local Policy Development for Coastal Access, Coastal Economic and Ecosystem Health and Coastal Hazard Mitigation and Adaptation (R/C-P-30). Local waterfront governments would benefit from a comprehensive legal analysis of their coastal policy making authority, especially in the confusing near-shore jurisdictional environment, and from a systematic assessment of the planning tools at their disposal that is packaged in a usable format. This is an applied legal and policy research and model code development project, coupled with legal and planning extension to disseminate results. Working with selected communities, investigators will marshal information and develop locally applicable policy plans adapted to individual community needs. (2010) Principal investigators: *Thomas T. Ankensen, University of Florida, ankensen@law.ufl.edu*; *Thomas Ruppert, University of Florida, ruppert@law.ufl.edu*; *Richard Hamann, University of Florida, hamann@law.ufl.edu*.

Extension

Using a combination of research, education and technology transfer, extension and communication programs interpret and deliver information to audiences in a format they can use. Some extension efforts take the form of continuing education, professional development or executive education. Extension faculty and staff also support local and regional decision making as it relates to Florida's coast. All of these actions are undertaken with a strategic approach designed to solve specific problems, provide science-based information on coastal and marine issues or help its citizens make Florida a better place to live.

About one-third of Florida Sea Grant's core funding is devoted to Sea Grant Extension activities. On-campus faculty provides leadership in planning statewide programs that are designed in part by advisory committees, public input and off-campus faculty needs. Off-campus faculty located strategically around Florida conduct planned educational programs through courses, workshops, lectures and meetings, by distributing literature and publications and through stimulating new research to meet identified needs. Research faculty generates new knowledge

which finds outlets through the Extension Program. Some research faculty members also participate directly in Extension programs. Principal projects are listed below along with the ending date and project contact.

Sea Grant Extension Program (SGEP-14). This project represents the core extension program and functions based on a four-year plan of work, which is updated bi-annually. Programs are conducted in six areas: (1) seafood safety and quality; (2) sustainable marine fisheries; (3) aquaculture; (4) environmental and water quality; (5) recreation, boating and waterway management; and (6) coastal and marine education. Each faculty member on-campus or located throughout the state participates in this project. (Ongoing) Program leader: *Michael Spranger, University of Florida, spranger@ufl.edu.*

Boating and Waterway Management (Various Projects). Pressures from a coastal population and unprecedented increases in boating intensity are resulting in overcrowding and stress to coastal waters. Over one million resident and tourist boats use Florida waterways. An objective of this program is to educate boaters on proper boating and anchoring procedures in order to minimize habitat impacts, develop safe boating behaviors, reduce congestion in waterways, and thus sustain boating activities and the industry that they support. Techniques include anchoring guides, a five-year pilot anchorage management program, a regional harbor board, improved navigational charts and waterways guides. Another objective is to provide science-based information to waterway and coastal managers, such as the development of a coastal data server system for the Gulf Intracoastal Waterway. Principal funding comes from Florida Sea Grant, the West Coast Inland Navigation District and the NOAA Coastal Services Center. (Ongoing) Project leaders: *Robert Swett, University of Florida, rswett@ufl.edu;* *David Fann, University of Florida, dafann@ufl.edu.*

NOAA South Florida Marine Ecosystem Outreach Project (E/T-9). Restoration of ecosystems and improvement of water quality in South Florida are priorities among federal, state and local agencies, with billions of dollars being expended on a variety of projects over the next 25 years. The ultimate success of these projects will depend on the awareness, knowledge and actions of citizens, business owners, and community leaders that are based on sound objective science. This project is the educational link between science-based information developed by NOAA agencies and Sea Grant supported research and the citizens of South Florida. (2008) Project leader: *Michael S. Spranger, University of Florida, spranger@ufl.edu.*

Center for Ocean Science Education Excellence (COSEE-GOM-1). The need for ocean science education is clearly recognized by the science and education communities. This regional activity among the Gulf of Mexico states bridges the gap between science and education through summer teacher institutes, online programs, informal educator workshops and lesson plans (2009) Project leader: *Michael S. Spranger, University of Florida, spranger@ufl.edu.*

Florida Sea Grant Fish Extension Project (SGEP-13-FE). The National Sea Grant federal appropriation continued the required enhancement of Sea Grant's fisheries extension program. Florida Sea Grant will hire two fisheries-oriented county faculty members and increase its recreational fishery extension program activity by one-half FTE. (2009) Project leaders: *Michael S. Spranger, University of Florida, spranger@ufl.edu; Steve Kearl, skearl@ufl.edu; Chuck Adams, cmadams@ufl.edu.*

Communications

Communications is a critical component of the Florida Sea Grant program, because it keeps the public informed about current research activities and has as its goal to develop and implement diverse and wide-ranging information that effectively communicates to millions of Floridians and tourists. Better informed citizens make better decisions that ultimately affect the sustainability of Florida's coastal resources. Communication activities are supported by Sea Grant core funds and the University of Florida, as noted here.

Sea Grant Communications Program (COMM-6). Florida Sea Grant can significantly reduce the severity of human impacts to the coast by providing science-based information needed to responsibly address management decisions involving coastal resources, and to increase awareness of residents and visitors to the importance of coastal and marine resources in sustaining both a healthy economy and environment in Florida. The Sea Grant management project provides funding to develop and use the latest technology and communication skills in expanding the dissemination of Florida Sea Grant research, education and extension efforts to get information into the hands and heads of people who can use it. (Ongoing) Program leader: *Steve Kearl, University of Florida, skearl@ufl.edu; Dorothy Zimmerman, University of Florida, dozimmer@ufl.edu.*

Education

Investment in the future of Florida's coastal resources requires both capital and labor. It is critical that the labor force be highly trained, skilled and knowledgeable. Through the support of undergraduate and graduate education and through competency-based training, Florida Sea Grant produces outstanding scientists, social scientists, engineers and other professionals that in the future will increase Florida's economic competitiveness both nationally and internationally, and who will create and lead management concepts to keep Florida's coastal environment sustainable for future generations.

In addition to ensuring that at least 25 percent of its research funds support graduate students working on active research projects, Florida Sea Grant annually provides student scholarship and fellowship opportunities. More details can be obtained from the Florida Sea Grant Web site (fseagrant.org).

Florida Sea Grant's support for graduate education in marine and ocean sciences helps ensure a highly trained work force that will one day manage and protect coastal and ocean resources. These students have earned Sea Grant fellowships in 2008.



Steven Saul

Steven is a doctoral student in marine biology and fisheries at the University of Miami Rosenstiel School of Marine and Atmospheric Science and one of five national awardees of the joint NOAA Fisheries-Sea Grant Population Dynamics Graduate Fellowship. The program provides him up to three years of funding for thesis research in the growth, recruitment and mortality of Gulf reef fish stocks.

Two students nominated by Florida Sea Grant have earned Knauss Marine Policy Fellowships for 2009. The Knauss program provides qualified graduate students pursuing careers in ocean and coastal resource policy with a one-year paid fellowship in Washington, D.C., in selected legislative or executive branches of the federal government.

Melanie King

Melanie is a recent graduate of the University of Florida Levin College of Law with a specialty in environmental land use law. She has conducted extensive analysis of the historical legislation in Florida related to boating safety laws, and has been actively engaged in ongoing work by state agencies to identify effective measures to reduce mortality of manatees in coastal waters.



Jennifer DuPont

Jennifer will earn a doctoral degree from the University of South Florida College of Marine Science. She has developed an innovative research program that deals with impacts of red tides on coastal marine ecosystems, and is actively working with resource management agencies to explore actions that might be taken to reduce those impacts.

Dean John A. Knauss Marine Policy Fellowship

These fellowships, awarded on competitive basis annually, allow a student to spend a year in Washington, D.C., in the legislative or executive branches of the federal government. In 2008, 50 winners were chosen from the pool of 80 applicants. Ten are placed with legislative hosts, 40 with executive hosts. Since 1982, 37 fellows have been from Florida universities. Florida had three in 2001, one in 2002, 2003 and 2004, three in 2005, one in 2006, three in 2007, one in 2008 and two in 2009.

National Marine Fisheries Service - Sea Grant Joint Graduate Fellowship Program in Population Dynamics

These fellowships are designed to help Sea Grant fulfill its broad educational responsibilities and to strengthen the collaboration between Sea Grant and NMFS. Fisheries fellows work on thesis problems of public interest and relevance to NMFS and have summer internships at participating NOAA science centers or labs under the guidance of NMFS mentors. Florida currently has one fellow from the University of Miami working on developing improved models for marine fish stock assessment.

Aylesworth Foundation for the Advancement of Marine Science

Two types of scholarships are awarded annually on a competitive basis – the Aylesworth and Old Salt scholarships. Both are supported completely by private funds and donations. The Aylesworth Scholarship is awarded to students enrolled at a university participating in the Florida Sea Grant College Program. To date, 87 students in 13 different Florida universities have received them. The Old Salt Marine Biology Scholarship is for students enrolled at the University of South Florida only. Sixteen students have received them.

NOAA Coastal Services Center Coastal Management Fellowship

This competitive program provides professional, on-the-job training and educational opportunities for post-graduate students through technical assistance for state coastal resource management programs. An annual competition is held to select six fellows each year. Two Florida students have been selected.

Elise B. Newell Seminar Series

Annually, these seminars bring nationally and internationally renowned scholars and scientists to meet with faculty and students in Florida's academic community for a few days of formal and informal dialogue about timely issues concerning the coast and oceans. Seminars are selected from proposals submitted by faculty from the network of Florida Sea Grant partner institutions. Since the program's creation in 1986, more than 80 distinguished speakers have participated.

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How You Can Invest in Florida's Coast

Florida Sea Grant has a demonstrated record of success in designing the best possible solutions for coastal and marine issues in Florida – combining research, outreach and education to address issues ranging from development of hurricane storm surge models that save human lives to tools that increase survival of catch-and-release fish. Florida Sea Grant strongly supports marine education, from K-12 to the graduate school level. Leading experts in marine science and coastal resource managers have received support from our program in their career development. Our faculty and staff work closely with coastal residents in a variety of non-traditional education and outreach programs that address their particular needs.

Your gift to Florida Sea Grant could strengthen our mission and directly support activities to preserve and sustain the precious coastal and marine resources of Florida.

The Director can work closely with you to identify exactly what you would like to accomplish with your donation, and the University of Florida Foundation can provide details on various options for providing gifts.

Here are a few ideas about how you could help Florida's coasts:

- Your endowment could support a visiting scholars program, allowing us to bring the nation's leading experts in coastal and marine science and policy to Florida to collaborate with students, faculty, and resource managers and the private sector, in order to tackle critical coastal problems.
- Your donation could support graduate students with fellowships, allowing Florida to recruit the best and brightest students from around the nation to work on pressing Florida coastal issues or focused in an area of particular interest to you.
- Your contribution could be used to provide start-up grants to faculty and students for pilot research, outreach and education projects, or for student travel to regional and national meetings where they can learn from their peers and bring new knowledge and skills back to Florida.
- Your investment could fully or partially support the construction of a state-of-the-art Florida Sea Grant building. Housed in a modular building for more than 20 years, the current location no longer meets the needs of the program. Working with donors we could design a facility that supports world-class applied coastal and marine research, education and outreach, and use those facilities to engage programs that substantially enhance our coastal resources.

These are just a few examples of how you could help protect and sustain Florida's coastal and marine resources. Ultimately your generous gift will be directed in the manner that you identify. For complete information, please contact me by phone or email:

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