Sea Grant
Florida

Florida Sea Grant College Program Program Directory 2006 through 2008

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

This publication was supported by the National Sea Grant College Program of the United States Department of Commerce, National Oceanic and Atmospheric Administration under NOAA Grant #NA16RG-2195. The views expressed herein do not necessarily reflect the views of any of these organizations.

February 2006 SGEF 165

Cover photos

(top to bottom, left to right):

Invasive green mussel colonies are becoming established in Northeast Florida. (UF/IFAS)

Hurricane Wilma approaches Florida in 2005. (NOAA)

Underwater reefs are examined during a collection dive. (Harbor Branch Oceanographic)

Derivatives of cone snail venom have potential as a human pharmaceutical. (UF/IFAS)

The South Seas Resort marina on Captiva Island, damaged by hurricanes in 2004, has reopened. (Florida Sea Grant)

Table of Contents

Introduction

This directory provides an overview of current research projects and a synopsis of educational programs conducted by the Florida Sea Grant College Program. Florida Sea Grant is a statewide partnership of research institutions, state and federal agencies, businesses and citizens guided by this mission:

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

This 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 the national network.

Florida Sea Grant addresses problems that are important both nationally and in Florida. Normally, these issues result from human interaction with the state's coastal environment, and require some combination of research, education, or technology transfer for successful resolution. Florida Sea Grant has a demonstrated record of success in designing the best possible approaches.

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 strategic plan for 2006-2009 can be obtained at the Florida Sea Grant website.

The year 2006 marks Sea Grant's 36th year in Florida. The following pages contain summaries of programs, outreach activities, and research projects that are ongoing or that have specific ending dates in 2006, 2007 or beyond. Participating institutions are listed along with contact information for all Florida Sea Grant staff members.

Participating Institutions

Florida Sea Grant is a State of Florida Center within the Florida Board of Education, Division of Colleges and Universities. 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 24-25). Many researchers from these institutions participate in the Sea Grant program. The University of Florida serves as the host campus for Florida Sea Grant.

Public Universities

Florida A&M University
Florida Atlantic University
Florida Gulf Coast University
Florida International University
Florida State University
New College of Florida
University of Central Florida
University of Florida
University of North Florida
University of South Florida
University of West Florida

Private Universities

Florida Institute of Technology
Nova Southeastern University
University of Miami

Research Laboratories

Harbor Branch Oceanographic Institution
Mote Marine Laboratory

Management

The Florida Sea Grant management office plans, implements, monitors and provides accountability to the public for all Sea Grant activities. The director, associate director, assistant director for extension programs, director of communications and fiscal officer represent the core leadership team. With support from staff, hundreds of faculty and a dedicated group of campus coordinators on each campus, 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 grant 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 of individuals 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 (see page 26) or our website at www.flseagrant.org.

Communications

Communications activity 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 relevant information to millions of Floridians and tourists. Better informed citizens make better decisions that ultimately affect the use and conservation of Florida's fragile coastal resources.

Sea Grant Communications Program (COMM-6). Florida's 1,350-mile coastal corridor is affected daily with nearly 80 percent of its 18 million people living within 50 miles of either shore, coupled with 78 million visitors to the state each year. Sea Grant information can significantly reduce the severity of this impact 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. This project provides funding to utilize 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) Project leader: *Steve Kearl, University of Florida, skearl@ufl.edu; Dorothy Zimmerman, University of Florida, dozimmer@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; all 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.

2006-2010 Florida Sea Grant Goal Areas. Florida Sea Grant Extension faculty and staff work is concentrated in the nine Sea Grant goal areas over the next program cycle. Designated Sea Grant administrators, faculty and staff coordinate county and state plans of work that focus in these goal areas:

Goal Area	**Faculty Leader**
1. Biotechnology	William Seaman
2. Fisheries	Charles Adams
3. Aquaculture	Charles Adams and Leslie Sturmer
4. Seafood Safety	W. Steve Otwell
5. Waterfront Communities	Robert Swett
6. Ecosystem Health	Charles Jacoby
7. Coastal Hazards	Donald Jackson
8. Graduate Education	James Cato
9. Marine Education	Michael Spranger

About one-third of Florida Sea Grant's core funding is devoted to Sea Grant Extension activities. On-campus faculty provide 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 generate new knowledge which finds outlets through the Extension Program. Research faculty are also often asked to 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 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 S. Spranger, University of Florida, spranger@ufl.edu.*

Boating, Anchorage and Waterway Management (Various Projects). Pressures from a coastal population and unprecedented boating intensities are stressing coastal water bodies. Over one million residents' and tourists' boats use Florida waterways. A goal of this program is to educate boaters on proper boating and anchoring procedures in order to minimize habitat impact and thus maintain boating activity and the industry that it supports. Techniques used are anchoring guides, a five-year pilot anchorage management program, a regional harbor board, improved navigational charts and waterways guides. Another goal 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; Charles Sidman, University of Florida, cccf@ufl.edu; David Fann, University of Florida, dafann@ufl.edu*

NOAA South Florida Marine Ecosystem Outreach Project (E/T-9). Restoration and long-term sustained water quality in South Florida is a priority 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 decisions of citizens, business owners, and community leaders that are based on sound science. This project will serve as the educational link between science-based information developed by NOAA agencies and Sea Grant supported research and the citizens of South Florida. (2007) Project leader: *Michael S. Spranger, University of Florida, spranger@ufl.edu.*

National Sea Grant Extension Academy (E/T-16). Florida Sea Grant will coordinate, develop and establish a national academy for training professional people new to Sea Grant Extension to improve the knowledge and skills needed for work as a Sea Grant Extension faculty. The academy will provide an understanding of the Sea Grant organizational structure within the various state programs, knowledge of the application of extension fundamentals and process skills that will meet client needs, and an understanding of the administrative and management procedures common to the various state programs. (2006) Project leader: *Michael S. Spranger, University of Florida, spranger@ufl.edu.*

Coastal Storm Initiative Outreach Project (E/T-10). Forty-six percent of all hurricanes or tropical storms that pass over Florida have touched the St. Johns River watershed. A new offshore sentinel buoy near Jacksonville is providing weather and ocean conditions data in real time. This NOAA coastal storms initiative will allow emergency managers to make better predictions on which areas to evacuate and determine the best evacuation routes, among other uses. Florida Sea Grant is providing the education/outreach component of the project. (2006) Project leaders: *Michael S. Spranger, University of Florida, spranger@ufl.edu; Don Jackson, University of Florida, dlj1@ufl.edu.*

Southeast Atlantic Coastal Ocean Observing System (E/T-12). Florida Sea Grant Extension will continue its second-year outreach activity as a component of the Southeast Atlantic Coastal Ocean Observing System (SEACOOS). Four Sea Grant programs (North Carolina, South Carolina, Georgia, and Florida) are cooperating in this regional project. The goal is to establish a dialog with non-scientific users, identify their information needs and the preferred formats and methods of information delivery. Florida will train its extension faculty, focus on regional groups (e.g., ports, hazards) and local sectors (e.g., fishers and emerging response offices), host sector workshops and convene three in-state meetings with user groups. (Ongoing) Project collaborators: *Michael S. Spranger, University of Florida, spranger@ufl.edu; Chris Simoniello, University of Florida, simo@marine.usf.edu; Don Jackson, University of Florida, dlj1@ufl.edu; various county faculty.*

Southeast Regional Aquatic Nuisance Species Education and Outreach Network (E/T-13). The need for current information on the types and impacts of aquatic nuisance species in informal education settings is critical to the public. As part of a four-state southeast regional effort, Florida Sea Grant will conduct several training programs for extension faculty and informal educators. These individuals will then develop aquatic nuisance species programs and materials in their respective locales. (2006) 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 will "bridge 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.*

Gulf of Mexico Regional Fish Extension Project (E/FE-GM). The FY02 National Sea Grant federal appropriation required the enhancement of Sea Grant's fisheries extension program. Florida Sea Grant is collaborating in regional activity with other Gulf of Mexico states. Florida Sea Grant's focus is on the sustainability of the Gulf of Mexico shrimp industry. (2006) Project leaders: *Michael S. Spranger, University of Florida, spranger@ufl.edu*; *Chuck Adams, University of Florida, cmadams@ufl.edu.*

South Atlantic Regional Fish Extension Project (E/FE-SA). The FY02 National Sea Grant federal appropriation required the enhancement of Sea Grant's fisheries extension program. Florida Sea Grant Extension will work as a member of the South Atlantic Regional Fish Extension Project team that will address the topics of marine protected areas (MPAs), essential fish habitat (EFH) and fisheries management. (2006) Project leaders: *Michael S. Spranger, University of Florida, spranger@ufl.edu; Charles Jacoby, University of Florida, cajacoby@ufl.edu; Chuck Adams, University of Florida, cmadams@ufl.edu.*

Fisheries Extension Enhancement (E/FE-FSG). The FY02 National Sea Grant federal appropriation required the enhancement of Sea Grant's fisheries extension program. Florida Sea Grant will increase the amount of its Sea Grant fisheries extension activity. (2006) Project leaders: *Michael S. Spranger, University of Florida, spranger@ufl.edu; Chuck Adams, University of Florida, cmadams@ufl.edu; Charles Jacoby, University of Florida, cajacoby@ufl.edu; various county faculty.*

Florida Sea Grant Fish Extension Project (SGEP-13-FE). The FY03 National Sea Grant federal appropriation continued the required enhancement of Sea Grant's fisheries extension program. Florida Sea Grant will employ two fisheries-oriented county faculty (Bay, Collier) and increase its recreational fishery extension program activity by one-half FTE. (2007) Project leaders: *Michael S. Spranger, University of Florida, spranger@ufl.edu; Stephen Holland, University of Florida, sholland@hhp.ufl.edu; Richard Makopundo, University of Florida, rmakopundo@hhp.ufl.edu.*

Online Outreach Designed to Demystify Marine Biotechnology: marinebiotech.org (E/T-11). This project evolved in response to a National Sea Grant Initiative and is intended to inform and educate the general public about marine biotechnology. Moreover, it is intended as a repository for informative and educational materials for users ranging from K-12 students and teachers to university students and researchers. This website is also intended to be a comprehensive working arena for university research and industry interface. (2006) Project leaders: *James Masterson, Harbor Branch Oceanographic Institution, masterson@hboi.edu; Shirley Pomponi, Harbor Branch Oceanographic Institution, pomponi@hboi.edu.*

Research

Florida Sea Grant research is funded from two principal sources. Every two years, Florida Sea Grant invites research proposals in areas defined as high priority in our strategic plan. A rigorous peer review process determines which proposals are funded. The normal ratio is about one project funded for each five proposals submitted. In addition, competitions are held at the national level in specific program areas defined by the National Sea Grant Office and by federal appropriations. Current research projects in this directory represent a mix of projects from both these funding sources. Current projects which are scheduled to end in 2006, 2007 or subsequent years are included in this directory. Each is summarized with the project investigators listed. 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 in this directory. (See www.flseagrant.org for other projects and collaborations.)

Economic Leadership

Florida Sea Grant's mission incorporates the strategic issue of providing economic leadership for marine bitechnology, fisheries, aquaculture, seafood safety and the economic well-being of coastal communities. Sea Grant goals in these areas are specific to Florida and represent a subset of those pursued by the National Sea Grant College Program.

Marine biotechnology in Florida represents an opportunity for both university scientists and biotechnology-based 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.

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 which contributes to habitat loss. Worldwide, aquaculture provides almost 30 percent of the fish and shellfish consumed by people. In Florida, aquaculture provides only a small amount of the state's total. The largest segment of the industry is freshwater tropical fish for the hobby aquarium trade. Growth potential exists for the food and hobby marine aquaculture industry.

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

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

BIOTECHNOLOGY

Design and Development of New Antifouling Paint Additives Based on Marine Pyridyls (R/LR-MB-20). This project builds on the investment and findings in a previous Florida Sea Grant research project (R/LR-MB-16). Researchers will synthesize pyridyl compounds and field test their ability as paint additives to reduce biofouling. (2006) Principal investigators: *William R. Kem, University of Florida, kem@pharmacology.ufl.edu; Ferenc Soti, University of Florida, soti@pharmacology.ufl.edu; Dan Rittschof, Duke University, ritt@duke.edu.*

Characterization and Synthesis of Hydroxconophans: A New Class of Neuropharmacological Agents from Cone Snails (R/LR-MB-21).

This project builds on the investment and findings in a previous Florida Sea Grant research project (R/LR-MB-18). Researchers will expand the set of conopeptides from cone snails and evaluate therapeutic potential. (2006) Principal investigators: *Frank Mari, Florida Atlantic University, mari@fau.edu; Gregg Fields, Florida Atlantic University, fieldsg@fau.edu.*

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 biodiversity 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). The goal is to provide 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 downstream experiments and sustainable production of unique bioactive marine natural products. (2008) Principal investigators: *Jose Lopez, Harbor Branch Oceanographic Institution, Lopez@hboi.edu; Robert Feldman, SymBio Corporation, rfeldman@sym-bio.com.*

Cloning of the Terpene Synthase Involved in Eleutherobin Biosynthesis (R/LR-MB-24). Lack of supply has hampered the development of many marine natural products. The aim of the project is to purify the native terpene synthase leading to eleutherobin and clone the corresponding gene. Our long-term goal is to develop a commercially relevant production method of eleutherobin combining recombinant technology with chemical synthesis. (2008) Principal investigator: *Russell Kerr, Florida Atlantic University, rkerr@fau.edu.*

FISHERIES

Combining DNA Forensic and Population Genetic Approaches for Application to Shark Conservation, Management, and Trade Monitoring (R/LR-B-56). There is an urgent need for better tracking of shark fisheries and trade on a species- and population-specific basis to better serve and manage sharks on a worldwide basis. This continues earlier work to develop identification markers for shark species that is already being used by NOAA law enforcement. (2006) Principal investigator: *Mahmood S. Shivji, Nova Southeastern University, mahmood@nova.edu.*

Assessment of Regional Spiny Lobster Stock Abundance Trends and Linkages that Explain Florida Stock Abundance Declines (R/LR-B-57). The Caribbean spiny lobster is Pan Caribbean because of long larval lifespan (6-12 mo.) residing in strong ocean currents. In spite of a 50% reduction in traps, the Florida fishery shows a 58% decrease in landings during the 1999 to 2002 fishing seasons. Significant catch decreases are observed also in the Bahamas (26%), Cuba (30%) and Nicaragua (35%). No knowledge regarding the origin of these common decreasing trends is available, but regional overexploitation and environmental change are suspected. This proposal investigates the roots of such decreasing trends. (2006) Principal investigators: *Nelson Ehrhardt, University of Miami, nehrhardt@rsmas.miami.edu; Donald Olson, University of Miami, dolson@rsmas.miami.edu.*

Tracking the Movements of Bull Sharks in the Gulf of Mexico Using Pop-Up Satellite Archival Transmitters (PSAT Tags) (PD-05-4). Knowledge of shark migration routes and local movement patterns could contribute to beach safety management. Recent advances in electronic tagging technology (pop-up satellite archival transmitters or PSAT tags) make it possible to gather and store detailed information on swimming depth, water temperature, and a daily record of location that is uploadable to ARGOS satellites. Objectives of this research are to identify and characterize the seasonal migratory patterns of bull sharks in the northern and eastern Gulf of Mexico off Florida, identify and characterize their habitat use patterns, and determine survival rates and overall fitness of those caught by longline fishing. (2006) Principal investigator: *George Burgess, University of Florida, gburgess@flmnh.ufl.edu.*

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 aims to develop an approach to evaluate the essential nature of fish nursery habitat by linking nursery-specific juvenile production with eventual recruitment to adult habitat. This 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 bipartite 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 to supply the international fin trade requires comprehensive management and trade monitoring on a species and population-specific basis. The goal of the project is to make possible 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.*

Development of an Advanced Underwater Video Telemetry and Data Collection Instrument for Remote Observation of Aquatic Organisms and Underwater Equipment (R/MI-12). There is widespread interest in the scientific application of underwater video units from researchers at academic institutions, government agencies, nonprofit research foundations and the fishing industry. This project will test the application of CRITTER-CAM on nurse, bull and hammerhead sharks. (2006) Principal investigators: *Michael Heithaus, Florida International University, heithaus@fiu.edu; Greg Marshall, National Geographic Society, gmarshal@ngs.org; Jeffrey Carrier, Albion College, jcarrier@albion.edu.*

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 mortality or total losses that result from prolonged hot summers. Triploid clams will be 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. (2007) 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.*

A Critical Evaluation of Two Approaches to Biomonitoring: Functional Biomarker Assays and Stress Protein Biomarkers in *Mercenaria mercenaria* (hard clam) (E/INDST-4). Biological changes in an animal following exposure to sublethal environmental or anthropogenic stresseors can be observed using biomarkers. Traditional functional biomarkers measure long-term responses, and protein biomarkers measure the molecular response to environmental stressors. Few studies have attempted to validate the newer molecular technology with the traditional functional techniques. Research will determine whether stress protein biomarkers correlate with traditional functional biomarker assays in hard clams following sublethal low oxygen (hypoxia) exposure and sublethal thermal stress. (2006) Principal investigators:

David Julian, University of Florida, Julian@zoo.ufl.edu; Joanna J. Matos, University of Florida, jjmatos@ufl.edu; Craig Downs, Haerecticus Environmental Laboratory, haereticusl@direcway.com.

Improved Hatchery Technology of Cobia (*Rachycentron canadum)* Using Proactive Microbial Management and a Simplified Live Food Regime (R/LR-A-40). The main objective is to develop innovative, reliable and environmentally sustainable hatchery technology for larval rearing and production of cobia fingerlings. This will be achieved by developing proactive health management methods to reduce the input of microbes from major sources of contamination during the culture cycle (eggs/hatching/live food), and to increase survival and yield of fingerlings through the addition of probiotic bacteria to the larval culture tanks and to live feeds prior to feeding the larvae. A quantitative microbial management technology, using selected strains of probiotic bacteria will be adapted to cobia fingerling production. (2006) Principal investigators: *Daniel Benetti, University of Miami, dbenetti@rsmas.miami.edu; Orhun Refik, University of Miami, refik@rsmas.miami.edu; Philippe Douillet, EcoMicrobials, LLC; Jorge Alarcon, Aquaculture Center of the Florida Keys; Owen Stevens, Aquaculture Center of the Florida Keys; Carlos Martinez, University of Florida, cvmartinez@ufl.edu.*

Development of Feeding Mechanics, Performance and Prey Selectivity in Marine Fish Larvae: A Novel Approach to Understanding Food Requirements of Marine Ornamental Fish (R/LR-A-41-PD). High mortality during larviculture remains a major obstacle to successful rearing of a large number of marine ornamental fish species. In particular, catastrophic mortality is associated with first-feeding or the "critical period" during which larvae switch from endogenous to exogenous feeding. This phenomenon creates a need for research to determine the causes of mass mortality during the early stages of exogenous feeding in hatchery-reared marine ornamental fish larvae. (2006) Principal investigators: *Ralph Turingan, Florida Institute of Technology, turingan@fit.edu; LeRoy Creswell, University of Florida, creswell@ufl.edu; Kevin Gaines, Ocean Reefs and Aquariums - Harbor Branch Oceanographic Institution, gaines@hboi.edu.*

Demonstrating Hatchery and Growout Technology for Production of Cobia (*Rachycentron canadum*) from Egg to Market (R/LR-A-42). Economic losses associated with heavy mortalities of cobia fingerlings during shipping, and outbreak of parasitic diseases have limited the economic viability of operations during the early stages of industry development. The objective of this study is to perfect and transfer innovative, reliable and environmentally sustainable technologies and protocols for disease prophylaxis and management of cobia eggs, larvae, post-flexion larvae, fingerlings, juveniles and adults. The expected result is to improve hatchery and offshore growout technology to expand marine fish aquaculture in the United States. (2006) Principal investigators: *D. Benetti, University of Miami, dbenetti@rsmas.miami.edu*; *Orhun Refik, University of Miami, refik@rsmas.miami.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 angelfish) and *Liopropoma carmabi* (candy basslet). These species demand a high price in the aquarium trade and have been successfully spawned in captivity. Researchers will use 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 for its potential as a new molluscan species for Florida shellfish producers. (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.*

SEAFOOD SAFETY

Improved Methods for Molecular Detection of *Vibrio vulnificus* (R/LR-Q-26). *Vibrio vulnificus* remains the leading cause of seafood-associated deaths. Current detection assays are time consuming (2-7 days), labor intensive, expensive and not always reliable. FDA has increasingly turned to molecular detection, but problems have been reported with available assays. The objective of this project is to evaluate and improve molecular detection and typing methods for *V. vulnificus* in order to standardize evaluation of oyster and seawater samples. (2006) Principal investigators: *Anita Wright, University of Florida, acw@ufl.edu; David Heil, Florida Department of Agriculture and Consumer Services, Bureau of Seafood and Aquaculture Marketing, heild@doacs.state.fl.us.*

Regulation of Capsular Polysaccharide and Virulence in *Vibrio vulnificus* (R/LR-Q-27). The goal of this work is to define genetic elements that regulate the on/off switching involved in the phase variation from virulent to avirulent forms of *V. vulnificus.* Preliminary data have identified phase variable genes within the capsular polysaccharide (CPS) operon, and these mechanisms and others will be investigated for application to intervention strategies to

reduce risk associated with oyster consumption and also for virulence-specific gene probes and/or molecular typing. (2007) Principal investigators: *Anita Wright, University of Florida, acw@ufl.edu; William Brown, ABC Laboratories, wbrown@abcr.com.*

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. (2007) 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. (2007) Principal investigator: *Judy L. Jamison, Gulf & South Atlantic Fisheries Foundation, Inc., judy.jamison@worldnet.att.net.*

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 directed at 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: *Murat Balaban, University of Florida, mob@ufl.edu; Hordur Kristinsson, University of Florida, hordur@ufl.edu; W. Steven Otwell, University of Florida, otwell@ufl.edu.*

WATERFRONT COMMUNITIES

Waterways and Waterfronts: The Legal Framework for Public Access (R/C-P-27-CC). Local waterfront governments often lack the time, funds or expertise to pursue waterfront policy innovation and secure this within their comprehensive planning structure. They would benefit from a comprehensive legal analysis of coastal policymaking authority, especially in the confusing nearshore jurisdictional environment, and from a systematic assessment of the planning tools at their disposal that are packaged in a usable format. This project will provide this assessment and incorporate non-regulatory alternatives such as tax and other land use incentives. (2006) Principal investigators: *Thomas Ankersen, University of Florida, ankersen@law.ufl.edu; Richard Hamann, University of Florida, hamann@law.ufl.edu; Timothy McLendon, University of Florida, mclendon@law.ufl.edu; West Coast Inland Navigation District (WCIND), wcind@comcast.net.*

Smart Growth for Coastal Communities (R/C-P-28-CC). In coastal communities across the nation, there is a growing concern that current development patterns, dominated by what some call "sprawl," are contributing to water quality and environmental degradation. Though supportive of growth, communities are increasingly seeking solutions to balance growth with community and environmental values. Community decision-making often lacks the resources and training necessary to address these issues resulting in a new demand and a new opportunity for smart growth extension programming. (2006) Principal investigators: *Michael S. Spranger, University of Florida, spranger@ufl.edu; Charles Sidman, University of Florida, cccf@ufl.edu.*

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. (2008) Principal investigators: *Michael S. Spranger, University of Florida, spranger@ufl.edu; Robert S. Swett, University of Florida, rswett@ufl.edu; Charles Sidman, University of Florida, cccf@ufl.edu.*

Promoting Policy Planning for Coastal Communities, Coastal Access and Coastal Hazards (R/C-P-30). Local waterfront governments would benefit from a comprehensive legal analysis of their coastal policymaking authority, especially in the confusing nearshore jurisdictional environment, and from a systematic assessment of the planning tools at their disposal that is packaged in a usable format. This project will be 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. (2008) Principal investigators: *Thomas T. Ankersen, University of Florida, ankersen@law.ufl.edu; Richard Hamann, University of Florida, hamann@law.ufl.edu; Timothy McLendon, University of Florida, mclendon@law.ufl.edu.*

Intelligent Manatee Idle Speed Zones (R/MI-13-PD). Controversy currently exists between users of waterways and proponents that wish to protect manatee habitat. Manatee idle speed zones greatly impact coastline property values, constrain the construction of docks and boat ramps, and affect the total economic output of the Florida marine industry ($14.1 billion dollars/180,000 related jobs). This research has the potential to significantly reduce the economic impact that round-the-clock idle speed zones have on boating associated businesses and recreational boating activities in Florida's waterways, while maintaining the integrity of the manatee habitat. (2006) Principal investigators: *Christopher Niezrecki, University of Florida, niezreck@ufl.edu; Diedrich Beusse, University of Florida, beussed@vetmed.ufl.edu.*

Coastal Ecosystem Health and Public Safety

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 analysis of datasets, multidisciplinary approaches and training of students.

Two general principles guide Florida Sea Grant activities to sustain the functional integrity of Florida's estuaries. First, the functions of all estuaries are intimately associated with the hydrological system. Second, much of the important variability in the system is cyclical in nature. To be successful in this area, Florida Sea Grant uses specific criteria to guide its work. They are: research must be at the site of existing management-based research being conducted by a partner agency, non-point source contamination must be the focus, the way that the scientific results will be used must be specified, and work must be multidisciplinary.

The Florida coastline is at risk from a variety of natural hazards, most notably the winds, waves and floods generated by 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. 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.

ECOSYSTEM HEALTH

A Multidisciplinary Investigation for Determining MPA Baselines at Bimini Bahamas and Essential Fish Habitat for the Lemon Shark *Negaprion brevirostris* at Three Nursery Sites (R/C-E-47). The goal of this project is to provide critical fish habitat information necessary for the conservation and management of a protected, large coastal species, the lemon shark (*Negaprion brevirostris)* and to provide baseline conditions for the planned Marine Protected Area that will protect the mangrove seagrass nursery at Bimini, Bahamas. (2006) Principal investigators: *Samuel Gruber, University of Miami, sgruber@rsmas.miami.edu; John Hoenig, Virginia Institute of Marine Science, hoenig@vims.edu; Kevin Feldheim, The Field Museum, kfeldheim@fieldmuseum.org.*

Quantification of Habitat Use by Reef Fishes in the Florida Coral Reef Ecosystem (R/C-E-50). The Florida Keys coral reef ecosystem, comprised of a network of interconnected inshore coastal bays, barrier islands,

and offshore coral reef enviornments, supports highly productive diverse fish and invertebrate communities and a multibillion dollar fishing and tourism industry. The goal of this project is to develop robust methods for identification and quantification of reef fish habitat use that improves the statistical precision of ecosystem-wide fishery-independent reef fish visual census sampling surveys; enhances stock assessment capabilities; and provides a framework for evaluation of marine reserves. (2006) Principal investigators: *Jerry Ault, University of Miami, ault@rsmas.miami.edu; Steven Smith, University of Miami, sgsmith@rsmas.miami.edu; James Bohnsack, National Marine Fisheries Service - Southeast Fisheries Science Center, Jim.bohnsack@noaa.gov; Peter Rubec, FWC Fish and Wildlife Research Institute, peter.rubec@fwc.state.fl.us; S. L. Miller, NOAA - NURC, millers@uncw.edu.*

Using Natural Chemical Tracers to Evaluate Point- and Non-Point Sources of Freshwater Inputs into Biscayne Bay (R/C-E-51). Identification of point-source and non-point sources of freshwater to coastal estuaries is essential in understanding the water quality of these areas. Planned future changes in freshwater deliveries to Biscayne Bay from point-source discharges via canals to non-point source discharge from wetlands and groundwater flow requires a monitoring method that effectively detects these changes, i.e., one that can detect changes in canal discharge versus groundwater seepage. Researchers will define the geochemical signature and determine the spatial and temporal variability of the dominant freshwater sources into Biscayne Bay. A geochemical mixing model will be used to quantify the contributions of the major freshwater end-members with seawater to form the observed water chemistry in Biscayne Bay. (2006) Principal investigators: *René M. Price, Florida International University, Rene.Price@fiu.edu; Peter K. Swart, University of Miami, p.swart@miami.edu.* Associate investigator: *Jeremy C. Stalker, Florida International University, Jeremy.Stalker@fiu.edu.*

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 coliform and enterococci by membrane filtration. The problem with this standard indicator monitoring is that there is a lag of at least 24-48 hours between when the sample is collected and when the data become available. The goal of the research is to develop portable sensor technology for rapid, sensitive and specific detection and quantification of entercocci 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 nearshore 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 subtidal water from Cape Canaeaveral to Key Biscayne. Their formation is impactd 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.*

COASTAL HAZARDS

Development of a Predictive Index for Rip Currents (R/C-S-44). Building on previous FSG research (R/C-S-42), a predictive rip current index can be employed to reduce the need for rip current-related rescues and lower the number of deaths attributed to this coastal hazard. The goal of this project is to develop the index, which would more accurately identify the conditions under which the strongest and most dangerous rip currents will occur. It will also provide real-time information for assisting lifeguards with staffing decisions and to alert the public to the hazard. (2006) Principal investigators: *Robert Thieke, University of Florida, rjthieke@ufl.edu; Andrew Kennedy, University of Florida, abkenn@ufl.edu.*

Risk Versus Mitigation Measures: Quantifying Residential Vulnerability to Hurricane Winds and Evaluating the Cost Effectiveness of Retrofits (R/C-S-45). The implementation of affordable solutions to mitigate damage from hurricane winds can only follow from a quantification of the wind forces causing this destruction, models that relate wind forces to the capacity of man-made structures to resist them, and engineering-based evaluations of the cost effectiveness of various mitigation techniques. There is a strong need for a public risk model that will allow for a scientific and accurate evaluation of the cost effectiveness of mitigation measures on the scale of city, county, or state. (2006) Principal investigators: *Kurtis Gurley, University of Florida, kgurl@ce.ufl.edu; Jean-Paul Pinelli, Florida Institute of Technology, pinelli@fit.edu; Chelekara Subramanian, Florida Institute of Technology, subraman@fit.edu.*

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. Also lacking are collocated wind and wave measurements which could help to improve turbulence predictions and thus gust loading on houses. 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). The majority of hurricane damage is associated with storm surges and coastal flooding. This study will validate the new storm surge and coastal flooding modeling system CH3D-SSMS, which will be coupled with the SBEACH 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. Outcome of the research will directly benefit NOAA's effort to improve its storm surge models. (2008) Principal investigator: *Peter Sheng, University of Florida, pete@coastal.ufl.edu.*

Mitigating the Exposure and Vulnerability of Coastal Communities to Hurricane Flood Damage Through Growth Management (R/C-P-26). Vulnerability of human settlements to damage from natural disasters is a significant constraint to local and global sustainability. Local growth management strategies have been advocated as a principal strategy for reducing such vulnerability, but empirical analysis of direct measures of the effectiveness of such strategies is very limited. Principal beneficiaries will include the Florida Department of Community Affairs, local governments of coastal jurisdictions in Florida, and state and local governments in other coastal areas of the United States. (2006) Principal investigators: *Robert Deyle, Florida State University, rdeyle@garnet.acns.fsu.edu; Timothy Chapin, Florida State University, tchapin@coss.fsu.edu; Earl Baker, Florida State University, jbaker@fsu.edu.*

Atlantic Tsunami Run-up Modeling (PD-04-10). Atlantic Basin tsunami are being recognized as potentially deadly hazards, given the high population density and infrastructure development in coastal North America. Water-waves modeling now includes sophisticated computerized simulations of potentially catasrophic tsunami events to assist emergency managers and inform the public of realistic mitigation strategies. Employing a program MOST (Method of Splitting Tsunami) computer code for the first time in an Atlantic setting, researchers will simulate the coastal run-up of the Lisbon 1755 event and other potential tsunami events along the U.S. coast. (2006) Principal investigators: *George A. Maul, Florida Institute of Technology, gmaul@fit.edu; Jose Borrero, University of Southern California, jborrero@usc.edu; Diana Syverston, Florida Institute of Technology, dsyverts@fit.edu.*

Education and Human Resources

Investment in the future of Florida's coastal resources requires both capital and labor. It is critical that the labor force be highly trained and skilled. Through the support of undergraduate and graduate education and through skill-based training, Florida Sea Grant produces highly trained 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 website (www.flseagrant.org).

Dean John A. Knauss Marine Policy Fellowship

These fellowships allow a student to spend a year in Washington, D.C. in the national legislative or executive branches of government. They are awarded on a competitive basis annually. There have been 642 participants in this excellent program. Forty-two winners were selected from the nationwide competition of about 80 applicants for 2006 placement. Nine are placed with legislative hosts and 33 are placed with executive hosts. Thirty-four of the 642 have been from Florida universities with all 34 placed since 1982. Florida had three Fellows in 2001, one Fellow in 2002, 2003 and 2004, three in 2005 and one in 2006.

National Sea Grant Industrial Fellows Program

This competitive fellowship is awarded in a national competition. It provides, in cooperation with specific companies, multi-year support for highly qualified students who are pursuing research on topics of interest to a particular industry or company. An annual competition is held each year to select fellows. Florida had four Fellows funded in 1998, 2002 (2) and 2004. The program was suspended by the National Sea Grant Office for 2006 as part of an overall budget-cut. The program will potentially be reinstated beginning in 2007.

Aylesworth Foundation for the Advancement of Marine Science

Two types of scholarships are awarded annually on a competitive basis. The Aylesworth Scholarship is awarded to students enrolled at a Florida university that participates in the Florida Sea Grant College Program. To date, 83 students in 12 different Florida universities have received these prestigious scholarships. The Old Salt's Marine Biology Scholarship is similar to the Aylesworth Scholar

ship, but is for students enrolled at the University of South Florida only. Fourteen students have held these scholarships. Both of these scholarship programs are supported completely by private funds and donations.

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 the six fellows chosen each year. Two Florida students have been selected.

Elise B. Newell Seminar Series

Annually, these seminars bring internationally renowned scholars and scientists to meet with Florida's own leaders in the academic community for a few days of formal and informal dialogue about timely issues concerning the coast and oceans. Seminars to be supported are selected from proposals submitted by faculty from the network of Florida Sea Grant partner institutions.The format for each event includes both a formal presentation as well as individual and small group discussions. Since 1986 when Florida Sea Grant started this program, more than 70 distinguished speakers have delivered formal seminars and been involved in many visits and consultations with Florida's faculty and students. They come from all over the United States and occasionally from another country, and represent numerous outstanding marine-related organizations. Six are planned in 2006. As just one endorsement, Professor Aswani Volety of Florida Gulf Coast University wrote that "a fledgling institution like FGCU could not bring excellent scholars like the past and present speakers without your support."

Campus Coordinators

Florida Sea Grant relies heavily on its group of "Campus Coordinators." Appointed by the president of each participating institution to represent Sea Grant, they provide both valuable advice in the management of the Sea Grant Program and a liaison with faculty and students on each campus to the Sea Grant Program statewide.

The Campus Coordinators meet at least biennially, depending on need and advice of the group. They provide programmatic direction as well as administrative direction regarding the way the Sea Grant Program is operated. Florida Sea Grant Management requests their input on such major issues as contributing to the annual or biennial proposal review process, providing input on operational issues including how best to communicate with the 700-800 faculty statewide who are interested in Sea Grant. All Campus Coordinators maintain on-campus e-mail or snail mail lists for communicating with faculty regarding calls for proposals and distributing Florida Sea Grant's bi-monthly Faculty Progress Report. The current membership follows:

Campus Coordinators

Florida A&M University
Larry Robinson
Institute of Environmental Sciences
Foote-Hylier Room 301
Tallahassee, FL 32307
(850) 599-3276
larry.robinson@famu.edu

Florida Atlantic University
Russell Kerr
Dept. of Chemistry
PO Box 3091
Boca Raton, FL 33431-0991
(561) 297-3356
Rkerr@fau.edu

Florida Gulf Coast University
Greg Tolley
College of Arts and Sciences
10501 FGCU Blvd. South
Ft. Myers, FL 33965-6565
(239) 590-7206
gtolley@fgcu.edu

Florida Institute of Technology
Junda Lin
College of Science
Biological Sciences Dept.
150 West University Blvd
Melbourne, FL 32901-6982
(321) 674-7587
jlin@fit.edu

Florida International University
James Fourqurean
Dept. of Biological Sciences
OE 212, University Park
Miami, FL 33199-0001
(305) 348-2201
Jim.Fourqurean@fiu.edu

Florida State University
Richard Iverson
Oceanography Dept.
515 OS/B
Tallahassee, FL 32306-3048
(850) 644-1730
iverson@ocean.fsu.edu

Harbor Branch
Oceanographic Institution
Dennis Hanisak
Marine Education
5600 US 1 North
Ft. Pierce, FL 34946
(772) 465-2400 ext. 306
hanisak@hboi.edu

Mote Marine Laboratory
Ken Leber
Center for Fisheries Enhancement
1600 Thompson Parkway
Sarasota, FL 34236
(941) 388-4441 ext. 406
kleber@mote.org

New College of Florida
Sandra Gilchrist
Natural Sciences
5700 N. Tamiami Trail
Sarasota, FL 34243-2197
(941) 359-4370
gilchrist@ncf.edu

Nova Southeastern University
Andrew Rogerson
Oceanographic Center
8000 N. Ocean Drive
Dania Beach, FL 33004
(954) 262-2354
arogerso@nova.edu

University of Central Florida
Linda Walters
Dept. of Biology
4000 Central Florida Blvd
Orlando, FL 32816
(407) 823-2148
ljwalter@pegasus.cc.ucf.edu

University of Florida
William Seaman
Fisheries and Aquatic Sciences
PO Box 110400
Gainesville, FL 32611-0400
(352) 392-5870 ext. 228
seaman@ufl.edu

University of Miami
Nelson Ehrhardt
Marine Biology and Fisheries
4600 Rickenbacker Causeway
Miami, FL 33149-1031
(305) 361-4741
nehrhardt@rsmas.miami.edu

University of North Florida
Kelly J. Smith
Biology Dept.
4567 St. John's Bluff Road South
Jacksonville, FL 32224
(904) 620-1954
ksmith@unf.edu

University of South Florida
Norman Blake
College of Marine Science
140 7th Avenue South
St. Petersburg, FL 33701
(727) 553-1521
Nblake@marine.usf.edu

University of West Florida
William Huth
Office of Research and Graduate Studies
11000 University Parkway
Pensacola, FL 32514-5750
(850) 474-2826
whuth@uwf.edu

Program Management – Main Office

Florida Sea Grant College Program
PO Box 110400
Gainesville, FL 32611-0400
(352) 392-5870 or
Suncom: 622-5870
Fax: (352) 392-5113

Management/Administration
James Cato - Director
ext. 227
jccato@ufl.edu

William Seaman, Jr.
Associate Director
ext. 228
seaman@ufl.edu

Ed Harvey
Fiscal Officer
ext. 230
ejh@ufl.edu

Sharon Cook
Administrative Assistant
ext. 221
scook@ufl.edu

Jacquelyn Whitehouse
Executive Secretary
ext. 222
jhw04@ufl.edu

Gina Edwards
Office Assistant
ext. 224
gewards@ufl.edu

Sea Grant Communications
P.O. Box 110409
Gainesville, FL 32611-0409
(352) 392-2801
Fax: (352) 392-5113

Steve Kearl
Communications Director
ext. 233
skearl@ufl.edu

Dorothy Zimmerman
Communications Coordinator
ext. 232
dozimmer@ufl.edu

Kim Wagner
Program Assistant
ext. 231
kawagner@ufl.edu

Sea Grant Extension
PO Box 110405
Gainesville, FL 32611-0405
(352) 392-1837
Fax: (352) 392-5113

Michael S. Spranger
Assistant Director for Extension
ext. 224
spranger@ufl.edu

Don Jackson
Project Coordinator
ext. 226
dlj1@ufl.edu

Treva Damron
Senior Secretary
ext. 225
damron@ufl.edu

On-Campus Extension Specialists

Charles Adams – Marine Economics
PO Box 110240
Gainesville, FL 32611-0240
(352) 392-1826 ext. 223 or
Suncom: 622-1826 ext. 223
Fax: (352) 392-3646
cmadams@ufl.edu

Charles Jacoby – Estuarine Ecology
PO Box 110600
Gainesville, FL 32611-0600
(352) 392-9617 ext. 272 or
Suncom: 622-9617 ext. 272
Fax: (352) 392-3672
cajacoby@ufl.edu

Steven Otwell – Seafood Technology
PO Box 110375
Gainesville, FL 32611-0375
(352) 392-4221 or
Suncom: 622-1991 ext. 304
Fax: (352) 392-8594
otwell@ufl.edu

Robert Swett – Waterway Management
PO Box 110405
Gainesville, FL 32611-0405
(352) 392-6233 or
Suncom: 622-6233
Fax: (352) 392-5113
rswett@ufl.edu

On-Campus Extension Cooperators
(Part-time)

Tom Ankersen – Marine/Coastal Law
Levin College of Law
PO Box 117629
Gainesville, FL 32611-7629
(352) 392-2237
Fax: (352) 392-1457
ankersen@law.ufl.edu

Richard Hamann - Marine/Coastal Law
Levin College of Law
PO Box 117629
Gainesville, FL 32611-7629
(352) 392-2237
Fax: (352) 392-1457
hamann@ufl.edu

Stephen Holland – Recreational Fisheries
PO Box 118208
Gainesville, FL 32611-8208
(352) 392-4042 ext. 1313
Fax: (352) 392-7588
sholland@hhp.ufl.edu

William J. Lindberg – Fisheries Habitat
Dept. of Fisheries and Aquatic Sciences
PO Box 110600
Gainesville, FL 32611
(352) 392-9617 ext 239 or
Suncom: 622-9617 ext 239
Fax: (352) 392-3672
wjl@ufl.edu

Richard Makopondo – Recreational Fisheries
Dept. of Tourism, Recreation and Sport Management
PO Box 118208
Gainesville, FL 32611-8208
(352) 392-4042 ext 1242
Fax: (352) 392-7588
rmakopondo@hhp.ufl.edu

Charles Sidman – Coastal Planning
PO Box 110405
Gainesville, FL 32611-0405
(352) 392-6233 or
Suncom: 622-6233
Fax: (352) 392-5113
cccf@ufl.edu

Off-Campus Extension Faculty

Dianne Behringer – Broward
3245 College Ave.
Davie, FL 33314-7798
(954) 370-3725
Fax: (954) 370-3737
DBehringer@broward.org

Brian Cameron – Bay
647 Jenks Ave., Suite A
Panama City, FL 32401-2629
(850) 784-6105
Fax: (850) 784-6107
camerbj@ufl.edu

Marella G. Crane – Miami-Dade
RSMAS
4600 Rickenbacker Causeway
Miami, FL 33149-1098
(305) 421-4017
Fax: (305) 421-4674
marella@ufl.edu

LeRoy Creswell – St. Lucie
8400 Picos Road, Suite 101
Ft. Pierce, FL 34945-3045
(772) 462-1660
Fax: (772) 462-1510
creswell@ufl.edu

Andrew Diller – Escambia
3740 Stefani Road
Cantonment, FL 32533-7792
(850) 475-5230 or
Suncom: 690-5230
Fax: (850) 475-5233
apdiller@ufl.edu

Bryan Fluech – Collier
Rookery Bay NERR
300 Tower Road
Naples, FL 34113
(239) 417-6310 ext 225
Fax: (239) 417-6315
fluech@ufl.edu

Douglas Gregory – Monroe
UF/MC Extension Service
1100 Simonton Street, Room 2-260
Key West, FL 33040
(305) 292-4501 or
Suncom: 472-4501
Fax: (305) 292-4415
drg@ufl.edu

L. Scott Jackson – Okaloosa, Walton
732 North 9th Street
DeFuniak Springs, FL 32433
(850) 892-8172
Fax: (850) 892-8443
lsj@ufl.edu

William (Bill) Mahan – Franklin
66 4th Street
Apalachicola, FL 32320
(850) 653-9337
Fax: (850) 653-9447
bmahan@ufl.edu

Carlos Martinez – Marine Ornamentals (statewide)
UF Tropical Aquaculture Laboratory
1408 24th Street SE
Ruskin, FL 33570
(813) 671-5230 ext. 109
Fax: (813) 672-5234
cvmartinez@ufl.edu

Maia McGuire – Nassau, Duval, St. Johns, Flagler
3125 Agriculture Center Drive
St. Augustine, FL 32092
(904) 209-0430 or
Suncom: 865-2629
Fax: (904) 209-0431
mpmcg@ufl.edu

Justin D. Sapp – Taylor
203 Forest Park Drive
Perry, FL 32347-6396
(850) 838-3508
Fax: (850) 838-3546
justinds@ufl.edu

Christina (Chris) Simoniello – Ocean Observation (Southeast US)
USF College of Marine Science
140 7th Avenue South
St. Petersburg, FL 33701
(727) 553-1237
Fax: (727) 553-1189
simo@marine.usf.edu

Elizabeth (Betty) Staugler – Charlotte
25550 Harbor View Road, Unit 3
Port Charlotte, FL 33980
(941) 764-4340
Fax: (941) 764-4343
staugler@ufl.edu

John Stevely – Manatee, Sarasota, Hillsborough
1303 17th Street West
Palmetto, FL 34221-5998
(941) 722-4524
Fax: (941) 721-6608
jsmarine@ufl.edu

Leslie Sturmer – Aquaculture (statewide)
PO Box 89
Cedar Key, FL 32625
(352) 543-5057
Fax: (352) 543-6958
LNST@ufl.edu

Donald Sweat – Levy, Citrus, Hernando, Pinellas
830 First Street South
St. Petersburg, FL 33701
(727) 553-3399
Fax: (727) 553-1109
dsweat@marine.usf.edu

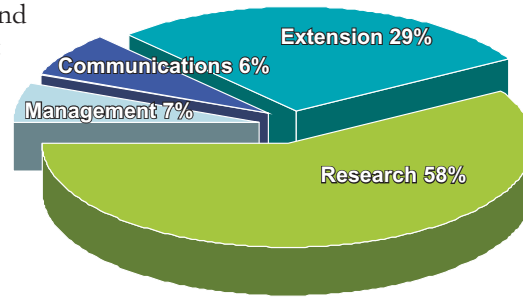
Christina Verlinde – Santa Rosa
6263 Dogwood Drive
Milton, FL 32570
(850) 623-3868
Fax: (850) 623-6151
chrismv@ufl.edu

Robert (Bob) Wasno – Lee
3406 Palm Beach Blvd.
Fort Myers, FL 33916-3736
(239) 461-7518 or
Suncom: 726-7518
Fax: (239) 461-7501
wasnorm@leegov.com

Vacant – Brevard
1455 Treeland Blvd. SE
Palm Bay, FL 32909-2212
(321) 952-4536

How You Can Invest in Florida's Coast

Florida Sea Grant is the only statewide program in Florida that conducts research, education, and extension programs on marine and coastal issues. Each year, the program manages approximately $4.8 million in federal Sea Grant and matching funds, dedicating at least 50 percent of these core funds to support research.



Allocation of Federal Sea Grant and Matching Funds in Florida for 2004-05

Your gift can strengthen Sea Grant's mission, for the benefit of Florida's citizens, marine industries, and coastal environment. Florida Sea Grant, headquartered at the University of Florida, cooperates with the nonprofit, tax-exempt University of Florida Foundation, Inc., to receive and manage private support. You may choose to restrict the purpose of your gift. There are seven ways to contribute:

Cash Donations – the easiest and most popular way to give.

Stocks – may entitle you to a significant charitable deduction on income tax.

Land – depending on the uniqueness of the property, may increase research productivity and bring substantial tax benefits to the donor.

Life Insurance – an easy and inexpensive way to support Sea Grant. If the Foundation is made beneficiary, premiums are tax-deductible.

Life Income Gifts – may enable you to receive income from an asset or make an asset such as real estate income-producing as you support Sea Grant.

Matching Gifts– often available through employers, these can double or even triple your gift to Sea Grant. For private gifts of $100,000 or more, the State of Florida provides matching with additional state dollars.

Endowed Funds – provides a steady and reliable income stream forever, enabling you to create a permanent fund for a specific purpose.

For complete information, please contact:

James C. Cato, Director
Florida Sea Grant College Program
University of Florida
PO Box 110400
Gainesville, FL 32611-0400
(352) 392-5870
jccato@ufl.edu

Florida Sea Grant Online

Florida's incomparably beautiful coast supports a broad range of commercial and recreational activities. Through its web site, Florida Sea Grant helps the citizens and communities of Florida address important issues of economic and environmental sustainability as competition for the state's fragile coastal resources increases.

www.flseagrant.org

The site gives those who manage, use and enjoy coastal resources immediate access to current research, notices of upcoming workshops, 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, marine biotechnology, 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 research dollars, 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, 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 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.

edis.ifas.ufl.edu

Graduate Education

Keeping track of college students is not easy; trying to track them down after graduation is harder still. *An Investment in Florida's Future: Sea Grant Sponsored Graduate Education* does just that. First published by Florida Sea Grant in 2002 (TP-117) and revised in 2004, this report traces the program's investment in scholarships and fellowships, and, more importantly, showcases the investment and contributions of the recipients in their commitment to research and their chosen careers.

It features degree information for students supported by Florida Sea Grant, the Aylesworth Foundation for the Advancement of Marine Sciences and the Old Salt Fishing Club, 1986-2003. Included is a summary of students' last known occupations and locations, and degree completed. It also tracks the Florida Sea Grant Knauss Fellows of the last 22 years by university, placement, current occupation, employer, and current location.

Nonformal and Informal Education

A companion publication, *Ahead of the Class: Florida Sea Grant Delivers Marine Education* (TP-139), describes the extensive support Florida Sea Grant provides for education beyond formal graduate training. These nonformal and informal educational opportunities transfer research results to communities, industries, and decision makers who can use the information in their everyday lives. All told, Florida Sea Grant dedicates at least a 2.5 full-time-equivalent effort in this area, even though the program does not employ a full-time marine education specialist.

One of the key components of the Sea Grant's nonformal education effort is the network of Sea Grant marine extension faculty that responds to constituent needs with specially designed workshops and programs at the county and regional level. Examples include educational and hands-on programs in ethical angling, responsible boating, shoreline restoration, beach and underwater clean-ups, and K-12 teacher training.

After an in-depth evaluation by the National Sea Grant College Program in May, 2005, Florida Sea Grant has earned the "Highest Performance" assessment for the overall quality of its program. The evaluation process reviewed the previous four-year period and rated the program on four criteria: how well the program (1) organizes and manages for success; (2) connects with users; (3) uses effective and long-range planning; and, (4) produces significant results. The evaluation is conducted during an intensive site visit by an external Program Assessment Team composed of senior-level academic administrators and veteran ocean science researchers. The team's recommendations are used by the national office to evaluate and improve each program's performance, and provide a basis for comparison among the other 31 Sea Grant programs. The results are also used to award merit funding to Florida Sea Grant should additional funds become available through congressional appropriation.

A copy of the team's rating sheet and full report are available at the Florida Sea Grant website (www.flseagrant.org) by searching Program Assessment Team.

Back cover photos:

Researchers are studying microbes isolated from this soft coral for their curative properties. (Harbor Branch Oceanographic)

Florida middle-schoolers learn about water salinity and density. (Florida Sea Grant)

Sea Grant
Florida

Florida Sea Grant College Program
Bldg 803 McCarty Drive
PO Box 110400
Gainesville, FL 32611-0400
(352) 392-5870 | (352) 392-5113 (fax)
www.flseagrant.org