Sea Grant
Florida

Science Serving
Florida's Coast

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Florida's Coast

Florida Sea Grant Program DIRECTORY 2004–2006

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May 2004

Florida Sea Grant is the only statewide program in Florida that conducts research, education and extension programs on marine and coastal issues. Its mission is to enhance the practical use and conservation of coastal and marine resources to create a sustainable economy and environment. One of Florida Sea Grant's major products is research, provided on a rapid response schedule to address priority problems identified by faculty, agencies, businesses and citizens. Graduate students and faculty in the state's eleven public universities — together with scientists from three private universities and two marine research laboratories — create new knowledge and help citizens access that knowledge for use in their everyday lives. Florida Sea Grant is "Science Serving Florida's Coast." Major program areas include marine biotechnology, fisheries, aquaculture, seafood safety, water-dependent businesses, water quality, coastal ecosystems, and coastal storms and hazards.

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Introduction

This booklet provides a brief overview of current research projects and 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, 31 Sea Grant programs, based within the academic structures of their coastal states, form the national network.

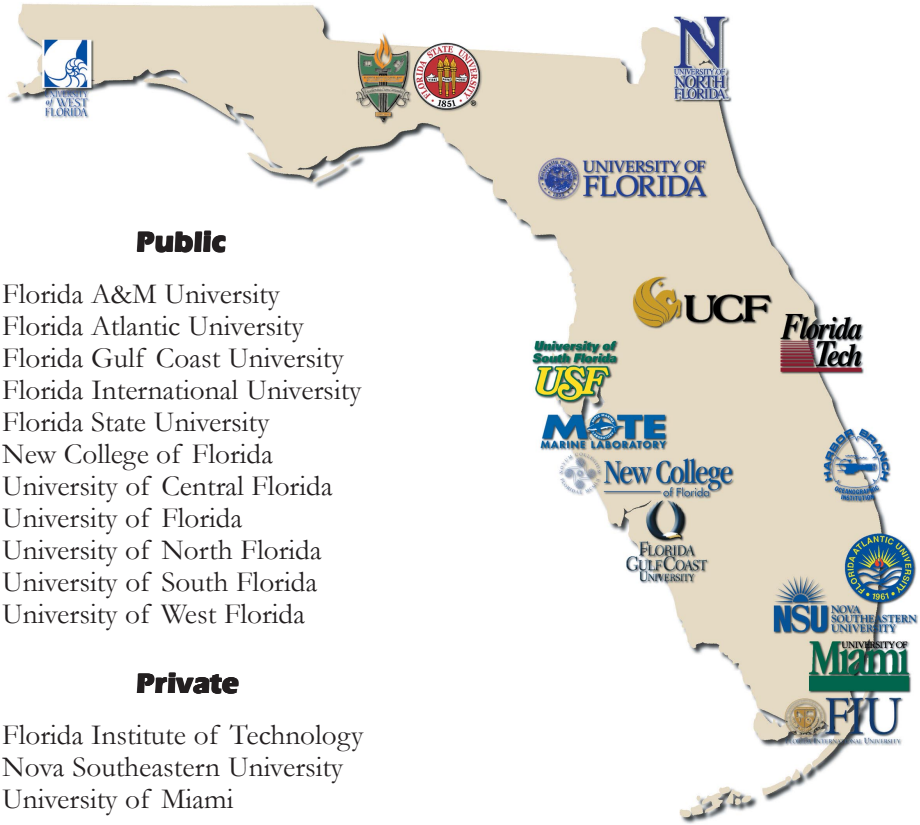
Florida Sea Grant addresses problems that are important both nationally and in Florida. Normally, these issues result from human interaction with the state's coastal environment, and require some combination of research, education, or technology transfer for successful resolution. Florida Sea Grant has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

The year 2004 marks Sea Grant's 33rd 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 2004, 2005 or 2006. Participating institutions are listed along with a review of educational opportunities Florida Sea Grant provides to students. The contact information for all Florida Sea Grant staff members is also listed. Please use that information or check our website www.flseagrant.org to contact us.

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 26-27). 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

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

Florida Institute of Technology
Nova Southeastern University
University of Miami

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 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 28) 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-5). 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. Commercial and public television broadcasts, audio-visual presentations, publications, print media contacts, posters, exhibits and a web site are among the many techniques used 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.*

Marine Biotechnology Outreach and Communication Foundation Using Florida Sea Grant Research. (PD-03-3). Synthesis and analysis of Florida Sea Grant's investment in marine biotechnolgy research will provide part of the basis for creating a foundation of knowledge for outreach, extension and communications in the marine biotechnology industry in Florida. (2004). Project leaders: *William*

Seaman, Jr., University of Florida, seaman@ifas.ufl.edu; Steve Kearl, University of Florida, skearl@ufl.edu; Dorothy Zimmerman, University of Florida, dozimmer@ufl.edu.

Prepare and publish a book "Legacy of Florida's Beaches" (PD-01-10). Florida has been a leader in beach management. This book will build on decades of Sea Grant projects and other agency research, authored by one of the world's foremost coastal engineers. It will provide a "Legacy of Florida's Beaches." (2004). Principal author: *Robert Dean, University of Florida, dean@coastal.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. (2004). Project leaders: *James Masterson, Harbor Branch Oceanographic Institution, masterson@hboi.edu; Shirley Pomponi, Harbor Branch Oceanographic Institution, pomponi@hboi.edu.*

Extension

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 brochures, courses, workshops, lectures and meetings 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-13). This project 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 and it represents the core extension program (ongoing). Program leader: *Michael S. Spranger, University of Florida, mssspranger@ifas.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, ccf@ufl.edu; David Fann, University of Florida, dafann@atlantic.net.*

Coastal Communities and Waterways Management Program (R/C-P-24). This program builds on previous urban boating and bay water management efforts, and continues to build diverse and effective partnerships with federal, state, county, local, and academic entities to create self-regulatory systems and management applications that deal with Florida's congested waterways. (ongoing). Project leaders: *Michael S. Spranger, University of Florida, msspranger@ifas.ufl.edu.; Robert Swett, University of Florida, rswett@ufl.edu.*

NOAA South Florida Marine Ecosystem Outreach Project (E/T-9). Restoration and long-term sustained water quality of the South Florida Ecosystem 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. (2005). Project leaders: *Michael S. Spranger, University of Florida, msspranger@ifas.ufl.edu.*

Florida Keys Conservation Everglades Research Program and Water Conservation Outreach Partnership (SFWMD-CERP-1). South Florida represents a critical region for education and outreach on natural systems, their connections and how they respond to human activities. This region contains several unique natural systems, including the Everglades, Florida Bay and the Florida Keys. This work will design and deliver a public education and outreach plan for the region. (2006). Project leader: *Charles Jacoby, University of Florida, cajacoby@ufl.edu.*

Educational Workshops for the Florida Medical Community on the Risks Associated with Consumption of Shellfish That May Contain Naturally-Occurring *Vibrio* Bacteria (E/TP-3) One of the primary strategies to reduce the number of illnesses in the high risk population for *Vibrio vulnificus* is to educate and inform the medical community. The result will be that appropriate information will be transmitted directly to the high-risk

patient at the time of treatment and/or counseling for the high-risk condition. This project will conduct 30 regional workshops at local chapters of the Florida Dietitians Association and Florida Nurses Association to provide educational materials developed by trained health educators. (2005). Project leaders: *David Heil, FDACS, heild@doacs.state.fl.us; Bobby Bickley, FDACS, bickleb@doacs.state.fl.us.*

Costal Storm Initiative Outreach Project (E/T-10) (NA16RG). Forty-six percent of all hurricanes or tropical storms that pass over Florida will touch the St. Johns River watershed. A new offshore sentinel buoy near Jacksonville is providing weather and ocean conditions 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. (2004). Project coordinators: *Michael S. Spranger, University of Florida, msspranger@ifas.ufl.edu: Don Jackson, University of Florida, dlj@ifas.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 instate meetings with user groups. (Ongoing). Project coordinators: *Michael S. Spranger, University of Florida, msspranger@ifas.ufl.edu: Don Jackson, University of Florida, dlj@ifas.ufl.edu; various county faculty.*

Southeast Regional Aquatic Nuisance Species Education and Act Outreach Network (E/NS-2). A critical and emerging need for ocean sciences education is to determine and catalog the types and impacts of aquatic nuisance species in the Gulf of Mexico region. Leaders will learn and develop materials for K-12 classroom use. This is a joint project with Mississippi/Alabama Sea Grant and includes holding elementary, middle school and high school teacher workshops. (2004). Principal investigator: *Michael S. Spranger, University of Florida, msspranger@ifas.ufl.edu.*

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 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. (2005). Project leader: *Michael S. Spranger, University of Florida, msspranger@ifas.ufl.edu.*

Center for Ocean Science Education Excellence (COSEE-GOM-1). The trend 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 (2004). Principal investigator: *Michael S. Spranger, University of Florida, msspranger@ifas.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 will participate in a regional activity for the Gulf of Mexico states. The topic of focus for Florida Sea Grant is participation in the sustainability of the Gulf of Mexico shrimp industry. (2004). Project leaders: *Michael S. Spranger, University of Florida, msspranger@ifas.ufl.edu*; *Chuck Adams, University of Florida, CMAdams@ifas.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 will participate in a regional activity for the South Atlantic. 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. (2004). Project leaders: *Michael S. Spranger, University of Florida, msspranger@ifas.ufl.edu; Charles Jacoby, Coastal and Estuarine Ecology, Florida Sea Grant, cajacoby@ufl.edu; Chuck Adams, Marine Economics, Florida Sea Grant, CMAdams@ifas.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. (ongoing) Project leaders: *Michael S. Spranger, University of Florida, msspranger@ifas.ufl.edu; Chuck Adams, University of Florida, CMAdams@ifas.ufl.edu; Steve Otwell, University of Florida, otwell@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 hire two new fisheries oriented county faculty (Bay, Collier) and increase its recreational fishery extension program activity by one-half FTE. (2006). Project leaders: *Michael S. Spranger, University of Florida, msspranger@ifas.ufl.edu; Stephen Holland, University of Florida, sholland@hhp.ufl.edu; Myron Floyd, University of Florida, mfloyd@hhp.ufl.edu.*

State Major Program Areas

Cooperative Extension program leaders in Florida identify State Major Programs in collaboration with faculty, appropriate department chairs and extension administration. Statewide programs are identified where several county programs are focusing on the same problem or issue, or when a statewide issue is identified with a need for county-level attention. Once a program has the designated State Major Program status, a team is established to deliver the program. Teams consist of extension faculty and specialists within the primary program area or supporting disciplines.

State Major Programs intensify academic and research support through the expertise of faculty and specialists, and provide a broader base for collaborative efforts than would be possible otherwise. Sea Grant faculty participate on State Major Program Teams that correlate directly with the Sea Grant strategic plan and annual plans of work. Overall objectives of the four current Teams in the Sea Grant category are provided below, together with a list of members and e-mail contact numbers. For fuller descriptions, including situations statements, target customers, impact and evaluation for these programs, see the website http://extensionsmp.ifas.ufl.edu.

Seafood and Aquaculture Product Quality and Safety in Florida. Objectives are to assist in the implementation of TQA (Total Quality Assurance) and HACCP (Hazard Analysis and Control Critical Point) Programs for seafood and aquaculture product quality and safety in commerce (production, processing and marketing); and to involve commercial and regulatory interest, plus university students. *W. Steven Otwell, team leader, Seafood Technology, Food Science and Human Nutrition, otwell@ifas.ufl.edu; Chuck Adams, Marine Economics, Florida Sea Grant, CMAdams@ifas.ufl.edu; Chris Combs, Sea Grant Agent, Brevard County Extension, seacombs@ufl.edu; LeRoy Creswell, Sea Grant Agent, St. Lucie County Extension, (Multi-County Agent), lcreswell@ifas.ufl.edu; Doug Gregory, County Extension Director, Monroe County Extension, Sea Grant, drg@ufl.edu; Bill Mahan, County Extension Director, Franklin County Extension, Sea Grant, wtm@icon.qcy.ufl.edu; John Stevely, Marine Science Agent, Manatee County Extension, jmstevely@ifas.ufl.edu; Leslie Sturmer, Aquatic Management Agent, Levy County Extension, lnst@ifas.ufl.edu; Donald Sweat, Sea Grant Agent, Pinellas County Extension (Multi-County Agent), sweat@seas.marine.usf.edu; Dorothy Zimmerman, Florida Sea Grant, dozimmer@ufl.edu.*

Coastal and Marine Recreation/Tourism and Waterway Management in Florida. Objectives are to: prepare educational materials and implement education programs that will help the marine recreation industries (i.e., bait & tackle, scuba, surfing, marinas, marine attractions) function in an economically and environmentally sustainable way; provide support to existing education programs that will improve boating safety and promote boat operation ethics on Florida waterways; develop and disseminate boating and bay management guidelines and educational materials which foster stewardship, nature-based tourism, and resource sustainability through user-driven, non-regulatory

management of waterways and recreational anchorages; and, provide to state and local decision-makers, planning models and management methods that are based on science-based information and that will provide for the maximum use of Florida's waterways by the public while sustaining environmental resources. *Robert Swett, team leader, Florida Sea Grant, rswett@ufl.edu; Tom Ankerson, University of Florida Law (Invited), cgtom@nervm.nerdc.ufl.edu; Steve Holland, University of Florida Recreation, Parks, Tourism (Invited), sholland@hhp.ufl.edu; Chris Combs, Marine Extension Agent, Brevard County Extension, seacombs@ufl.edu; Donald Pybas, County Extension Director, Dade County Extension, pybas@ifas.ufl.edu; John Stevely, Marine Extension Agent, Manatee County Extension, jmstevely @ifas.ufl.edu; Charles Sidman, Florida Sea Grant, cccf@ufl.edu.*

Florida's Coastal Environment and Water Quality. Overall objectives are to sustain or enhance Florida coastal and estuarine water quality, habitat quality, sustainable commercial use and sustainable recreational use by increasing knowledge of coastal ecology and by motivating citizens, professionals, and agency personnel to take actions that reduce impacts on these valuable resources. *Charles Jacoby, team leader, Coastal and Estuarine Ecology, Sea Grant, cajacoby@ufl.edu; Thomas Frazer, University of Florida, frazer@ufl.edu; William Mahan, Marine Agent, Franklin County Extension, wtm@ifas.ufl.edu; Maia McGuire, Marine Agent, (Multi-County), mpmmcguire@ifas.ufl.edu; John Stevely, Marine Science Agent; Manatee County Extension, stevely@ifas.ufl.edu.*

Florida's Sustainable Marine Fisheries. Overall objectives are to: increase commercial and recreational user group awareness, understanding, and utilization of marine fisheries resource conservation and management principles and processes; increase user group participation and involvement in the formulation and development of effective marine fisheries management policies within the state and federal management process; and, increase state and federal regulatory agency awareness of the role of economics in the effective management of marine fishery resources. *Chuck Adams, team leader, Marine Economist, CMAdams@ifas.ufl.edu; LeRoy Creswell, Marine Agent, St. Lucie County Extension, LCreswell@ifas.ufl.edu; Douglas Gregory, County Extension Director, Monroe County Extension, drg@ufl.edu; John Stevely, Marine Agent, Manatee County Extension, jmstevely@ifas.ufl.edu; Don Sweat, Marine Agent, Pasco County Extension, dsweat@seas.marine.usf.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. All current projects which are scheduled to end in 2004, 2005 or 2006 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

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 5,000 processing plants and retail seafood firms. They range from the nation's largest firms to many small independent firms. 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.

Development of a Biotechnological Production Method of Elisabethadione — A Potent Marine Anti-inflammatory Agent (R/LR-MB-14). A number of natural compounds from marine sources are now being used as anti-inflammatory agents in medicines and other products. Elisabethadione is a biosynthetic intermediate that leads to natural agents. The goal of this project is to develop a biotechnical production method of elisabethadione, which in nature comes from the sea whip. (2004). Principal investigators: *Russell Kerr, Florida Atlantic University, rkerr@fau.edu; Jose Lopez, Harbor Branch Oceanographic Institution, lopez@hbio.edu.*

Quantitative Real-time PCR Probes for Pathogenic *Vibrio* Species (R/LR-MB-15). R-PCR is a quantitative molecular methodology that offers higher throughput potential from current types of analysis, providing results within hours, not days. The goal of the project is to develop real-time PCR for rapid, quantitative, cost-effective technology for enumeration of *Vibrio* spp. oyster. The methods will be developed for practical applications in shellfish monitoring and for evaluation of post-harvest treatments. (2004). Principal investigators: *Anita Wright, University of Florida, acwright@ifas.ufl.edu; Gary E. Rodrick, University of Florida, ger@ifas.ufl.edu; Keith R. Schneider, University of Florida, krschneider@ifas.ufl.edu.*

Nemertine and Sponge Pyridyl Maine Natural Products as Anti-Fouling Agents (R/LR-MB-16). Protection of marine surfaces against fouling organisms is a big business, but a difficult process to make environmentally friendly. These natural products will be characterized and tested for barnacle larvae settling inhibition and crustacean chemoreceptor activities. These anti-fouling compounds will be tested in both laboratory and field settings. (2004). Principal investigators: *William Kem, University of Florida, kem@pharmacology.ufl.edu; Ferenc Soti, University of Florida, soti@pharmacology.ufl.edu; Dan Rittschof, Duke University, ritt@duke.edu.*

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 R/LR-MB-16 (above). 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.*

Investigation of the Molecular Target of the Lasonolides, Potent Anti-tumor Agents Isolated from the Marine Sponge *Forcepia* Sp. (R/LR-MB-17). Cancer is the second leading cause of death in the United States. Lasonolides appear to have a novel, but undefined mode of action to kill tumor cells. This project will help define the utility of the compounds by identifying the primary protein target for the compounds. (2004). Principal investigators:

Amy E. Wright, Harbor Branch Oceanographic Institution, wright@hboi.edu; Ross E. Longley, Harbor Branch Oceanographic Institution, longley@hboi.edu.

Isolation and Characterization of Novel Pharmacological Agents from Atlantic and Panamic Cone Snails (R/LR-MB-18). Conopeptides are powerful neuropharmacological agents that can be used for a wide variety of applications. More than 100,000 conopeptides exist; however, few have been sequenced to date. The goal is to obtain a novel set of conopeptides and evaluate their potential as a therapeutic agent. (2004). Principal investigators: *Frank Mari, Florida Atlantic Univeristy, mari@fau.edu; Gregg Fields, Florida Atlantic University, fieldsg@fau.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 R/LR-MB-18 (above). Researchers will expand the set of conopeptides from cone snails and evaluate therapeutic potential. (2006). Principal investigators: *Frank Mari, Florida Atlantic Univeristy, mari@fau.edu; Gregg Fields, Florida Atlantic University, fieldsg@fau.edu.*

SUSTAINABLE FISHERIES

Bioenergetic Response of Gag Grouper to Reef Habitat Configuration (R/LR-B-53). Gag grouper is a highly prized fish in the Southeast United States. The fishery is under intense management, scrutiny and pressure. This project will link the importance of essential fish habitat to gag grouper population dynamics. This will allow management agencies to make science-based decisions related to essential fish habitat. (2004). Principal investigators: *William J. Lindberg, University of Florida, wjl@ufl.edu; Doran M. Mason, Great Lakes Environmental Research Lab, doran.mason@noaa-gov; Debra J. Murie, University of Florida, dmurie@ufl.edu.*

High-throughput Molecular Genetic Identification of Shark Body Parts for Forensic Applications in Conservation; Fisheries Management and Trade Monitoring (R/LR-B-54). Declining shark population worldwide have prompted concern about the sustainable health of the resource. Management on a species-specific basis is under consideration. This is currently not possible due to considerable difficulties in identifying shark carcasses and fins. The development of alternative identification methods is needed before valid data can be obtained and management measures developed. (2004). Principal investigator: *Mahmood S. Shivji, Nova Southeastern University, mahmood@nova.edu.*

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 enforce-

ment. (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 life span (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.*

Development of an Advanced Underwater Video Telemetry and Data Collection Instrument for Remote Observation of Aquatic Organisms and Underwater (R/MI-12). There is widespread interest in the scientific application of underwater video units from researchers at academic institutions, government agencies, non-profit research foundations and the fishing industry. This project will test the application of CRITTERCAM on nurse, bull and hammerhead sharks. (2005). Principal investigators: *Michael Heithaus, Florida International University, heithaus@fiu.edu; Greg Marshall, National Geographic Society, gmarshal@ngs.org; Jeffery Carrier, Albion College, jcarrier@albion.edu.*

A Multidisciplinary Investigation for Determining MPA Baselines at Bimini Bahamas and Essential Fish Habitat for the Lemon Shark *Negaprion brevirostris* (Poey 1868) 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. (2005). 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.*

MARINE AQUACULTURE

Solving a Bottleneck: Identification and Production of Capepods Suitable for Rearing the Early Life History Stages of Marine Ornamental Fish and Invertebrates (R/LR-A-36). Suitable food for early life stages of cultured fish is a bottleneck for raising them for the ornamental fish hobby-based market. The goal of this project is to scale-up production of copepod species as food for rearing tropical ornamentals. (2004). Principal investigator: *Nancy Marcus, Florida State University, marcus@ocean.fsu.edu.*

Enhancing Stress Resistance of Cultured Hard Clams in Florida by Triploidy (R/LR-A-39). Florida has approximately 350 active clam growers producing a crop worth $18.2 million in 2001. Recently, the need for a hardier clam strain has become evident as clam culturists in Florida report below average survivals or total losses during the prolonged hot summers. Triploid clams may be a 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. (2006). Principal investigators: *John Scarpa, Harbor Branch Oceanographic Institution, JScarpa@hboi.edu; Roy Kibbe, Kibbe and Company, roy.kibbe@clamstogo.com; Dan Leonard, Bull Bay Clam Farm, clams@sunline.net; Mike Hodges, Cedar Key Aquaculture Association; Shirley Baker, University of Florida, smbaker@mail.ifas.ufl.edu; Leslie Sturmer, University of Florida, Lnst@ifas.ufl.edu; Charles Adams, University of Florida, CMAdams@ifas.ufl.edu.*

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 aiming 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@ifas.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 aimed at determining 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, lcreswell@ifas.ufl.edu; Kevin Gaines, Ocean Reefs and Aquariums - Harbor Branch Oceanographic Institute, gaines@hboi.edu.*

Larviculture of Ornamental Emerald Crab and Caribbean Reef Lobster (PD-03-09). Most marine organisms marketed in the aquarium trade industry are collected from the wild, particularly from coral reef ecosystems. Some destructive harvesting techniques have dramatic impacts on the health and biodiversity of coral reef ecosystems. Developing aquaculture technology for marine ornamental species is urgently needed to guarantee a sustainable supply for the industry while minimizing the negative impacts on the natural environment. The goal is to develop and improve larviculture protocols for marine ornamental crabs and lobsters. (2004). Principal investigator: *Junda Lin, Florida Institute of Technology, jlin@fit.edu.*

ABC (Aquaculture, Biology and Conservation) of Marine Ornamental Shrimp (E/INDST-2). Many marine ornamental species are collected from coral reef areas. Aquaculture is recognized as one solution to minimize the wild collection, while sustaining the aquarium industry and creating new commercial opportunities. This Sea Grant Industrial Fellow will continue former Sea Grant research to develop protocols to cultivate high value and popular marine ornamental shrimp. (2004). Principal investigators: *Junda Lin, Florida Institute of Technology, jlin@fit.edu; Andrew Rhyne, Florida Institute of Technology, arhyne@fit.edu; Bruce Calman, Maritech, bcalman@metrolink.net.*

Captive Nutritional Management of Atlantic Surgeonfish: Effect of Ascorbic Acid Deficiency on Development of HLLES-Related Pathology (E/INDST-3). The aquaculture of marine ornamental fish is one way to reduce the collection of the fish from coral reef areas. A major problem is diseases contracted by the fish in culture situations or while on display in aquariums. Longer-lived fish mean fewer must be collected or cultured. This Sea Grant Industrial Fellow will examine the causes of head and lateral line erosion syndrome of the popular surgeonfish and attempt to find the solution to the problem. (2004). Principal investigators: *Ruth Francis-Floyd, University of Florida, rff@ifas.ufl.edu; G. Chris Tilghman, University of Florida, fishkill@ufl.edu.*

SEAFOOD QUALITY AND SAFETY

Verification of Science Based Controls for the Safe Use of Vacuum and Modified Atmosphere (V/MA) Packaging of Seafood (R/LR-Q-22). The use of reduced-oxygen packaging continues to expand for seafood despite warnings of potential food toxicity problems. This project will develop "smart-labels" for time-temperature integration and packaging film permeability. Unbiased, scientifically based controls can then avert regulatory interaction or product safety issues. (2004). Principal investigators: *Murat O. Balaban, University of Florida, mob@ifas.ufl.edu; W. Steven Otwell, University of Florida, otwell@ifas.ufl.edu; Bruce A. Welt, University of Florida, bwelt@ufl.edu; Hordur G. Kristinsson, University of Florida, hgkristinsson@ifas.ufl.edu.* Principal collaborators: *National Fisheries Institute; Winn-Dixie; Rock-Tenn Company; Save-on-Seafood; MC Fresh, Inc.; Cox Technologies; Praxair.*

Integrated Oyster Market Research, Product Development and Evaluation, Promotion and Consumer Education for the Gulf of Mexico's Oyster Industry (R/LR-Q-23) (FL-G01-5). Millions of U.S. consumers eat oysters. However, for a small segment of the population, eating raw or undercooked oysters can cause serious illness or death from *Vibrio vulnificus*. The goal of this project is to develop new oyster product research and processing technologies, and to educate consumers and medical groups so that human safety risks can be minimized or eliminated while maintaining an industry. (2004). Principal investigators: *Judy Jamison, Gulf and South Atlantic Fishery Development Foundation, gulfsouthfdn@worldnet.att.net; Ewell Smith, Louisiana Seafood Promotion and Marketing/Gulf Oyster Task Force; JoAnne McNeely, Florida Department of Agriculture and Consumer Services, Bureau of Seafood and Aquaculture Marketing; Ruth Posadas, MDMR/BST; Mike Voisan, Motivatit Seafood; Chris Nelson, BonSecur Fisheries.*

Strategies for the Decontamination of Oyster Infected with *Vibrio vulnificus* (R/LR-Q-24) (G01P-03). Bacteriophage have been proven to be effective in the prevention and treatment of diseases in humans and animals. Previous Sea Grant research has shown that phage specific for *V. vulnificus* can prevent lethal disease in mice caused by this organism. This project extends that work to test scale-up systems for phage treatment to eliminate *V. vulnificus* from the system. (2004). Principal investigators: *Donna Duckworth, University of Florida, duckwort@mgm.ufl.edu; Paul Gulig, University of Florida, gulig@ufl.edu, Gary Rodrick, University of Florida, ger@ifas.ufl.edu; Anita Wright, University of Florida, acwright@ifas.ufl.edu.*

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. (2005). Principal investigators: *Anita Wright, University of Florida, acwright@ifas.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 of oyster consumption and also for virulence-specific gene probes and/or molecular typing. (2006). Principal investigators: *Anita Wright, University of Florida, acwright@ifas.ufl.edu; William Brown, ABC Laboratories.*

Coastal Communities Waterways Management Program (R/C-P-24). Intensive boating by over one million boaters in Florida waterways places tremendous environmental pressure on them. This project will use technical and science-based education methods to educate Florida boaters. The goal is to have boaters become self-regulatory in order to maintain boating as an economically valuable enterprise while at the same time eliminate boating-related environmental damage. (2004). Principal investigators: *Michael Spranger, University of Florida, mspranger@ifas.ufl.edu; Robert Swett, University of Florida, rswett@ufl.ed; West Coast Inland Navigation District (WCIND), wcind@comcast.net.*

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. This will 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 useable 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, mspranger@ifas.ufl.edu; Charles Sidman, University of Florida, cccf@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, multi-disciplinary 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: (1) research must be at the site of existing management-based research being conducted by a partnering agency, (2) non-point source contamination must be the focus, (3) the way that the scientific results will be utilized must be specified, and (4) 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.

WATER QUALITY AND SAFETY

Assessment of Sewage Impacts via Groundwater Discharge into Two Coastal Bays (R/C-E-44). The potential for nitrogen and other inputs reaching coastal water via groundwater contaminated with sewage discharge is high. State of the art techniques will be used to access the potential for sewage contamination of an urban bay (Sarasota) and a less populated bay (Apalachicola). The results will be useful to help manage the use of septic tanks in Florida's coastal zone. (2004). Principal investigators: *Jeffrey Chanton, Florida State University, jchanton@mailer.fsu.edu; William Burnett, Florida State University, wburnett@mailer.fsu.edu.*

Testing the Feasibility of Red Tide Remote Sensing (R/LR-Q-25). Current on-site sample collection and laboratory-based analysis is costly and time consuming in regards to approving coastal waters for shellfish growing for human consumption. Red tide is often a problem which requires constant sampling. This project will test the accuracy and effectiveness of satisfying red tide monitoring methods using remote sensing equipment rather than labor-intensive on-site sampling. (2005). Principal investigators: *R. Sherman Wilhelm,*

Florida Department of Agriculture and Consumer Services, wihels@doacs.state.fl.us; Gary Kirkpatrick, Mote Marine Laboratory, gkirkpat@mote.org.

Using Natural Chemical Tracers to Evaluate Point-Source and Non-Point Sources of Fresh Water Inputs to Biscayne Bay (R/C-E-51). Identification of point-source and non-point sources of fresh water to coastal estuaries is essential in understanding the water quality of these areas. Planned future changes in fresh water 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. The results of this project will provide a scientific-based tool for assessing the results of the fresh water redistribution plan. (2006). Principal investigators: *Rene Price, Florida International University, pricer@fiu.edu; Peter Swart, University of Miami, pswart@rsmas.miami.edu.*

Assessment of the Potential for an Invasive Macrolaga (*Caulerpa brachypus*) to Establish Populations in the Indian River Lagoon, Florida Based on Salinity Tolerances (PD-03-11). Proliferations of an exotic invasive alga, *Caulerpa brachypus*, have been documented on reefs off of the east coast of central and south Florida. This project will determine if low salinity may act as a natural barrier to the expansion of *C. brachypus* into the Indian River Lagoon. (2004). Principal investigator: *E. Irlandi, Florida Institute of Technology, irlandi@fit.edu.*

COASTAL ECOSYSTEM HABITATS

Impact of Boat Wakes on the Eastern Oyster in the Southeastern U.S.: Maximizing Sustainability and Restoration (R/C-E-45). Large populations along Florida's coast have created conflicts between human uses of the waterways and natural resources, such as oysters. This project will determine the impact of boat wakes on intertidal oyster reefs and will provide coastal managers with data on which management decisions can be scientifically based. (2004). Principal investigators: *Linda Walters, University of Central Florida, ljwalter@pegasus.cc.ucf.edu; Loren Coen, South Carolina Department of Natural Resources, coenl@mrd.dnr.state.sc.us; Raymond E Grizzle, University of New Hampshire, ray.grizzle@unh.edu.*

Genetic Distributional and Ecological Characterization of Recent Swamp Eel Introductions in Florida (R/C-E-46) (ANS-20). Over the last several years swamp eels have been discovered in aquatic habitats in Georgia and Florida. These are large ambitious predators capable of dispersal over land with the potential to disrupt ecosystems. The goal of this project is to discover how eels are introduced, how this can be prevented, and to describe their ecology, life history and support methods to control them. (2004). Principal investigators: *Timothy Collins, Florida International University, collinst@fiu.edu; Joel*

Trexler, Florida International University, trexlerj@fiu.edu; Leo G. Nico, U.S. Geological Survey, leo_nico@usgs.gov; William Loftus, U.S. Geological Survey, bill_loftus@usgs.gov.

Multiple Habitat Utilization by a Coastal Fish: Diel, Seasonal and Ontogenetic Movement of Gray Snapper (*Lutjanus griseus)*(R/C-E-48). Many reef fishes are thought to make diel, seasonal, or ontogenetic migrations among multi-habitats. But most evidence of such movements is indirectly inferred from density and size-structure differences among the habitats. This project will provide quantitative results (time and spatial range) which will have direct utility for resource managers charged with designing and implementing management plans for tropical and subtropical coastal habitats and fisheries. (2005). Principal investigators: *Jiangang Luo, University of Miami, jluo@rsmas.miami.edu; Su Sponaugle, University of Miami, ssponaugle@rsmas.miami.edu; Joseph Serafly, National Marine Fisheries Service - Southeast Fisheries Science Center, Joe.Serafy@noaa.gov; Jerome Lorenz, Audubon Society, jlorenz@audubon.org.*

Killer Algae: Preventing Florida from Becoming the Next Invasion Location of *Caulerpa taxifolia* – Mediterranean Strain (R/C-E-49). Since 1984, aquarium releases of *Caulerpa taxifolia* - Mediterranean strain have led to this "killer algae" becoming established in coastal waters in Europe, California and Australia. In all cases, the ecological and economic costs have been substantial. The goal of this project is to significantly reduce the likelihood that *Caulerpa taxifolia* will become established in Central Florida. (2005). Principal investigators: *Linda Walters, University of Central Florida, ljwalter@pegasus.cc.ucf.edu; Jeanine Olsen, University of Georgia, J.L.Olsen@biol.rug.nl.*

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 environments, supports highly productive and diverse fish and invertebrate communities and a multibillion dollar fishing and tourism industry. The goal 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, Univeristy 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, Florida Marine Research Institute, peter.rubec@fwc.state.fl.us; S. L. Miller, NOAA - NURC.*

COASTAL PROCESSES AND STORMS

Enhanced Commercial Selection and Micropropagation of Sea Oats for Dune Stabilization (R/C-S-41). Commercial sea oats micropropagation for dune restoration is limited by absence of a protocol for efficient production of multiple genotypes. Removing this limitation is critical for this technology to

be used for commercial application of the technology for dune stabilization and restoration. The goal for this project is to develop an efficient protocol. (2004). Principal investigators: *Michael Kane, University of Florida, mkane@ifas.ufl.edu; Sandra Wilson, University of Florida, sbwilson@ufl.edu.*

Threshold Conditions for the Occurrence and Stability of Rip Currents (R/C-S-42). About 36,000 beachgoers are rescued from rip currents annually. About 30 rip current-related deaths were reported in Florida in a recent year. The goal of this project is to develop rip current threshold criteria for rip current channels, identify conditions under which significant rip channels develop, and determine ways the beachgoing public can be warned of danger. (2004). Principal investigators: *Robert Thieke, University of Florida, rthie@ce.ufl.edu; Daniel Hanes, University of Florida, hanes@ufl.edu; Robert Dean, University of Florida, dean@coastal.ufl.edu.*

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

Hurricane Wind Gusts Structures: Movement, Characterization and Coastal Damage Mitigation (R/C-S-43). Florida coasts are impacted by hurricane winds which create structural damage and public hazards. Affordable solutions to mitigate damage can only follow from an accurate quantification of the wind forces causing the destruction. This project will develop new instrumentation for ground-level wind fields, create tools to analyze the data and develop models to predict the effect of winds over a building. (2004). Principal investigators: *Kurtis Gurley, University of Florida, kgurley@ufl.edu; Jean-Paul Pinelli, Florida Institute of Technology, pinelli@fit.edu; Chelakara Subramanian, Florida Institute of Technology, subraman@zach.fit.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, kgurley@ufl.du; Jean-Paul Pinelli, Florida Institute of Technology, pinelli@fit.edu; Chelekara Subramanian, Florida Institute of Technology, subraman@fit.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@garnet.acns.fsu.edu; Earl Baker, Florida State University, jbaker@garnet.acns.fsu.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 560 participants in this excellent program. Thirty-three winners were selected from the nationwide competition of about 70 applicants for 2004 placement. Ten are placed with legislative hosts and 24 are placed with executive hosts. Thirty of the 560 have been from Florida universities with all 30 placed since 1982. Florida had three Fellows in 2001 and one Fellow in 2002, 2003 and 2004.

National Sea Grant Industrial Fellows Program

This competitive fellowship is awarded in a national competition. It provides, in cooperation with specific companies, 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 two Fellows funded during 2003 and 2004.

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, 76 students in 12 different Florida universities have received these prestigious scholarships. The Old Salt's Marine Biology Scholarship is similar to the Aylesworth Scholarship, but is for students enrolled at the University of South Florida only. Twelve 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 fellows. One Florida student is currently serving in this program.

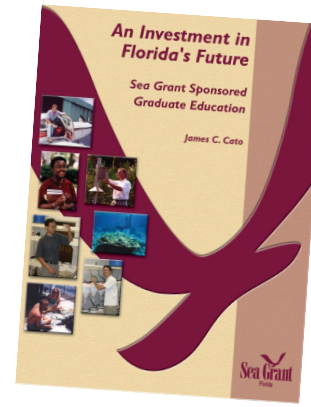
Elise B. Newell Seminar Series

Annually, these seminars allow persons from on and off Florida's campuses to learn more about timely issues concerning the coast and oceans. The format for each event includes both a formal presentation as well as individual and small group discussions. The program brings internationally renowned scholars and scientists to meet with Florida's own leaders in the academic community. Florida faces great pressures on its marine resources, but also stands at the forefront of research, education and extension efforts in this field. Through these seminars, the Sea Grant goal of promoting academic service to the public of Florida is fostered. Seminars to be supported are selected from proposals submitted each year.

Sea Grant's Investment in Florida's Future

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, *Nonformal Education: Florida Sea Grant Contributes and Participates Statewide* (SGEF-148), 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 who respond to constituent needs with specially designed workshops and programs at the county and regional level. Examples include K-12 teacher training, responsible boating, shoreline restoration, beach and underwater clean-ups, and catch-and-release techniques for marine fish.

Contact Information

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 ranging from whether to do annual or biennial proposals and how the review process is organized to operational issues including how best to communicate with the 700-800 faculty statewide who are interested in Sea Grant. All maintain on-campus e-mail or hard mail mailing lists for communicating with faculty regarding calls for proposals and distributing Florida Sea Grant's bi-monthly Faculty Progress Report. The current membership follows:

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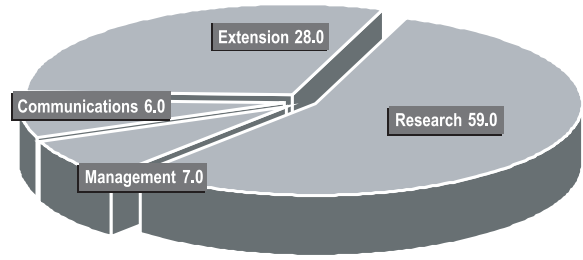
How You Can Invest in Florida's Coast

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 2003-04

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.

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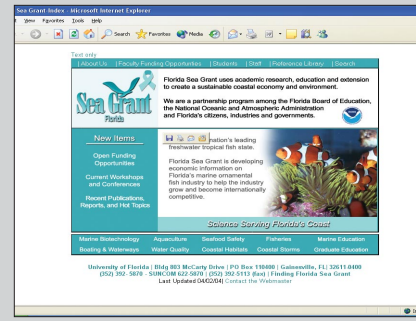
Florida Sea Grant Online

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.

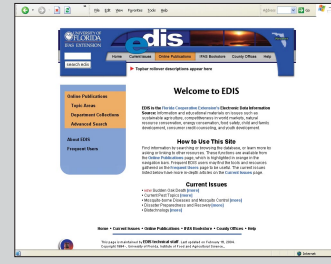


www.flseagrant.org

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.



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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 30 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.