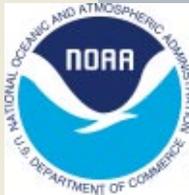


**Science Serving
Florida's Coast**

**Florida Sea Grant
Program DIRECTORY
2002 - 2004**





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Introduction

The Florida Sea Grant College Program is committed to enhancing the practical use and conservation of coastal and marine resources for a sustainable economy and environment in a state whose coastline stretches for over 1,300 miles. Florida Sea Grant operates through a statewide university-based research, education and extension partnership of state and federal agencies, businesses and citizens. This partnership, involving university faculty and the public, was created nationally in 1966 with the passage of federal legislation that created the National Sea Grant College Program. The year 2002 marks Sea Grant's 31st year in Florida. Thirty Sea Grant programs, based within the academic structures of their states, together form the national program.

Using research, education and technology transfer to address societal needs requires a strategic approach along with tailored tools and techniques designed to solve specific problems. One problem may require a substantial research effort. Another may need the transfer of existing information. The solution to a third problem may depend on an intensive educational effort to develop a new source of human capital. Solving other problems may require substantial extension networking with agencies, industries or communities to bring people together in a common activity. Of course, the successful solution to some problems will require all these elements. Florida Sea Grant has a demonstrated record of success in designing the best possible approach to solving the problems resulting from human interaction with the state's coastal environment.

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. Letting these criteria guide Sea Grant actions allows Sea Grant faculty to achieve the Florida Sea Grant mission:

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

This directory contains a brief overview of Florida Sea Grant programs and projects that are ongoing or that have specific ending dates in 2002, 2003 or 2004. Participating institutions are listed and a summary of current research projects and outreach activities is provided along with a review of student opportunities. Finally, each current participant in Florida Sea Grant is listed along with contact information. Please use that information or check our website www.flseagrant.org to contact us.

Participating Institutions

Florida Sea Grant is a Type I Center within the Florida Board of Education, Division of Colleges and Universities. The University of Florida serves as the host campus for Florida Sea Grant, but many universities, both public and private, in addition to several research laboratories participate in the program. Sixteen institutions provide the core of those institutions which actively participate.



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

University of Miami
Nova Southeastern University
Florida Institute of Technology

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 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-4; 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.*

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 and public input. 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-12; 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, (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). Assistant Director for Extension: *Michael S. Spranger, University of Florida, msspranger@mail.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. The 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. 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@atlantic.net.*

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@mail.ifas.ufl.edu.*

State Major Program Design Teams

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 design team is established for it. 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 Design Teams that correlate directly with the Sea Grant strategic plan and annual plans of work. Overall objectives of the four current Design 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 web site <http://extensionsmp.ifas.ufl.edu>.

FL312 Seafood and Aquaculture Product Quality and Safety in Florida.

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). To involve commercial and regulatory interest, plus university students. *W. Steven Otwell, team leader, Seafood Technology, Food Science and Human Nutrition, otwell@gnv.ifas.ufl.edu; Chuck Adams, Marine Economics, Florida Sea Grant, adams@fred.ifas.ufl.edu; Chris Combs, Sea Grant Agent, Brevard County Extension, chris.combs@mail.ifas.ufl.edu; Leroy Creswell, Sea Grant Agent, St. Lucie County Extension, (Multi-County Agent), lreswell@mail.ifas.ufl.edu; Doug Gregory, County Extension Director, Monroe County Extension, Sea Grant, drg@gnv.ifas.ufl.edu; Bill Maban, County Extension Director, Franklin County Extension, Sea Grant, wtm@icon.qcy.ufl.edu; John Stevely, Marine Science Agent, Manatee County Extension, jmstevely@mail.ifas.ufl.edu; Leslie Sturmer, Aquatic Management Agent, Levy County Extension, lnst@mail.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.*

FL315 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 Ankeron, University of Florida Law (Invited), cgtom@nervm.nerdc.ufl.edu; Steve Holland, University of Florida Recreation, Parks, Tourism (Invited), sholland@hbp.ufl.edu; Chris Combs, Marine Extension Agent, Brevard County Extension, Chris.Combs@mail.ifas.ufl.edu; Donald Pybas, County Extension Director, Dade County Extension, pybas@gnv.ifas.ufl.edu; John Stevely, Marine Extension Agent, Manatee County Extension, jmstevely@mail.ifas.ufl.edu; Charles Sidman, Florida Sea Grant, ccdf@ufl.edu.*

FL316 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. *Chuck 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@mail.ifas.ufl.edu; Maia McGuire, Marine Agent, (Multi-County), mpmmcguire@mail.ifas.ufl.edu; Marine Science Agent; Manatee County Extension, stevely@gnv.ifas.ufl.edu.*

FL317 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@mail.ifas.ufl.edu; Leroy Creswell, Marine Agent, St. Lucie County Extension, LCreswell@mail.ifas.ufl.edu; Douglas Gregory, County Extension Director, Monroe County Extension, drg@ufl.edu; Richard Novak, Marine Agent, Charlotte County Extension, novack@gnv.ifas.ufl.edu; John Stevely, Marine Agent, Manatee County Extension, jmstevely@mail.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 2002, 2003 or 2004 are included in this directory. Each is summarized below 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. These projects are not included in this directory.

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.

MARINE BIOTECHNOLOGY

Biosynthesis and Enzymology of the Pseudopterosins: Anti-inflammatory Agents from the Soft Coral *Pseudopterogorgia elisabethae* (R/LR-MB-8). A mixture of pseudopterosins is sold commercially in skin creams and some have potential as anti-inflammatory and analgesic agents. The overall goal of this project is to develop a biotechnological production method of the pseudopterosins and seco-pseudopterosins from the sea whip and to test them for their anti-inflammatory activity. (2002). Principal investigator: *Russell Kerr, Florida Atlantic University, rkerr@fau.edu.*

Bipyridyl Marine Natural Products as Anti-Fouling Compounds (R/LR-MB-9). Protection of marine surfaces against fouling organisms is not only a big business, but it is also a difficult process to make coatings environmentally friendly. The world market for marine paints is over \$2 billion annually. A world-wide ban on some paint ingredients will occur in 2003. The goal of this project is to develop nemertine bipyridyls from marine species which have potential as potent antifouling agents. (2002). Principal investigators: *William Kem, University of Florida, kem@pharmacology.ufl.edu; Ferenc Soti, University of Florida, kemlab@pharmacology.ufl.edu.*

Bioactive Agents Produced by Invertebrate-Associated Marine Microbes (R/LR-MB-10). One solution to increase resistance by humans to pathogen treatment therapy is to identify novel antimicrobial compounds, which can serve as leads in drug discovery programs. Marine microbes are an exciting potential source of compounds. Bacteria will be isolated from several species of Floridian tunicates and sponges that produce bioactive compounds and tested for potential as clinical antimicrobiological agents. (2002). Principal investigators: *Julia Grimmwade, Florida Institute of technology, grimmwade@fit.edu; Bill J. Baker, University of South Florida, bbaker@marine.usf.edu; Alan Leonard, Florida Institute of technology, aleonard@fit.edu.*

Development of a Biotechnological Production Method of Elisabethadione — A Patent 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@bbio.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, awright@gvn.ifas.ufl.edu; Gary E. Rodrick, University of Florida, ger@gvn.ifas.ufl.edu; Keith R. Schneider, University of Florida, kerschneider@mail.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, letuality, and crustacean chemoreceptor activities. These anti-fouling compounds will be tested in both laboratory and field settings. (2004). Principal investigators: *William R. Kerr, University of Florida, kerr@pharmacology.ufl.edu; Ferenc Soti, University of Florida, kemlab@pharmacology.ufl.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@hbboi.edu; Ross E. Longley, Harbor Branch Oceanographic Institution, longley@hbboi.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 University, mari@fau.edu; Gregg Fields, Florida Atlantic University, fieldsg@fau.edu.*

Molecular Basis of Marine Natural Product Function and Production for Improved Utilization of Bioactive Compounds (R/LR-MB-19). This project provides leadership in a new direction to expand and enhance natural products research. It focuses the latest advances in biotechnology to identify and determine the mechanism of action of marine-derived compounds with pharmaceutical potential. It demonstrates the power of cross-species array technology for the development of unconventional model systems, such as marine invertebrates, to address questions in marine, cell and molecular biology.

(2003). Principal investigators: *Shirley Pomponi, Harbor Branch Oceanographic Institution, pomponi@hboi.edu; Robin Willoughby, Harbor Branch Oceanographic Institution, willoughby@hboi.edu.*

SUSTAINABLE FISHERIES

Development of Age-Structured Population Models and Risk Analysis for Small Coastal Sharks: An Avenue to Informed Management and Sustainable Fisheries (R/LR-B-48). Commercial catches of small coastal shark species have increased dramatically in recent years, as large coastal sharks have been over-fished. Management quotas have been set for small coastal sharks. A scientific framework for assessing the current status of small coastal sharks and to access the impact of future harvest strategies will be completed.

(2002). Principal investigators: *Colin Simpfendorfer, Mote Marine Laboratory, colins@mote.org; George Burgess, University of Florida, gburgess@flmnh.ufl.edu.*

Habitat-Mediated Predator-Prey Interactions: Implications for Sustainable Production of Gag Grouper in the Eastern Gulf of Mexico (R/LR-B-49). The gag grouper is one of the most valuable fisheries in the Southeast United States. The fishery is presently under intense management scrutiny and is a priority for federal fisheries research related to essential fish habitat. Thus, it is important to test the role of habitat in mediating predator-prey interactions and individual fish growth dynamics in gag grouper to ensure that appropriate management measures can be implemented to ensure fishery sustainability.

(2002). Principal investigators: *William J. Lindberg, University of Florida, wjl@ufl.edu; Debra J. Murie, University of Florida, dmurie@nervm.nerdc.ufl.edu; Doran M. Mason, Purdue University, doran@fnr.purdue.edu.*

Management of Spiny Lobsters in South Florida Based on Postlarval Supply and Juvenile Dynamics (R/LR-B-50). The Florida spiny lobster is the most valuable fishery in Florida, when both the commercial and recreational economic impact of the fishery are considered. The stock relies on continued input of post larvae and the suitability of the habitat. This project builds on previous research investments and will provide Florida spiny lobster managers with an accurate method to predict the fishable lobster population several years in advance and to track the health of the essential nursery habitat. (2002).

Principal investigators: *William Herrnkind, Florida State University, herrnkind@bio.fsu.edu; Mark Butler, Florida State University, Old Dominion University, mbutler@odu.edu.*

Evaluating Gag Spawning Aggregations & Benthic Habitat in the West Florida Shelf (R/LR-B-51). West Florida shelf-edge reefs are of major importance to reef fish fishery production in the Gulf of Mexico, yet little is known of the biological and geological characteristics of these reef systems. The commercial reef fish fishery of this region concentrates its effort on these

shelf-ledge reefs. Virtually all of the important reef species are considered overfished; some are considered threatened. In 1999, the Gulf of Mexico Fishery Management Council set aside two 100 nautical-square-mile shelf-ledge areas for experimental purposes, providing opportunities to monitor fish demographics in protected areas. Monitoring of gag grouper (*Mycteroperca microlepis*) and scamp (*M. phenax*) spawning aggregations, movement patterns, and changes in year round distribution and abundance will provide comparison data for protected areas with unprotected areas of similar habitat. Benthic habitat characteristics and habitat changes will also be monitored at several scales in the study areas. (2002). Principal investigators: *Christopher Koenig, Florida State University, koenig@bio.fsu.edu; Felicia Coleman, Florida State University, coleman@bio.fsu.edu; Don Levitan, Florida State University, levitan@bio.fsu.edu.*

Field Assessment of the Effects of Artificial Reefs and Their Role in Fisheries Management (R/LR-B-52). Artificial reefs are a potentially powerful management tool that can be used to enhance fish production and divert deleterious impacts away from natural habitat. To date, their use is limited by some interests due to a scientific controversy over attraction-production. Solutions to this problem must quantify the negative effects of attracting fish away from natural reefs, the positive effects of providing new habitat, and the compensatory responses mediated by reducing density-dependence on natural reefs. Impact assessment, experimental design and a statistical framework will be developed for long-term studies of fish dynamics, using important ornamental reef fish species in the Florida Keys. These small reef fishes comprise an emerging fishery, and provide a tractable model system in which to explore the efficacy of artificial reefs. (2002). Principal investigators: *Craig W. Osenberg, University of Florida, osenberg@zoo.ufl.edu; Colette M. St. Mary, University of Florida, stmary@zoo.ufl.edu, Benjamin M. Bolker, University of florida, bolker@ufl.edu.*

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 fishing 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, duran.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 false identification methods is needed before valid data can be obtained and management measures developed. (2004). Principal investigators: *Mahood S. Shiiji, Nova Southeastern University, mahood@nova.edu.*

The Effectiveness of Bycatch Reduction Devices on Crab Pots at Reducing Capture and Mortality of Diamondback Terrapins and Enhancing Capture of Blue Crabs (R/LR-B-55). Diamondback terrapins range along the eastern and Gulf coasts of the US and prefer the same habitat as blue crabs. Large numbers of terrapins enter crab pots and drown as bycatch. Much of the mortality is avoidable with the use of bycatch reduction devices that limit the entrance size of trap funnels. This project is designed to test bycatch devices which can reduce turtle mortality. (2002). Principal investigator: *Joseph Butter, University of North Florida, jbutter@unf.edu; George Heinrich, St. Petersburg Parks Department, highpine3@aol.com.*

MARINE AQUACULTURE

Enhancing Seed Availability for the Hard Clam, *Mercenaria mercenaria*, Aquaculture Industry Through Application of Remote Setting Techniques (R/LR-A-27). Adequate seed availability is a major hindrance to the further development of the hard clam culture industry in the southeastern U.S. Critical shortages have occurred, and remote setting will allow nursery operators and growers to become less dependent upon traditional seed sources. Technical procedures will be developed and the economic feasibility determined of transferring remote setting technology from the Pacific Northwest molluscan shellfish industry to the Florida hard clam industry. (2002). Principal investigators: *Charles Adams, University of Florida, adams@fred.ifas.ufl.edu; Leslie Sturmer, University of Florida, Inst@gmv.ifas.ufl.edu; John Supan, Louisiana State University, jsupan@lsu.edu.*

Evaluation of the Efficacy of Introducing Hatchery-Spawned Larvae Directly to the Water Column for Stock Enhancement of Hard Clams (R/LR-A-28). The fishery for naturally occurring hard clams is of major cultural and economic importance to many eastern U.S. states. Landings from the traditional stock have declined in the past due to over harvesting and removal of spawning stock. Stock enhancement in natural settings is an alternative to increasing stock size. The feasibility of introducing hatchery-sponsored larvae directly to the water column as a cost-effective means of stock enhancement for hard clams will be tested in the Indian River Lagoon. (2002). Principal investigators: *Elizabeth Irlandi, Florida Institute of Technology, irlandi@marine.fit.edu; Gary Hitchcock, University of Miami, ghitchcock@rsmas.miami.edu; William Arnold, Department of Environmental Protection, arnold_b@epic7.dep.state.fl.us.*

Market Preferences, Wholesale Demand, and Breakeven Prices for Ornamental Fish Cultured and Collected in Florida (R/LR-A-29). In Florida, marine aquarium species are primarily collected from the wild (about

\$4 million annually) while farm-level sales of freshwater ornamental fish reached nearly \$60 million in 1997. A Sea Grant goal is to increase the culture of marine ornamentals in order to generate economic activity in Florida while protecting the wild-caught stocks. Market information, the acceptability of various marine ornamental attributes, and the overall demand for marine ornamentals will be determined as a way to measure the potential of this culture industry. (2002). Principal investigators: *Robert Degner, University of Florida, degner@fred.ifas.ufl.edu*; *J. Walter Milon, University of Central Florida, JWalter.Milon@bus.ucf.edu*; *Sberry Larkin, University of Florida, larkin@fred.ifas.ufl.edu*.

Captive Nutritional Management of Herbivorous Reef Fish Using Atlantic Surgeonfish (*Acanthurus* spp.) as a Model (R/LR-A-30). Certain marine algal species make up an important part of the natural diet of Atlantic surgeonfish, which have economic importance in Florida, and are traded globally for the aquarium trade. An experimental diet that approximates the natural diet of these fish will be developed and tested. The goal is to develop diets that can be used to improve the health and management of Atlantic surgeonfish and to enhance efforts for captive propagation. (2002). Principal investigators: *Ruth Francis-Floyd, University of Florida, rff@gmv.ifas.ufl.edu*; *Edward Pblips, University of Florida, pblips@ufl.edu*; *Ilze Berzins, University of Florida, lberzins@flaquarium.org*; *Paul Cardeillac, University of Florida, cardeillac@mail.vetmed.ufl.edu*.

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 capepod species as food for rearing tropical ornamentals. (2004). Principal investigator: *Nancy Marcus, Florida State University, marcus@ocean.fsu.edu*.

Diversification for the Hard Clam Aquaculture Industry Through Investigation of Blood Ark, *Anadara oralis*; and Ponderous Ark, *Noetia ponderosa*, Reproduction and Development (R/LR-A-37). Clam aquaculture is currently focused on a single species. Diversification is needed to allow the industry to grow. This project will help determine the production feasibility of two marine bivalve species. Limited stocks of these species have prevented the development of major fisheries, but aquaculture could provide a source of seed for both species. This project will focus on spawning and larval rearing technologies. (2003). Principal investigator: *John Baldwin, Florida Atlantic University, baldwin@fau.edu*.

Development of Feeding Kinematics and Performance in Marine Fish Larvae: A Novel Approach to Understanding Food Requirements of Marine Ornamental and Food Fish. (R/LR-A-38). This study uses a novel

approach to understanding key factors about a major problem in aquaculture. High mortality rates occur during the first feeding stage of hatchery-reared marine fish larvae. Development of techniques that will increase the survival rate is critical. (2003). Principal investigators: *Ralph Turingan, Florida Institute of Technology, turingan@fit.edu; Bruce Calman, Mariteck, bcalman@metrolink.net; LeRoy Creswell, University of Florida, lcreswell@mail.ifas.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 investigator: *Murat O. Balaban, University of Florida, mob@gmv.ifas.ufl.edu; W. Steven Otwell, University of Florida, otwell@mail.ifas.ufl.edu; Bruce A. Welt, University of Florida, bwelt@ufl.edu; Hordur G. Kristinsson, University of Florida, hgkristinsson@mail.ifas.ufl.edu*

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 educate consumers, conduct new oyster product research and processing technologies and education medical groups so that human safety risks can be minimized or eliminated while maintaining an industry. (2003). Principal investigator: *Judy Jamison, Gulf and South Atlantic Fishery Development Foundation, gulfsouthfdn@worldnet.att.net; Thomas Vergel C. Jamir, Gulf and South Atlantic Fishery Development Foundation, tom.jamir@worldnet.att.net.*

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. (2003). Principal investigator: *Donna Duckworth, University of Florida, duckwort@mgm.ufl.edu; Paul Gulig, University of Florida, gulig@ufl.edu, Gary Rodrick, University of Florida, ger@gmv.ifas.ufl.edu; Amy Wright, University of Florida, awright@gmv.ifas.ufl.edu.*

WATER DEPENDENT BUSINESSES

Coastal Communities Waterways Management Program (R/C-P-24).

Intensive boating by over one million boaters in Florida waterways plays 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 investigator: *Michael Spranger, University of Florida, msspranger@mail.ifas.ufl.edu; Robert Swett, University of Florida, rswett@ufl.edu.*

A Method to Determine the Utility of the Vessel Title Registration System to Characterize Florida's Boating Population: A Test Case in Two Southwest Florida Counties (R/C-P-25).

The rapid increase in the number of boats in Florida has created environmental issues at the same time, boats create huge economic impacts for the state. Currently, expensive on-the-water surveys are needed to compile data sufficient for boat traffic management use. This project will determine the feasibility of modifying the Florida vessel regulation system to make it more usable for research purposes. (2003). Principal investigator: *Robert Swett, University of Florida, rswett@ufl.edu; Charles Sidman, University of Florida, cccf@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 decade. 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

Tracer Techniques to Evaluate Rates of Non-Point Source Pollution from Barrier Islands to Surface Water (R/C-E-42). One major and rapidly growing source of non-point source contamination in the coastal zone is nutrient loading from septic and other types of on-site disposal systems. This is particularly true on barrier islands that seldom have centralized sewage treatment facilities. This project aims to develop new approaches to study rates of water and nutrient transport via groundwater, and better tools for evaluating such contaminant loading. The approach will use natural radium isotopes and an artificial tracer to assess long- and short-term average flow rates in the proximity of St. George Island, Florida. (2002). Principal investigators: William Burnett, Florida State University, wburnett@mail.fsu.edu; Jeffrey Chanton, Florida State University, chanton@ocean.fsu.edu; Reide Corbett, East Carolina University, corbett@mail.ecu.edu.

COASTAL ECOSYSTEM HABITATS

The Role of Filter-Feeding Sponges in Controlling Phytoplankton Blooms in Florida Bay and the Concomitant Effect on the Health of Seagrasses (R/C-E-43). Persistent and widespread phytoplankton and cyanobacteria blooms have coincided with large-scale decimation of sponge communities in Florida Bay. One hypothesis is that the large-scale loss of suspension feeding sponges has rendered the ecosystem susceptible to these recurring blooms. The goal is to experimentally determine the potential for suspension feeding sponges to control nuisance phytoplankton blooms caused by internal non-point source pollution. (2002). Principal investigators: Bradley J. Peterson, Florida International University, petersob@fiu.edu; James Fourqurean, Florida International University, fourqre@fiu.edu.

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 assess 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 investigator: Jeffrey Chanton, Florida State University, jchanton@mail.fsu.edu; William Burnett, Florida State University, wburnett@mail.fsu.edu.

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 science-based management decisions can be based. (2004) Principal investigator: *Linda Walters, University of Central Florida, ljwalters@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). On 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 and how this can be prevented and describe their ecology and life history, etc., and support methods to control them. (2003). Principal investigator: *Timothy Collins, Florida International University, collinst@fiu.edu; Joel Trexler, Florida State University, Joel.Trexler@fsu.edu; Leo G. Nico, U.S. Geological Survey, leo_nico@usgs.gov; William Loftus, U.S. Geological Survey, bill_loftus@usgs.gov.*

COASTAL PROCESSES AND STORMS

Compatible Plant/Mycorrhizal Fungus Ecotype Combinations for Micropropagated Sea Oats Planted on Florida Beaches (R/C-S-38). Establishment of sea oats on restored beaches is critical for combating erosion losses. However, concerns about genetic diversity have led to restrictions in harvesting and planting of sea oats. The overall goal is to enhance ecologically sound establishment of micropropagated sea oats by developing compatible plant/mycorrhizal fungus ecotype combinations for out planting onto Florida beaches. (2002). Principal investigators: *David Sylvia, University of Florida, dmsa@gnv.ifas.ufl.edu; Michael Kane, University of Florida, mek@gnv.ifas.ufl.edu; Abid Alageb, University of Florida, aaag@gnv.ifas.ufl.edu; Nancy Philman, University of Florida, nlpb@gnv.ifas.ufl.edu.*

Long-term Sediment Budget for Florida's East Coast for Coastal Management (R/C-S-39). A recently completed Sea Grant project on long-term shoreline position resulted in the identification of previously unrecognized shoreline characteristics which are important to the long-term management of Florida's and the nation's beaches. This project will investigate these characteristics of sand sediment sources and sinks on Florida's east coast, determine the causes of unpredicted shoreline advancement, develop more rationale sediment budgets and disseminate the information to professional and lay audiences for

use in decision making and shoreline project planning. (2002). Principal investigator: *Robert Dean, University of Florida, dean@coastal.ufl.edu.*

A Field Study of Rip Currents and the Development of a Predictive Model (R/C-S-40). Rip currents account for 80 percent of beach rescues, accounting for 36,000 rescues in 1997. About 150 drownings (30 in Florida) occur each year due to rip currents. The ability to predict the occurrence of rip currents will reduce this dramatically. A data base of rip currents will be developed and a predictive model will be developed and tested. (2002). Principal investigators: *Daniel Hanes, University of Florida, hanes@ufl.edu; Robert Thieke, University of Florida, rthie@ce.ufl.edu; Robert Dean, University of Florida, dean@coastal.ufl.edu.*

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 investigator: *Michael Kane, University of Florida, mkane@mail.ifas.ufl.edu; Sandra Wilson, University of Florida, sbsolson@gmv.ifas.ufl.edu.*

Threshold Conditions for the Occurrence and Stability of Rip Current (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 investigator: *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.*

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 investigator: *Kurtis Gurley, University of Florida, kgurk@ce.ufl.edu; Jean-Paul Pinelli, Florida Institute of Technology, pinelli@fit.edu; Chelakara Subramanian, Florida Institute of Technology, subraman@zach.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.

Dean John A. Knauss Marine Policy Fellowship

These fellowships allow a student to spend a year in Washington, D.C. in the Legislative or Executive branches of government. They are awarded on a competitive basis annually. For 2002, a student from the University of Miami will participate in this program. A national competition selects participants each year.

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.

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, 69 students in 11 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. Ten 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.

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.

An Investment in Florida's Future Through Sea Grant Sponsored 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 Through Sea Grant Sponsored Graduate Education does just that. Published by Florida Sea Grant in 2002 (TP-117), this work traces the investment of 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, 1986-2001. 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 20 years by university, placement, current occupation, employer, and current location.

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.

They meet at least biennially, and usually annually, depending on need and advice of the group. The Campus Coordinators 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 is given below.

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Florida Sea Grant Online

Through its web site, Florida Sea Grant provides immediate access to an array of material and tools that supports the scientific research of its investigators, the education of students, and the delivery of science-based information to the general public.



Researchers may routinely survey funding opportunities available through Florida Sea Grant and the National Sea Grant office. When calls for proposals are issued, the web site offers guidelines for project proposals, and the interactive forms that relate to requests for proposals in the grant application process. Researchers may also review the strategic issues that drive the research funding process and the profiles of the program's current research projects.

Interested in a career in marine science? The web site provides support to students by listing scholarship and fellowship opportunities funded through Florida Sea Grant, the National Sea Grant program, and philanthropic organizations in the state. To respond to numerous questions from prospective marine science students and individuals across the world, the web site also offers a continually updated directory of marine education and research organizations in Florida.

Sea Grant publications are regularly published in full-text format on the site and made available for download. Selected Florida Sea Grant publications may now also be accessed through EDIS, the University of Florida/IFAS electronic database of extension publications, at <http://edis.ifas.ufl.edu>. By linking to the National Sea Grant's repository of electronic publications, the Florida Sea Grant web site gives its visitors access not only to the entire Florida Sea Grant library, but to the thousands of publications of the 29 other Sea Grant programs across the U.S.

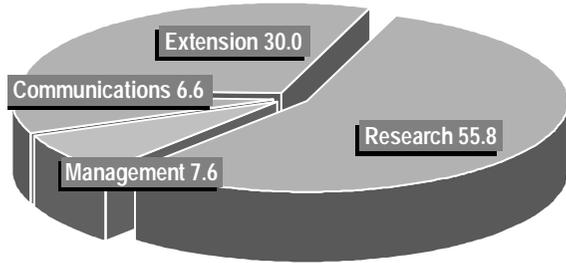


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How You Can Invest in Florida's Coast

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 \$3.75 million in federal Sea Grant and matching funds, dedicating at least 50 percent of these core funds to support research.

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:



Allocation of Federal Sea Grant and Matching Funds in Florida (about \$3.75 million per year)

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

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



**Science Serving
Florida's Coast**

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