



FLORIDA SEA GRANT COLLEGE PROGRAM 2010-2011 PROGRESS REPORT



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INTRODUCTION

With more than 1,350 miles of coastline and nearly 80% of its 18 million residents living within 60 miles of the ocean, Florida truly is a state whose future depends on how people interact with its coastal zone. More than 78 million visitors come to Florida each year to enjoy our beautiful beaches, diverse fisheries, coral reefs, recreational boating opportunities, and the many other marine resources the state has to offer. People also put pressure on the coastal and ocean resources. Thus, there is a need for objective information to guide people's actions and support effective management of those resources. In the 35 years since Florida Sea Grant (FSG) was established as a partnership between the National Oceanographic and Atmospheric Administration (NOAA) and the State University System of Florida, FSG has developed strong partnerships with the University of Florida Institute of Food and Agricultural Sciences (IFAS) Extension, coastal communities, state agencies and NGO's. Despite nearly flat federal funding, Florida Sea Grant has grown its overall budget and its faculty and staff diversity and expertise, and has created new funding opportunities for students. This is due to generous private donations, success in obtaining additional extramural grant funding, and continued strong support by the University of Florida.

Our fundamental approach is to conduct Extension and outreach that provide solutions to high priority issues of coastal constituents, partnering with other organizations to achieve efficiency and effectiveness in tackling complex problems, and funding solution-oriented applied research. Every FSG activity satisfies three simple but tough criteria: it (1) is based on a strong rationale; (2) demonstrates scientific or educational merit; and (3) produces results that are clearly useful and applicable in industry, management or science. These activities are guided by priorities developed through a statewide strategic planning process that includes the input of hundreds of Floridians representing industry, academia, coastal communities and government.

Six core values allow FSG to deliver results based on these criteria:

- 1) Excellence. Research is funded on a competitive basis, with scientific merit and relevance as the two most important criteria. Extension programs and activities are based on reviewed faculty plans of work. Communications efforts use the latest technology to achieve maximum output, visibility and citizen receipt of our science-based information.
- 2) Participation. High value is placed on the involvement of a large number of participating institutions in research, education and Extension. Graduate student involvement is also high. We require researchers to identify and work with end-users to develop projects that provide solutions to real-world coastal and ocean issues.
- 3) Accountability. Both external and internal processes are used to measure a wide range of achievements. These include tracking the scientific publication output of faculty and students, understanding the contribution to society of scientific discovery, and determining the economic impact or level of new business activity resulting from a research project.
- 4) Connection with Users. A strong advisory process is used to define research priorities, to plan Extension programs, and to measure the impact of program activities. It is also used to build public and private support for FSG.
- 5) Partnerships. Faculty, students, and citizens all benefit from functioning in a partnership mode. Scientific results and education projects reach greater success levels and are more efficient when partners from agencies and businesses support an activity.

6) Impacts and Accomplishments. Funded projects must demonstrate significant scientific, economic or social benefits.

These core values are advanced through coordinated research, education, and Extension programming implemented to support strategic planning priorities and performance measures identified for the following areas of focus: (a) seafood production and safety, (b) sustainable and hazard-resilient coastal communities, (c) healthy coastal and marine ecosystems, and (d) climate change: impacts and adaptations.

During 2010-11, Florida Sea Grant's 21 marine Extension Agents and seven university-based Extension Specialists in marine economics, fisheries management, waterway planning, coastal community planning, law and policy and seafood safety, implemented a wide array of highly relevant programs. They educated fishermen about ways to increase fish survival in catch-and-release recreational fishing; provided legal expertise to local governments for preserving and promoting waterfront access and becoming climate ready; coordinated a series of crab trap clean-up events that enhanced more than 125,000 acres of shallow water benthic habitat; helped the state evaluate the economic benefits of artificial reef programs that Florida Sea Grant pioneered more than two decades ago; assessed use impacts to natural reef systems; assisted state law enforcement agencies in implementing science-based boating safety zones for Florida's intra-coastal waterways; and trained hundreds of seafood industry personnel and government inspectors on proper handling, processing, and shipping techniques to ensure that seafood products continue to be safe for consumption.

This report highlights Florida Sea Grant's accomplishments in 2010-11, as a result of applied research, Extension and education, which provided assistance to coastal businesses, residents and communities, helped sustain and enhance coastal and marine environments, created and sustained jobs and small businesses, supported public and commercial access to coasts and waterways, enhanced community resiliency from hurricanes and other natural hazards, and saved tax dollars through the development and application of new policies and science-based tools and technologies.

PROGRAM MANAGEMENT AND ORGANIZATION

The program management team of Florida Sea Grant (FSG) operates a diverse and effective Sea Grant College in one of the nation's most complex settings in terms of number and diversity of stakeholders, universities, coastal resources, and coastal uses. FSG management provides national and international leadership to academic interests concerned with sustainable coastal marine economies and environments.

The management team's principal responsibilities include strategic planning and coordinating research, Extension, and communications to meet benchmarks established in four priority Focus Areas. This is accomplished by working internally with a stakeholder Advisory Council and with program Specialists and Agents; externally with campus coordinators affiliated with the 16 Florida academic institutions, and with collaborating governments, industries, and citizen groups.

At any given time, FSG manages over \$5M and more than 100 research, Extension, education and communications projects, often with multiple investigators on each project. These include core program projects, graduate student fellowships, program development projects, SG national strategic initiatives, and a host of other extramurally funded projects that leverage NOAA's investment and advance the FSG mission as defined in its strategic plan.

The management team includes the Director, Associate Director for Extension and Education, Associate Director for Research, Communications Director and Assistant Director for Fiscal Operations. The work of this group is coordinated through monthly staff meetings, augmented by ongoing communication between individuals and in smaller groups of the team, depending on the issue.

Management Team

- **Director** – provides overall program vision and leadership, explores new opportunities with partners, constituents, prospective sponsors and the Advisory Council, develops regional and inter-agency collaborations, leads development of the four-year program strategic plan, and ensures that the program addresses priorities of our Florida constituents, the National Sea Grant Office (NSGO), and NOAA
- **Associate Director for Extension and Education** – provides vision and leadership for the state-wide Extension and education program, develops cooperative programs with Extension and education partners at local, state, and national levels, and coordinates the activities of FSG Extension specialists and marine Extension agents
- **Associate Director for Research** – coordinates the biennial call for research proposals, coordinates research development projects, tracks the outputs and impacts of funded research projects, and reports data and achievements towards program and national strategic planning metrics
- **Communications Director** – develops and maintains an effective multi-media communications program to meet the needs of researchers, Extension experts, elected officials, resource managers and coastal residents
- **Assistant Director for Fiscal Operations** -- coordinates all fiscal functions of FSG including administration of awards, tracking of expenditures by investigators, development and/or review of proposal budgets, and fiscal reporting to National Sea Grant, NOAA, the University of Florida and the State University System Board of Governors

Organizational Chart

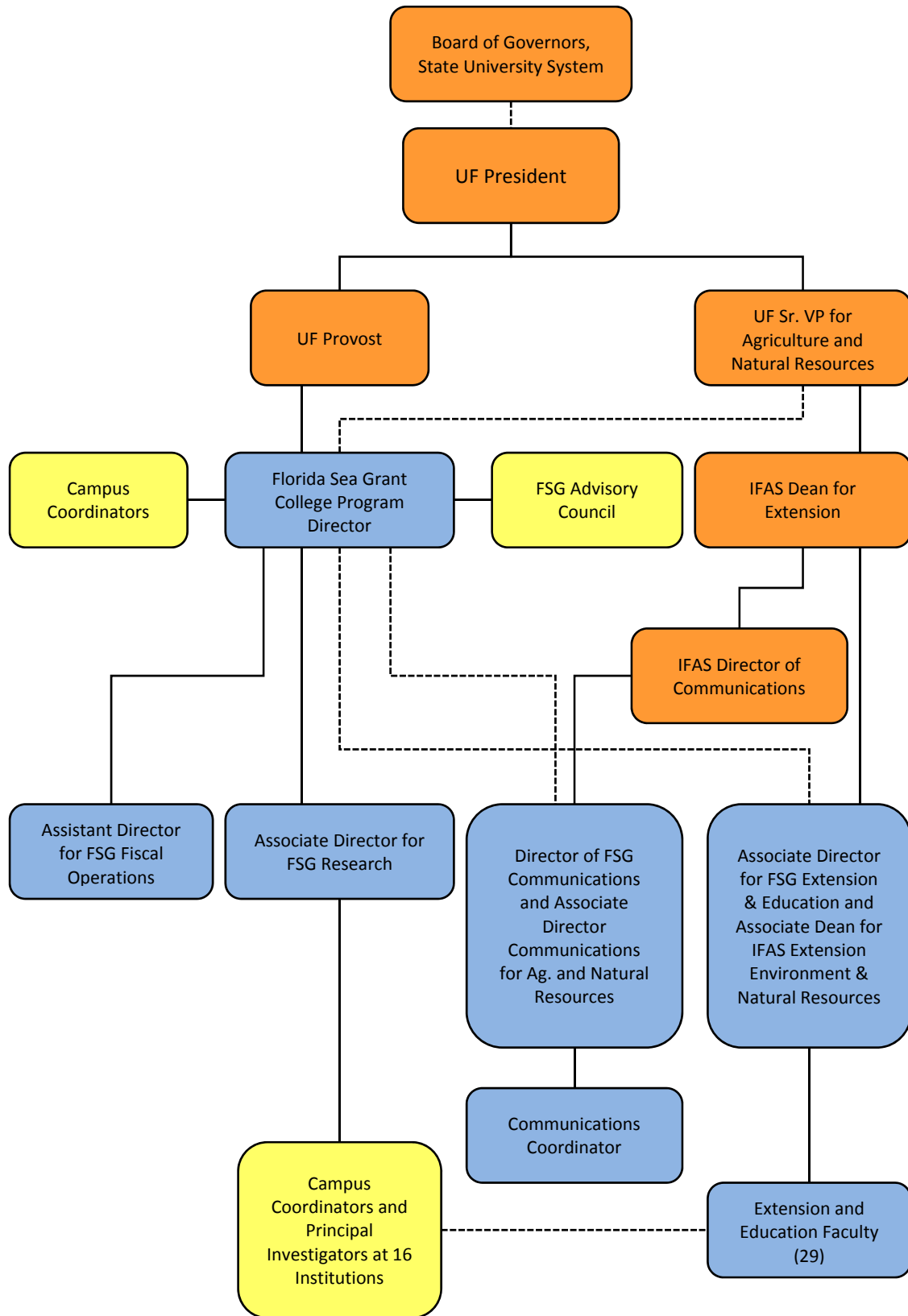


Figure 1. FSG Management Organization.

Staff

Table 1. Florida Sea Grant staff.

Individual	Title	Extension	Education	FTE*
Karl Havens	Director			1.0
Michael Spranger	Associate Director for Extension and Education	0.4	0.1	0.5
Charles Sidman	Associate Director for Research			1.0
Dorothy Zimmerman	Communications director			1.0
Ed Harvey	Assistant director for fiscal operations			1.0
Staci Biondini	Communications coordinator			1.0
Jackie Whitehouse	Executive secretary			1.0
Sharon Cook	Administrative assistant			1.0
Treva Damron	Senior secretary			1.0
Dee Boyle	Communications program assistant			1.0
Thomas Ruppert	Coastal planning specialist	1.00		1.0
Charles Adams	Extension specialist – marine economics	1.00		1.0
Tom Ankersen	Legal specialist – environmental law and policy	0.20		0.2
William Lindberg	Extension specialist – fisheries ecology	0.20		0.2
Cortney Ohs	Extension specialist – aquaculture	0.40		0.4
Steven Otwell	Extension specialist – seafood technology	1.00		1.0
Robert Swett	Extension specialist–coastal/marine spatial planning.	1.00		1.0
Holly Abeels	Marine agent – Brevard County	0.90	0.10	1.0
Lindsay Addison	Marine agent (joint with Rookery Bay NERRS)	0.90	0.10	1.0
LeRoy Creswell	Marine agent – St. Lucie County	0.85	0.15	1.0
Andrew Diller	Marine agent – Escambia County	0.50	0.50	1.0
Pamela Fletcher	Marine agent - Miami (joint with NOAA AOML)	0.95	0.05	1.0
Bryan Fluech	Marine agent – Collier County	0.85	0.15	1.0
Douglas Gregory	Marine agent/CED –Monroe County	0.55	0.05	0.6
Heather Hammers	Marine agent – Pinellas County	0.90	0.10	1.0
Joy Hazell	Marine agent – Lee County	0.90	0.10	1.0
Scott Jackson	Marine agent/CED – Wakulla County	0.55	0.05	0.6
Lisa Krinsky	Marine agent – Miami/Dade County	0.90	0.10	1.0
William Mahan	Marine agent/CED – Franklin County	0.55	0.05	0.6
Carlos Martinez	Marine agent (UF Tropical Aquaculture Center)	0.15	0.05	0.2
Maia McGuire	Marine agent – St. Johns and Flagler Counties	0.50	0.50	1.0
Brooke Saari	Marine agent- Walton and Okaloosa Counties	0.50	0.50	1.0
Betty Staugler	Marine agent – Charlotte County	0.90	0.10	1.0
John Stevely	Marine agent – Manatee, Sarasota, and Hillsborough Counties	0.95	0.05	1.0
Leslie Sturmer	Marine agent (statewide shellfish aquaculture)	0.95	0.05	1.0
Steve Theberge	Marine agent – Bay County	0.90	0.10	1.0
Chris Verlinde	Marine agent – Santa Rosa County	0.50	0.50	1.0
Fred Vose	Marine agent –Taylor County	0.90	0.10	1.0
Total	38 people	(20.65)	(3.35)	33.3 FTEs

* Where Extension and education FTEs are not listed, the total FTE is associated with program management, and in cases where the listed Extension and education FTEs do not add up to 1.0, the remaining FTE of the individual is focused on research or management.

Advisory Council

Table 2. Current members of the Florida Sea Grant Advisory Council

Name	Title	Affiliation
Bob Aylesworth, Chair	Owner	Aylesworth's Fish and Bait
James Beever	Principal Planner	Southwest Florida Planning Council
Jim Cantonis	President	Acme Sponge & Chamois
Billy Causey	Southeast Regional Director	NOAA NMSP
Ernesto Lasso de la Vega	Citizen Advisor	Charlotte Harbor NEP
Kathleen Elliot	Vice President	Mahogany Youth Corporation
Ted Forsgren	Executive Director	Coastal Conservation Assoc.
Laura Geselbracht	Senior Marine Scientist	The Nature Conservancy
Amy Godsey	State Meteorologist	Florida Division of Emergency Mgmt.
Frank Hibbard	Mayor	City of Clearwater
Elliot Kampert	Director, Growth Management	Okaloosa County, Florida
Liz Longstreet	Seafood Procurement	Darden Restaurants
Chuck Listowski	Executive Director	W. Coast Inland Navigation Dist.
Gary Lytton	Director	Rookery Bay NERRS
Gil McRae	Director	Fish & Wildlife Research Institute
Gib Migliano	President	Save on Seafood
Ben Nelson	Forecaster	NOAA National Weather Service
Michael Poff	Vice President	Coastal Engineering Consultants
Richard Pruitt	Assoc. Vice President	Royal Caribbean Cruises, Ltd.
Jerry Sansom	Executive Director	Organized Fishermen of Florida
Dan Solano	Owner	Cedar Key Aquaculture Farms
John Sprague	Director of Government Affairs	Marine Industries of Florida
Jacqui Sulek	Chapter Network Manager	Audubon of Florida

Strategic Partnerships

A variety of strategic partnerships were formed in 2010 in order to address issues related to the Deepwater Horizon oil spill in the Gulf of Mexico. Florida Sea Grant and the three other Gulf of Mexico Sea Grant Programs worked together to develop a comprehensive website where coastal residents, business owners, researchers and community leaders could go for up-to-date, accurate and objective information on a variety of practical issues related to the spill, responses to the spill, and impacts to the coastal zone. The programs worked together throughout the disaster to provide training to volunteers, information to consumers about seafood safety, information to people and businesses about filing claims for lost income and revenue, and support in communities where people were experiencing psychological stress. During the period of the spill, Florida Sea Grant also partnered with the Sea Grant programs of Georgia, North Carolina and South Carolina to develop an informational website and to host two workshops where experts developed white papers on the hydrodynamics and biogeochemistry of oil transport and transformation, in anticipation of oil possibly reaching and impacting the east coast of the USA.

In 2010, Florida Sea Grant also partnered with the National Estuarine Research Reserve, jointly establishing a 'Team OCEAN' program at the Rookery Bay Reserve, to promote marine resource conservation by training citizen volunteers who educate the public about safe boating, protection of habitat and catch-and-release fishing. Florida Sea Grant also has a full time Extension agent located at Rookery Bay, who works closely with the NERRS Coastal

Training Program staff in conducting education and outreach, and along with the Sea Grant Programs of North and South Carolina, we supported a graduate research project at the Guana Tolomato Matanzas Reserve to examine factors associated with oyster mortality events.

In 2010, Florida Sea Grant continued to partner with the Florida Oceans Council and the Florida Oceans Alliance to develop user-friendly informational documents about climate change, sea-level rise, and coastal and ocean opportunities planning – targeted primarily at the Florida Legislature, and together we held events in the State Capitol to meet with Legislative staff on these important coastal issues.

Florida Sea Grant continued to be an active participant in the Gulf of Mexico Climate Outreach Community of Practice, working with the NOAA Gulf of Mexico Regional Collaboration Team, the NOAA Coastal Services Center and other federal, state and local Gulf partners to bring awareness and resources for action to coastal communities affected by climate change, in particular, by sea-level rise. This partnership has included a face-to-face meeting and development of an interactive website with a discussion forum and repository of documents related to outreach and education on the subject of climate change, and an ongoing process to develop tools and information tailored to the needs of particular Gulf communities.

Florida Sea Grant is actively engaged in a number of other strategic partnerships including:

- Aylesworth Foundation for the Advancement of Marine Science
- Cedar Key Aquaculture Association
- Florida Clean Boating Partnership
- Florida Coastal Ocean Observing System Consortium
- Florida Institute of Oceanography
- Gulf of Mexico Coastal Ocean Observing System
- Gulf of Mexico Governor’s Alliance
- National Seafood HACCP Alliance
- NOAA Gulf of Mexico Regional Team
- NOAA South Atlantic Regional Team
- South Atlantic Governor’s Alliance
- Southeast Coastal Ocean Observing System
- West Coast Inland Navigation District

Program Funding

Research, Extension, communication and management funds from the NSGO also are matched at a rate of 50 cents on a dollar. FSG leadership has been successful in obtaining substantial additional grant support for Extension and outreach projects, as well as increased support for student fellowships. As a result, with a \$2.16M investment from the NSGO omnibus award, FSG runs a program in excess of \$5.71M a year.

Table 3. FSG 2010-2011 budget.

Funding Area	Total (dollars)	% Total
Research	2,165,000	38
Outreach and Education	2,591,000	45
Communications	269,000	5
Administration	536,000	9
Fellowships	156,000	3
TOTALS	5,717,000	100

RESEARCH

FSG reports on an annual basis the accomplishments that are associated with each ongoing or completed research project. In this report we also identify project outcomes, realized or potential impacts and leveraged funding (where applicable) within the context of strategic planning goals and performance measures. To aid in gathering this information principal investigators are required to report on: (1) project accomplishments; (2) new research directions; and (3) outcomes and impacts to society, the economy and/or the environment. This reporting is facilitated by a new Online Activity Reporting System (OARS), which was implemented during 2010.

Current Research Projects

Table 4. Active Florida Sea Grant research projects in 2010-11.

Strategic Focus Area	Project Number	Project Title	Institution
Seafood Production & Safety	R/LR-Q-32	Oyster Demand Adjustments to Alternative Consumer Education and Post Harvest Processes in Response to V.v.	University of West Florida
Seafood Production & Safety	R/LR-Q-33	Grouper Forensics for Seafood Quality Control	University of South Florida
Seafood Production & Safety	R/LR-Q-34	Implementation of Vibrio Monitoring Methods Needed to Sustain Florida Coastal Communities	University of Florida
Seafood Production & Safety	R/LR-A-45	Species Diversification on Florida Shellfish Aquaculture: Nursery and Grow-out of the Sunray Venus Clam	Harbor Branch Oceanographic Institute
Seafood Production & Safety	R/LR-A-48	Evaluating Performance of Pilot and Commercial Wastewater Systems Associated with Inland Production of High-Value Marine Fish	Mote Marine Laboratory
Healthy Ecosystems	R/LR-B-62	Cryopreservation of Florida Sea Oats Germplasm: A Technology to Ensure Long-term Commercial Availability of Site-Specific Genotypes for Dune Restoration	University of Florida
Healthy Ecosystems	R/LR-B-63	Environmental Controls on the Dynamics of Nursery Habitat Quality for Estuarine-Dependent Fishes	Florida State University
Healthy Ecosystems	R/LR-B-64	Ecosystem-based Fishery Management: A Potential Interdisciplinary Approach to Evaluating Grouper Harvest Policies	University of Florida
Marine Biotechnology	R/LR-MB-25	Development of an Immortalized Sponge Cell Line for Sustainable Supply of Marine Bio-products	Harbor Branch Oceanographic Institute
Sustainable Communities/Hazard Resilience	R/C-S-50	A Spatial Hazard Index of Semi-Permanent Rip Currents in Northwest Florida	University of West Florida
Healthy Ecosystems	R/C-E-54	Predicting Impacts of Coastal Habitat Degradation on and Economically Important Fish	Mote Marine Laboratory

Strategic Focus Area	Project Number	Project Title	Institution
Healthy Ecosystems	R/C-E-55	Projected Reorganization of Seagrass Communities in Response to Altered Freshwater Flow in Florida Bay	Florida International University
Sustainable Communities/Hazard Resilience	R/C-D-18	Full-Scale Simulation of Hurricane Effects on Residential Building Envelopes to Reduce Hurricane Induced Losses	Florida International University
Sustainable Communities/Hazard Resilience	R/C-D-19	Development of Test-Based Data on Hurricane-Induced Building Interior, Utility, and Contents Damage for Improved Risk Prediction and Mapping	Florida International University
Sustainable Communities/Hazard Resilience	R/C-D-20	Design Guidelines for Retrofitting Wood Roof Sheathing Using Closed-Spray Applied Polyurethane Foams	University of Florida
Sustainable Communities/Planning & Policy	R/C-P-31	State and Local Policy Innovation and Implementation for Coastal Access, Coastal Economic and Ecosystem Health, and Coastal Hazard Mitigation and Adaptation	University of Florida
Sustainable Communities/Planning & Policy	R/C-P-32	Assisting Coastal Communities to Plan and Manage Their Waterfronts and Waterways	University of Florida
Sustainable Communities/Planning & Policy	R/C-P-33B	Mapping Florida's Property Parcels for Sea-Level Rise Planning Using a 10 Meter Digital Elevation Model	University of Florida
Sustainable Communities/Planning & Policy	R/C-P-36	Community-Based Hazard Identification, Planning and Engagement	University of Florida
Healthy Ecosystems	E/POPDYN-1	Development and Use of an Agent-Based Model to Evaluate the Effect of Effort Redistribution due to Fleet Heterogeneity and Policy Implementation on Estimating a Standardized Catch-Per-Unit Effort Index of Abundance	University of Miami
Healthy Ecosystems	E/NMFS-MRE-1	Economic and Biological Complexities in the Blue Crab Fishery	University of Wyoming
Sustainable Communities/Hazard Resilience	GOM/RP-1	Development of Innovative Load Transfer Mechanism to Reduce Hurricane Induced Failures in New and Existing Residential Construction	Florida International University
Climate Change	GOM/RP-2	A Parameterized Climate Change Projection Model for Hurricane Flooding, Wave Action, Economic Damages, and Population Dynamics	University of Florida
Climate Change	GOM/RP-3	Implications of Takings Law on Innovative Planning for Sea-Level-Rise in the GOM	University of Florida

Current Program Development Projects

Table 5. FSG Program Development (PD) projects active in 2010-11.

Strategic Focus Area	Project Number	Project Title	Institution
Healthy Ecosystems	PD-09-3	Reopening a Tidal Pass: Implications for Water Quality and Seagrass	Florida Gulf Coast University
Healthy Ecosystems	PD-09-4	Blue Crab Traps Removal Exercise and Development of Guidelines for Statewide Crab Trap Management	Sea Grant Extension Program
Sustainable Communities/Planning & Policy	PD-09-6	Engaging the Public in Planning for Recreational Waterway Access in a Rural Coastal Community	University of Florida
Seafood Production & Safety	PD-09-7	Hard Clam Product Characterization with Sensory Profiling for Quality .Attributes, Shelf-Life and Appellations	University of Florida
Healthy Ecosystems	PD-09-8	Conservation Through Education: Meaningful Watershed Experiences at the Navarre Beach Marine Science Station	Sea Grant Extension Program
Sustainable Communities/Planning & Policy	PD-09-11	UF Law Marine and Coastal Law and Policy Program Development Workshop	University of Florida
Climate Change	PD-10-3	Development of an Integrated Approach to Sea-Level Change and Effects Analysis for South-Florida	Florida Atlantic University
Healthy Ecosystems	PD-10-4	Understanding Circulation Dynamics and Transport Mechanisms of Gag Grouper Larvae in the Florida Big Bend Region	Florida State University
Seafood Production & Safety	PD-10-5	Dose Optimization of Human Chorionic Gonadotropin (HCG) for Induced Spawning of Pinfish	University of Florida
Healthy Ecosystems	PD-10-6	Identifying Magnitude and Sources of Change in Oyster Reefs in the Big Bend Area of Florida	University of Florida
Sustainable Communities/Hazard Resilience	PD-10-7	Integrating Storm Surge and Inundation Prediction to Strengthen Resiliency of Coastal Communities and Infrastructures	University of Florida
Healthy Ecosystems	PD-10-8	Effects of oiling on Oyster Resources in the Big Bend of Florida	University of Florida
Oil Spill	PD-10-9	A Pre-Spill Assessment of Seagrasses Along Florida's Gulf Coast	University of Florida
Oil Spill	PD-10-10	Oil Contamination as a Driver of Archaeal Abundance and Diversity in the Gulf of Mexico	University of Florida
Oil Spill	PD-10-11	Tracing the Intrusion of the GOM 2011 Oil Spill on Coastal Food Webs with Natural Abundance Radiocarbon	Florida State University
Healthy Ecosystems	PD-10-12	Sixth International Symposium on Aquatic Animal Health	University of Florida
Seafood Production & Safety	PD-10-13	Updating Public Health Advisories Regarding Methylmercury in Seafood	University of Florida
Climate Change	PD-10-14	Climate Change and Sea-Level Rise Effects on Natural Environment of South Florida	Florida Atlantic University

Leveraged Funds

FSG-sponsored researchers are required to provide a 50% match of non-federal funds as a supplement to the FSG core funding allocated for their projects. For 2010-11 this translated to a combined research portfolio of \$2,165,000 (core and match funding) and an additional \$9,241,366 in leveraged research funding that was influenced by FSG. Influenced refers to funds that were obtained because of the initial investment made by FSG in the research.

EXTENSION

Program Effort by OARS Reporting Theme

While it is possible to break the program into four coarse focus areas for strategic planning that include: (1) seafood production and safety, (2) sustainable and hazard-resilient coastal communities, (3) healthy coastal and marine ecosystems, and (4) climate change: impacts and adaptations, this classification does not provide sufficient resolution to present annual accomplishments as they relate to certain audiences or issues. Therefore, the subsequent narrative and associated figures and tables consider work effort related to the following nine 2010-11 OARS reporting themes: (1) climate change, (2) hazard resilience, (3) coastal habitats, (4) policy and planning, (5) oil spill, (6) marine education, (7) seafood science, (8) aquaculture, and (9) fisheries.

FSG's researchers, specialists, and marine agents implemented or participated in 1,091 outreach and Extension contact events that generated 2,394 topical information exchanges (Figure 2) that reached an estimated 504,501 people (Table 6). The term "information exchange" describes the common situation where an outreach or Extension contact event addressed multiple OARS reporting themes. Many of the contact events reported also reached multiple audiences, and were oriented towards the OARS reporting theme areas of fisheries (n = 564 information exchanges), coastal habitats (n=506 information exchanges) and marine education (n = 362 information exchanges).

During 2010, FSG's Extension program mobilized a rapid response in the aftermath of the DWH oil spill. In the span of four months FSG's specialists and agents implemented a coordinated outreach program consisting of 148 topical information exchanges that provided sound advice to the public about the possible impacts of oil, and helped victims of the spill find employment (e.g., clean-up crews, vessels of opportunity, etc.) and/or receive compensation for lost business or wages.

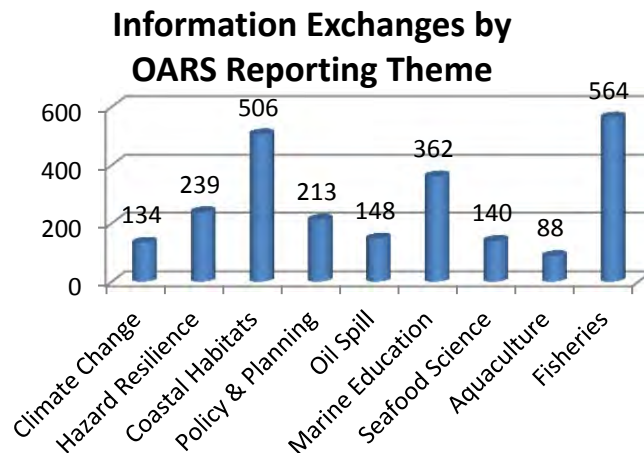


Figure 2. Number of information exchanges by OARS reporting theme.

Several FSG agents also participated regularly in radio and televised news events that were broadcast regionally and nationally to large audiences. An example was Franklin County Sea Grant Extension Agent and County Extension Director Bill Mahan’s nationally televised description of the Harvest Open Waters (HOW) seafood sensory program, which was developed by Professor Steve Otwell (University of Florida / Florida Sea Grant) to help industry and agency representatives identify seafood products tainted by the Deepwater Horizon (DWH) oil spill. Audience numbers for television and radio events are difficult to estimate, however the 37 radio and 32 televised spots reported reached an estimated 396,500 people (Table 6).

Another way to look at the scope of our Extension program is by numbers of people reached, instead of counts of events or information exchanges. A breakdown of FSG Extension effort based on target audiences reached is presented in Figure 3. The pie chart indicates that the bulk of FSG Extension programming conformed to the OARS reporting themes of fisheries (29%), aquaculture (17%), coastal habitats (16%), and marine education (16%). A similar amount of programmatic effort (3% to 6%) was distributed among other reporting areas including hazard resilience (6%), policy and planning (5%), climate change (4%), seafood science (3%), and Extension related to the DWH oil spill (4%).

Program Effort by OARS Reporting Theme
(based on target audiences reached)

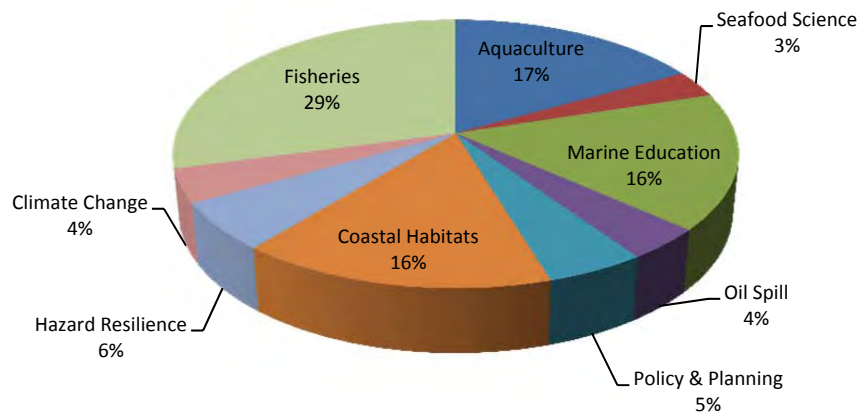


Figure 3. Target audiences reached. Proportions are based on estimated numbers of people that comprise target audiences reached by activities that conform to OARS reporting themes. The audience classified as “general public” is not included in the calculation.

Table 6. 2010-11 FSG outreach activities and estimated audiences reached.

Activity Type	Count	Audience Reached
Camps, Clubs	169	5,721
Class Trip	32	3,240
Conference	92	10,298
Consultation / Advisory	95	2,558
Formal Education (K-12)	53	4,805
Habitat Enhancement	20	496
Informal Education	161	5,782
Large Event / Festival / Tournament	91	58,488
Meeting	124	2,567
Meeting Facilitation	73	3,396
Professional Development	45	1,220
Public Presentation	121	5,194
Radio	37	292,000
Television	32	104,500
Webinar	18	914
Workshop	143	3,322
TOTALS	1,306	504,501

Activities

Table 6 shows the different types of activities that characterize contact events and the estimated number of people reached through those activities. Counts reflect activities that FSG researchers and Extension agents and specialists either helped to organize or participated in. Counts are based on tallies of activity types reported for contact events and, therefore, do not equal the number of contact events or information exchanges identified in Figure 2, because some contact events consisted of multiple types of activities. Also, some audiences may be double-counted because multiple agents participated in or worked collaboratively to organize some contact events, thereby, increasing audience exposure to FSG programming at those events.

Target Audiences

FSG-supported Extension activities, delivered by researchers, marine agents, and specialists, targeted a number of traditional audiences including the scientific community (26%), agency and resource managers (14%), boaters and fishers (5%), industry (9%), teachers and educators (5%), legal and local government (7%), and youth and adults through formal education (K-12; 16%), and non-formal learning programs (youth and adults; 18%) (Figure 4; Table 7).

Most FSG activities are designed for specific audiences, however, some activities such as TV and radio shows and large festivals, also reach the general public. It is estimated that FSG Extension programming reached 461,878 people classified as general public. Figure 4 does not include this general audience because its large size would obscure the target audiences identified in those results.

Target Audiences Reached by Extension Programming

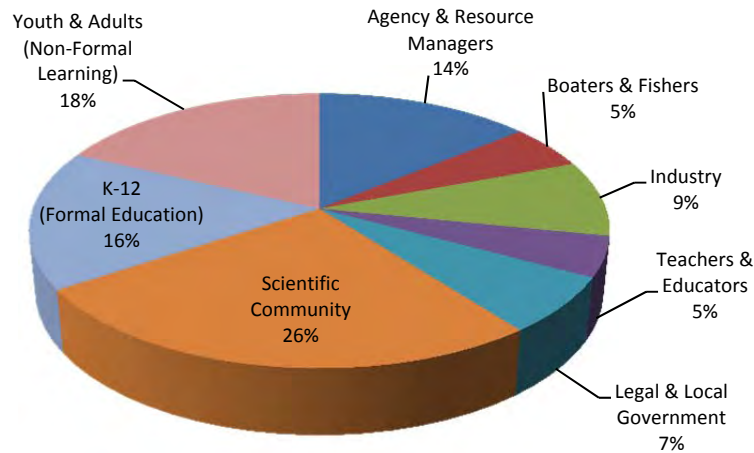


Figure 4. Target audiences reached (proportions are based on estimated audiences reached through outreach associated with FSG research and extension programs).

Table 7. Estimated target audiences reached.

Target Audience	Audience Reached
Agency & Resource Managers	5,982
Boaters & Fishers	2,222
Industry	3,804
Teachers & Educators (Formal and Non-formal)	2,014
Legal & Local Government	2,836
Scientific Community	11,122
K-12 (Formal Marine Education)	6,987
Youth & Adults (Non-Formal Education)	7,656
General Public	461,878
TOTAL	504,501

Volunteers

During 2010-11, 1,419 citizens volunteered 8,359 hours of their time in support of FSG Extension-related events. Of those hours, 1,429 were associated with Extension activities related to FSG-funded research projects, which, beginning in 2008, were required to have outreach plans for target audience/stakeholder engagement.

DEEPWATER HORIZON OIL SPILL RESPONSE

The explosion of the Deepwater Horizon well changed our program focus rapidly, dramatically, and for several months in 2010. Within a week of the explosion, FSG determined that we could provide help and reliable information in three areas – (a) safety of Gulf seafood; (b) the process of filing claims for lost incomes; and (c) volunteer opportunities for cleaning oil-impacted wildlife in coastal areas.

Activities

The spill created significant uncertainty among consumers about the safety of eating seafood harvested from the Gulf. Within days of the explosion, seafood safety experts from FSG posted frequently-asked questions and answers, as well as a media advisory, about seafood and oil contamination. We also launched a major campaign to inform consumers about processes that ensure safe Gulf seafood, including the use of sensory analysis by trained “seafood sniffers” developed by Professor Steve Otwell. The effort garnered coverage in every major national media outlet. In addition, the Gulf Sea Grant programs collaborated to lead the seafood safety response for industry, offering structured training that addressed concerns about oil contamination in harvest and processing practices. Dr. Otwell’s Harvest Open Waters (HOW) program trained more than 300 participants from industry, the media, and regulatory agencies in less than four weeks.

Many Floridians incurred economic loss caused by fishery closures or negative media coverage that drove customers away. There was widespread confusion among citizens and businesses about the provisions of the federal Oil Pollution Act, and how to seek compensation from the responsible party, BP. Florida Sea Grant’s economics and legal team exhaustively investigated the claims process, and developed a widely distributed advisory with step-by-step instructions for filing claims. Since procedures changed as the spill continued, Florida Sea Grant posted daily online updates. The team also issued an advisory about making legal decisions related to spill damages, to help businesses and individuals understand the options of seeking compensation through the claims process or other legal avenues.

Numerous individuals concerned about potential damage from oil coming ashore sought ways to lend a hand. Sea Grant Extension faculty in affected Panhandle counties worked to help private individuals find meaningful ways to take part in the recovery. They worked closely with Volunteer Florida to identify volunteer opportunities once it was announced that only specially trained or paid workers would be allowed to clean oil from beaches and wildlife. They also organized a major public forum in Pensacola, “The Science of the Spill,” where more than 120 community members had an opportunity to ask local experts questions about local oil spill impacts.

FSG provided coordinated and objective communications about all aspects of the spill. FSG quickly recognized the need to consolidate internal channels of communications to assess the information flow for its relevance and validity. The communications team partnered with Sea Grant’s Extension faculty to create web pages dedicated to the spill then populated the pages with timely and accurate advisories on the safety of seafood, the claims process, and volunteer opportunities for cleaning up the coast. Just over a week after the rig sank the communications programs of the Gulf Sea Grant programs collaborated to post a regional oil spill Web portal, gulfseagrant.org, which featured comprehensive content on all aspects of the spill. Within a month, the South Atlantic Sea Grant programs launched a second site, southatlanticseagrant.org, featuring original material from two research summits sponsored by South Atlantic Sea Grant programs to answer questions about the possible movement of oil from the Gulf to the Atlantic.

This disaster showcased FSG’s ability to quickly respond to an unplanned event in an effective and organized manner, thanks to the dedication and competency of our marine Extension faculty, and the positive relationships

quickly forged between the Gulf of Mexico Sea Grant programs, the regional Land Grant Extension programs, and local, state, and federal agencies. Now that the well has been capped, threats to Florida have been greatly diminished, but FSG will continue to provide support where needed.

Target Audiences

FSG’s DWH oil spill response provided assistance primarily to the aquaculture and seafood industry, including commercial fishermen (Figure 5; 32%). In addition, FSG’s oil spill-related outreach programming also assisted the resource management community (21%) who was mobilizing clean-up efforts and assessing the ecological impacts to coastal and marine habitats. In addition to the specific audiences shown in Figure 5, oil spill-related events, representing FSG’s coordinated response, directly reached more than 21,000 Floridians classified as “general public.” These numbers do not reflect national audiences who tuned in to televised news programs that provided information on the safety of Gulf seafood from the perspective of FSG marine agents and seafood safety specialists.

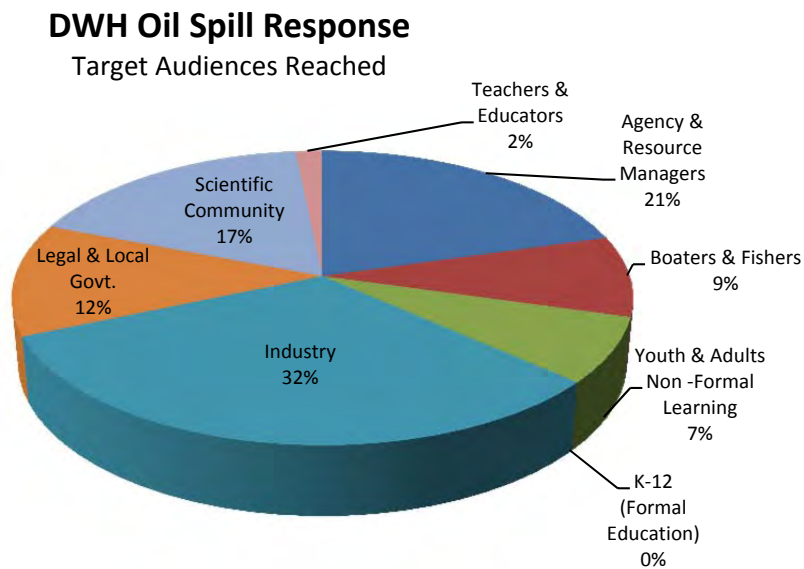


Figure 5. Target audiences for FSG’s DWH oil spill response effort.

MARINE EDUCATION

FSG's statewide marine education program works through partnerships with state, local governments, and industry to implement hands-on learning experiences and ecosystem enhancement projects that harness the power of the scientific community, industry, citizen volunteers, and teachers and youth. They learn by doing, while also enhancing the environment.

College Students Supported

FSG supports ocean and coastal education at all academic levels. At the college level, FSG offers scholarships and fellowships through university-based research grants, and through private donations, such as the Chuck Skoch Florida Sea Grant Scholarship, the Aylesworth Scholarship, the Guy Harvey Scholarship, and the Scott's Nutrient Dynamics Fellowship.

Table 8. Students who received scholarships and fellowships from different funding sources in 2010-11.

2010 Funding Source	Undergrad	Masters/JD	Ph.D.
Research Grant Supported	10	35	22
Research Grant Graduated	10	24	6
Chuck Skoch Florida Sea Grant Scholarship	1		
Aylesworth Scholarship			1
Guy Harvey Scholarship		4	
Knauss Fellowship		1	1
Scott's Nutrient Dynamics Fellowship			2
NOAA Fisheries Population Dynamics Fellowship			1

Target Audiences

FSG marine education programs complement the public school system's science curriculum, which in many communities lacks a comprehensive coastal and marine ecology component. During 2010-11, FSG's marine education program reached 353 formal educators and 6,987 youth (K-12)

FSG also responds to the needs expressed by local cooperative Extension programs for more informal learning experiences through a blending of education and Extension that targets not only youth, but also adults who want to learn more about coastal and marine systems through hands-on educational experiences. To this end, FSG marine agents have developed a variety of coastal habitat enhancement programs (e.g., beach clean-ups, monofilament line recycling, oyster, mangrove, and dune restoration) or have taught modules of the popular University of Florida IFAS Florida Master Naturalist adult education program.

COMMUNICATIONS

Publications

FSG issues Publication and Communication Support Guidelines to all FSG project collaborators, and has an organized process for printing and tracking publications. Documents published “in-house” include Reports, Extension Publications, Technical Papers, thesis or dissertation abstracts, staff papers and other items such as Extension newsletters. Each is numbered and tracked in an appropriate series. Books and journal articles are published elsewhere, but tracked for completion and credit by Communications staff. All publications are distributed to the National Sea Grant Library, housed in the Pell Library at the University of Rhode Island.

Florida Sea Grant also contributes to the Electronic Data Information Source (EDIS), which is the database of nearly 8,000 online titles maintained by the Institute of Food and Agricultural Sciences (IFAS) at the University of Florida. EDIS (www.edis.ifas.ufl.edu) provides a comprehensive single-source repository of all current UF/IFAS numbered and reviewed extension publications. EDIS content includes a collection of information on topics relevant to the environment and natural resources, agriculture, 4-H, Florida-friendly landscapes, and Florida communities. From the EDIS website, more than 10 million educational print and electronic products are viewed each year. Together, the streamlined publication process, universal access, and print-as-needed services not only reduce the cost but also expand the impact of UF/IFAS publications. In 2010, Florida Sea Grant faculty shared authorship in more than 80 active publications on EDIS. According to EDIS statistics, these titles were viewed more than 152,000 times in 2010-11.

FSG also maintains a running five-year list of publications sponsored by its research, education Extension, communications and management efforts. The list categorizes items as either submitted, in press, or published. Publications are identified according to the following categories: Report; Technical Paper; Book or Book Chapter; Journal Article; Graduate Thesis or Dissertation; Extension Publication; Extension Newsletter; Miscellaneous Paper, Article or Conference Proceeding; and Website. Publications identified through annual research and Extension progress reports are provided below. Some of the publications developed by county Extension agents are collaborations with FSG communications and have been officially tracked (submitted to the Pell Library).

Table 9. Florida Sea Grant publications submitted to the National Sea Grant Library in 2010-11.

Publication Type	Number
Advisory/Extension	6
Technical Reports	1
Handbooks	1
Map/Atlas	2
Proceedings	1
Program Reports	7
Surveys	4
Newsletters	8
Theses/Dissertations	13
Journal Reprints	30
Websites Developed / Maintained	13
National Library Downloads of FSG Publications	201,389

In addition to publications that FSG’s program’s communications department helped to develop and submitted to the National Sea Grant Library, FSG researchers, agents, and specialists produced 442 communications products that supported their 2010-11 outreach and Extension activities (Table 10). Most program affiliates engaged their audiences through public presentations, which accounts for the development of 86 PowerPoint slide shows. Other digital media generated by FSG researchers and agents include the development and maintenance of 32 web pages or websites that were used to advertise upcoming events and/or showcase the results and achievements of outreach and Extension activities. Most agents also reached wider audiences through printed media that included 84 newsletters, 46 fact sheets, and 44 newspaper articles. FSG engaged scientific and professional communities through conference presentations and posters, which were highlighted in 17 conference proceedings. FSG agents also helped to organize a number of large community-based festivals (e.g., Cedar Key Seafood Festival, Cortez Fishing Festival, Marine Industry Boat Shows, Mighty Mullet Maritime Festival), which accounted for the development of 24 large format displays and signs.

In short, FSG researchers and agents blended both traditional and more contemporary forms of communication strategies to reach a wide variety of audiences; from the general public, to youth, policy-makers, educators, and industry, which attests to the richness and diversity of our outreach and Extension and program.

Table 10. FSG outreach and Extension communication products in 2010-11.

Communications Products Type	Count
Blog	0*
Book, Monograph	6
Conference Proceedings	17
Curricula Developed	5
Display / Sign	24
Electronic Publication / Report	17
Extension Bulletin	1
Fact Sheet	46
Handbook Manual / Guidelines	4
Journal Article	10
Maps / Chart / Atlas	0
Newsletter	84
Newspaper Article	44
Periodical	1
Poster	27
PowerPoint	86
Press Release	24
Technical Paper	13
Video (CD, DVD)	6
Website	32
TOTAL PRODUCTS	442

*New for 2011 reporting year.

PERFORMANCE TOWARD STRATEGIC PLANNING OBJECTIVES AND METRICS

Meeting Strategic Planning Objectives

The FSG 2009-13 Strategic Plan identifies 23 broad four-year planning objectives. Just two years into the plan, 20 of the objectives already have been met or are on target to be met (Table 11). Three objectives will be met over the next two years. Planning metrics and four year planning targets are presented in Table 12.

Table 11. 2010-11 Progress Towards Strategic Planning Objectives.

Program Focus Area	Strategic Planning Objective	2010-11 Program Response
Climate Change: Impacts and Adaptations	Environmental and land use law professionals will develop an increased understanding of what is known, what is probable, and what is possible in regard to the impacts of sea-level rise on coastal development, and become more familiar with legal and policy options related to land use, zoning and real property transactions as a result of Florida Sea Grant law and policy outreach.	In 2010, Florida Sea Grant hired an attorney with expertise in sea level rise adaptation planning who is acting as the program's coastal planning specialist. He is currently implementing this program. His expertise complements that of the FSG legal extension specialist who is developing climate change related policy tools for coastal communities. During 2010, the FSG coastal planning specialist provided expertise to 244 legal professionals and coastal planners via presentations at workshops, meetings, and conferences.
Climate Change: Impacts and Adaptations	Florida Sea Grant will facilitate information exchange among coastal governments regarding climate adaptation strategies using a Community of Practice approach and at least yearly facilitated workshops. This will include collaborative work with GOM and SE Atlantic Sea Grant programs and other NOAA programs.	Florida Sea Grant is collaborating with the other GOM Sea Grant programs to sustain a climate change community of practice established in 2009. The FSG director has engaged policy makers and local government officials through his involvement with the Florida Oceans and Coastal Council. FSG legal experts are implementing a complimentary program that engages community officials and decision makers to address sea level rise.
Climate Change: Impacts and Adaptations	Hundreds of K-12 teachers, informal educators and youth will develop increased climate literacy as a result of Sea Grant education and outreach programs.	Florida Sea Grant's recently initiated climate related outreach has initially focused on local government officials and policy makers. FSG is currently working with partners (Florida Fish and Wildlife Conservation Commission) to establish a climate coordinator who will be working with FSG agents to develop and implement K-12 curricula in this area.
Climate Change: Impacts and Adaptations	Planners, legal staff and other key stakeholders in selected coastal counties (Climate Test Beds) will develop an in-depth understanding of the potential impacts of sea level rise and the policy options for adaptation and mitigation as a result of Florida Sea Grant law and policy outreach.	Florida Sea Grant's legal specialist is partnering with our new coastal planning specialist to develop a set of policy tools to help local government officials implement sea level rise adaptation strategies. A recent success is that the city of Punta Gorda was named 'Florida's First Climate Ready Community' based on model climate adaptation policies provided by FSG legal extension.
Climate Change: Impacts and Adaptations	Resource managers will receive information and guidance regarding how sea level rise is expected to affect the structure and function of coastal natural systems and projects intended to restore and sustain them.	Florida Sea Grant partnered with the US Geological Survey, US Army Corps of Engineers and US Department of Interior to hold a series of workshops where staff involved in Everglades restoration discussed how to integrate sea level rise into adaptive management of that regional ecosystem.
Healthy Coastal and Marine Ecosystems	Hundreds of K-12 teachers, informal educators and youth will develop increased ocean literacy as a result of Sea Grant education and outreach programs.	The advancement of ocean literacy through formal and informal learning experiences is a hallmark of Florida Sea Grant's extension program. During 2010, Florida Sea Grant extension programming reached 988 teachers, 1,026 informal educators and 11,751

Program Focus Area	Strategic Planning Objective	2010-11 Program Response
Healthy Coastal and Marine Ecosystems	Hundreds of recreational boaters will become better informed about actions to reduce their impacts on mangroves, sea turtles, barrier islands, seagrass and other habitats and biota through an outreach partnership conducted by Florida Sea Grant and at least one of the NOAA NERRS areas.	youth through education and outreach programming, which was implemented in partnership with local schools and government agencies. In addition, a number of Florida Sea Grant marine agents acted as instructors for the statewide Florida Coastal Master Naturalist Program, which provides nature-based adult education experiences.
Healthy Coastal and Marine Ecosystems	Mayors, county commissioners and other local and regional decision makers in coastal counties will become better informed about the values of coastal natural resources and how their decisions affect those resources, via innovative in-the-water outreach programs conducted by Sea Grant marine extension agents.	This project ended abruptly, shortly after it was initiated, due to the departure of the person hired to implement the outreach component. Florida Sea Grant and the Rookery Bay NERR are discussing options for refilling the position and continuing the project. Florida Sea Grant will be funding researchers during 2012 who are applying a Community Based Social Marketing strategy that targets boaters in Brevard County's Indian River Lagoon in an attempt to reduce pressure on critical seagrass beds.
Healthy Coastal and Marine Ecosystems	State and federal agencies will be provided with new information, models and decision-support tools for ecosystem-based management of finfish and shellfish, as a result of research funded by Florida Sea Grant.	This objective was linked to a project that proposed to engage decision-makers by providing a kayak-based ecological immersion experience. The target group of decision-makers proved to be difficult to reach so the program shifted focus to provide kayak-based educational experiences to youth as part of activities offered by the Navarre Beach Marine Science Station. During 2010, 1,886 youth took part in the kayak program.
Healthy Coastal and Marine Ecosystems	State and federal agencies will be provided with new information, models and decision-support tools for ecosystem-based management of finfish and shellfish, as a result of research funded by Florida Sea Grant.	Florida Sea Grant funded research was responsible for the development of several decision support tools to improve ecosystem-based fisheries management. Examples include a new model that maps Gulf of Mexico circulation patterns to determine gag grouper larvae transport mechanisms, and a bioenergetics growth model that quantifies linkages between water pollution and fishery production. In addition, Florida Sea Grant is currently funding a Ph.D. project, scheduled to be completed in 2011, by a student who is developing a simulation tool, which models fishing fleet effort and pressure as input to fishery management strategies.
Healthy Coastal and Marine Ecosystems	Thousands of recreational fishers will learn methods to reduce fish mortality, practice ethical angling, and reduce their impacts on essential habitat for fish and other marine biota as a result of information and programs developed by Florida Sea Grant in partnership with the Florida Fish and Wildlife Conservation Commission.	In 2010, FSG extension agents and specialists engaged 42,623 coastal residents and visitors that comprise target audiences, with information about how to protect coastal and marine resources using a combination of formal and informal teaching methods.
Healthy Coastal and Marine Ecosystems	Thousands of recreational fishers will learn methods to reduce fish mortality, practice ethical angling, and reduce their impacts on essential habitat for fish and other marine biota as a result of information and programs developed by Florida Sea Grant in partnership with the Florida Fish and Wildlife Conservation Commission.	Florida Sea Grant continued a coordinated program, in partnership with the Florida Fish and Wildlife Conservation Commission, to impart responsible angling practices to commercial and recreational fishers, with a concentration on youth. In 2010, FSG's responsible angling program reached 7,685 fishers of all ages.
Healthy Coastal and Marine Ecosystems	Volunteer groups will remove thousands of derelict crab and lobster traps from coastal waterways in a statewide program using guidelines	FSG extension agents help create a new volunteer-based program for statewide crab trap removal to safeguard navigation and to enhance benthic habitats. More than 3,000 derelict traps have been

Program Focus Area	Strategic Planning Objective	2010-11 Program Response
	developed by Florida Sea Grant and the Florida Fish and Wildlife Conservation Commission.	removed to date enhancing 125,000 acres of coastal habitats. More clean-ups are scheduled for 2011-12.
Healthy Coastal and Marine Ecosystems	Volunteers working on projects sponsored wholly or in part by Florida Sea Grant will enhance, re-establish or rehabilitate coastal habitat.	Florida Sea Grant's statewide marine education and extension programs partner with state, local governments, and industry to implement hands-on learning experiences and ecosystem enhancement projects that harness the power of the scientific community, industry, citizen volunteers, and teachers and youth, who learn by doing, while also enhancing the environment. During 2010, agents organized artificial reef, dune, mangrove, oyster and beach habitat enhancement events which improved an estimated 3,700 acres of coastal and marine habitats. This is in addition to a crab trap removal program which has enhanced an estimated 125,000 acres of benthic habitat.
Seafood Production and Safety	Clam, oyster and other aquaculture producers, and state agencies involved with the regulation and support of the aquaculture industry will continue to receive technical assistance, training and support from Florida Sea Grant, and consumers will be provided with educational information regarding healthy sustainable seafood choices.	Florida Sea Grant's seafood safety specialist continues to provide support to the industry and regulatory agencies in the form of oyster and shrimp schools and a HACCP certification program. In 2010, 40 shrimp and oyster processing firms adopted safe and effective methods for handling and processing seafood as the result of knowledge gained from the oyster and shrimp schools alone.
Seafood Production and Safety	Commercial, regulatory and institutional seafood interests will develop increased international collaboration facilitated by Florida Sea Grant, to better share the responsibility for seafood safety and sustainability.	The Florida Sea Grant seafood safety specialist is fostering international collaboration among seafood processors, retailers, and agencies through participation in the HACCP training curriculum. The seafood safety specialist interfaces with local, state, national, and international stakeholders to facilitate collaboration among the various industry and government interests.
Seafood Production and Safety	Florida Sea Grant's research and extension will provide information that helps to sustain at least 200 aquaculture related businesses.	Aquaculture extension and research represent core Florida Sea Grant capacities for more than three decades. During this time, Florida Sea Grant has helped to develop a robust statewide aquaculture support program that involves researchers at the Harbor Branch Oceanographic Institute who are developing methods to increase the production and harvest of clams and oysters. University-based seafood specialists and scientists who are working with the industry to implement post harvesting and rapid vibrio detection technologies to make oysters safer for consumers, and aquaculture extension professionals who interface with researchers and work directly with local oyster and clam farmers and processors to apply new technologies and information that have sustained and expanded the industry. In 2010, Florida Sea Grant's aquaculture program has helped to sustain more than 3,000 jobs and 335 aquaculture businesses, many of which are small and family owned.
Seafood Production and Safety	Seafood professionals from across the nation will participate in the University of Florida / Florida Sea Grant Seafood HACCP Alliance for	Florida Sea Grant's seafood safety specialist oversees an internationally renowned Seafood Safety and Technology Program. In 2010, the seafood Safety and Technology Program's HACCP Alliance

Program Focus Area	Strategic Planning Objective	2010-11 Program Response
	Education and Training which provides educational support for every seafood processing and importing entity in the nation. This program will be significantly updated and revised in 2009 to anticipate new mandates for the next decade of seafood commerce in both domestic and international settings.	for Education and Training curriculum is estimated to have reached 2,792 seafood professionals throughout the nation. Approximately 400 individuals from the seafood industry and from regulatory agencies received formal HACCP certifications during 2010. Approximately 80 seafood processing and retail operations adopted new information and practices due to HACCP trainings.
Seafood Production and Safety	The aquaculture industry will produce and sell new products developed as a result of research and extension supported by Florida Sea Grant addressing larval development, grow-out, quality control and product economics and marketing strategies.	Florida Sea Grant has supported a long-term research and extension program aimed at diversifying risk to Florida's hard clam aquaculture industry, which is based on a single species. To this end, Florida Sea Grant has funded recent research that has evaluated the potential of triploidy to produce a clam that can thrive in Florida's warming waters. Another project that shows great promise is the culture and production of a new native species, the Sunray Venus clam, which is now being locally grown and selectively marketed due to a coordinated Florida Sea Grant supported research and extension effort.
Seafood Production and Safety	The seafood industry will be provided with new information from integrated research and extension/outreach that addresses emerging concerns for the limitations in traditional wild resources and responsible introduction, use and understanding of alternative selections from aquaculture and importation.	Florida Sea Grant's seafood safety specialist is actively working with industry partners to diversify the selection and gain consumer confidence and acceptance of alternative seafood choices. Choices that, if are commercially viable and desired by consumers, can reduce pressure on wild populations that are being overexploited.
Seafood Production and Safety	The seafood industry will implement new production and processing methods to reduce and eliminate potential pathogens in raw molluscan shellfish that can be applied across all processing operations associated with warm coastal waters as a result of Florida Sea Grant research and extension.	Since its inception, Florida Sea Grant has supported research and extension to ensure the economic viability of seafood processors, particularly those involved in the shellfish industry. To this end, Florida Sea Grant is currently funding research projects that are developing new methods to evaluate consumer preferences, perceived risk, and willingness to pay for shellfish that have been treated by post harvest processing methods. Florida Sea Grant also is supporting research to develop new technologies for rapidly detecting vibrio in shellfish.
Sustainable and Hazard-Resilient Communities	Coastal communities will be provided with new information, products, tools and policies to increase resistance and resilience of residential structures to hurricanes, as a result of Florida Sea Grant research and extension.	During 2010, Florida Sea Grant supported researchers at the University of Florida who improved hurricane storm surge tracking and prediction models and researchers at Florida International University who developed new products and building guidelines that are making buildings safer during hurricanes.
Sustainable and Hazard-Resilient Communities	Coastal residents will be provided with information that increases their awareness of risks associated with living, working and recreating along the coast, including risks associated with sharks, rip tides, sun exposure and red tide.	During 2010, Florida Sea Grant sponsored the First International Rip Current Conference in Miami, which highlighted new research, technologies and products to reduce beach drowning. Florida Sea Grant researchers also developed a Spatial Hazard Index that is now supporting efforts to help save lives on northwest Florida beaches prone to rip currents.
Sustainable and Hazard-Resilient Communities	Coastal residents, businesses and communities will be provided with effective and coordinated on-the-ground support during and after	In the aftermath of the Deepwater Horizon oil spill, Florida Sea Grant responded with a coordinated yet targeted response aimed at (1) assisting affected water-dependent businesses with filing for claims for

Program Focus Area	Strategic Planning Objective	2010-11 Program Response
	natural and man-made disasters.	lost revenue and income, (2) assisting commercial fishermen in applying for economic relief from BP, and (3) helping to train boat owners to participate in BP's Vessel Of Opportunity program. As a result, 14 small businesses obtained economic relief from BP and 1,350 boat owners were able to earn income by assisting in the clean-up effort.
Sustainable and Hazard-Resilient Communities	Coastal resource managers and policy-makers will use Florida Sea Grant information and tools to support more effective management of their waterways, increase the efficiency of resource use, increase navigation safety, save tax dollars and reduce environmental impacts.	Florida Sea Grant extension specialists and researchers developed or enhanced decision support tools, including a Regional Waterway Management System for the West Coast Inland Navigation District and a Vessel Traffic Risk Decision Support System for the Florida Fish and Wildlife Conservation Commission Division of Law Enforcement that are now being used to streamline efforts to manage navigation within Florida's congested waterways.
Sustainable and Hazard-Resilient Communities	Florida Sea Grant will provide coordinated communications regarding disaster response and recovery at the local to regional level through the web and other forms of media.	In the weeks following the Deepwater Horizon oil spill the media was flooded with misinformation about the local impacts that could be expected. Florida Sea Grant communications provided timely and accurate information that people could rely on. When emergency communications about the spill soon threatened to overwhelm websites and inboxes with unverified information, Florida Sea Grant extension faculty created web pages dedicated to the spill, then populated the pages with timely and accurate advisories on the safety of seafood, the claims process, and volunteer opportunities for cleaning up the coast. For example, Florida Sea Grant launched a major campaign to inform consumers about processes that ensure safe Gulf seafood, including the use of sensory analysis by trained "seafood sniffers." The effort garnered coverage in every major national media outlet.
Sustainable and Hazard-Resilient Communities	Hundreds of K-12 teachers will be provided with innovative educational materials and approaches that bring knowledge about sustainable and hazard-resilient coastal living into the classroom.	During 2010, Florida Sea Grant helped to sponsor a "Hurricane Challenge" outreach event that was organized by researchers affiliated with Florida International University's Hurricane Center. The event, which challenged 10 teams of high school students to develop the most hurricane resistant design for a large multi-story building, drew more than 150 people. The principal investigator, who is currently being funded by Florida Sea Grant, has initiated a number of innovative outreach events that have brought together key groups from academia, industry, and regulatory agencies in an effort to generate new products, stronger building codes, and more accurate insurance standards for hurricane risk assessment.
Sustainable and Hazard-Resilient Communities	Local, state and federal agency staff will be provided with science-based information to facilitate their actions in disaster response and recovery.	Following the Deepwater Horizon explosion, national news outlets reported that ocean current models showed the likelihood that oil spilled into the Gulf could become entrained in currents and carried to the Atlantic coast, spreading north with the Gulf Stream as far as North Carolina. Questions arose among the legislative, executive, and business leaders of the south Atlantic states about the imminent threat of oil reaching the region's waters and shores. In response, the Sea Grant programs of Florida,

Program Focus Area	Strategic Planning Objective	2010-11 Program Response
		<p>Georgia, South Carolina and North Carolina convened two scientific roundtables of recognized physical oceanographic experts to give decision makers access to the best available science on if, how and when oil could arrive in regional waters. Results were quickly published in two separate technical reports. One described potential scenarios of oil spill movement from the Gulf to the South Atlantic coast. The other addressed questions about the forms that oil from the spill would take should it migrate to the South Atlantic coast. The reports were distributed through email to regional business leaders and emergency preparedness officials, and were also posted on a collaborative regional website, and in the online archives of the National Sea Grant library. Florida Sea Grant extension program was also mobilized to (1) assist in facilitating an oil spill bioremediation meeting which brought together 50 scientists and resource managers with expertise in treating coastal wetlands affected by the Deepwater Horizon oil spill to consider multiple aspects of using bioremediation to restore the environment; (2) coordinate a Gulf-wide training of personnel from FDA, NOAA and Sea Grant agents in “sensory analysis” as a first alert for presence or absence of hydrocarbons in seafood; (3) coordinated local logistics for Vessel of Opportunity trainings by BP. This training certified vessel owners for opportunity to work with BP in the clean-up, monitoring and post-oil recovery of oil in the Gulf of Mexico region; (4) hosted forums that brought experts together to address the health and safety concerns of local residents who might be affected by the oil spill; and (5) worked with other specialists in the Gulf of Mexico region to develop a program, Harvest Open Waters (HOW) that focused on seafood safety. More than 300 participants from the seafood industry, media and regulatory agencies were trained in less than four weeks.</p>
Sustainable and Hazard-Resilient Communities	Marinas, boatyards and boat retailers will adopt best management practices for reducing coastal water pollution, as a result of Florida Sea Grant extension activities conducted in the Clean Marina, Clean Boatyard, Clean Retailer and Clean Boating Partnership programs.	During 2010, the longstanding Florida Sea Grant partnership with the Department of Environmental Protection has resulted in 28 new “Clean Marina” designations, thereby improving water quality in the vicinity of Florida’s marinas and boatyards.

Table 12. FSG planning metrics, four-year targets, and 2010-11 performance towards meeting targets.

Strategic Planning Performance Metric	Four Year Planning Target	2010-11 Performance
Boaters, fishers, coastal residents are informed about how their actions affect the health of coastal and ocean resources.	1,000	7,685
Decision-makers are informed about the value of coastal natural resources and how their decisions affect those resources.	50	313
Acres of coastal and marine habitats to be enhanced.	100	3,700
Information products, models, decision support tools or technologies for ecosystem-based fisheries management.	4	7
K-12 teachers, informal educators and youth who increase their ocean literacy.	100	23,366
Resource managers and policy-makers will receive guidance to support sustainable resilient communities.	300	1,788
Resource managers and policy-makers who implement practices and policies to support sustainable resilient communities.	30	7
New data sources, decision-support methods, standards, products, BMPs to increase community resilience and sustainability.	10	16
Economic benefits derived from sustainable coastal policies and practices implemented as a result of Sea Grant activities.	\$5M	\$236M
K-12 teachers, informal educators and youth who increase their literacy regarding sustainability and hazard resiliency.	100	261
Seafood processing operations and regulatory inspectors who participate in new HACCP Alliance training programs.	4,400	2,972
Seafood retail operations adopting information from FSG seafood safety educational materials.	200	40
Shrimp and oyster processing firms adopting safe methods for handling and processing seafood from FSG shrimp and oyster schools.	20	40
New native Florida aquaculture products commercially produced.	2	1
Economic and societal benefits derived from the discovery or application of new fishery production and management techniques.	\$100M Income 500 Jobs 5 Businesses	\$253M Income 3,095 Jobs Not Known
Legal professionals and planners who learn about policy options to reduce sea-level rise impacts.	100	244
Local and regional decision makers who learn about sea-level rise adaptation strategies.	100	70
K-12 teachers, informal educators and youth who increase their climate literacy.	100	36
Resource managers will receive information regarding the effect of sea-level rise on the structure and function of coastal natural systems.	100	772

ACCOMPLISHMENTS AND IMPACTS

Accomplishments

Table 13. FSG 2010-11 research and Extension programming accomplishments.

Project	Investigators / Institution	Description
PD-09-4	Betty Staugler, Joy Hazell – UF	FSG marine agents help create new guidelines for statewide crab trap removal to safeguard navigation and to enhance benthic habitats.
PD-09-6	Charles Sidman, Garin Davidson, Robert Swett- UF	User-based economic analysis supports a rural coastal community's efforts to enhance waterway access for nature-based tourism.
PD-09-7	Steve Otwell, Leslie Sturmer – UF	New sensory characterization improves seafood safety and marketability by providing industry with new standards for product attributes and quality.
PD-09-11	Tom Ankersen – UF	Online legal policy toolkit is enhanced to provide new information to decision-makers about current coastal planning issues. (http://www.law.ufl.edu/conservation/spotlight/)
	Tom Ankersen – UF	New marine and coastal policy program offers hands-on specialized training for law students and local government planners.
PD-10-3	Leonard Berry – FAU	Climate change workshop provides information to assist water managers in implementing regional restoration efforts that can adapt to sea-level rise.
PD-10-4	Austin Todd – FSU	New model maps Gulf of Mexico circulation patterns to determine gag grouper larvae transport mechanisms.
PD-10-6	Peter Frederick – UF	Aerial analysis identifies sources and magnitude of change in oyster reefs in the Big Bend area of Florida to support habitat restoration efforts.
PD-10-7	Peter Sheng – UF	New web-based hurricane storm surge modeling environment provides state-of-the-art forecasting tools to Florida's emergency managers.
PD-10-9	Tom Frazer – UF	A new strategy for monitoring seagrass health was developed and will be a useful tool to evaluate the effects of future oil spills and other disasters.
R/LR-Q-32	William Huth - UWF, Ash Morgan – ASU	Novel social science approach addresses consumer risk / aversion to eating raw oysters and quantifies the economic impact to the industry from new post-harvest treatment requirements.
R/LR-Q-33	John Paul, David Fries, David John – USF	New portable rapid DNA testing system for grouper helps retailers, wholesalers, and authorities identify and track unlawful product substitution.
R/LR-Q-34	Anita Wright, Gary Roderick, Steve Otwell – UF	New rapid test for Vibrio now is being reviewed by the National Shellfish Sanitation Program to sustain year-round harvest of oysters.
R/LR-A-45	John Scarpa - HBOI, Leslie Sturmer, Leroy Creswell, Charles Adams – UF	New culture techniques developed for the Sunray Venus Clam are now being used in a pilot program by clam farmers to diversify their Florida industry.
R/LR-B-63	Jeffrey Chanton, Kevin Craig – FSU	New bioenergetics growth model quantifies linkages between water pollution and fisheries production.

Project	Investigators / Institution	Description
R/LR-MB-25	Shirley Pomponi – HBOI	New in vitro sponge culture process advances efforts toward generating a sustainable supply of therapeutic marine bio-products.
R/C-S-50	Chris Houser - TAMU, Klaus Meyer-Arendt – UWF	New spatial hazard model and index supports efforts to help save lives on northwest Florida beaches prone to rip currents.
GOM-RP-1	Arindham Chowdhury – FIU	New fiber reinforced polymer connection technology is developed in partnership with industry to strengthen buildings during hurricanes.
R/C-D-18	Arindham Chowdhury – FIU	New measures of strength of home building components leads to improved building codes for hurricane resilience.
	Arindham Chowdhury – FIU	New patented ArrowEdge™ product significantly reduces hurricane wind damage to roof structures.
R/C-P-31	Tom Ankersen – UF	New sea-level rise adaptation planning policies are implemented by the Charlotte Harbor National Estuary Program as part of an EPA funded climate ready estuary initiative.
	Tom Ankersen – UF	New planning model to evaluate maritime infrastructure is now being tested by the Florida Department of Community Affairs and implemented in Manatee and St. John's counties.
	Tom Ankersen – UF	A new overlay zoning ordinance addresses waterfront blight in Millville and Panama City.
	Tom Ankersen – UF	New environmentally friendly deed restrictions are adopted by Florida Department of Environmental Protection as a "Best Management Practice."
	Tom Ankersen – UF	St. Marys River Management Plan achieves interstate water quality monitoring coordination.
	Tom Ankersen – UF	New cooperative agreement between UF, Florida Department of Environmental Protection and the Environmental Protection Agency facilitates planning initiative to protect Florida's critical watersheds.
	Tom Ankersen – UF	Innovative coastal community land development code is adopted and increases the resilience of the community of Marineland to coastal hazards.
	Tom Ankersen – UF	New economic impact analysis quantifies benefits of FSG's longstanding leadership role in nurturing Florida's artificial reef program.
R/C-P-32	Robert Swett, Garin Davidson, Corina Guevara – UF	Regional boating and waterway management workshops provide a venue for professional development for more than 200 practitioners.
	Robert Swett – UF	Regional Waterway Management System implemented in Lee County saves tax dollars, supports effective waterway maintenance, and helps keep boats out of 1,200 acres of sensitive manatee habitat.
	Robert Swett, Garin Davidson, Corina Guevara – UF	Hands-on geo-spatial technologies course teaches resource managers, faculty and students the fundamentals of coastal and ocean opportunities planning.
	Robert Swett - UF	FSG specialist assists in the development of a Maritime Management Master Plan, providing a planning tool for Brevard County to manage human uses within its coastal and marine environments.

Project	Investigators / Institution	Description
E/POPDYN-1	Steven Saul – UM	New simulation tool models fishing fleet effort and pressure as input to fisheries management strategies.
M/PD-12	Karl Havens – UF	Newell Seminar Series provides faculty and students at Florida Universities with the latest information on coastal and marine science and technologies.
Extension Programming	Leroy Creswell – UF, Statewide Extension Program	New social marketing tool challenges Treasure Coast boaters to engage in clean boating habits - 3,000 sign pledge.
Extension Programming	Leroy Creswell – UF, Statewide Extension Program	Gulf and Caribbean Fisheries Institute annual conference and proceedings offers a forum for dialog and consensus building among scientists and policy-makers for ecosystem-based fisheries management.
Extension Programming	Bryan Fluech – Collier County	New environmental education program teaches children of migrant workers about marine ecology concepts through dissection and other hands-on experiments.
Extension Programming	Bryan Fluech – Collier County	Tarpon Genetics Recapture Workshop targets anglers with information about the genetics and behavior of this popular recreational sportfish species.
Extension Programming	Bryan Fluech – Collier County, Maia McGuire – Flagler County	Aquatic Species Collection Permit Workshop and “Exploring our Environment” curriculum imparts teachers with BMP’s for safely collecting, transporting, storing and releasing aquatic species for education programs.
Extension Programming	Bryan Fluech – Collier County	Marine fisheries regulation class educates 50 anglers and commercial fishers about new fishing rules.
Extension Programming	Bryan Fluech – Collier County, Joy Hazell – Lee County, Betty Staugler – Charlotte Country	New FSG leadership program teaches Extension faculty and local government staff to facilitate effective consensus-building and decision-making involving contentious resource management issues.
Extension Programming	Doug Gregory – Monroe County	Alternative Energy Program partners Florida Sea Grant with industry and the Florida Keys Community College to train local businesses to develop and implement solar technologies.
Extension Programming	Joy Hazell – Lee County	BMP class certifies 125 landscape professionals to operate businesses in Lee County.
Extension Programming	Bill Mahan – Franklin County	New FDA regulatory guidelines, developed for the oyster industry, are now being reviewed by the Interstate Shellfish Sanitation Commission for adoption and implementation.
Extension Programming	Bill Mahan – Franklin County	BP’s Unified Command approves new Franklin County Oil Spill Contingency Plan, developed as a tool to protect Apalachicola Bay’s critical marine resources.
Extension Programming	Thomas Ruppert, Charles Adams – UF Extension Specialists	Decision tool provides guidance to coastal business owners and residents for filing claims to obtain compensation from BP related to the oil spill.
Extension Programming	Thomas Ruppert, Planning Specialist, Dorothy Zimmerman – Communications Director	Video illustrates and discusses strategies available to local communities and coastal residents to prepare for and respond to rising sea levels and other natural hazards.
Extension Programming	Steve Otwell, Victor Garrido, Laura Garrido – UF Research and Extension Specialists	Third annual “Shellfish School” teaches BMP’s for product safety and marketing to 20 shellfish buyers and 16 seafood business representatives. Participants estimated that they increased their business income by \$10,000 due to the school.

Project	Investigators / Institution	Description
Extension Programming	Steve Otwell, Victor Garrido, Laura Garrido – UF Research and Extension Specialists	Harvest Open Waters pilot program trains regulatory agency staff and industry representatives to detect "oil taint" from the DWH oil spill in Gulf seafood products.
Extension Programming	Brooke Saari – Okaloosa County	Web-based newsletters and newspaper articles developed by FSG agents provide up-to-date information about oil spill impacts as a response to tremendous citizen concern and need for reliable, fact-based information.
Extension Programming	Betty Staugler- Charlotte County, Joy Hazell – Lee County, Bryan Fluech – Collier County, John Stevely – Manatee County, Fred Vose – Taylor County	FSG agents mobilize volunteer "Citizen Science" network to assist the Florida Fish and Wildlife Conservation Commission with efforts to monitor goliath grouper and scallops.
Extension Programming	Robert Swett – UF Extension specialist; Garin Davidson – UF, Corina Guevara – UF, John Stevely – Manatee County, Betty Staugler – Charlotte County, Joy Hazell – Lee County; Bryan Fluech, Collier County, Heather Hammers – Pinellas County, Holly Abeels, Brevard County, Lisa Krinsky – Miami-Dade County; Chris Verlinde – Santa Rosa County	FSG Extension agents and specialists partner to organize a series of regional workshops aimed at disseminating the latest tools, technologies and information to Florida's waterway planning practitioners. See also R/C-P-32 above.
Extension Programming	Lisa Krinsky – Miami-Dade County	"Propagules in School's" program helps youth learn about coastal and marine ecosystems through hands-on habitat enhancement projects.
Extension Programming	Andrew Diller – Escambia County, Brooke Saari – Okaloosa County, Chris Verlinde – Santa Rosa County	Wildlife Friendly Lighting Workshops teach citizens of coastal communities BMP's for protecting sea turtles.
Extension Programming	All Agents	Statewide Fisheries Extension Program teaches sustainable angling and fishing practices to youth and helps Florida's commercial fishing industry to comply with new fishing regulations.
Extension Programming	Pamela Fletcher – FSG South Florida Ecosystem Education Coordinator	FSG specialist applies consensus-based approach to facilitate public understanding and the development of BMP's for the protection of Florida Keys and Dry Tortugas ecosystems.
Extension Programming	Scott Jackson– Wakulla County	FSG agent trains 19 landscape operations on BMP's to become DEP certified "Green Industries."
Extension Programming	Chris Verlinde – Santa Rosa County	FSG agent develops and delivers a kayak-based hands-on marine science curriculum to thousands of children and families through the Navarre Beach Marine Science Station.
Extension Programming	Scott Jackson – Wakulla County, Bill Mahan – Franklin County, Chris Verlinde, Santa Rosa County	FSG agents provide information and support tools to assist compensation to citizens and businesses affected by the DWH oil spill.
Extension Programming	Most agents	FSG agents enhance adult ocean literacy through hands-on opportunities such as those provided by the Florida Master Naturalist Program.
Extension Programming	John Stevely – Manatee County	Expert advice from FSG agent sustains 150 jobs and the economic viability of Florida's \$3M sponge fishery.

Project	Investigators / Institution	Description
Extension Programming	Brooke Saari – Okaloosa County	FSG agent's "Reach out with Science" program offers a hands-on marine science curriculum for hundreds of kids in the Okaloosa County Public School System.
Extension Programming	Maia McGuire -- St. Johns and Flagler Counties.	Beach combing and marine debris program teaches an environmental sustainability ethic to area youth and residents.
Extension Programming	Carlos Martinez – Marine Ornamentals Specialist	FSG affiliated specialist develops an aquaculture technology program that teaches 400 teachers and 9,000 children how to raise marine ornamental fish.
Extension Programming	Steve Theberge – Bay County	New "Look at Seafood Class" teaches school children the benefits of preparing and consuming seafood as part of a healthy diet.
Extension Programming	All agents	Statewide coastal habitat restoration effort harnesses volunteer power to teach citizens marine ecology through hands-on experiments that enhance mangrove, dune, oyster, and mangrove habitats.
Extension Programming	Leslie Sturmer – Levy County	Operation and maintenance of UF/IFAS real-time web-based water quality monitoring system provides decision support for Florida's clam industry. During 2010, more than 50% of growers and 80% of seed suppliers accessed the system, which has helped growers obtain \$54K in damage claims due to El Nino conditions.
Extension Programming	Leslie Sturmer – Levy County	New web-based pictorial guide "What do clams eat?" assists farmers in identifying food sources for hard clams and the spatial and seasonal distribution of nutritious versus harmful food for clams.
Extension Programming	Leslie Sturmer – Levy County	Seventh annual CLAMerica seafood festival in Cedar Key attracts 12,800, raising appreciation and consumer confidence in Florida's clam aquaculture industry.
Extension Programming	Maia McGuire – Flagler County, Lisa Krimsky – Miami-Dade County	FSG agents implement Lionfish awareness program, which distributed information to dive shops to help inform divers of the risks and spread of this invasive species.

Economic Benefits

Table 14. FSG 2010-11 research and Extension programming economic benefits.

Description	Economic Benefit	Businesses Created / Sustained	Jobs Created / Sustained	Patents
User-based economic analysis supports a rural coastal community's efforts to enhance waterway access for nature-based tourism.	\$700,000		158	
Green Initiatives Task Force, headed by FSG agent, secures \$2.6M Energy Efficiency Conservation Block Grant: A major step to reducing greenhouse gas emissions in Monroe County.	\$2,600,000			
FSG agent helps Florida Keys Commercial Fisherman's Association to hold the 5 th annual Keys Seafood Festival, which nets \$90K to support the local fishing industry.	\$90,000			

Description	Economic Benefit	Businesses Created / Sustained	Jobs Created / Sustained	Patents
FSG agent negotiates deal with the Florida Department of Transportation to continue roadside trap storage areas in the Middle Keys that supports 25 fishing families.		25		
"Kids, Let's Go Fishing Program," developed by FSG agent, educates youth about sustainable fishing and supplements income for commercial fishing guides during the slow season.	\$10,000			
FSG agent helps to secure \$800K to support oyster industry compliance with new Vibrio bacteria regulations, thereby, helping to sustain 10 businesses and 300 jobs.	\$800,000	10	300	
FSG's seafood specialist offers Shellfish School that teaches BMP's for product safety and marketing to 20 shellfish buyers and 16 seafood businesses. Participants estimate that they increased their business income by \$10K each due to the school.	\$360,000			
Kid's Cup Redfish Tournament teaches sustainable angling and monitoring to 56 youth and fishing captains, contributing \$58K to the local economy.	\$58,000			
FSG agent helps to organize annual Cortez Commercial Fishing Festival, raising \$85K and helping to preserve waterfront access for the local commercial fishing fleet.	\$85,000			
Expert advice from FSG agent sustains 150 jobs and the economic viability of Florida's \$3M sponge fishery.	\$3,000,000		150	
FSG specialists help small businesses obtain economic relief from BP, and helped boat owners participate in the vessels of opportunity program to protect beaches and sensitive habitats from the DWH oil spill.	\$2,300,000	14	1,350	
FSG aquaculture researchers help to sustain Florida's clam and oyster industries.	\$26,700,000		335	
FSG supports efforts to develop a new patented ArrowEdge™ product that significantly reduces hurricane wind damage to roof structures.				1
Economic impact analysis supports FSG's longstanding leadership role in developing and nurturing Florida's artificial reef program.	\$226,000,000		2,500	
FSG specialist develops Regional Waterway Management System saving Southwest Florida taxpayers \$2.5M.	\$2,500,000			
Real-time web-based water quality monitoring system helps growers recoup \$54K in damages due to El Nino conditions and provides critical information on water temperature and salinity conditions that helps to sustain 300 small clam aquaculture businesses.	\$54,000	360	600	
New in vitro sponge culture process advances efforts toward generating a sustainable supply of therapeutic marine bio-products				1
Economic Benefit Totals	\$264,987,000	384	5,418	2

Impacts

Table 15. FSG 2010-11 research and Extension programming impacts.

Project / Investigators	Title	Relevance, Response, Results
PD-09-3 Coen, Milbrandt, Bartleson, Rybak – Sanibel-Captiva Conservation Foundation	Re-engineering of a tidal pass enhances water flow and quality for distressed sea grass beds.	<p>Relevance: This project took advantage of a unique opportunity to quantify the ecological benefits and effectiveness of re-engineering a recently closed tidal pass (Blind Pass), within the Pine Island Estuary, which had resulted in a significant decline in water quality and to habitat health.</p> <p>Response: FSG partnered with the Sanibel-Captiva Conservation Foundation to support a critical monitoring component of the project to re-engineer a closed tidal pass, to improve water quality in a biologically significant estuary in Lee County, Florida.</p> <p>Results: The Blind Pass tidal monitoring program, which recorded before and after ecological conditions, documented increased water quality and flow. The project enhanced 211 acres of submerged aquatic habitat, which includes extensive sea grass beds and other habitat that nurtures popular sportfish species and the endangered Florida manatee.</p>
PD-09-4 Staugler, Hazell – UF FSG	FSG Extension agents help create new volunteer-based program for statewide crab trap removal to safeguard navigation and to enhance benthic habitats.	<p>Relevance: Lost and abandoned crab traps litter Florida's shallow estuarine submerged habitats, posing a threat to navigation, and impacting recreational and commercial fishing industries by continuing to trap fish and crustaceans.</p> <p>Response: In partnership with commercial crabbers, the Florida Fish and Wildlife Conservation Commission and the Ocean Conservancy, FSG Extension agents created guidelines for organizing and conducting volunteer-based crab trap removal events and disseminated this information through web-based fora and hands-on, on-site, trainings.</p> <p>Results: This project has removed more than 3,000 derelict crab traps from shallow water, seagrass and mangrove environments and has enhanced approximately 125,000 acres of benthic habitat in Charlotte Harbor alone.</p>
PD-09-6 Sidman, Davidson, Swett – UF FSG; Fik – UF Geography; Hodges – UF FRED	Sea Grant technical assistance program supports planning in Florida's rural coastal communities.	<p>Relevance: Many rural Florida coastal communities lack the resources to undertake science-based planning to balance economic growth and environmental protection. For communities, such as Steinhatchee, in Taylor County, economic well-being is closely linked to the provision of adequate public access to coasts and waterways to sustain nature-based recreation, such as fishing.</p> <p>Response: Florida Sea Grant recently initiated a program to support planning initiatives that engage citizens and result in direct social or economic benefits to rural coastal communities. For the pilot initiative in Taylor County, Florida Sea Grant partnered with the Taylor County UF/IFAS Extension Service to provide technical assistance to the County in support of a user and economic assessment of existing public waterway access facilities.</p> <p>Results: The public input process implemented for Taylor County was used by the County to obtain \$700,000 in outside funding to support the development of a new ramp in the town of Steinhatchee, and the expansion of a parking lot at the popular Keaton Beach boat ramp. Jack Brown, the Taylor County Administrator, had this to say about the project, "The Florida Sea Grant study is timely. It confirms broad support from the public for making improvements to our ramps and other waterway infrastructure. It also supports our plans to expand our County's economic base by developing the sectors that depend on outdoor recreation and tourism."</p>
R/LR-A-48 Kevan Main - Mote Marine Lab	Florida Sea Grant funded researchers at Mote Marine Laboratory	<p>Relevance: Inland marine aquaculture facilities will benefit economically through the development of innovative approaches to utilize wastewater resources with zero-discharge re-circulating aquaculture systems. In an effort to support and diversify the aquaculture industry, this project is developing "smart design" technologies in the form of sustainable recirculation waste systems to allow for</p>

Project / Investigators	Title	Relevance, Response, Results
	develop technology to use aquaculture effluent to grow marine plants, enhancing 310 acres of coastal habitat in Florida.	<p>the simultaneous commercial production or stock enhancement of marine fish and plants.</p> <p>Response: Florida Sea Grant researchers from Mote Marine Laboratory are partnering with the aquaculture industry to develop an innovative re-circulating system that can accommodate both fish and land-based production of native saltwater plants associated with sustainable aquaculture farming to restore coastal and marine habitats and to provide an additional income stream to Florida's aquaculture enterprises.</p> <p>Results: A new brackish water collection system is being developed to expand an existing fish aquaculture facility, Aqua Green, to also produce marine plants, including red mangroves, smooth cord grass, rush, and saltwort. The new system captures and uses fish waste product as fertilizer. To date, 107,614 plants have been grown and transplants used to enhance more than 300 coastal acres around Florida. According to Gil Sharell, Jr., Vice President of Aquatic Plants of Florida, Inc., "Thus far, plant growth performance using the new wastewater systems has been a raging success and cost savings has been dramatically improved compared to offsite horticulture operations."</p>
R/C-S-50 Chris Houser – TAMU, Klaus Meyer-Arendt - UWF	New spatial hazard model and index supports efforts to help save lives on northwest Florida beaches prone to rip currents.	<p>Relevance: Rip currents claim more lives each year (approximately 150 lives each year with the majority being in Florida) than other natural hazards including hurricanes, lightning strikes and tornadoes. Research is needed to better understand the physical conditions that give rise to rip currents, and to develop models that can accurately predict where and when rip currents will occur.</p> <p>Response: This project partnered with the Gulf Islands National Seashore to develop a spatial hazard index, based on new models of coastal processes and shoreline morphology, for beaches in northwest Florida characterized by persistent and dangerous rip currents.</p> <p>Results: The spatial hazard index developed from this project is being used by the Gulf Islands National Seashore to plan beach access sites, assist safety officers in the placement of infrastructure (e.g. lifeguard towers) and staffing, and for issuing public alerts to inform beachgoers of hazardous swimming conditions at rip-current hot spots.</p>
R/C-P-32 Robert Swett, Charles Adams, Sherry Larkin, Alan Hodges, Thomas Stevens – UF	Economic impact analysis supports FSG's longstanding leadership role in developing and nurturing Florida's artificial reef program.	<p>Relevance: Florida's artificial reef program, which has been assisted by FSG since its inception in 1982, now manages more than 2,500 artificial reefs. FSG's Extension program has played an active role in providing expertise in the deployment, maintenance, and ecological evaluation of these structures. For example, Florida Sea Grant Extension agents organize a biennial statewide artificial reef conference, as well as regional workshops. These conferences, and workshops, attended by about 200 practitioners, play a critical role in reinforcing collaborative ties among stakeholders and in developing future planning initiatives.</p> <p>Response: At the request of the West Coast Inland Navigation District and the FWC Marine Fisheries Management Section, Florida Sea Grant specialists implemented a comprehensive economic impact analysis of this program for Southwest Florida. The study was implemented at the request of local governments who needed economic information to justify the continuation of new reef deployments.</p> <p>Results: The results of the economic study estimate that Florida's artificial reef program, which was developed in partnership with FSG and state and local partners, is responsible for more than 2,500 jobs and contributes more than \$226 million to the local Southwest Florida economy alone. These numbers justify the emphasis that FSG places on Extension programming that helps ensure the future growth, the economic viability, and ecological integrity of the State's artificial reef program.</p>
Leroy Creswell –	Indian River Lagoon Oyster	<p>Relevance: Oyster reefs act as natural filters purifying near shore waters which, in turn, sustain estuarine habitats. Oyster habitat has declined or has been</p>

Project / Investigators	Title	Relevance, Response, Results
FSG	Reef Restoration Program enhances 10 acres of critical oyster habitat.	<p>degraded in a number of areas of the Indian River Lagoon, leading to a reduction in water quality, which has impacted seagrass beds and marine life.</p> <p>Response: Working in collaboration with the St. Lucie County Engineering Department, the Florida Oceanographic Society, and volunteers, the Florida Sea Grant St. Lucie County Extension agent organized the deployment of 80,000 lbs of oyster clutch, which was placed over 10 acres of degraded oyster reef habitat.</p> <p>Results: Results of monitoring of new and previously deployed reefs in the area indicates significant recruitment and growth of live oysters to what had become 'dead zones'. The filtering capacity of these enhanced oyster beds has enhanced 10 acres of coastal habitat and led to increased water quality in areas of deployments.</p>
Lisa Krinsky – FSG	"Kids, Let's Go Fishing Program" educates youth about sustainable fishing and supplements income for commercial fishing guides during the off-season.	<p>Relevance: Recreational fishing is an important economic sector for south Florida. However, increased fishing pressure and reduced stocks emphasize the need for educating the next generation of fishers to be responsible anglers.</p> <p>Response: The Kids, Let's Go Fishing! Program is a partnership between the Fishing and Conservation Trust and the Miami-Dade Sea Grant Extension Program. The fishing program targets first time anglers and introduces them to the sport of fishing, whilst providing a quality outdoor activity with their families. Outings are timed to provide much needed revenue to commercial fishing captains during the slow-season.</p> <p>Results: Five fishing fleets and more than 300 anglers have participated. These trips help teach kids "how to fish" and encourage ethical angling skills to help children develop an appreciation for the marine environment. It is estimated that the program has generated about \$10K towards the income of participating commercial fishing captains.</p>
Lisa Krinsky – FSG	"Propagules in Schools" program restores five acres of mangrove habitat, valued at \$75,000, in Miami-Dade, County.	<p>Relevance: South Florida mangrove ecosystems provide essential habitat for coastal species as well as protection from erosion and storms. Mangrove habitat also serves an important role as a nursery for economically important sportfish species.</p> <p>Response: The Miami-Dade Sea Grant Extension Program has partnered with The Reclamation Project to help teach K-12 students about the importance of mangrove ecosystems. Together, the partners have collected, grown, and replanted thousands of red mangrove seedlings in restoration sites within Miami-Dade County, valued at approximately \$18,000 per acre, due to their roles in coastal storm protection and critical habitat for fisheries.</p> <p>Results: This project is estimated to have brought in approximately \$75,000 worth of coastal improvements and 5 acres of mangrove reforestation.</p>
Bill Mahan and Steve Otwell – UF FSG	Florida Sea Grant helps to secure \$800K to support oyster industry compliance with new vibrio bacteria regulations, thereby helping to sustain 10 businesses and 300 jobs.	<p>Relevance: The Florida oyster industry is now being required to adopt new and expensive Post Harvest Processing technologies in order to comply with new regulations imposed to address vibrio bacteria concerns.</p> <p>Response: The Florida Sea Grant agent for Franklin County, home to Florida's most prominent oyster processing industry, helped to coordinate a series of meetings with Congressman Allen Boyd and his staff about the impacts that the new and pending U.S. Food and Drug Administration (FDA) regulations were having on Florida's oyster industry.</p> <p>Results: As a result of the meetings, Congressman Boyd helped to secure a special funding request from Franklin County for \$800,000 (over 3-years) to support the oyster industry's compliance with the new Federal vibrio requirements. It is estimated that this new funding has helped to sustain 10 businesses and 300 jobs in rural Franklin County.</p>
Bill Mahan – FSG	Florida Sea Grant agent helps to convince state	<p>Relevance: In order to comply with new Federal & State "summer" time/temperature harvesting regulations, which restricted the use of oyster harvesting tongs prior to sunrise, harvesters would have to launch their boats and</p>

Project / Investigators	Title	Relevance, Response, Results
	regulators to eliminate a new rule making it illegal to use oyster tongs prior to sunrise, which was severely impacting oyster harvesters.	<p>travel to the oyster bars well before sunrise in order to have enough time to harvest oysters and land them at a certified dealer within the new restrictive harvesting timeline.</p> <p>Response: The Florida Sea Grant Franklin County agent organized three meetings with FWC staff to explain the new Federal and State harvesting time/temperature regulations and the problem caused by not allowing the fishermen enough time to launch their boats, travel to the oyster bar, harvest oysters, and land them at a certified shellfish dealer within the new restrictive time frame.</p> <p>Results: The FWC commissioners unanimously approved a change to remove the restriction on having oyster tongs onboard a vessel on state waters prior to sunrise. As a result, 300 oystermen are now able to continue to work during the summer harvest season.</p>
Steve Otwell – UF	Thirty seafood operations, 40 seafood retail operations, and more than 200 regulatory agency inspectors received new HACCP certifications, thereby helping to sustain the seafood industry and the quality of seafood products.	<p>Relevance: Seafood, including shellfish, is among the most perishable of foods. This is due to the kind of enzymes and bacteria found on fish and the effects of oxygen, which can cause the "fishy smell" that is one sign of spoilage. HACCP, or the Hazard Analysis Critical Control Point System, is a process control system that identifies where hazards might occur in the food production process and puts into place stringent actions to prevent contamination and resulting food poisoning.</p> <p>Response: The Florida Sea Grant affiliated seafood safety specialist, Dr. Steve Otwell, developed a new HACCP seafood curriculum and trained almost 300 individuals from seafood processing, retail operations, and government agencies on new seafood safety regulations.</p> <p>Results: It is estimated that new HACCP certifications obtained by participating seafood processing and retailer firms has sustained an estimated 70 businesses and 5,000 jobs in the industry.</p>
Most FSG agents	Florida Sea Grant partners with the UF-based Florida Master Naturalist Program to help teach a recently developed Coastal Systems module as an interactive learning experience.	<p>Relevance: The popular Florida Master Naturalist Program was designed by UF professor Marty Main to address the need to promote awareness, understanding, and respect of Florida's natural resources through interactive, hands-on learning experiences. The program recently added a Coastal Systems module, which complemented the mission of Florida Sea Grant's marine Extension program, and the skill set of FSG's marine agents.</p> <p>Response: The developer of the Florida Master Naturalist Program sourced expertise within the FSG Extension network to help instruct the Coastal Systems module. In 2010, most FSG agents served as instructors for the program.</p> <p>Results: A statewide survey of hundreds of Florida Master Naturalist program graduates shows that the courses helped them acquire new jobs (7%), new volunteer positions (13%), a pay raise or promotion (3%), increased job responsibilities (30%), and increased knowledge of coastal environments to share with others (97%).</p>
Betty Staugler - FSG	Kid's Cup Redfish Tournament provides a hands-on experience that teaches sustainable fishing and acoustic tagging/monitoring methods to 56 youth and adult captains and contributes \$58K to the local	<p>Relevance: Fishing is the number one water-based activity in Florida. Red drum is a popular fish species that is suffering from over-exploitation. There is a need to preserve Florida's red drum fishery and manage catch and release tournaments, through a coordinated outreach program that targets anglers of all ages</p> <p>Response: Florida Sea Grant agent, Betty Staugler, partnered with Mote Marine Laboratory and Progress Energy to develop a Kid's Cup Redfish Tournament, which works through volunteers to teach sustainable angling practices to kids. A series of hands-on activities that include acoustic tagging, monitoring, and catch and release techniques, demonstrate fisheries science and management skills.</p> <p>Results: The 56 youth who participated in the 2010 Kids Cup Tournament learned about fisheries science, acoustic tagging and proper catch and release techniques to support efforts to determine post release mortality and dispersal</p>

Project / Investigators	Title	Relevance, Response, Results
	economy.	patterns. Volunteers donated time estimated to be worth \$7K to the activity which generated \$38K in direct impact and an additional \$20K in value-added impact to the local economy.
John Stevely – FSG	Florida Sea Grant helps to organize annual Commercial Fishing Festival in the historic town of Cortez, FL. In 2010, the festival raised \$85,000, helping to preserve 95 acres of environmentally sensitive waterfront land and waterfront access for the local commercial fishing fleet.	<p>Relevance: What remains of Florida's once robust commercial fishing fleet is being supported, in part, by the efforts of Florida Sea Grant agents, who are working with local partners to sustain the heritage and function of working waterfronts, behind a backdrop of increasing privatization of coastal lands and waterway access.</p> <p>Response: Florida Sea Grant partnered with the Florida Institute for Saltwater Heritage - a community based organization in the historic fishing village of Cortez - to raise funds to purchase environmentally sensitive coastal lands and to implement plans that serve to protect working waterfronts. The annual Cortez Commercial Fishing Festival, organized principally by Florida Sea Grant agent John Stevely, is the source of revenue for these preservation actions.</p> <p>Results: The Cortez Commercial Fishing Festival raised \$85,000, in 2010, which was applied toward the purchase and preservation of 95 acres of sensitive coastal lands. The purchase of these lands and related community development activities played a critical role in ongoing efforts to preserve the working waterfront heritage of the Cortez community.</p>
John Stevely - FSG	Expert advice from Florida Sea Grant agent sustains 150 jobs and the economic viability of Florida's \$3 Million commercial sponge fishery.	<p>Relevance: Florida's \$3 million commercial sponge fishery employed traditional harvesting practices that impaired the ability of sponges to re-grow, making the industry unsustainable.</p> <p>Response: Florida Sea Grant agent, John Stevely, an internationally recognized sponge expert, developed a new harvesting protocol (one that cuts instead of tearing the sponge) that allows the sponges to regenerate. This method is now used by the industry to harvest sponges sustainably.</p> <p>Results: Areas that had been traditionally closed to sponge harvesting were recently reopened following Florida Sea Grant research that showed current harvesting methods would be sustainable. It is estimated that FSG's recommended approach to sponge harvesting has resulted in the retention of 150 jobs and \$3 million in annual earnings to the Florida commercial sponge industry. Jim Cantonis, President of ACME Sponge and Chamois, Tarpon Springs, FL, commented that "If it was not for Florida Sea Grant, there would be no commercial sponge industry in Florida."</p>
Robert Swett – UF FSG	Florida Sea Grant's Regional Waterway Management System is now being use in Lee County to prioritize waterway maintenance for navigational access and environmental protection.	<p>Relevance: Waterway maintenance has become increasingly more costly to implement due to lengthy State and Federal permitting required for each maintenance event. The West Coast Inland Navigation District, charged with maintaining southwest Florida waterways for navigation, estimates that 70% of the cost for a waterway maintenance event is attributed to legal fees necessary to shepherd permits through the regulatory process.</p> <p>Response: In partnership with the West Coast Inland Navigation District, Florida Sea Grant's Boating and Waterway Management Program developed a GIS-based decision-support tool called the Regional Waterway Management System (RWMS). This tool is helping to streamline the permitting system which now allows for up to 50 maintenance events per permit. The RWMS involves participatory mapping which allows stakeholders to make dredging decisions that balance the need for navigational access and environmental protection.</p> <p>Results: The RWMS, developed by Florida Sea Grant's Boating and Waterway Planning Program, has now been implemented in four southwest Florida counties. Most recently, a noticed general permit, based on data and analysis provided by the RWMS, has been issued by the State for Lee County. This permit allows for multiple waterway maintenance events to be combined under a single permit. In Lee County, the process has led to the establishment of non-combustion engine zones, enhancing 1,200 acres of environmentally sensitive</p>

Project / Investigators	Title	Relevance, Response, Results
		seagrass habitat and manatee protection zones, as mitigation for improvements to navigation channels.
Most agents and UF-based specialists	Florida Sea Grant Extension provided a coordinated response to the Deepwater Horizon oil spill in 2010, addressing the multiple issues that affected the people, businesses, communities and environments along Florida's Gulf coast.	<p>Relevance: The explosion of the Deepwater Horizon oil platform and subsequent massive leak of oil into the waters of the Gulf had devastating impacts on the Gulf ecosystem and its coastal communities. In Florida, environmental impacts were constrained to the extreme western region of the state's 'panhandle' yet of all the Gulf states, Florida experienced the greatest economic impacts, as tourists cancelled vacations to our beaches and people had concerns about eating Gulf seafood.</p> <p>Response: Florida Sea Grant developed a decision support framework to help affected businesses and residents determine how to file claims for lost revenue and income. Our Extension agents and specialists helped small businesses apply for economic relief from BP, and helped train boat owners who were able to participate in the BP vessels of opportunity program to deploy booms to collect oil. This provided them with steady income when they were put out of the fishing business by the oil spill. Another 1,000 residents received training to be BP 'Qualified Community Responders' to deal with issues such as tar ball clean-up on area beaches. Sea Grant Agents also provided training for volunteers to care for marine mammals, and this activity was featured on CNN's 'Building up America' television show. Florida Sea Grant also worked with Franklin County to develop an oil spill contingency plan, which was approved by Unified Command, and a seafood sensory program called Harvest Open Waters (HOW) that trained regulatory agency staff and industry representatives to detect oil contamination in seafood. Our agents also led 'listening sessions' in the panhandle region, where residents voiced their concerns and needs in a public forum. All of this work was coordinated with the other Gulf of Mexico Sea Grant Programs, with our respective state emergency management agencies, and with NOAA.</p> <p>Results: As a result of these efforts, 14 small businesses obtained economic relief from BP, and 1,350 boat owners were able to participate in the vessels of opportunity program, earning an estimated \$2.03 million dollars and helping to deploy booms to protect beaches and sensitive oyster habitat. In addition, 129 volunteers were trained to care for oil-impacted marine animals and over 50 regulatory agency staff and industry representatives received training that they used to screen seafood for oil contamination.</p>
Most agents	FSG's statewide marine education and Extension programs partner with state, local governments, and industry to implement hands-on learning experiences and ecosystem enhancement projects that harness the power of the scientific community, industry, citizen volunteers, and teachers and youth, who learn by doing, while also enhancing the environment.	<p>Relevance: Florida Sea Grant's marine education programs complement the public school system's science curriculum, which in many communities lacks a comprehensive coastal and marine ecology component. In addition, Florida Sea Grant responds to the need expressed by local cooperative Extension programs for more informal learning experiences through a blending of education and Extension that targets not only youth, but also adults who want to learn more about coastal and marine systems through immersion programs, which offer hands-on educational experiences.</p> <p>Response: To meet a growing demand for hands-on formal and informal marine science learning experiences, Florida Sea Grant's network of 21 outreach specialists develop their respective marine education and Extension programs with input from local advisory committees. These programs are further coordinated through a Florida Sea Grant supported Work Action Group, and through an annual Florida Sea Grant Extension meeting that identifies areas of common interest, such as habitat enhancement, responsible angling, monofilament recycling, and Coastal Master Naturalist Certification programs, which become integrated into annual work plans. The success of Florida Sea Grant's marine education program is due to adherence to four overarching principles: First, educational activities are conducted through partnerships with state agencies, the Cooperative Extension Service, the school system, local citizen groups, and/or industry. Second, activities harness and benefit from local volunteer involvement. Third, activities must impart knowledge of coastal and marine systems by providing interactive learning experiences. And last, activities</p>

Project / Investigators	Title	Relevance, Response, Results
		<p>where possible are organized in a way that support local small-scale coastal dependent businesses, such as commercial fishing enterprises.</p> <p>Results: In 2010, Florida Sea Grant agents coordinated learning programs that involved sustainable angling and habitat enhancement, seamlessly blending environmental education with volunteer-based community service. Some of the activities, such as the new Kid's Let's Go Fishing Program and a Statewide Crab Trap Removal Program (which enhanced 125,000 acres of near-shore coastal environments), were planned to involve and supplement the income of commercial fishing captains during the slow season. Florida Sea Grant also continued its partnership with the State in implementing a monofilament line recycling program. The program showed a 60% increase in the amount of line collected from 2008-2010, enhancing an estimated 3,000 acres of coastal habitat. In one area alone, 500 lbs of cast nets were removed from popular artificial reefs (Naples, Collier County). Florida Sea Grant also organized habitat enhancement projects to help coastal communities restore degraded coastal dune, mangrove, marsh, and oyster habitats. For example, in 2010, ten acres of critical oyster habitat in the Indian River Lagoon (Brevard County) and in Choctawhatchee Bay (Wakulla County) were restored. These efforts complemented shoreline enhancement projects that restored sand dunes at Shell Point Beach in Wakulla County and marsh habitat along East Bay in Santa Rosa County. The innovative Florida Sea Grant Propagules in Schools Program restored five acres of mangrove habitat valued at \$75K in Miami-Dade County. These restoration activities were complemented by a new kayak-based ecological immersion program which taught field sampling techniques and ocean literacy to 1,886 kids in Santa Rosa County.</p> <p>Agents also helped to organize large annual festivals aimed at boosting the incomes of commercial fishermen and sustaining small water-dependent communities. Examples include the Cortez Fishing Festival, which in 2010 raised \$85K, helping to preserve 95 acres of environmentally sensitive waterfront land and waterfront access for the local commercial fishing Fleet, and the Florida Keys Seafood Festival, organized in part by the Monroe County Florida Sea Grant agent, which netted \$90K in 2010 to help support the local fishing industry.</p> <p>In short, during 2010, Florida Sea Grant's marine education and outreach program provided learning experiences for 2,014 teachers and educators, 6,987 K-12 youth, and 7,656 citizens (youth and adults), supported water-dependent businesses and communities and was responsible for enhancing more than 128,000 acres of critical coastal habitats in communities throughout the State.</p>

SUMMARY

Florida Sea Grant is pleased to showcase these 2010-11 accomplishments. They reflect strong connections with FSG's member institutions and public and private partners to align research, Extension and education programs to address critical state and national priorities. The accomplishments also attest to the richness and diversity of FSG's research and Extension programs which are based on strong partnerships with University of Florida / IFAS Extension, with other state universities, and with local governments around Florida's coast. These partnerships and the active support by our Advisory Council will ensure that FSG research, Extension and education continue to address the critical needs of Florida's coastal communities, industries, and resource management agencies. Please visit the Florida Sea Grant website (www.flseagrant.org) to learn more about how Florida Sea Grant is making a difference through "Science Serving Florida's Coast."