2019

SITE REVIEW BRIEFING BOOK
FLORIDA SEA GRANT COLLEGE PROGRAM

Sea Grant Florida

UF IFAS UNIVERSITY of FLORIDA

NOAA

SCIENCE SERVING FLORIDA'S COASTS

AGENDA

Day 1 – Tuesday, November 19

7:30 am	*Breakfast and Registration*
8:00 am	*Welcome, Introductions, and Overview*
8:30 am	*Program Management and Organization*
9:45 am	*Break*
10:00 am	*Program Management and Organization (continued)*
12:00 pm	*Lunch*
1:00 pm	*Stakeholder Engagement*
3:00 pm	*Break*
3:15 pm	*Collaborative Network Activities*
5:00 pm	*Break*
5:30 pm	*Product Demonstrations and Reception*
7:00 pm	*Adjourn Day 1*

Day 2 – Wednesday, November 20

7:30 am	*SRT, Director, and UF Leadership Breakfast*
9:00 am	*Review and Preview*
9:15 am	*Performance: Leadership*
9:45 am	*Break*
10:00 am	*Performance: Sustainable Fisheries and Aquaculture*
12:00 pm	*Lunch*
1:00 pm	*Performance: Healthy Coastal Ecosystems*
3:00 pm	*Break*
3:15 pm	*Performance: Envrionmental Literacy and Workforce Development*
5:00 pm	*Adjourn Day 2*

Day 3 – Thursday, November 21

7:30 am	*Breakfast*
8:00 am	*Review and Preview*
8:15 am	*Performance: Resilient Communities and Economies*
10:00 am	*Break*
10:15 am	*Program Changes*
11:00 am	*SRT Deliberations*
12:00 pm	*SRT Lunch*
1:00 pm	*SRT Deliberations (continued)*
3:00 pm	*Break*
3:15 pm	*SRT Deliberations (continued)*
4:00 pm	*SRT Report to FSG and UF Leadership*
5:00 pm	*Adjourn*

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In Florida, over 20 million people live and recreate in close proximity to the ocean. More than 100 million more vacation on its beaches, enjoy boating and fishing or explore the state's wide variety of natural destinations. The state's natural environment supports its three main economic drivers – tourism, agriculture and development – but the consequences of past actions now raise significant issues for the state's future prosperity. Most populated areas are subject to the hazards of hurricanes, storm surge, sea-level rise and flooding during heavy rain events. Lands developed to meet the demand for a growing population and agricultural areas created to meet the nation's demand for food have contributed to nutrient pollution in adjacent freshwater systems and sensitive coastal habitats. In a state whose southern half was once mostly wetlands, the landscape has been ditched, drained and diked to the point that state and federal governments have now undertaken the largest ecosystem restoration project in the world.

The Florida Sea Grant College Program (FSG) is helping address this complex array of economic and environmental issues with an integrated program of research coordinated with 17 institutions, extension programing with faculty in more than 20 coastal counties, and a portfolio of educational activities to train the next generation of scientists, engineers and other ocean and coastal professionals. This briefing book gives an overview of our program from 2014 to 2018, describing how we effectively and efficiently addressed the needs of Floridians through programming organized around four national focus areas.

The University of Florida (UF) serves as the host institution for Florida Sea Grant. Within UF, FSG receives additional leadership and support from the Institute of Food and Agricultural Sciences (UF/IFAS), which administers the Land Grant mission through the Florida Agricultural Experiment Station and the Cooperative Extension Service. FSG extension, education and outreach programs are conducted in partnership with UF/IFAS Extension and coastal counties in Florida.

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FLORIDA SEA GRANT ORGANIZATIONAL CHART

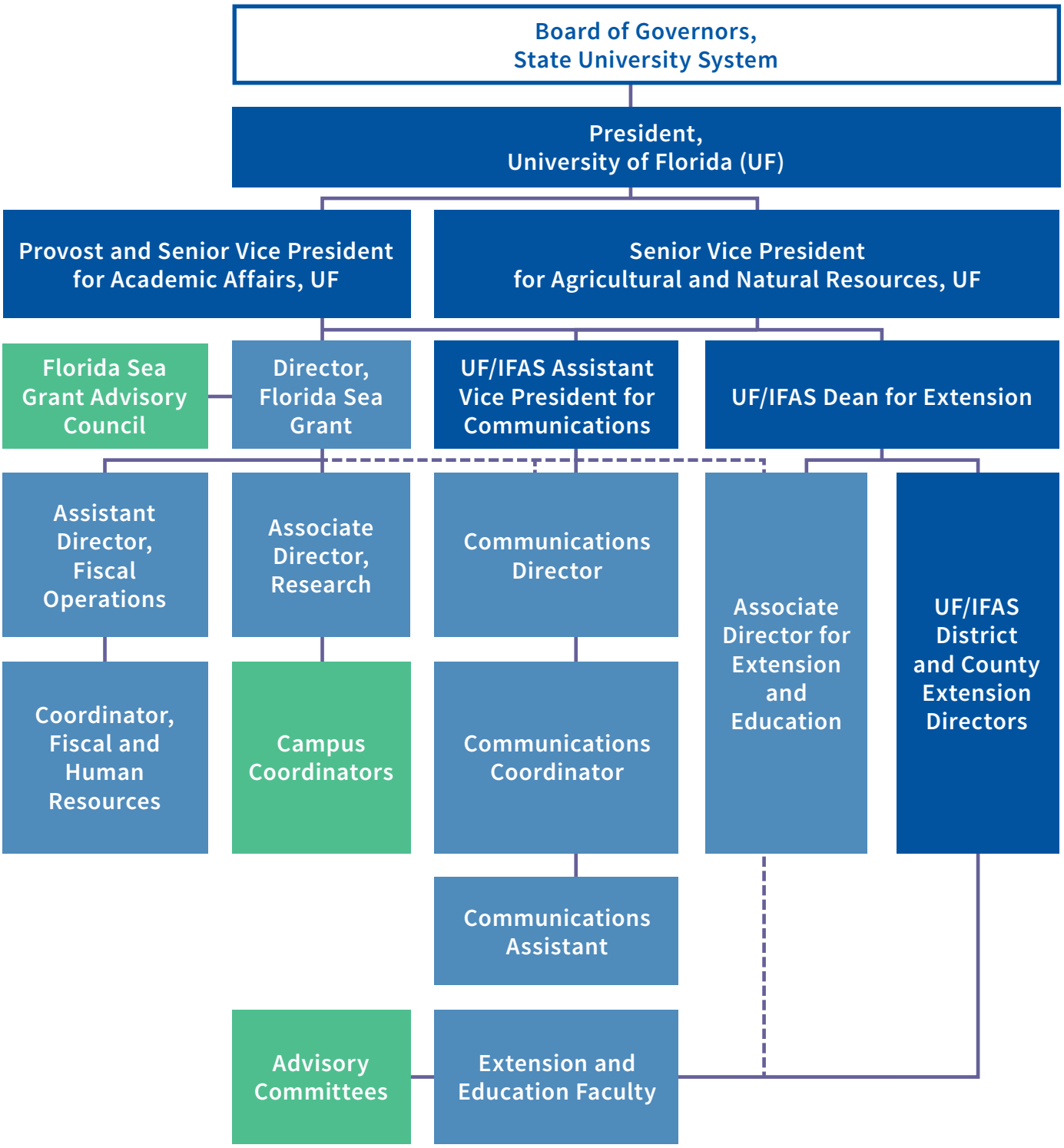

CHART KEY

Staff at partner institutions or external advisors	*Florida Sea Grant core staff*	*University of Florida staff*

Sea Grant Florida

PROGRAM MANAGEMENT AND ORGANIZATION

FLORIDA SEA GRANT LEADERSHIP TEAM

The Florida Sea Grant (FSG) leadership team operates a respected and effective Sea Grant College in one of the nation's most complex settings. The team ensures that FSG provides national and international leadership for coastal community and natural resource management issues to support sustainable and resilient economies and environments. Principal responsibilities of the team include: strategic planning; coordinating research, extension and communications to meet benchmarks established in the national focus areas; fiscal accountability; fundraising; building program visibility and value to constituents; networking with other National Oceanic and Atmospheric Administration (NOAA), federal and state programs; and tracking the outcomes and impacts from research, extension, education and student support.

At any given time, Florida Sea Grant manages nearly $7 million and more than 50 research, extension, education and communications projects, often with multiple investigators on each. These include core program projects, program development projects, Sea Grant's National Strategic Initiative projects, and a host of other externally-funded projects that leverage the NOAA investment and advance the FSG mission as defined in its strategic plan.

Several members of the leadership team are paid 100 percent by the University of Florida, including the Director, the Associate Director for Research, the Associate Director for Extension and Education, and the Communications Director. The NOAA grant pays the Assistant Director for Fiscal Operations, an administrative coordinator, an extension administrative coordinator, two communications support staff, a student coordinator and a fiscal assistant.

The work of the leadership team (those in director positions) is coordinated through monthly staff meetings that are augmented by ongoing communications among individuals and in smaller groups of the team, depending on the issue. The entire staff also meets monthly for programmatic coordination, and participates in annual or biennial field days to allow staff to learn about ongoing research and extension projects.

Responsibilities of the leadership team are:

- **Director –** provides overarching vision and leadership for FSG; establishes and maintains strategic collaborations; interacts with constituents, prospective sponsors and the Advisory Council; leads the fund-raising program; interacts with senior UF administrators, heads of state agencies and members of Congress to advance the program mission; coordinates and leads regional collaborations with other Sea Grant programs, state and federal partners; and ensures that FSG addresses the strategic priorities of NOAA. The Director also leads interactions with the greater Everglades ecosystem restoration program and initiatives related to inland and coastal water quality, in particular harmful algal blooms.
- **Associate Director for Extension and Education –** provides vision and leadership for a statewide natural resource extension and education program that includes both coastal and inland ecosystems; develops cooperative programs with extension and education partners at local, state, and national levels including the Cooperative Extension Service; coordinates the activities of FSG extension faculty; and leads collaborative network extension activities at regional and national levels.
- **Associate Director for Research –** coordinates the biennial call for research proposals and the proposal review process; tracks accomplishments and impacts of research and extension projects; coordinates funding of research development projects; and reports metrics and measures in the Planning, Implementation, and Evaluation Resource (PIER) information system. This Associate Director also leads a fisheries management education and training program in the greater Caribbean and south pacific regions in support of the Sea Grant Islands Initiative.
- **Communications Director –** develops and maintains an effective multimedia communications program to meet the needs of researchers, extension experts, students, 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.

AMOUNT OF TIME FLORIDA SEA GRANT FACULTY AND STAFF DEVOTED TO SEA GRANT

(EXT = EXTENSION, EDU = EDUCATION, AND FTE = TOTAL FTE DEVOTED TO THE SEA GRANT PROGRAM,

**INDIVIDUAL NO LONGER HAS FTE ASSOCIATED WITH THE FSG PROGRAM)*

INDIVIDUAL	TITLE	EXT	EDU	FTE
Karl Havens*	Director			1.00
Martin Main*	Associate Director for Extension and Education			0.40
Charles Sidman	Associate Director for Research			1.00
Dorothy Zimmerman*	Communications Director			1.00
Rebecca Burton*	Communications Coordinator			1.00
Ed Harvey*	Assistant Director for Fiscal Operations			1.00
LeRoy Creswell*	Extension Program Coordinator			1.00
Melissa Macarages*	Administrative Coordinator, Management			1.00
Sharon Cook	Administrative Assistant, Fiscal			1.00
Sandi Reveille	Administrative Assistant, Extension			1.00
Benjamin Murphy	Communications Program Assistant			1.00
Thomas Ruppert	Coastal Planning Specialist	1.00		1.00
Shelly Johnson	Florida Master Naturalist Program Coordinator	0.50	0.50	1.00
Monica Wilson	Oil Spill Specialist – Gulf of Mexico Research Initiative	1.00		1.00
Charles Adams*	Extension Specialist – Marine Economics	1.00		1.00
Tom Ankersen	Extension Specialist – Environmental Law	0.20		0.20
Andrew Kane	Extension Specialist – Aquatic Health	0.10		0.10
William Lindberg*	Extension Specialist – Fisheries Ecology	0.20		0.20
Cortney Ohs	Extension Specialist – Aquaculture	0.40		0.40
Steven Otwell*	Extension Specialist – Seafood Technology	1.00		1.00
Joshua Patterson	Extension Specialist – Restoration Aquaculture	0.10		0.10
Robert Swett*	Extension Specialist – Waterway Planning	1.00		1.00
Huiping Yang	Extension Specialist – Shellfish Aquaculture	0.10		0.10
Lisa Krimsky	Regional Specialized Agent – Water Quality	1.00		1.00
Savanna Barry	Regional Specialized Agent – Coastal Ecosystems	1.00		1.00
Libby Carnahan	Extension Agent – Pinellas County	0.90	0.10	1.00
Armando Ubeda	Extension Agent – Sarasota County	0.90	0.10	1.00
Holly Abeels	Extension Agent – Brevard County	0.90	0.10	1.00
Brittany Hall-Scharf	Extension Agent – Hernando County	0.90	0.10	1.00
Joy Hazell	Extension Agent – Lee County	0.90	0.10	1.00
Ray Bodrey	Extension Agent – Wakulla County	0.90	0.10	1.00
Scott Jackson	Extension Agent – Bay County	0.90	0.10	1.00
Ana Zangroniz	Extension Agent – Miami/Dade County	0.90	0.10	1.00
Shelly Krueger	Extension Agent – Monroe County	0.90	0.10	1.00
Erik Lovestrand	Extension Agent/CED – Franklin County	0.55	0.05	0.60
Maia McGuire	Extension Agent – St. Johns, Flagler Counties	0.40	0.60	1.00
Rick O'Connor	Extension Agent – Escambia County	0.90	0.10	1.00
Laura Tiu	Extension Agent – Walton and Okaloosa Counties	0.90	0.10	1.00
Betty Staugler	Extension Agent – Charlotte County	0.90	0.10	1.00
Leslie Sturmer	Extension Agent – Statewide Shellfish Aquaculture	0.95	0.05	1.00
Angela Collins	Extension Agent – Manatee County	0.90	0.10	1.00
Chris Verlinde	Extension Agent – Santa Rosa County	0.50	0.50	1.00
Victor Blanco	Extension Agent – Taylor County	0.90	0.10	1.00
Vincent Encomio	Extension Agent – St. Lucie and Martin Counties	0.90	0.10	1.00

ADVISORY COUNCIL MEMBERSHIP AND FUNCTION

The FSG Advisory Council is comprised of leaders from the private sector, non-governmental organizations, local governments, and state and federal agencies who are actively engaged in issues related to the resilience of Florida's coastal and ocean economies and natural resources. They serve a term of four years, renewable for additional terms if mutually beneficial to the member and the program. They generously provide their time, knowledge, experiences and ideas to help FSG maintain excellence and relevance in its research, extension and education at state, regional and national levels. The Advisory Council participates in developing the FSG Strategic Plan, provides input regarding implementation of strategic planning objectives, and provides guidance and support for governmental relations, and new strategic partnerships. Meetings of the Advisory Council occur twice per year, once by Zoom videoconference and once at a location hosted by a member. Every year 2-3 members travel with the directors to meet with members of Congress in Washington, DC, and in Florida.

Florida Sea Grant Advisory Council members and their affiliations (alphabetized by last name):

- **Robert Aylesworth,** Owner, Aylesworth's Fish and Bait, Inc.
- **Jim Cantonis,** President, Acme Sponge and Chamois Co., Inc.
- **Billy Causey,** Southeast Regional Director, NOAA National Marine Sanctuary Program
- **Kevin Claridge,** Director, Florida Coastal Office, Florida Department of Environmental Protection
- **George Cretekos,** Mayor, City of Clearwater
- **Spencer Crowley,** Partner and Land Use Attorney, Akerman Law Firm
- **Kathleen Elliott,** Vice President, Mahogany Youth Corporation
- **Victor Garrido,** Quality Assurance Director, Quirch Foods, Co.
- **Laura Geselbracht,** Senior Marine Scientist, The Nature Conservancy
- **Greg Jacoski,** Executive Director, Guy Harvey Ocean Foundation
- **Tim Jordan,** Owner, Saucy Lady Oyster Company
- **Bill Kelly,** Executive Director, Florida Keys Commercial Fishermen's Association
- **Ernesto Lasso de la Vega,** Citizen Advisory Committee, Charlotte Harbor National Estuary Partnership
- **Gil McRae,** Director, FWC Fish and Wildlife Research Institute
- **Michael Rimoldi,** Senior Vice President for Education and Technical Programs, Federal Alliance for Safe Homes
- **Richard Pruitt,** Vice President, Environmental Operations at Carnival Cruise Line
- **Jerry Sansom,** Executive Director, Organized Fishermen of Florida
- **Shawn Stephenson,** Co-Owner, Southern Cross Sea Farms
- **Steve Stock,** Owner, Victory Consulting, LLC
- **Jacqui Sulek,** Chapter Network Manager, Audubon Florida

RECRUITING TALENT

Motivating Applied Science

The funding of applied coastal science that addresses key issues to Florida in a practical yet innovative manner is a core programmatic element. Priority research topics included in the Request for Proposals (RFPs) are developed directly from objectives and performance metrics outlined in the FSG Strategic Plan. In addition to requiring that projects address priorities identified in the RFP, FSG ensures that projects are highly relevant to the needs of the coastal zone by stipulating that proposals will only be sent out for review if "the Principal Investigator (PI) has worked with a specific end-user in order to develop a relevant proposal" and if there is "evidence about how the end-user will ultimately apply the new information, tools,

FSG's Advisory Council is made of representatives from business, federal and state agencies, local government, non-profits, and education groups. Shown here (from L to R) are Ernesto Lasso de la Vega, Shawn Stephenson, Michael Rimoldi, Jacqui Sulek, and Spencer Crowley.

models or other products of the research project in decision-making." To ensure that the project ultimately contributes to workforce development, at least one student must be supported on the grant as part of their graduate or undergraduate research that is supervised by the PI. Furthermore, researchers are encouraged to include FSG extension specialists in their proposals to facilitate outreach through "direct interactions" with end-users.

Proposal Solicitations and Reviews

FSG ensures that eligible applicants at universities, state agencies, non-profits and other institutions including the private sector are aware of FSG's funding opportunities and that they have the opportunity to submit proposals. The RFP is posted biennially on the FSG website during the first week of January and broadly distributed to natural and social scientists, engineers and legal professionals affiliated with 17 public and private universities in Florida with ocean and coastal programs via designated campus coordinators. The RFP is also sent to state and federal agencies, the Florida Ocean Alliance, the Florida Institute of Oceanography and to the FSG Advisory Council. These groups have large networks in the academic, agency and private sectors and they assist in broadly disseminating the proposal to prospective PIs and end-user partners.

The RFP contains a template and guidance for completing required narrative sections. The narrative includes descriptions of: the rationale; objectives; methods; end-user participation and delivery of results; and expected results, applications and benefits. Support letters from end-users are encouraged. Due to historically strong demand for omnibus research funding, the RFP selection process consists of two-stages (pre-proposal and full-proposal). At the pre-proposal stage investigators are limited to a five-page narrative including letters of support from end-users. For both stages, proposals are submitted via a custom website developed to facilitate the proposal acquisition and review process, and reviews are conducted in accordance with guidance provided by the National Sea Grant Office (NSGO).

FSGs expert external reviewers and the technical review panel are comprised of individuals with broad knowledge, experience and leadership in one or several disciplines represented in the FSG strategic plan and RFP (e.g., water quality, coastal ecology and habitats, wind engineering, hazard-resilience planning, fisheries, aquaculture, seafood technology) with knowledge of Florida's unique setting and coastal issues. These review panels include former Sea Grant directors, university-affiliated faculty and emeritus professors, university center and marine laboratory directors, NGO professionals, and NOAA, USGS and USDA scientists.

Given the number of pre-proposals typically received (e.g., 127 in this review period), FSG selects between 12 to 15 external reviewers in order to obtain at least three evaluations of each pre- and full-proposal. In addition, 5 to 6 of these experts continue to serve on the technical review panel for final evaluation of the

STUDENT SUPPORT

Florida Sea Grant has a long history of supporting large numbers of college students with scholarships, fellowships and on research grants. A substantive amount of support comes from private donors and foundations, resulting from fundraising efforts. For example, as of 2017, the Aylesworth Foundation had supported over $653,000 of student scholarships; and the Guy Harvey Ocean Foundation had supported $224,000.

NUMBER OF NEW AND CONTINUING STUDENTS SUPPORTED BY PRIVATE ENDOWMENTS, NOAA OMNIBUS RESEARCH GRANTS AND NATIONAL FELLOWSHIPS

FELLOWSHIP OR AWARD	2014	2015	2016	2017
Aylesworth Foundation Scholorship	2	2	2	2
Guy Harvey Scholarship	7	8	8	6
Florida Outdoor Writers Association	2	3	3	3
Chuck Skoch Scholarship	1	1	1	1
Florida Sea Grant Scholars	5	5	5	5
FSG Elise B. Newell Scholarship	0	0	0	10
Florida Coastal Office Fellowship	1	1	1	1
National Fellowships*	5	2	3	3
Research Grants	83	72	84	69
TOTAL	**106**	**94**	**107**	**100**

This table expands on the information provided in the PIER generated Site Review Report.

* John A. Knauss Marine Policy Fellowships, NOAA National Marine Fisheries/Sea Grant Population and Ecosystem Dynamics Fellowships, NOAA National Marine Fisheries/Sea Grant Marine Resource Economics Fellowships, and NOAA Coastal Management Fellowships

smaller pool of full proposals. For their assistance, the members of the technical review panel receive an honorarium. This strategy ensures the participation of a highly knowledgeable group of expert reviewers and panelists and provides continuity in project assessment between pre-proposal and full-proposal stages. Importantly, a required narrative element at the full-proposal stage involves a description of how the investigators have addressed review criticisms voiced at the pre-proposal stage. All expert external reviewers are required to read and attest to a conflict of interest form before the FSG online review system allows them to view and critique a pre-proposal.

Proposal Review Process

First stage: Pre-proposals are reviewed for (1) technical merit, (2) end-user engagement and (3) anticipated outcomes and impacts. Pre-proposals are then evaluated internally by FSG leadership and specialists (4 to 5 persons) for programmatic and RFP relevance. The internal review considers expert reviews and emphasizes (1) relevance of the proposed work to the FSG strategic plan, (2) end-user engagement, and (3) potential to yield tangible benefits and impacts. The internal review classifies pre-proposals as being of "high priority," "low priority" or "not acceptable" for funding. After considering expert external reviews and discussing all of the pre-proposals, the internal review identifies the top pre-proposals in a manner that encourages a funding success rate of between 30% to 40%. Principal Investigators (PIs) who submitted those top-rated pre-proposals are invited ("recommended") to submit full proposals. All PIs may submit full proposals but this is not encouraged ("not recommended") unless their pre-proposal is ranked in the top tier.

Second stage: Full proposals are subjected to three external reviews and a final evaluation by the technical review panel. Prior to convening the technical review panel, external reviewers complete a summary form that includes a numerical score ranging from one to five ("poor", "fair", "good", "very good", or "excellent", respectively) and a narrative of the pros, cons and areas for improvement for proposals that they are assigned. Through this process, proposals are ranked in order from highest to lowest mean review score. The technical review panel considers the review scores and meets with the FSG leadership team and a representative of the NSGO either in person or by video-conference. Technical review panel members are assigned as either a primary or a secondary reviewer and discussion occurs in the same manner as for the pre-proposals. The primary reviewer summarizes the assigned proposal discussing the merits and perspectives of the external reviews. The secondary reviewer then offers additional input and perspective. The discussion is then open to all technical review panel members. At the conclusion of each 15-minute discussion period, the technical review panel is asked to rate the proposal on the same five-point scale and submit a completed summary form. At the end of the full-proposal evaluation process, the technical review panel's ratings determine which projects are to be funded (i.e., those receiving the highest review scores and panel ratings).

Review Process Outcomes

During the two biennial RFP processes that occurred during this review period, 16 projects were funded. The table below lists the number of pre- and full research proposals submitted during this review period, by cycle, with the number of institutions represented at each step of the review process in parentheses). During 2014-15, nine research projects were funded; during 2016-17, seven projects were funded. These 16 projects involved researchers at 8 institutions.

NUMBER OF PROPOSALS AND INSTITUTIONS (IN PARENTHESES) INVOLVED IN EACH OMNIBUS FUNDING OPPORTUNITY BY STAGE

BIENNIUM	PRE-PROPOSALS	FULL PROPOSALS	FUNDED
2015-2016	54 (14)	24 (10)	9 (6)
2017-2018	73 (20)	30 (13)	7 (4)
TOTAL	**127 (18)**	**54 (13)**	**16 (8)**

In addition to projects funded through the omnibus, several hazard-resilience projects were funded through a separate (minibus) competition supported by the National Sea Grant Office. One regional hazard-resilience project was funded in partnership with NOAA and the Sea Grant programs of North Carolina, South Carolina and Georgia. Finally, several projects were funded through a separate Coastal Communities and Economies grant from the National Sea Grant Office.

STAKEHOLDER ENGAGEMENT AND PARTNERSHIPS

HOW THE PROGRAM INVOLVES ITS PARTNERS AND STAKEHOLDERS

Florida Sea Grant administers a program that is congruent with NOAA priorities and is heavily driven by the needs of **stakeholders** in Florida, ranging from fishermen and aquaculture producers to seafood retailers, community nonprofits and local planning boards. The program is successful because of strong and lasting **partnerships** with coastal communities, local industries, state agencies, industry and non-governmental organizations. Our program is designed to have the input from stakeholders and partners naturally flow into nearly everything that we do. Partners and stakeholders from across the Sea Grant focus areas participate every four years in the crafting of the next strategic plan in a two-day retreat. It is challenging to find a project where we do not have both partners and stakeholders involved at some level, and so they are discussed here in concert with one another.

As described in the previous section, since 2015 we have required that principal investigators in our competitive research projects seek out a stakeholder or "end-user" (e.g., industry association, coastal community, state agency) who has an issue to be addressed with targeted research. We also require that researchers work with stakeholders in developing the research proposal and in executing the funded project. We only consider projects for funding when a stakeholder-researcher relationship exists. We also have a history of funding projects in partnership with agencies, industry and NGO's, including the South Florida Water Management District, Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission, Gulf and Caribbean Fisheries Institute, Billfish Foundation and Guy Harvey Ocean Foundation.

All of our extension agents, located in 20 coastal counties, have local advisory committees that include stakeholders and partners. These include community leaders, planners, business leaders, representatives from not-for-profits, National Estuarine Research Reserve System, and other state and federal programs. Those stakeholders and partners provide guidance to the extension agents on the scope of their local programming. We also engage stakeholders and partners as members of our Advisory Council (previously identified), and their backgrounds span the breadth of the Sea Grant focus areas. We keep abreast of emerging stakeholder needs by participating in annual meetings of relevant associations such as the Southeastern Fisheries Association and the Florida Shore and Beach Preservation Society and, with our partners, we participate in organizations such as the Florida Oceans Alliance and Florida Institute of Oceanography (see Leadership section that follows for further detail).

Major Partners During the Review Period

- Archie Carr Center for Sea Turtle Conservation
- Aylesworth Foundation for the Advancement of Marine Science
- Billfish Foundation
- Bonefish and Tarpon Trust
- Caribbean Regional Fisheries Mechanism
- Counterpart International
- Florida Department of Environmental Protection
- Florida Clean Boating Partnership
- Florida Coastal Management Program
- Florida Department of Agriculture and Consumer Services
- Florida Fish and Wildlife Conservation Commission
- Florida Outdoor Writers Association
- Florida State University System
- Gulf and Caribbean Fisheries Institute
- Gulf of Mexico Alliance
- Guy Harvey Ocean Foundation
- Japan International Cooperation Agency
- National Estuarine Research Reserves
- National Fish and Wildlife Foundation
- National Marine Educators Association
- National Sea Grant Program
- NOAA Atlantic Oceanic and Meteorological Laboratory
- NOAA Florida Keys National Marine Sanctuary
- NOAA Marine Debris Program
- NOAA National Marine Fisheries Service
- NOAA National Ocean Service
- National Weather Service
- NOAA Office of Coastal Management
- Royal Caribbean Ocean Fund
- Sea Grant programs (GA, NC, SC, PR, HI, GA, MS-AL, TX, LA)
- The Nature Conservancy
- The Ocean Conservancy
- UF Florida Master Naturalist Program
- UF Institute of Food and Agricultural Sciences (IFAS) Extension

- UF Levin College of Law Conservation Clinic
- University of South Florida College of Marine Science
- US Environmental Protection Agency
- US Fish and Wildlife Service

Major Stakeholders During the Review Period

- Apalachicola Bay Seafood Workers Association
- Artificial reef coordinators
- Association of Food and Drug Officials
- Beaver Street Seafood
- Cedar Key Aquaculture Association
- Florida International University Wall of Wind
- Florida Keys Commercial Fishermen's Association
- Franklin County Seafood Dealer's Association
- Franklin County Seafood Worker's Association
- Gulf of Mexico Fisheries Management Council
- Gulf of Mexico Research Institute
- Mahogany Youth Corporation
- National Seafood HACCP Alliance for Training and Education
- Northwest Seafood
- Panacea, Florida—over 30 independent oyster aquaculture businesses
- Publix Supermarkets
- Save On Seafood
- South Florida Water Management District
- Southern Shrimp Alliance
- Southwest Florida Shellfish Grower's Association
- Tampa Bay Regional Planning Council
- TRICO Shrimp Company
- US Food and Drug Administration
- West Coast Inland Navigation District

EXAMPLES OF STAKEHOLDER ENGAGEMENT AND PARTNERSHIPS

FSG Science Supports Improved State Law For Clam Harvesting

This year marks over two decades of FSG providing support for the state's shellfish aquaculture industry, working in partnership with UF/IFAS and the **Florida Department of Agricultural and Consumer Services** (FDACS). We have responded to needs identified by an industry valued at $53 million and supporting over 600 jobs. A recent issue was a state ban on use of mechanical harvesters. Clam farmers traditionally have grown and collected product in mesh bags that are staked to the sea

Shellfish aquaculture continues to grow in Florida helped by Florida Sea Grant research and outreach.

floor. However, a new species of commercially-produced clam, the sunray venus, requires planting in the sediments. This limits harvesting to hand and raking, which are cost and labor intensive. The FSG statewide shellfish extension specialist, **Leslie Sturmer**, engaged with the shellfish aquaculture industry, and partnered with FDACS and the **Florida Department of Environmental Protection** (FDEP) to test mechanical harvesting as a more effective option. The results documented that this approach has little to no adverse environmental impacts and is an effective tool. As a result of the work, a bill allowing the use of mechanical harvesting was passed by the Florida Legislature and signed into law by the Governor in 2015.

FSG Rapid Response Supports Fishing Gear Recovery After Hurricane Irma

FSG helped locate more than 39,000 lobster traps lost during Hurricane Irma in 2017.

A premier example of what can result from being actively engaged with stakeholders is the lobster trap recovery project that occurred after Hurricane Irma in September 2017. Our extension agent in the Florida Keys, **Shelly Krueger**, works with the fishing industry and has provided them with support in terms of training programs. When the hurricane hit and the lobster industry realized that they had lost over 150,000 traps at the peak of their season, the executive director of the **Florida Keys Commercial Fishermen's Association** (FKCFA) called Shelly. The next day we organized a conference call with the

Association, and our partners in **UF/IFAS Extension** and the **Florida Fish and Wildlife Conservation Commission** (FWC), to discuss how we could help. This led to the plan for a low-level aerial mission with spotters and GPS-enabled cameras. An emergency grant was obtained by the Director from the NSGO and within two weeks the coordinates of over 14,000 clusters of traps had been obtained, georeferenced, and provided to the lobster industry. FWC developed a special permit exemption that allowed lobstermen to recover traps belonging to others. Over 39,000 traps were recovered and put back into use in subsequent weeks, and the FKCFA estimates that the project saved them $1.56 million in traps and an additional $2.36 million in what it would have cost to find traps by boat (i.e., 150 days). Coincident with this recovery effort, FSG partnered with Monroe County, FDEP, and NOAA to locate and determine possible fuel leakage from sunken vessels using high resolution aerial imagery.

FSG Supports State and Federal Agencies

Florida Sea Grant also has a long history of partnering with state and federal agencies to address their needs. We have worked with the FWC to develop outreach materials, in the form of brochures and trainings. For example, FSG extension agent **Betty Staugler** worked closely with FWC to create outreach materials related to catch and release fishing and recreational scalloping. We assisted the **South Florida Water Management District** (SFWMD) through a partnership with **Florida Atlantic University** and the **Department of the Interior** (DOI) to bring the latest science on climate change to bear on Everglades restoration planning. Most recently, and since 2014, we have funded a long-term research project led by PIs at Florida International University and the SFWMD where field mesocosms and greenhouse tanks are being dosed with salt in order to quantify how saltwater intrusion affects the integrity of peat soils and the associated vegetation it supports in the southern Everglades. The results of this research are critical to the SFWMD, the **US Army Corps of Engineers,** and the DOI because they aim to adaptively manage a large water diversion project designed to deliver more freshwater to a region in the **Everglades National Park** called Shark River Slough. This project is an example of FSG's support of integrated research projects that begin to link terrestrial resource management with impacts to coastal environments and economies.

FSG Helps Set a Unified Sea-Level Rise Projection For The Tampa Bay Region

FSG assists local governments with sea-level rise adaptation planning.

One of the challenges faced by metropolitan areas is that numerous and diverse local governments often deal with a common threat, yet find it hard to agree on the nature of the problem. This is a challenge to developing effective management plans. In Tampa Bay, the issue was getting multiple cities to agree on a unified sea-level rise projection much like has been done in the southeast Florida metropolitan area, so that coordinated planning can move forward. FSG extension agent **Libby Carnahan** led an 18-month process, which included a literature review, expert speakers, facilitated discussion in partnership with the **Tampa Bay Climate Science Advisory Panel**, and a collaboratively written and published white paper entitled, *Recommended Projection of Sea-Level Rise in the Tampa Bay Region*. The report was unanimously adopted by the **Tampa Bay Regional Planning Council** and is being used by many local governments around the bay to inform sea-level rise adaptation planning. Four governments and one regional water utility company already have incorporated sea-level rise projections into their updated comprehensive city plans. And **Pinellas County** is developing a GIS model that uses the new sea-level rise projections to identify vulnerabilities as part of a critical infrastructure resiliency assessment. To ensure that information about regional issues related to climate change reaches the public, Libby also hosts community engagement programs. One of her most popular is called *Salty Topics*, a marine science speaker series that brings in researchers to inform the public on issues related to coastal resilience in the face of climate change.

FSG Helps Hernando County Develop a First-of-Its Kind Coastal Waterway Plan

Extension agents work with volunteers on an oyster reef restoration project.

With technical support from FSG extension agent **Brittany Scharf** and FSG legal experts, Hernando County has become the first in Florida to adopt a long-term Strategic Marine Area Plan for its entire marine and coastal zone in the county's comprehensive plan. "It is the most comprehensive and explicit treatment of marine resources for a local government comprehensive plan," noted **Tom Ankersen**, FSG's legal specialist and a lead in the initiative. Typically in Florida, a county's comprehensive plan provides long-range guidance on dry land or shoreline issues to keep growth and development in balance among competing interests. Management of marine submerged lands has not been factored into the planning equation. The Strategic Marine Area Plan will address activities in submerged habitats up to 9 nautical miles out from the county's coast. Hernando County's economy is being boosted by a large, nature-based recreation and tourism industry dependent on near pristine habitats along its 18-mile Gulf coast. For more than a year, Ankersen and a team of legal students partnered with Hernando County planners to develop approaches for sustaining and improving its marine environments. In March 2018, the **Hernando County Board of County Commissioners** voted to amend the coastal management element of its comprehensive plan with recommendations from the team's final report. The management blueprint includes plans for shoreline stabilization, oyster reef restoration, artificial reefs, hard bottom and seagrass habitats, improved commercial and recreational fisheries, and navigation and water access. It also provides a 15-year, science-based spending framework for penalty money paid into the RESTORE Gulf Coast Restoration Trust Fund by BP after the Deepwater Horizon Oil Spill.

FSG Research Produces a Rapid Test For Red Tide Toxicity

New techniques for shellfish harvest and monitoring are available due to FSG efforts.

One of the issues facing the culture or wild harvest of shellfish products from coastal waters is the presence of red tide. When it is detected in the water above threshold concentrations, the state closes the area to harvesting, sometimes for months. Every day that harvesters or producers cannot gather their product, money is lost and jobs are put in jeopardy. The currently accepted method to determine safe levels of red tide in the water is a mouse bioassay, which is done only in a limited number of laboratories and whose results can take over a week. This means that shellfish beds might be closed longer than needed while waiting for results. The shellfish industry approached FSG about developing a more rapid and still reliable test for red tide toxicity. FSG extension agent **Angela Collins** worked with the FWC on a research project conducted by Leanne Flewelling at the **Florida Fish and Wildlife Research Institute**, where she developed an alternative test based on a rapid ELISA (enzyme-linked immunosorbent assay). After comparing results of more than 500 samples tested by both methods, a proposal was submitted to the **Interstate Shellfish Sanitation Conference**, the state/federal cooperative that establishes updated guidelines for sanitary control of the shellfish industry. The new method has been accepted as a "limited use method" and is undergoing a second phase of evaluation as part of a larger partnership with the **U.S. Food and Drug Administration** to identify alternative methods for reducing neurotoxic shellfish poisoning.

COLLABORATIVE NETWORK ACTIVITIES

OVERVIEW OF NOAA, SEA GRANT AND OTHER COLLABORATIONS

The complex issues affecting coastal communities and ecosystems in the South Atlantic and Gulf of Mexico regions demand a collaborative network approach. FSG works with NOAA partners, other Sea Grant programs, state agencies, regional organizations, and nonprofits to protect ecosystems, enhance community resilience, address major fisheries and aquaculture issues, and enhance environmental literacy.

Within the Sea Grant network, we have a long history of collaborative projects in the Gulf of Mexico, and since 2012, in the South Atlantic and Caribbean regions as well. During the review period, we also worked with Sea Grant programs in Hawaii, Puerto Rico and Guam to establish a new virtual "islands region" because we share many characteristics and issues (i.e., a large percentage of the population in low-elevation areas prone to storm surge, hurricanes and sea-level rise; a high dependence on tourism; and diverse subtropical marine habitats and biota). Specific activities during the review period included:

- Organizing a planning meeting in Puerto Rico for the "islands region" programs.
- Co-funding and hosting a Caribbean fisheries training program.
- Hosting Sea Grant week in 2014 that introduced a new model of best management practice workshops that was replicated in Rhode Island in 2016 and Oregon in 2018.
- Hosting a regional extension planning meeting for the South Atlantic programs in 2017.
- Procuring a liaison position with the NOAA Atlantic Oceanographic and Meteorological Laboratory in Miami.
- Housing an FSG extension agent at the Rookery Bay National Estuarine Research Reserve, and an oil spill response specialist at the University of South Florida College of Marine Science in St. Petersburg, as part of a Gulf of Mexico regional outreach team for the Gulf of Mexico Research Initiative.
- Partnering with the (1) NOAA Office of Coastal Management on projects related to coastal community resilience, (2) the NOAA Coastal Zone Management Program in co-funding the Coastal Community Partnership Initiative, and (3) with the NOAA National Ocean Service to hire a coral reef response coordinator who is working with the various action teams on the coral disease outbreak in southeast Florida.

EXAMPLES OF COLLABORATIVE ACTIVITIES

Sea Grant National Strategic Initiative Informs Lionfish Control in the Southeast Atlantic

In 2012 FSG was awarded $380,000 from the National Sea Grant Office for a national strategic initiative related to exotic species control. The project, a collaboration with the Sea Grant programs of North Carolina, South Carolina, Georgia, Florida and Puerto Rico, supported three research teams that evaluated the efficacy of lionfish eradication measures on reefs in Florida and Puerto Rico. It also funded an FSG led outreach effort, spearheaded by **LeRoy Creswell** and **Maia McGuire**, to inform divers, charter boat operators, recreational fishers and others who might encounter lionfish about risks of contact and methods of handling caught fish. In Puerto Rico, the outreach augmented an already highly innovative and successful program that can be found at *lionfish.pr.com*. The project was completed in 2015 and culminated in a regional science workshop. Insights into reef density and configuration, distance from already invaded reefs, and capture gear were gained and transferred to the lionfish targeting community. The State of Florida used information from the project in its Lionfish Management Plan and enacted new regulations about the species. Lionfish are now in decline in Florida and the Caribbean, in part due to lionfish rodeos and derbies organized by FSG-funded researchers and extension agents, new management practices, and because of consumption by native predatory fish.

Coastal Partnership Supports Habitat Enhancement and Water Access in Over 30 Communities

Florida Sea Grant has a history of working with coastal communities to enhance habitat, increase public access to the water and to foster environmental stewardship. In 2015 the director of FSG (**Karl Havens**) and the then new director of the Florida Coastal Office in the Florida Department of Environmental Protection discussed how we might increase the impact of our NOAA funds (in the case of DEP, funds from the OCM Coastal Zone Management Program) to support community-level projects. A partnership was formed that continues on an annual basis, with FSG contributing $100,000 and DEP approximately $200,000 to $250,000 to collectively fund projects under the Coastal Community Partnership Initiative. DEP conducts the RFP process each year, receives applications

from coastal communities, and obtains expert reviews and a review panel ranking. We then work together to fund the highest ranked community projects. Projects in the last three years (11 funded by FSG in total) have included cleaning up natural lands in urban core areas to permit hiking trails that provide access to the Intracoastal Waterway or the oceanfront. We also have partnered with DEP in supporting a Coastal Fellow who worked in Tallahassee supporting the South Atlantic Governor's Alliance and other projects relevant to coastal and ocean issues. The DEP Coastal Office director serves on the FSG Advisory Council.

Sea Grant / NOAA Regional Project Increases Resilience of Rural Coastal Communities

In 2015, the South Atlantic Sea Grant programs issued a regional research RFP, in partnership with the NOAA Office of Coastal Management (OCM), for proposals related to the resilience of rural coastal communities to hazards, in particular sea-level rise. OCM contributed $105,000, and each Sea Grant program contributed $25,000 per year, for a total of $305,000 for a two-year project. The project team, selected competitively, started work in 2016 and just wound down with a videoconference for the respective Sea Grant directors and NOAA staff in October 2018. To ensure the project was truly regional and not just four discrete state projects, FSG contributed an additional $25,000 per year so that the lead PI (located in Georgia) could serve as the overall project manager. General recommendations identified in the course of the research included improved design and knowledge about stormwater drainage systems, integrity of roads, and the nature of natural coastal habitat and social vulnerability. There already have been impacts from this project. The Town of Nags Head has incorporated sea-level rise projections into its newly adopted comprehensive plan. Areas in the Florida Keys that were heavily impacted by Hurricane Irma in 2017 are using project recommendations in post-planning and reconstruction. Based on information from the project and input from FSG Coastal Planning Specialist **Thomas Ruppert**, Satellite Beach, Florida, moved the location of a new fire station and public safety building. At this time the four SG programs in the south Atlantic region and NOAA OCM are preparing for the project's next phase.

Florida Sea Grant Continues to Lead Effective Placement and Management of Artificial Reefs

For more than three decades, Florida Sea Grant has contributed to the evolution of Florida's artificial reef-building community in partnership with the Florida Fish and Wildlife Conservation Commission. Most of Sea Grant's coastal county-based extension faculty are involved in some activity related to artificial reefs — planning, siting, deployment or monitoring. FSG fisheries ecology extension specialist, **Bill Lindberg**, led the development of the Steinhatchee Fisheries Management Area, a large array of artificial reefs in waters of the state's Big Bend region, designed to support enhanced growth and reproduction of gag grouper, an important recreational and commercial fish in the Gulf of Mexico. He also has conducted long-term NOAA Marine Fisheries Initiative-funded research to learn the degree to which artificial reefs in known locations result in increased fisheries production or simply act as fish attractors where anglers concentrate their efforts and deplete stocks. The answer is "it depends." However, along the way we have learned that artificial reefs provide myriad other benefits such as habitat for marine organisms and as popular diving and snorkeling locations that reduce dive pressure on natural reefs. There now are thousands of artificial reefs in Florida waters; they support over 40,000 jobs in related economic sectors, generate an estimated $3.1 billion a year in economic activity, and provide $1.3 billion in income to Floridians. Artificial reef research, training and planning for deployment continues to be a thrust of FSG, working in partnership with the FWC and coastal communities.

Oil Spill Outreach in the Gulf of Mexico Brings Science to Stakeholders

In 2010, approximately 172 million gallons of oil spilled into the Gulf of Mexico due to the Deepwater Horizon explosion. An estimated 1.8 million gallons of chemical dispersant were used to break up the oil, reducing the amount that reached the shoreline. Despite this, there were severe ecological impacts in Louisiana, Alabama, and Mississippi, and economic impacts in Florida where prospective tourists cancelled recreational trips because of unfounded fears that beaches had been fouled by oil. With a portion of the penalty funds that BP paid, the Gulf of Mexico Research Initiative (GOMRI) was formed to oversee a coordinated 10-year research program to quantify the effects of the oil spill. Sea Grant directors in the Gulf recognized that GOMRI

had no outreach – no way to get results from the scientists to those communities most in need of the information. Sea Grant approached GOMRI with a proposal, led by the MS-AL program, and received a grant for over $1.5 million (that since has been extended) to support oil spill outreach specialists in each state (**Monica Wilson** is the Oil Spill Specialist for FSG) as well as a communicator and project lead. This collaborative Sea Grant team has conducted 11 science seminars and 75 presentations around the Gulf of Mexico, published 10 outreach documents, and built a network of more than 1,200 stakeholders with whom they share the results of GOMRI science. More than 2,700 people who have interacted with this team have increased their understanding of effects of the oil spill on the Gulf and its surrounding communities. At Sea Grant Week in 2018, the outreach team received the National Superior Programming Award.

SUMMARY OF REGIONAL AND MULTI-PROGRAM PROJECTS

YEAR	PROGRAMS INVOLVED	TOPIC	FUNDING AMOUNT
2014-2016	NC, SC, GA, FL, PR	Research and outreach related to the control of lionfish	$480,00
2014-present	TX, LA, MS/AL, FL; Gulf of Mexico Research Institute	Oil spill outreach for the Gulf of Mexico	$532,600
2015-present	FL, PR, GA, HI, GU; Caribbean Regional Fisheries Mechanism, Gulf and Caribbean Fisheries Institute	Islands Initiative	$44,000
2016-present	NC, SC, GA, FL; NOAA OAR	Community resilience and adaptation to sea-level rise	$355,000
2016-2018	FL; Caribbean Regional Fisheries Mechanism, Japan International Cooperation Agency	Co-management of offshore fisheries in the Caribbean region	$59,900

SUCCESS IN SEA GRANT NATIONAL COMPETITIONS

YEAR	PROGRAMS INVOLVED	TOPIC	FUNDING AMOUNT
2014-2016	NC, SC, GA, FL, PR	Research and outreach related to the control of lionfish	$480,000
2014-2015	University of Florida (UF)	Revitalizing the hard clam aquaculture industry in the southeastern U.S. through transferring technology on Sunray Venus Clam, Macrocallista nimbosa	$209,241
2015	UF	Application of triploidy to an emergent oyster culture industry on the west coast of Florida	$89,756
2016	UF	Information transfer about tetraploid oyster induction for Florida aquaculture industry	$15,000
2016	UF	Red tide stinks: Discussing strategies for safe, sustainable commercial shellfish production in areas susceptible to HABs	$12,904
2016	Mote Marine Laboratory	Developing technologies to expand the supply of emerging marine finfish fingerlings for commercial offshore aquaculture systems	$300,000
2017	UF	Information transfer about shellfish hatchery operations	$22,639
2017	University of Miami	Expanding marine aquaculture in the U.S.: Technology for commercial-scale hatchery and nursery production of high-value marine reef fish	$318,945
2017	Private company	Velella Epsilon: Pioneering offshore aquaculture in the southeastern Gulf of Mexico	$139,474

PERFORMANCE

LEADERSHIP IN PROGRAMMING BY FSG

Florida Sea Grant is a leader at the state, regional and national levels across the four focus areas and is recognized by a wide range of partners and stakeholders who look to us for leadership in addressing pressing coastal issues. FSG established a statewide artificial reef-building community in the 1980s, and continues to provide leading research, training of county reef coordinators, and a biennial artificial reef summit that supports reef deployment, management and monitoring in this multi-billion dollar economy. Our seafood extension specialist has led the National Seafood HACCP Alliance almost since its inception, and our communications director is the publications manager. We distribute the HACCP training manuals nationwide from our program. FSG is a leader in providing new environmental literacy curriculum to public schools in Florida, and in engaging K-adults in hands-on learning experiences. The Gulf of Mexico Fisheries Management Council and other Sea Grant programs in the region look to FSG as a leader in outreach and education materials on barotrauma, venting and other successful fish release techniques. Coastal communities around the state look to the FSG legal program for innovative approaches to land-use and comprehensive planning. State agencies, water management districts, and coastal communities look to expertise in FSG related to effects of drought, climate variability and change, algae blooms and other adverse conditions on estuarine health and fisheries. We were a first responder in supporting constituent needs after the BP oil spill impacted the economy of Florida, after a severe drought caused a crash in the oyster population and oyster fishery in Apalachicola Bay, and after Hurricane Irma almost devastated the commercial lobster fishery. We lead the region in curriculum development and training related to installation of living shorelines, and have been collaborating with the state, which is developing a parallel program on permitting issues. Our work with sea-turtle friendly lighting of beaches has darkened large segments of the Florida coast, and has been key to success of state of Florida programs in this area. Finally, Florida Sea Grant led two major initiatives in the review period to secure funding for a regional research and outreach project focused on lionfish and a more recent and ongoing project where FL, GA, NC and SC are partnering with NOAA OCM to help coastal communities become more resilient in the face of sea-level rise.

AWARDS

- Eugene P. Odum Award for Excellence in Ecology Education, Ecological Society of America, 2014 (**Main**)
- Gold, Promotional Materials, Seafood at Your Fingertips, Association of Natural Resources Extension Professionals, 2014 (**FSG Team**)
- Gold, Promotional Materials, Ranger Naturalist Leadership, Association of Natural Resources Extension Professionals, 2015 (**Carnahan**)
- Conservation Educator of the Year, Florida Wildlife Federation, 2015 (**McGuire**)
- Gold, Promotional Materials, Sea Turtle Lighting Outreach, Association of Natural Resource Extension Professionals, 2016 (**FSG Team**)
- Fulbright Student Scholar, 2016 (**Hazell**)
- Best Professional Paper, American Fisheries Society, Florida Chapter, 2016 (**Collins**)
- Outstanding Team, Florida Microplastic Awareness Project, Association of Natural Resources Extension Professionals, 2017 (**FSG Team**)
- Spirit of the Community Award, Gulf of Mexico Climate and Resilience Outreach Community of Practice, 2017 (**Carnahan**)
- National Superior Outreach Programming Award, National Sea Grant Network, 2018 (**Gulf of Mexico Team**)

BOARD AND COMMITTEE PARTICIPATION

SEA GRANT AND NOAA

- Chair, Sea Grant Association Program Mission Committee, 2013-14 (**Havens**)
- Member, Sea Grant Association External Relations Committee, 2015-present (**Havens**)
- Review Panel Member, NOAA MARFIN South Atlantic Regional Research Grants, 2015-17 (**Havens**)
- Sea Grant Representative to the NOAA South Atlantic and Caribbean Regional Team, 2013-16 (**Havens**)
- Chair, Sea Grant Education Network, 2015-16 (**McGuire**)
- Secretary, Sea Grant Education Network, 2007-14 (**Verlinde**)
- Member, Research Review panel, Texas Sea Grant, 2017 (**Krimsky**)
- Member, Technical Advisory Committee, Indian River Lagoon NERR 2013-14 (**Encomio**)
- Reviewer, NOAA MARFIN Grants, 2015 and 2017 (**Staugler**)
- Reviewer, NOAA Saltonstall-Kennedy Grants, 2015 (**Krimsky**)
- Advisory Council Member, Apalachicola NERR, 2014-present (**Lovestrand**)
- Member at Large, Extension Assembly Executive Committee, 2014-15 (**Main**)

- Awards Co-Chair, Extension Assembly Executive Committee, 2014-15 (**Main**)
- Member, National Review Panel, Science Transfer Grants NERR, 2015-17 (**Main**)

INTERNATIONAL AND NATIONAL

- Member, National Academies of Sciences, Engineering and Mathematics, Committee for Independent Scientific Review of Progress Towards Everglades Restoration Progress, 2015-present (**Havens**)
- Associate Editor, *Journal of Plankton Research,* 2014-present (**Havens**)
- Editorial Board Member, *Hydrobiologia,* 2009-present (**Havens**)
- Caribbean Regional Fisheries Mechanism Forum Member, 2012-present (**Sidman**)
- Chair, vice-chair, secretary, Agriculture and Natural Resources Program Leaders Network, Association of Southern Region Extension Directors, 2014-present (**Main**)
- Editorial Board, *Conservation Biology,* 2012-15 (**Main**)
- Steering Committee Chair, 4th National Working Waterfronts and Waterways Symposium, 2015 (**Swett**)
- Secretary-Treasurer, Sustainable Coastal Community Development Network, 2014-17 (**Swett**)
- Founding Steering Committee Member, National Working Waterfronts and Waterways Network, 2012-present (**Swett**)
- Editor, Quarterly Newsletter, National Shellfisheries Association, 2013-present (**Creswell**)
- Board Member, National Marine Educators Association, 2014-17 (**Verlinde**)
- Publications Director, National Seafood HACCP Alliance for Training and Education, 2016-18 (**Zimmerman**)

REGIONAL

- Member, Gulf Sea Grant Fisheries Extension Advisory Panel, Gulf States Marine Fisheries Commission, 2014-18 (**Staugler** and **Jackson**)
- Chair, Coral Advisory Panel, Gulf of Mexico Fishery Management Council, 2015-19 (**Krueger**)
- Chair, Outreach and Education Technical Committee, Gulf of Mexico Fishery Management Council, 2015-19 (**Krueger**)
- Executive Secretary, Gulf and Caribbean Fisheries Institute, 1996 - present (**Creswell**)
- Steering Committee Member, Marine Resource Education Program Southeast, 2014-17 (**Staugler**)
- Editor, Proceedings of the Gulf and Caribbean Fisheries Institute and GCFI Special Publications Series (**Creswell**)
- Deputy Director, Southeastern Coastal Center for Agricultural Safety and Health, 2016-17 (**Kane**)
- President, Southern Association of Marine Educators, 2014-15 (**Verlinde**)
- Chair, Outreach and Education Committee, Gulf Coast Ocean Observations Systems (GCOOOS), 2016-18 (**Verlinde**)
- Chair, Seafood Exposure Assessment Working Group, National Institute of Environmental Health Science, Deepwater Horizon Consortium, 2014-17 (**Kane**)
- Steering Committee Member, Marine Resource Education Program Southeast, Gulf of Maine Research Institute, 2014-18 (**Staugler**)

STATE AND LOCAL

- Secretary of the Executive Board, Florida Oceans Alliance, 2016-present (**Havens**)
- University of Florida Representative, Florida Institute of Oceanography, 2008-present (**Havens**)
- Chair, UF Oyster Recovery Team, 2012-15 (**Havens**)
- Chair, Board of Directors, Florida Master Naturalist Program, 2013-present (**Main**)
- Co-Chair, Florida Artificial Reef Summit, 2014 (**Hazell**)
- Treasurer, Florida Association of Natural Resource Extension Professionals, 2017-Present (**Krueger**)
- North Regional Director, Florida Marine Science Educators Association, 2016-17 (**Barry**)
- Chair, Florida Outdoor Writers Scholarship Committee, 2014-17 (**Zimmerman**)
- Director, Florida Outdoor Writers Association, 2016-17 (**Burton**)
- Membership Chair, Florida Marine Science Educators Association, 2017-18 (**Barry**)
- Chairman, UF/IFAS Northwest District Professional Implementation Team, 2013-15 (**O'Connor**)
- Chairman, Ecosystems Subcommittee, Association of Natural Resource Extension Professionals, 2014-15 (**O'Connor**)
- Treasurer, Florida Chapter of the Association of Natural Resources Extension Professionals, 2014-17 (**Abeels**)
- Chair, Technical Advisory Committee, Charlotte Harbor National Estuary Program, 2014-17 (**Staugler**)
- Appointed Member, Charlotte County RESTORE Advisory Board, 2015-17 (**Staugler**)
- Governing Board Member, Florida Master Naturalist Program, 2014-16 (**Staugler**)
- Environment Seat, Franklin County Florida Restore Council, 2014-present (**Lovestrand**)
- Scholarship Committee Co-Chair, Florida Association of Natural Resource Extension Professionals, 2017 (**Lovestrand**)
- Governing Board Member, Apalachicola-Chattahoochee-Flint Stakeholders, 2017 (**Lovestrand**)
- Vice-Chair, Northwest District Natural Resources Extension Program Implementation Team, 2017 (**Lovestrand**)
- Northwest Florida District Director, Florida Association of Natural Resource Extension Professionals, 2017 (**Tiu**)
- Advisory Council, Safe Water for Walton, 2017 (**Tiu**)

- Member, SMARRT (Seafood Management and Resource Recovery Team), Franklin County, 2014-17 (**Kane**)
- Member, Apalachicola Bay Oyster Management Group, 2017 (**Kane**)
- Director, Aquatic Pathobiology Laboratory, UF Emerging Pathogens Institute, 2014-17 (**Kane**)
- Member, Sarasota Bay Estuary Program, Technical Advisory Committee, 2015-present (**Collins**)
- Secretary, Cafe Latino (UF/IFAS Extension Spanish-speaking working Group) (**Blanco**)
- Member, Indian River Lagoon Advisory Committee, Florida Department of Environmental Protection, 2014-15 (**Encomio**)
- Member, EcoArts South Florida Advisory Board, 2012-2015 (**Encomio**)

PRODUCTIVITY

Florida Sea Grant had a 4-year economic impact of $424 million, supported or created an average of 3,563 jobs per year and supported an average of 1,133 businesses in the private sector per year.

The following sections describe the integrated impacts and accomplishments of the FSG program in addressing issues relevant to each of the four national focus areas over the review period. Each narrative is followed with a table showing FSG targets and results relating to national performance measures.

Healthy Coastal Ecosystems

A diver measures sponges as part of an FSG-funded restoration project.

The Florida economy is intimately linked with a healthy coastal environment and is affected by tens of millions of tourists and residents who come here to swim at pristine beaches, kayak in clean estuaries, dive and snorkel on healthy reefs, fish, watch birds and go boating. The large human population on the coast, and the changes that have been made to accommodate them, has impacted the environments that support these activities and has severely affected the health and integrity of several distinct ecosystems. In this review period, FSG focused on four inter-related issues affecting coastal marine ecosystems: habitat loss; water quality; water quantity; and sea-level rise. The projects are geographically distributed and reflect locations where substantive anthropogenic impacts have occurred.

- A benthic habitat restoration program in Florida Bay started in 2016 and is led by an FSG research affiliate and an FSG extension agent, with partners from the EPA, the Nature Conservancy, the Bonefish and Tarpon Trust, and the Florida Keys Environmental Fund. The aim is to restore over 15,000 acres of sponge habitat lost during an algae bloom and hyper-salinity events. Sponge planting is being done by FSG-trained volunteers. After just one year and 8,000 new sponges, there is an impact – a significant increase in the biodiversity and abundance of fish, sea turtles, and invertebrates at restored sites compared to controls. These benefits continue to increase.
- Apalachicola Bay once had the most productive oyster fishery in the nation. That fishery collapsed in 2012 and the director of FSG led a research team to determine the cause. The research and industry engagement led to the finding that the collapse happened because of a drought, with the proximal cause being a sudden recruitment failure. That information was used by NOAA to declare a Fishery Disaster, and Congress appropriated $4 million in relief funds for job diversification training and reef restoration. The research concluded that to restore the bay it would be necessary to stop oyster harvest for 2 years and restore 1,000 acres of reef habitat. In 2015, FSG received a $1.3 million research and outreach grant from the National Fish and Wildlife Foundation (NFWF) to quantify oyster settlement, growth and health on experimental reefs deployed by the Florida Department of Agriculture and Consumer Services with different densities of shell material. That 5-year study, in partnership with the Florida Fish and Wildlife Conservation Commission, is ongoing and a substantive part of the project is informing harvesters about sustainable practices.
- Sea level rise research in the Everglades has been supported in three consecutive 2-year grants from FSG. Researchers at Florida International University, working in partnership with the South Florida Water Management District, are using mesocosms and greenhouse studies to evaluate responses of peat substrate and associated vegetation to different levels of salinity in order to mimic the effects of a rising sea. Results from the research will be used to guide operations of a major new water control and flow modification structure at the southern end of the Everglades that is part of the Comprehensive Everglades Restoration Program (CERP).
- Sea level rise is also affecting estuaries around the state, pushing in more salt water at the same time that river inflows are being reduced by consumptive uses. The Suwannee River exemplifies the problem.

At the mouth of the river there is a small estuary behind a chain of islands formed entirely of oyster reefs. A program-development grant from FSG in 2014 allowed UF researchers to document that the reefs could maintain lower salinity on the landward side compared to the Gulf of Mexico, and that the estuary supported diverse estuarine biota. It also documented that the reefs are degrading and the likely cause is reduced freshwater inflow due to increased consumptive use by Jacksonville. Using the results from the FSG-funded pilot study, the PI was able to get an $8.3 million grant in 2016 from The National Fish and Wildlife Foundation that is being used to restore 2 linear miles of reef habitat. Outreach and communications are being supported by FSG.

- Sometimes too much fresh water is a concern for estuaries. A notable example is the large canals that connect Lake Okeechobee to the St. Lucie estuary on the east coast and the Caloosahatchee estuary on the west coast, and that allow large freshwater releases from the lake to prevent dike failure. The Comprehensive Everglades Restoration Plan (CERP) has water storage components to reduce the harmful freshwater releases that transport heavy sediment loads to estuaries, cause oyster mortality, and at times are linked with toxic algae blooms. Yet questions have arisen about the capacity of CERP projects to achieve this goal. In 2015 the Florida Legislature commissioned the UF Water Institute, Florida Sea Grant, UF/IFAS and the UF College of Law to conduct an independent assessment of expected outcomes of CERP. A careful analysis, submitted to the Florida Legislature as a white paper, revealed that CERP may fall short, by over 1,000,000-acre feet, in the necessary storage to prevent harmful estuary discharges, meet dry season water demands of the Everglades, and meet water supply needs of the growing population in south Florida. The Florida Legislature used those findings to pass legislation for a new water storage reservoir in the Everglades Agricultural Area. It was signed into law by the governor and funds were appropriated in 2017. Planning is now underway for construction of a new 240,000-acre foot reservoir.
- Lake Okeechobee and the two estuaries have had widespread cyanobacteria blooms in 2005, 2010, 2016 and 2018, and FSG has been the hub for providing science-based information to the affected public related to the cause, human health issues, and ecological effects (e.g., *www.flseagrant.org/algae-blooms*). 2018 was the first year that both a cyanobacteria bloom occurred in the lake and estuaries – and, one of the largest red tides on record occurred along the Gulf coast, which caused widespread fish kills and closed beaches. FSG partnered with NOAA to provide a temporal visualization of blooms in the lake and now is working on a similar partnership for red tides.
- Much of the surface water pollution in Florida lakes and estuaries has its origin in current and legacy agricultural nutrients. But in some areas, runoff from private properties and septic tank leakage are a substantive nutrient source. The Indian River Lagoon, located along the east coast of Florida, is one such place. FSG Extension Agents developed a Water Ambassador program in 2014 to address the issue of rural runoff, which has so far resulted in residents making landscape changes, diverting roof drainage to permeable surfaces, and having local governments evaluate green infrastructure and septic to central sewer conversion.

PRODUCTIVITY RELATIVE TO NATIONAL PERFORMANCE MEASURES: HEALTHY COASTAL ECOSYSTEMS

NATIONAL MEASURE	FSG TARGET (4 YEARS)	ACHIEVED (4 YEARS)
Number of acres of coastal habitat protected, enhanced or restored as a result of Sea Grant activities	1,000	101,134
Number of resource managers who use ecosystem-based approaches in the management of land, water, and living resources as a result of Sea Grant activities	No state target set	283

Environmental Literacy and Workforce Development

With Florida's large and growing coastal population and associated impacts to the environment, there is a need to promote responsible and sustainable conservation ethics that extend beyond knowledge gained and translate to tangible social, economic and environmental benefits. There also is a need for training in the coastal and ocean workforce. FSG rises to the challenge in both areas with a long history of impacts.

Mahogany Youth Corporation takes Miami kids fishing.

In this review period, the FSG education and workforce development program, implemented by 19 extension agents and 11 subject matter specialists, and in partnership with stakeholders, was oriented toward increasing knowledge of issues and facilitating actions that can support the planning, management and sustainable utilization of the state's coastal built and natural environments. This programming strategically leveraged communications, research and extension capabilities to support user-driven science and extension, using traditional and modern forms of outreach to engage lay and professional audiences, including K-12 youth, teachers and educators, commercial and recreational fishers, legal and planning practitioners, seafood workers and fisheries managers.

Programs for youth continue to be an important component of community-based extension. Marine-science programs developed by FSG offer classroom and field experiences that complement biological and natural science education offered by public schools. The programs were attended by over **12,000 students and educators**. An ongoing collaboration with the Mahogany Youth Corporation (MYC) has provided 120 youth in Miami's inner-city neighborhoods with hands-on marine science experiences, drawing from expertise provided by FSG extension agents and researchers. Records indicate that youth who participate in FSG/MYC activities exhibit lower incidents of certain scholastic risk factors, including tardiness and truancy.

FSG also provided learning opportunities that engaged residents in citizen-science programs, including water quality monitoring, marine debris removal and habitat restoration. These activities harnessed the power of volunteers who **donated more than 32,000 hours**. FSG extension also provided professional development opportunities for seafood industry workers (HACCP seafood training schools, schools on shrimp and oyster quality, and oyster harvesting techniques), resource management professionals (e.g., GIS, data analysis and stakeholder engagement trainings) and sea-level rise adaptation planning short-courses for continuing legal education. During this review period, these activities helped to train and retain the jobs of more than **3,000 professionals** associated with water-dependent businesses and professions.

FSG's educational programming offered advanced learning opportunities for citizens to participate in coastal habitat restoration activities though the Florida Master Naturalist Program. Three new restoration modules — focusing on oyster, marsh, and mangrove habitats, and developed in partnership with the Guy Harvey Research Foundation — have been added to the popular program attended by **4,800 people** during this review period. These formal learning experiences were complemented by informal youth-oriented programs that involved oyster bar restoration, beach debris cleanups, dune restoration, and exotic vegetation removal activities that contributed towards enhancing **91,000 acres of coastal and marine habitats**.

Finally, one of the most important aspects of our program is the support and training of students. We track students from the time of initial support through graduation and into their professional careers. During this four-year review period, **266 students** become employed in a career related to their degree within two years of graduation. While many students remain in Florida, the impact of our program is evident in the fact that these students work throughout the nation and internationally.

PRODUCTIVITY RELATIVE TO NATIONAL PERFORMANCE MEASURES: ENVIRONMENTAL LITERACY AND WORKFORCE DEVELOPMENT

NATIONAL MEASURE	FSG TARGET (4 YEARS)	ACHIEVED (4 YEARS)
Number of Sea Grant products that are used to advance environmental literacy and workforce development	No state target set	54
Number of people engaged in Sea Grant-supported informal education programs	No state target set	28,767
Number of Sea Grant-supported graduates who become employed in a career related to their degree within two years of graduation	No state target set	266

Sustainable Fisheries and Aquaculture

Catch and release methods taught by FSG help fish survive being caught.

One of the longest-running and most impactful areas of research and extension in Florida Sea Grant is in the realm of fisheries, aquaculture and seafood safety. FSG has been a national leader in those areas since the 1980's. Florida is a state renowned for its wild-caught fish and, in addition to a commercial fishing sector, there is a huge recreational fishery in the state valued at over $6 billion annually. Florida has the largest seafood import/export industry in the USA. Marine aquaculture blossomed in the 1980's with the introduction of hard clam aquaculture, largely supported by FSG and UF/IFAS, and today also includes oysters, baitfish, and a growing interest in large pelagic finfish. FSG was an early leader in the development of the national seafood safety HACCP program, and continues in that role to date. We have supported research that has led to innovative tools for detecting seafood product fraud, have identified pathways of exposure of lobster to lethal pathogens, and in the aftermath of the Deepwater Horizon oil spill in the Gulf of Mexico, developed a sensory-based method for screening seafood that was adopted and used by NOAA Fisheries. The fisheries and aquaculture extension work action groups of FSG have developed approaches for the handling and release of deep water fish to increase survival after the fish are returned to the water – methods subsequently adopted by the state fisheries management agency and the Gulf of Mexico Fisheries Management Council (GMFMC), they have held community fishing festivals that generated enough revenue to allow for the purchase of traditional working waterfronts in jeopardy of being converted to other uses, they have provided a myriad of trainings that have supported increased productivity in shellfish hatcheries and grow-out locations, and have assisted commercial fisheries dealing with international trade imbalances. The following illustrate some additional recent impacts of FSG in the sustainable fisheries and aquaculture focus area.

- For sustainable fisheries, FSG partnered with the Guy Harvey Ocean Foundation to support a 3-year research project at NOVA Southeastern University that tracked the movement of Mako sharks in the Atlantic using satellite tags. This study provided new information about the tremendous range of movement of these sharks and also indicated that existing estimates of mortality from commercial fishing were too low. The results led the International Commission for the Conservation of Atlantic Tunas to recommend reducing the annual Mako shark catch from 3,300 to 500 tons in the Atlantic. Member nations have not yet taken action on this standing recommendation and we continue to work with NGO's and the industry to communicate the findings of the ongoing shark research.
- On the issue of red snapper, perhaps the most sought-after reef species by anglers, FSG was asked by the GMFMC to facilitate a workshop of advisory panel members that led to consensus on a preferred management approach including methods to apportion fishing quotas for the species in Florida waters. The GMFMC subsequently implemented the consensus-based rule changes. In a related effort, the FSG fisheries work action group has led citizen science projects including a goliath grouper count, horseshoe crab survey, genetic sampling of common snook and bay scallop surveys. The work was done in coordination with the state fisheries management agency and results have been used in stock assessment and economic models.
- FSGs sustainable fishing program resulted in the publication of a variety of information products that teach fishermen how to use new tools and be responsible anglers. A new set of guides illustrating collecting, care and handling for bay scallops, one of the most popular seasonal fisheries in west-central Florida, have become an important component of the Florida Fish and Wildlife Conservation Commission's (FWC) outreach strategy to help manage the fishery. Additionally, a series of field trials tested a variety of fish descending products intended to reduce barotrauma, a condition associated with rapid

PRODUCTIVITY RELATIVE TO NATIONAL PERFORMANCE MEASURES: SUSTAINABLE FISHERIES AND AQUACULTURE

NATIONAL MEASURE	FSG TARGET (4 YEARS)	ACHIEVED (4 YEARS)
Number of fishermen, seafood processors and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities	No state target set	4,623

changes in pressure as a fish is brought to the surface. The methods developed for testing and communicating the results of this catch-and-release program have been adopted by Texas Sea Grant and are being considered for implementation by other Sea Grant programs in the Gulf of Mexico region.

- FSG has a long history of supporting the seafood industry through professional development trainings, including shrimp and oyster schools, and through the HACCP seafood safety program, now administered by the Association of Food Drug Officials (AFDO) in partnership with Sea Grant programs. FSG's seafood specialist helped to develop the HACCP program to minimize contamination and hazards at critical control points in the supply chain of harvesting, handling, processing and shipping of seafood product. During the review period, 665 seafood workers in Florida received HACCP training on regulations and safety processes that support a multi-billion-dollar seafood industry. In addition, customized HACCP trainings were also provided to major seafood distributers servicing Publix, Whole Foods and Fresh Market supporting an additional 550 seafood quality control jobs estimated at $20 million annually. A new training program for aquacultured seafood safety is being tested this year.
- In support of the shellfish aquaculture industry, which generates over $27 million annually in revenue, FSG partnered with the FWC to develop a new assay that can be used to rapidly detect the toxins produced by red tide dinoflagellates (also highlighted under Stakeholder Engagement and Partnerships). When red tides occur in the Gulf, shellfish lease sites are closed to harvest by the state and they are not reopened until there are negative results from mouse bioassays. The slow nature of those tests means that shellfish beds can be kept closed for days beyond the time when clams are safe for consumption. The new rapid test overcomes this issue and is expected to save the industry millions of dollars in lost revenue a year. The test has been adopted for limited use by the International Shellfish Sanitation Commission, and is undergoing final comparative testing, after which it is expected to become an accepted standard test.
- In support of wild harvesting of oysters, FSG developed and now implements annual training courses that are required for oyster harvesters to keep their state-issued licenses. In the review period, 320 oystermen were trained in cooperation with FDACS. With a median annual income of $25,000, this represents an economic impact of $8 million dollars.

Resilient Communities and Economies

Nearly 14.5 million people live in the coastal zone of Florida, at just a few feet above sea-level. Since 1980, Florida has experienced 54 natural disasters that, due to an ever-increasing coastal population, have resulted in damages of over a billion dollars per event. People, businesses and communities in the coastal zone are at high risk from hurricane-force winds, storm surge, flooding from heavy rain, eroding shorelines and sea-level rise. FSG works with constituents on a wide range of these issues in rural communities, large metropolitan areas and with water-dependent businesses. The following are examples of programs related to coastal community resilience in the four-year review period.

- In regards to hurricane-related winds, FSG has a history of working to improve the safety of buildings in the coastal zone. The program has supported research that developed methods to retrofit the interior roofs of old homes for increased wind resistance. This research led to a new tool to adhere loose roof shingles prior to hurricane season at a low cost. Most recently the research also led to a more accurate estimate of losses to interior contents of homes impacted by wind and rain. Conducted jointly at Florida International University (FIU) and UF, this project uses huge machines that simulate hurricanes – so large that full-size building structures can be placed in front of them for testing. At the FIU facility called the "wall of wind", testing was conducted to calibrate the Florida Public Hurricane Loss Model, which is an open-source model used by the insurance industry to determine rates for properties in different locations of the state. Other recent research, still underway, is testing a new design for the glass curtain walls used to build skyscrapers – a design to overcome water penetration that occurs when winds in a major hurricane drive rain against the seams.
- FSG is leading a regional research and outreach project focused on increasing the resilience of rural coastal communities. The project began in 2015 and involves the Sea Grant programs in the South Atlantic (Florida to North Carolina) and the NOAA Office of Coastal Management. In each state, an investigative team is working with a pilot community and doing two things. First, accurate elevations are being obtained for critical and historic infrastructure. Second, that information is being incorporated into a sea-level visualization tool and meetings are being held to determine how communities can plan in a manner that reduces their risk of loss from both storm surge and sea-level rise. The hypothesis is that when results are examined as a whole, the resulting model can identify commonalities that will support broader use of approaches that the pilot communities can implement to increase

FSG-funded researchers and extension agents help coastal communities be more resilient to hurricanes and other hazards.

resilience. While not complete, the project already has had impacts as noted earlier. Satellite Beach, Florida, was planning to build a new fire station, and based on their interactions with the team, relocated the new building to a location at higher elevation. In Marathon, Florida, where much of the infrastructure was destroyed by Hurricane Irma, the guidance of the team is being used to formulate rebuilding plans for that community.

- FSG legal experts have been actively addressing the issue of beach erosion due to storms and sea-level rise. They organized a group of professionals to develop a scenario-based tool that allows coastal communities to evaluate the policy implications of alternative futures for sandy beaches. The tool allows communities to see the various legal and policy constraints on future beach management decisions, and provides legal opinions on reforms that could eliminate or reduce constraints on what a particular community can do. The information has been integrated into a virtual reality education tool, in partnership with the UF College of Journalism, which allows community leaders and the general public to see simulated scenarios pertaining to beaches under different sea-level scenarios and management approaches.
- A critical aspect of being prepared for a hurricane is knowing where it is likely to go, and which areas are expected to flood when the storm makes landfall. During the review period, FSG supported the development, improvement, and application of hurricane storm-surge modeling tools, including CH3D, a new rapid storm-surge modelling system that integrates sea level rise and flooding and yields results in under three minutes. CH3D and other models developed with FSG funding are used for emergency planning purposes in the greater Tampa Bay region, the City of Jacksonville, and Broward and Miami-Dade counties.

PRODUCTIVITY RELATIVE TO NATIONAL PERFORMANCE MEASURES: RESILIENT COMMUNITIES AND ECONOMIES

NATIONAL MEASURE	FSG TARGET (4 YEARS)	ACHIEVED (4 YEARS)
Number of communities that implemented sustainable economic and environmental development practices and policies as a result of Sea Grant activities	8	35
Number of communities that implemented hazard resiliency practices to prepare for, respond to, or minimize coastal hazardous events as a result of Sea Grant activities	10	47

PROGRAM CHANGES RESULTING FROM THE PREVIOUS SITE VISIT

The site review process was instrumental in catalyzing the program to summarize, reflect, assess, and ultimately improve. FSG did not receive recommendations or substantive suggestions following the 2015 Site Review, nevertheless during the last four years we have fine-tuned the membership of our Advisory Council; developed and implemented a strategic five-year plan for fundraising in partnership with the Advisory Council and UF/IFAS Advancement; created and implemented innovative new communications products; developed social media platforms to further enhance student and workforce development opportunities; and increased our programming to reach broader audiences (e.g., environmental literacy with underserved youth; extended the scope of a Caribbean fisheries training program, increased involvement with the greater Everglades ecosystem restoration program, and implemented an “Islands Initiative” with Sea Grant programs in Hawaii, Puerto Rico and Guam). More practically, we have worked to retain and improve our core footprint on the main campus at UF and have explored the mechanism for generating and distributing patent and licensing revenues through the Office of Technology and Licensing at UF, which is in accordance with a state-wide emphasis on successful public-private partnerships through the State University System of Florida.

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Sea Grant
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Florida Sea Grant is committed to enhancing the practical use and conservation of coastal and marine resources to create a sustainable economy and environment.

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