

The background of the cover is a photograph of a long wooden pier extending into the ocean under a clear blue sky. The pier has wooden railings and several white lamp posts. A person is walking away from the camera towards the end of the pier. In the foreground, there are decorative wavy lines in shades of blue and green.

FLORIDA SEA GRANT COLLEGE PROGRAM 2018–2023 STRATEGIC PLAN



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FLORIDA SEA GRANT COLLEGE PROGRAM 2018–2023 STRATEGIC PLAN

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Florida Sea Grant Stock Photo

Florida has one of the longest coastlines in the United States and over 16 million people who live in close proximity to the ocean. Nearly 80 percent of the state's gross revenue is generated in the counties bordering the coastline, with a coastal economy ranking second only to California at \$13.04 billion. Coastal natural resources are biologically diverse, productive and provide a myriad of vital economic services to society. The coastline includes vast expanses of mangrove, coral reef, seagrass, salt marsh and oyster beds. It supports economically important aquaculture, commercial harvesting of aquatic products and one of the nation's largest recreational boating and fishing industries. With tens of millions of people living in the coastal zone, there are multiple issues related to freshwater demand, nutrient runoff from urban and agricultural areas, habitat loss and fragmentation, and competition for space. People in coastal Florida also face the situation of homes and businesses that are built just a few feet above sea level. They are periodically impacted by hazards including flooding, storm surge and hurricane force winds. They also are at a high risk from sea level rise and some areas of the Florida coast already are experiencing increased

flooding at high tide compared to decades in the past.

Florida Sea Grant has a long history of providing solutions to problems that affect coastal communities, businesses, residents and resource managers in this complex environment, and we will continue to tackle complex issues over the next four years. We collaborate with partners at local, state, regional and national levels to achieve shared goals, and we leverage our federal funds at a three-to-one ratio with state, local and private funding. We use the research expertise of over 300 coastal and ocean scientists at 17 Florida universities and research institutions and are hosted by the University of Florida (UF), which is the State of Florida's flagship research university. Our outreach is seamlessly embedded in the UF Institute of Food and Agricultural Sciences (IFAS) Extension program, which serves the companion Land Grant mission. Twenty-one Sea Grant-affiliated Extension Agents live and work in coastal communities and we have Extension Specialists and Coordinators at UF in coastal planning, coral disease, sustainable fisheries, oil spill outreach, economics, seafood safety, and coastal ecology. We also have Sea Grant affiliate faculty that

bring expertise in fisheries, engineering, law, ecology, veterinary medicine, and aquaculture.

Florida is the only state with subtropical coastal environments that are common to the Caribbean region. Florida Sea Grant is actively involved in regional projects throughout the Caribbean. We conduct research and outreach on issues that are fully funded by external grants, partner with regional management authorities and provide training for resource managers from small island nations. We plan to continue to support joint regional initiatives that address coastal resilience and sustainability in the Southeastern U.S. as well as the Caribbean region.

This document is a roadmap that identifies how Florida Sea Grant will address ocean and coastal issues for the period 2018 to 2023 with relevant research, extension and education. As Florida's growing coastal population is matched only with an increasing portfolio of information and practical needs, this plan identifies specific goals, outcomes, performance measures and metrics for Florida Sea Grant that represent accomplishments in addressing four focus areas that are aligned with those found in the National Sea Grant strategic plan.

The Strategic Planning Process

This plan was developed with broad input from coastal constituents, extension faculty, research faculty, local elected officials, local, state and federal agency staff and the Florida Sea Grant Advisory Council. The first step of the process was a visioning workshop of the Council. Coincident with this event, each of our extension ‘work action groups’ (fisheries, aquaculture, ecosystem health, education, etc.) developed preliminary goals and outcomes in those particular areas. The process culminated with a two-day workshop in St. Petersburg attended by approximately 80 people representing the groups identified above. In break-out sessions facilitated by staff from the NOAA Office of Coastal Management, a draft set of goals and outcomes were developed and they were used to develop a draft plan. That draft plan was carefully reviewed by our Advisory Council, and then discussed in a meeting in Key West on September 20, 2016, where the Council voted unanimously to adopt the plan.

The plan was originally developed for the 2018-21 planning horizon. When it was extended for two years, a new process was developed that both incorporated information obtained during the 2014-17 Site Review Visit and input from the Advisory Council. This process included a formal and anonymous survey of all Advisory Council members that collected thoughts on prioritization of programming and functions, and input on processes and procedures to improve efficiency, outreach, and impact. This survey was conducted in August-September 2020 and the information gained helped guide the recommended amendments to the goals, outcomes and performance metrics in this current 2018-2023 Strategic Plan.

Vision

Florida Sea Grant envisions a future with a resilient coastal zone where people use natural resources in ways that are beneficial to the economy and society and that preserve their quality and abundance for future generations.

Mission

Florida Sea Grant supports integrated research, education and extension to enhance coastal and ocean resources, bolster coastal resilience and enhance economic opportunities for the people of Florida.



Core values

Florida Sea Grant fully embraces the four core values of the National Sea Grant College Program that include to be Visionary, Collaborative, Dedicated to Sustainability, and Accountable. In addition, our program seeks to:

- ❖ **Innovate** – Florida Sea Grant will lead innovation and serve as a catalyst for innovation to advance solutions to emerging coastal challenges and in support of a new Blue Economy.
- ❖ **Engage** – Florida Sea Grant will be responsive, accessible, respect our partners, maintain scientific neutrality, integrate diverse expertise, and support and provide the necessary science and knowledge to inform stakeholders and support decision making
- ❖ **Strategically Prioritize** – Florida Sea Grant will leverage opportunities that are uniquely suited to our program in order to maximize the impact of our resources and resources available within the Sea Grant network.

Cross-cutting principles

Florida Sea Grant will:

- ❖ set high standards for excellence in our sponsored research and in our extension and education programs;
- ❖ embrace diversity, equity and inclusion in our workforce and in those supported by contracts with our NOAA funds;
- ❖ provide timely information and tools to residents, business owners and community leaders so that they better understand how their decisions affect coastal environments and what actions they can take to become more resilient to coastal change;
- ❖ help to ensure that resource management and decision-making about coastal development are based on sound science, involve residents and businesses who have a stake in the resource, and include mechanisms to evaluate trade-offs between human and environmental needs;
- ❖ help constituents incorporate social science, including quality of life and sustainable economic development, into comprehensive planning and management of built and natural coastal resources;
- ❖ help constituents incorporate the latest science-based information across all of the focus areas; and
- ❖ help water-dependent businesses operate sustainably and profitably in order to support coastal communities.



Florida Sea Grant Photo

1. Healthy Coastal Environments



UF/IFAS Photo

2. Sustainable Fisheries & Aquaculture



Florida Sea Grant Photo

3. Resilient Communities & Economies



Florida Sea Grant Photo

4. Environmental Literacy & Workforce Development

Florida Sea Grant Focus Areas, Goals and Outcomes

Focus areas are high-level categories that serve to organize the plan. Goals are general directions of work in the program under each focus area, and outcomes are specific expected results under each goal. There are three kinds of outcomes identified in this plan – research, learning and action.

Research outcomes are new tools, technologies or information derived from the approximately 30 research projects ongoing each year at Florida universities and research institutions. **Learning outcomes** are about new information being acquired by people, businesses or communities from the research projects funded by Florida Sea Grant or through science-based collaborations. This information typically is provided by extension agents. **Action outcomes** are changes in ways of doing things based on information that is provided, or the use of new tools and technologies developed by researchers.

An example of a research outcome is a new hand-held device that can be used to determine if a piece of fish being sold as local “grouper” is really that kind of high-value product or a fraudulent lower cost or imported species of fish. A learning outcome would be seafood wholesalers and retailers learning about the new device and how it can be used in the purchase and sale of product. An action outcome would be the actual use of the device by

wholesalers and retailers to test fish to ensure that it really is grouper. Another example is research developing a tool that coastal communities can use to assess risk from flooding during storm surge, community leaders and planners learning how to use the tool and then the tool being put into action to guide the creation of a new comprehensive plan.

In general, all of the research and learning outcomes listed in this plan will occur in six years. Action outcomes will occur at some unknown future time because they largely depend on funding, politics and other factors outside of the control of Sea Grant.

National Focus Areas Supported by This Plan

The 2018-23 Florida Sea Grant Strategic Plan supports the four focus areas of the national plan:

- ❖ Healthy Coastal Ecosystems
- ❖ Sustainable Fisheries and Aquaculture
- ❖ Resilient Communities and Economies
- ❖ Environmental Literacy and Workforce Development



Focus Area 1: Healthy Coastal Environments

Healthy coastal environments are the foundation for the quality of life and economy of Florida's coastal communities. The sustainability and health of habitats and good water quality in the coastal zone will determine the future of the state's recreational and commercial fisheries and aquatic products industries, recreational boating and diving, beach-related recreation, tourism, nature observation and a myriad of other natural and societal values that support a thriving economy. However, increasingly rapid coastal development, and other human activities and behaviors have led to congestion, water quality degradation, shoreline erosion and loss of critical habitat. Major issues affecting coastal ecosystems at this time include extreme variability in flows of fresh water into estuaries, pollution of coastal waters with nutrients, and loss, fragmentation or degradation of coastal habitats.

Human impacts threaten not only the ecosystems, their biodiversity and their functions, but also human uses such as beach going, boating, and tourism as well as fishing and production of aquatic products (e.g., clams, oysters and sponges). In addition to existing threats, climate change poses further and less-understood challenges for coastal habitats, water quality and coastal economies.

Florida Sea Grant will provide the targeted science, outreach and education that is required to address existing and emerging issues affecting our natural coastal zone and we will work with partners and stakeholders to identify feasible and effective solutions and adaptation options.

GOAL 1.1

Provide information to resource managers and local governments in support of decision-making that protects and sustains natural coastal habitats, including water quality and quantity and dependent flora and fauna.

Research outcomes

- R1.1.1 New methods and policy tools will be developed to more efficiently and effectively monitor and enhance coastal habitats including water quality and the dependent flora (e.g., sea grasses, mangroves) and fauna (e.g., manatees, sea turtles).
- R1.1.2 Information will be obtained regarding effects of altered environments on coastal ecosystems (e.g., invasive species, harmful algal blooms, pollutants, etc.).

- R1.1.3 Information will be obtained to quantify effects of point and non-point source pollution on coastal ecosystems (e.g., urban storm water runoff and agricultural runoff).

Learning outcomes

- L1.1.1 New methods and tools to monitor and enhance coastal habitats and water quality will be provided to resource managers.
- L1.1.2 Regulatory agencies will become more aware of effects of altered environments and anthropogenic pollutants on coastal ecosystems.
- L1.1.3 Local governments will become more aware of how new methods and policy tools affect coastal habitats and water quality, including dependent flora and fauna.
- L1.1.4 Coastal constituents will be better informed about coastal enhancement through participatory learning programs.

Action outcomes

- A1.1.1 Resource managers use new methods and tools to monitor and enhance coastal habitats and water quality.
- A1.1.2 Management agencies use new information about effects of altered environments to guide their decisions about water quantity and water quality related rules and regulations.
- A1.1.3 Facilitate management decisions to protect natural coastal environments.
- A1.1.4 Stakeholders benefit from coordination services that support natural resource enhancement projects and citizens become more engaged in the monitoring of those environments.

Consequences

- ❖ Coastal habitats are effectively monitored, managed and enhanced.
- ❖ Coastal water quality is more effectively monitored.
- ❖ The coastal environments' susceptibility to anthropogenic stressors, including pollutants, is better understood.

GOAL 1.2

Engage citizens in environmental monitoring and enhancement to promote awareness of the condition of coastal ecosystems and societies role in sustaining natural resources.

Learning outcomes

- L1.2.1 Citizens learn about policies, regulations, methods and best management practices for enhancing of coastal flora and fauna.
- L1.2.2 Citizens learn the proper methods to monitor water quality in the coastal zone.

Action outcomes

- A1.2.1 Citizens will participate and or lead in programs that restore natural coastal habitats (including oyster reefs, salt marshes and coastal dunes) and deploy living shorelines.
- A1.2.2 Citizens will participate in a coordinated monitoring programs with corresponding data collection.

Consequence

- ❖ Coastal residents are actively engaged in the enhancement of habitat and the monitoring of environmental quality.

GOAL 1.3

Provide science-based approaches to mitigate impacts or to adapt to changes in climate such as sea level rise.

Research outcome

- R1.3.1 The impacts of climate change (such as sea level rise) on coastal habitats, water quality and human uses will be measured, and where applicable, science-based approaches will be developed to evaluate and help mitigate those impacts.

Learning outcome

- L1.3.1 Resource managers and community leaders will be informed about the impacts of climate change on coastal habitats and water quality.

Action outcomes

- A1.3.1 Information and consideration of climate change is incorporated into coastal habitat restoration and management plans.
- A1.3.2 Resource managers and coastal communities implement best management practices to enhance the resistance and resilience of coastal habitats and water quality to climate change.

Consequences

- ❖ Management interventions increase the resistance and resiliency of coastal habitats, water quality, and water-dependent industries to impacts from climate change.
- ❖ Communities and industries affected by impacts of climate change are supported in adapting to new circumstances.



UF/IFAS Photo

Focus Area 2: Sustainable Fisheries and Aquaculture

There is an ever-increasing public demand for wild-caught and farm-raised seafood. Certain fisheries in US waters are recovering from past over-exploitation, some fisheries are still being over-exploited on a global scale, and there are issues related to the environmental impacts of fishing (such as by-catch) and product substitution of seafood. As the capacity of the ocean to increase supplies of wild stocks to meet demand (for both commercial and recreational uses) is limited, aquaculture provides a promising alternative to satisfy domestic demand and generate an increase in demand for seafood that can be farmed.

The potential for an economically-viable new food industry highlights the need for a comprehensive program targeted at enhancing the value chain through helping to ensure the sustainability of the stocks, educating consumers so that they can make informed choices about the harvest and purchase of seafood products, and training seafood professionals in methods to ensure that the seafood we eat is safe.

Further, there are opportunities identified in emerging research for aquaculture production of aquatic food products that are more tolerant of extreme environmental events, and for producing non-food products that collectively support a new Blue Economy. Such products could be market oriented (e.g., ornamental species, sponges, baitfish, etc.) or restoration oriented (e.g., corals, sea grasses, etc.), or both (e.g., bivalves). There is a tremendous opportunity to help new businesses develop and thrive through research and training to help identify and overcome bottlenecks.

Florida Sea Grant will support an integrated program of research, outreach and education to support the environmental and economic sustainability of the commercial harvesting of wild aquatic products and newly emerging aquaculture products. Florida Sea Grant will also continue to support research and outreach on sustainable recreational fishing that accounts for a large percentage of the catch of many marine species in Florida.



GOAL 2.1

Conduct programs to facilitate sustainable commercial and recreational fishing and develop a skilled and knowledgeable fisheries community.

Research outcomes

- R2.1.1 New models, tools and technologies will be developed for sustainably managing fisheries resources for recreational and commercial harvest, and more effectively protecting at-risk species.
- R2.1.2 Stakeholder engagement processes to support fisheries management will be developed and tested at local levels and evaluated for use at broader geographic scales.
- R2.1.3 Regional research will independently evaluate the stocks of valuable finfish and invertebrate species.

Learning outcomes

- L2.1.1 Fisheries managers will be provided with the new models, tools, approaches and technologies to assess vulnerability of at-risk species in recreational and commercial fisheries.
- L2.1.2 Fishermen and fisheries managers will become increasingly aware and knowledgeable of sustainable fishing practices.
- L2.1.3 Recreational and commercial fishermen in the Gulf will be informed about results of the independent evaluation of valuable reef stocks.
- L2.1.4 Recreational fishers will continue to be provided with guidance about best practices for releasing fish in a manner that minimizes catch and release mortality.

Action outcomes

- A2.1.1 Fisheries managers use new models, tools, approaches, technologies and information to more effectively manage fisheries and over-exploited species.
- A2.1.2 Fishermen increasingly use sustainable fishing practices.

Consequences

- ❖ Fisheries are more sustainably used and managed.
- ❖ At-risk species are identified, better understood, and managed.
- ❖ Stakeholders are more engaged in fisheries management through awareness and adoption of best practices.

GOAL 2.2

Develop methods and approaches that support sustainable and economically viable aquaculture and aquatic product industries.

Research outcome

- R2.2.1 New tools, technologies, methods and approaches will be developed to support profitable, sustainable and environmentally-friendly aquaculture and the harvest, processing and sale of wild aquatic products.

Learning outcome

- L2.2.1 The aquaculture and aquatic product industry will be provided with information about new tools, technologies, methods and approaches to increase their efficiency, product diversity, profitability and to minimize their environmental impacts.



UF/IFAS Photo

Action outcome

- A2.2.1 The aquaculture and aquatic product harvesting industries will be more efficient, diversified, productive and sustainable.

Consequence

- ❖ The aquaculture and product industries in Florida's coastal zone are more productive and sustainable.

GOAL 2.3

Promote the quality, safety and integrity of seafood products that are sold or consumed in Florida to increase the profitability and market value of the industries.

Research outcome

- R2.3.1 New tools, technologies and information will be generated to evaluate the characteristics of seafood products that generate value.

Learning outcomes

- L2.3.1 The seafood industry will be provided with tools, information and training to evaluate and support the quality, safety and integrity of seafood products.
- L2.3.2 Seafood consumers will be provided with information on how best to source, select and prepare seafood and shellfish.

Action outcomes

- A2.3.1 The seafood industry uses the tools, information and training provided by Sea Grant in monitoring source, identity, quality and safety of seafood products.
- A2.3.2 Consumption of fish and shellfish increases, including preparation of meals at home.

Consequences

- ❖ Seafood sold or consumed in Florida remains high in quality and is safe to eat.
- ❖ Aquaculture and aquatic product industries are more economically and environmentally sustainable.

GOAL 2.4

Investigate effects of extreme weather events and climate change on aquatic products and industries and develop products that are more tolerant of extremes and/or develop adaptation options for affected industries.

Research outcome

- R2.4.1 Aquaculture products will be developed that show market potential and can tolerate adverse conditions in coastal waters, such as warming water temperatures occurring due to climate change.

Learning outcome

- L2.4.1 The aquaculture industry will be provided with information regarding the production of products that can better tolerate adverse environmental conditions in coastal waters.

Action outcome

- A2.4.1 New aquaculture products with a greater ability to tolerate adverse conditions are tested for viability in commercial production.

Consequence

- ❖ Aquaculture and harvested aquatic products are produced in a manner that results in increased productivity and sustainability in the face of adverse environmental conditions.



Florida Sea Grant Photo

Focus Area 3: Resilient Communities and Economies

Most of the population of Florida and most of the state's gross domestic product are associated with coastal and ocean-based economies. Over 16 million people live in the coastal zone and their assets, quality of life and safety are at high risk from natural hazards. The state frequently is impacted by the intense wind, storm surge and heavy rainfall from tropical storms and hurricanes, causing coastal and inland flooding. Sea-level rise is routinely causing flooding of certain coastal urban and residential areas, has reduced the extent of certain coastal habitats, is creating issues with saltwater intrusion to coastal well-fields, and is anticipated to have major impacts on the state's economy. Florida also has experienced the negative consequences of man-caused disasters, in particular the Deepwater Horizon oil spill in the Gulf of Mexico.

Florida Sea Grant will continue to support an integrated program of research, outreach and education to help stakeholders - residents, businesses, communities, planners and agencies - understand and employ best management practices and policies for sustainable development and for preparing for and responding to hazards and disasters. This includes informing citizens and communities about adaptation options to climate change and other adverse environmental events (e.g., harmful algal blooms or HABs), especially those that affect underserved members of society.

GOAL 3.1

Support planning and policy research to help coastal communities rebound from disasters and become more resilient and adaptive to emerging environmental hazards and threats.

Research outcome

- R3.1.1 Research will identify or develop effective legal approaches to evaluate risk and increase resilience to coastal hazards.

Learning outcomes

- L3.1.1 Coastal communities will be informed about appropriate planning and policy tools to reduce risk and vulnerabilities associated with a changing environment and associated economic consequences (e.g., severe weather, flooding, HABs), and to improve adaptive capacity.
- L3.1.2 Coastal communities will be informed about barriers to incorporating actions into community planning and development, and options for overcoming those barriers.
- L3.1.3 Local and regional decision-makers, resource managers, and coastal businesses will be provided with results of new research, including Deepwater Horizon science, that explains community and ecological vulnerabilities from man-made and natural disasters.

Action outcomes

- A3.1.1 Coastal communities adopt new risk management tools, building standards and policies.
- A3.1.2 Attorneys and planners use new resources for understanding potentially relevant laws and regulations affecting risk, adaptation planning and hazard mitigation.
- A3.1.3 Communities are better informed about effects of natural and man-made disasters.

Consequence

- ❖ Coastal communities are more resistant to and resilient from the impacts of severe coastal threats and hazards.

GOAL 3.2

Develop engineering-based tools, information and guidance to protect coastal infrastructure during extreme weather events.

Research outcomes

- R3.2.1 Research will examine the extent of potential damage to infrastructure caused by both wind and flooding associated with hurricanes.
- R3.2.2 New tools and technologies will be developed to assist communities in evaluating their risk of loss from hurricanes, storm surge and coastal flooding, and options to mitigate their losses.

Learning outcomes

- L3.2.1 Coastal communities, businesses and homeowners in the coastal zone will be given new information and better models for evaluating community and household risk for both wind, storm surge and flooding.
- L3.2.2 Communities, businesses and homeowners in the coastal zone will have a greater understanding of the impacts of coastal hazards and sea-level rise and will have tools they can use to reduce risk.

Action outcome

- A3.2.1 Communities benefit from new tools that assess flooding, wind and storm surge risk to existing and new developments and infrastructure investments.

Consequence

- ❖ Coastal communities, businesses and homeowners are better able to withstand extreme weather events.

GOAL 3.3

Support actions that promote sustainable use of waterfronts and waterways for the benefit of water-dependent businesses and communities.

Research outcome

- R3.3.1 New planning tools and policies will be developed to promote access and sustainable use of waterfronts and waterways.

Learning outcomes

- L3.3.1 Communities will be informed about actions that can be taken to effectively manage mooring fields, anchorage areas, navigational routes, and to remove derelict vessels.
- L3.3.2 Residents and tourists will continue to be informed about safe boating practices and about ways to avoid damage to seagrass, manatees and other aquatic biota.

- L3.3.3 Information is provided to marinas, boatyards and other types of working waterfronts regarding effective pre- and post-disaster planning.

Action outcomes

- A3.3.1 State and local governments benefit from new policies and practices that enhance waterfronts and waterways.
- A3.3.2 Greater coordination of planning occurs among local and regional waterfront and waterway decision-makers, managers and regulators.
- A3.3.3 Residents and tourists practice safe and environmentally-friendly operations of their vessels.
- A3.3.4 Water-dependent businesses are certified as “Clean” operations.

Consequences

- ❖ Waterfronts and waterways are used and managed more sustainably.
- ❖ Near-shore environments are managed to minimize effects from recreational boating and other uses.
- ❖ Improved pre- and post-recovery planning for water-dependent communities reduces adverse anthropogenic and environmental impacts.

GOAL 3.4

Inform coastal residents and visitors about practices and behaviors that contribute to sustainable coastal communities.

Learning outcome

- L3.4.1 Florida year-round and seasonal residents will be provided with science-based information about sustainable practices and behaviors (e.g., appropriate beach-side lighting, avoiding damage to seagrass and other habitats, and proper disposal of plastic and other debris that persists and causes harm in the marine environment).

Action outcome

- A3.4.1 Residents and visitors and targeted business operations (e.g., coastal landscaping operations) will implement environmentally sustainable practices.

Consequence

- ❖ Changes in the behaviors and practices of residents, visitors and businesses result in communities that are more sustainable.





Focus Area 4: Environmental Literacy and Workforce Development

The actions of people can have large negative or positive effects on habitats, wildlife and water quality in the Florida coastal zone, particularly because of the close proximity of a huge population and the sensitivity of those natural environments to human and natural impacts. Therefore, in addition to active resource management, it is critical that residents, businesses and tourists understand the values of our natural coastal habitats and of good water quality, as well as take actions to protect and sustain them through what often can be simple changes in lifestyle.

Florida Sea Grant has captured the essence of those lifestyle changes in a book called *A Practical Guide to Estuary-Friendly Living* and will continue to carry out a comprehensive statewide program to educate people about appropriate actions. There also is a large workforce in the coastal zone that can benefit from training provided by Sea Grant – training that is either required for them to remain employed or in business, or training that can help them advance in their careers. This training goes hand-in-hand with actions that protect the coastal environment and ensure safety of marine aquatic products.

Florida Sea Grant will continue its active programs in environmental literacy and workforce development, expanding it to include a greater array of opportunities for K-12 STEM education and recent graduates to transition into the coastal workforce through targeted internship programs. Greater efforts will also be made to reach Spanish speaking and underserved stakeholders.

GOAL 4.1

Residents (year-round and seasonal) will be informed about behaviors and take actions that reduce their negative effects on the coastal zone, and they will participate more actively in beneficial activities.

Research outcome

- R4.1.1 Innovative new immersive learning programs will be developed to educate children and young adults about the actions that they can take and avoid to protect the health of the coastal zone.

Learning outcomes

- L4.1.1 Residents will be informed about actions that can reduce their negative effects on coastal habitats, water quality and water quantity.
- L4.1.2 Residents will become more aware of opportunities for participating in activities that benefit the coastal zone like beach cleanups, mangrove restoration, oyster and dune restoration, native vegetation planting and storm water signage.

Action outcomes

- A4.1.1 Residents act in a manner that reduces their negative effects on coastal habitats, water quality and water quantity.
- A4.1.2 Residents actively participate in activities led by Sea Grant that benefit the coastal zone.

Consequence

- ❖ Coastal habitats are improved because of changes in actions by residents.

GOAL 4.2

Training will be provided to the coastal workforce that is beneficial and sometimes required for continued employment, or that can result in enhanced employment opportunities.

Learning outcome

- L4.2.1 Training will be provided that is beneficial and sometimes required for workers to remain successful in their jobs and for businesses to remain competitive in their operation.

Action outcomes

- A4.2.1 People in the coastal workforce remain competitive in their jobs and have opportunities for career advancement because of the new skills they acquire in Sea Grant training programs.
- A4.2.2 Businesses are more aware of their contribution to environmental outcomes because they participate in targeted training programs provided by Sea Grant.

Consequence

- ❖ Professionals in the coastal workforce are more knowledgeable of factors and actions that contribute to environmental sustainability.

GOAL 4.3

Youth will be educated in STEM disciplines, threats and actions that can be taken to preserve natural environments, and opportunities to enhance natural resources for the benefits of coastal economies.

Learning outcome

- L4.3.1 Formal educators will gain knowledge about the effect of human activities on coastal habitats and water quality, for possible use in their science curricula.

Action outcomes

- A4.3.1 Student-oriented programs with researchers, agencies, organizations and businesses will provide on-the-job training.
- A4.3.2 K-12 instructors are more knowledgeable of coastal environmental issues for inclusion in their learning curriculum.

Consequence

- ❖ Students and K-12 instructors are more knowledgeable and engaged in actions that enhance and sustain coastal environments.

Capacity Building

There are a myriad of major issues currently impacting Florida's coastal environments and economy and/or that are likely to impact them in the future because of climate change and anthropogenic stressors. This six-year plan addresses a substantive number of those issues with targeted research and extension goals.

However, the program lacks the capacity to fully address certain issues related to, for example, water quality, quantity, and community adaptation to climate change. During the next six years the leadership team of Florida Sea Grant will work with our Advisory Council and with local, state and federal partners to build capacity for enhanced collaboration in a manner that leverages our collective resources to more effectively address these pressing issues. Additional partnerships with non-governmental organizations (NGOs) that share similar organizational missions will also be sought to increase our capacity to serve our stakeholders.

As a result, additional faculty and staff can be added and projects developed to address pressing issues such as recurring harmful algae blooms, increased competition for wild fish and shellfish stocks, concern for the safety of fish and shellfish, the growing potential of aquaculture, and threatened coastal flora and fauna and the water-dependent businesses and communities they support. The same holds true for the resilience of coastal communities. We currently have the capacity to help communities better understand risks from flooding and sea-level rise and to inform them about adaptation policy options. However, we lack capacity in providing guidance related to infrastructure changes. By strengthening our linkages with urban planning and engineering programs at Florida universities, and working closely with UF partner institutions, this capacity can be achieved by Florida Sea Grant and our collaborators within six to eight years.

Not only are there numerous research needs in each area, but there is a growing need for effective outreach and communication that reaches important stakeholder groups, including the underserved. Moving ahead, our program will seek to increase the capacity of citizens (including youth), underserved communities and businesses, and institutions of higher learning to benefit from our programs. For example, by offering programs in Spanish and by providing training tailored to students and researchers to increase their success in our competitive funding programs.



Florida Sea Grant Photo

Strategic Program Management

With this plan Florida Sea Grant intends to continue a long-standing record of implementing model programs that have local, regional and international relevance. Strategic management of the program is critical for identifying the approaches best suited to tackle the diverse and interconnected issues that affect our coasts through integrated research, extension and education. The following set of actions frame our program management philosophy and will underpin the implementation of the goals and objectives outlined in this strategic plan.

- ❖ **Collaborate** with local communities, state and federal agencies, the private sector and not-for-profits in order to most efficiently and effectively address the issues identified in our plan and in regional plans.
- ❖ **Implement**, in coordination with the UF Foundation, a program to increase the private donations to our Sea Grant endowment fund to have the financial resources to increase the number of student scholarship and fellowship opportunities, address emerging issues and to more fully tackle existing issues affecting the coast.
- ❖ **Build** new partnerships that also are critical to growing our capacity to address issues related to water quality and coastal community resilience.
- ❖ Continue to be a **leader and innovator** in the use of multiple forms of media to effectively provide information to a wide range of constituents.
- ❖ Continue to provide relevant **professional development** opportunities for extension faculty, agency staff and the coastal workforce, including on issues related to diversity, equity and inclusion.
- ❖ Continue to **provide facilitation, science synthesis, coordination** and other support to communities and industries to help resolve contentious coastal issues.
- ❖ Continue to **integrate** research and application.
- ❖ Continue programs that actively **engage** students with researchers and extension faculty.
- ❖ Continue to be actively involved with – and **serve** on committees for – regional organizations, programs and councils in order to play a role in addressing existing and emerging issues in the Gulf and South Atlantic regions.
- ❖ **Expand** the participation of faculty in non-traditional areas including urban and regional planning, global health, and journalism with our program.

Performance Measures and Targets 2018-23

This list corresponds to National Sea Grant performance measures, organized by National Focus Area and the two national cross cutting measures and metrics.

Healthy Coastal Ecosystems (HCE)

- ❖ Number of acres of coastal habitat protected, enhanced or restored as a result of Sea Grant activities

Sustainable Fisheries and Aquaculture (SFA)

- ❖ Number of fishermen, seafood processing and aquaculture industry personnel who modify their practices using knowledge gained in fisheries sustainability and seafood safety as a result of Sea Grant activities

Resilient Communities and Economies (RCE)

- ❖ Number of communities that adopt / implement sustainable economic practices and policies as a result of Sea Grant activities
- ❖ Number of communities that adopt / implement hazard resiliency practices to prepare for and respond to/minimize coastal hazardous events as a result of Sea Grant activities

Environmental Literacy and Workforce Development (ELWD)

- ❖ Number of Sea Grant products that are used to advance environmental literacy and workforce development
- ❖ Number of people engaged in Sea Grant supported informal education activities (in support of ELWD)
- ❖ Number of Sea Grant supported graduates who become employed in a job related to their degree within two years of graduation

Cross-cutting Performance Measures

- ❖ Economic and societal impacts derived from Sea Grant activities

Cross cutting Output Metrics

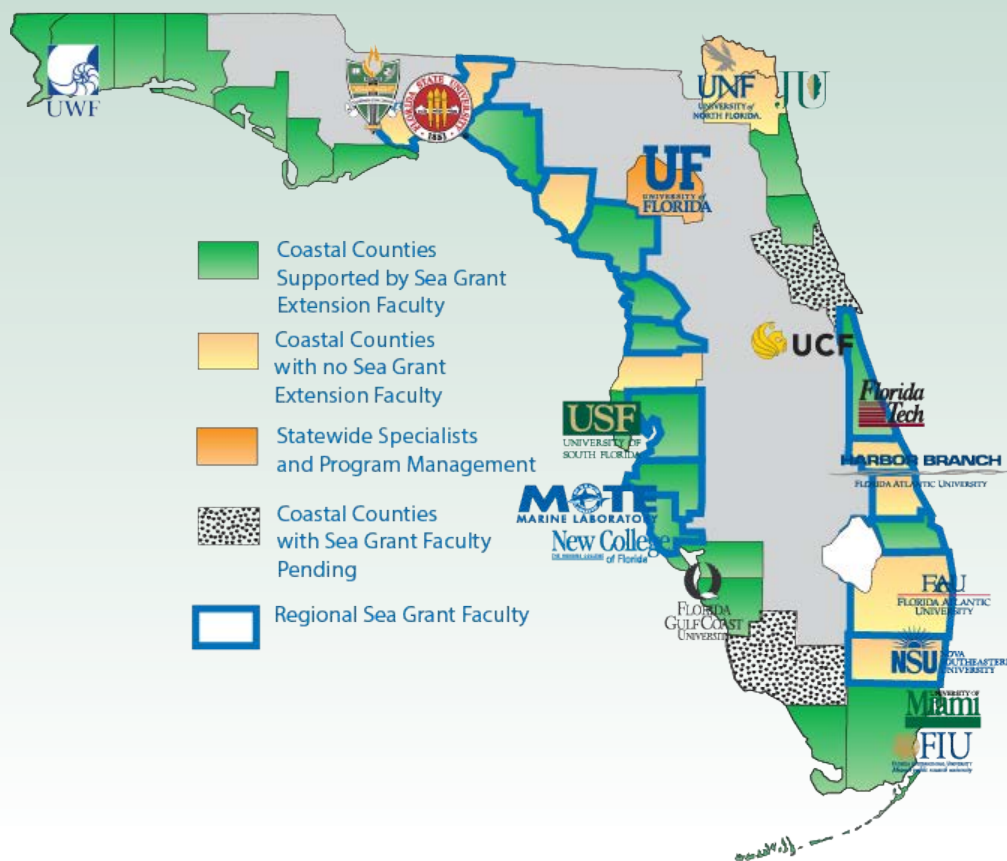
- ❖ Number of marinas certified as clean by the Clean Marina Program as a result of Sea Grant activities
- ❖ Number of individuals certified or recertified in Hazard Analysis Critical Control Point (HACCP) as a result of Sea Grant activities
- ❖ Number of peer-reviewed publications produced by Sea Grant
- ❖ Number of P-12 students reached through Sea Grant-trained educators or directly through Sea Grant education programs
- ❖ Number of P-12 educators who participated in Sea Grant education programs



FLORIDA SEA GRANT RESEARCH, EXTENSION, AND EDUCATION NETWORK

Florida Sea Grant supports an integrated program of research, education and public outreach through a statewide network of 12 public universities, 3 private universities, 2 research laboratories, and the UF/IFAS Extension Service. The University of Florida in Gainesville serves as the host campus, but all of the institutions shown here are a formal part of the program. UF is also home for Sea Grant's statewide specialists, who interface with program management and a network of marine extension professionals in coastal counties.

Florida Sea Grant is also part of the National Oceanic and Atmospheric Administration and one of 34 Sea Grant programs nationally.





SCIENCE SERVING FLORIDA'S COAST

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

Florida Sea Grant College Program
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