Strategic Plan 2018-2021

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Introduction

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 18 Florida universities and are hosted by the University of Florida (UF), which is the State of Florida's flagship research university. Our extension program is seamlessly embedded in the UF Institute of Food and Agricultural Sciences (IFAS) Extension program. Twenty-five Sea Grant-affiliated Extension Agents live and work in coastal communities and we have Extension Specialists at UF in economics, environmental law, aquaculture, seafood safety, waterway planning, aquatic health and coastal planning.

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 including fisheries management that is fully funded by external grants, partner with regional fisheries management authorities and provide training for resource managers from small island nations. In the near future we aim to expand the scope of our collaboration to include Cuba, which is already an active partner in research and outreach with our UF host.

This document is a roadmap that identifies how Florida Sea Grant will address ocean and coastal issues for the period 2018 to 2021 with relevant research, extension and education. The plan identifies goals, outcomes, performance measures and metrics in four focus areas that are aligned with those found in the national 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, coastal planning, 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.

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 core values of the National Sea Grant College Program and these values will guide our actions over the next four years …

- Innovation – Florida Sea Grant will lead innovation and serve as a catalyst for innovation to advance solutions to emerging coastal challenges.
- Engagement – 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.
- Collaboration – Florida Sea Grant will seek out relationships that leverage our strengths, promotes efficiency and values efficiency.
- Accountability – Florida Sea Grant is fully responsible for our actions.
- Sustainability – Florida Sea Grant will communicate the importance of good stewardship and the values that coastal and ocean ecosystems provide to businesses, communities and residences.

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 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; and
- help constituents incorporate the latest science-based information about climate change into planning across all of the focus areas

National focus areas that are supported by this plan

The 2018-21 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, and environmental literacy and workforce development.

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 research, learning and action. We fund research projects, we conduct extension so that research leads to learning or new tools, and after new knowledge is acquired or new tools provided, actions occur. In general, all of the research and learning outcomes listed in this plan will occur in 4 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.

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 unnatural low and high flows of fresh water into estuaries, pollution of coastal waters with nutrients, and loss, fragmentation or degradation of the coastal habitats mentioned above.

The human impacts threaten not only the ecosystems, their biodiversity and their functions, but also many human uses including fishing, boating, tourism and aquatic products including 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. During the next four years 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 to identify solutions or adaptation options.

Goal 1.1 Provide information to resource managers and local governments that can be used to support decision making, monitoring and enhancement activities that protect and sustain natural coastal habitats and water quality and quantity.

Research outcome

R1.1.1 *New methods and tools will be developed to more efficiently and effectively monitor and enhance coastal habitats and water quality.*

R1.1.2 *Information will be obtained regarding effects of altered freshwater flow regimes (droughts and/or floods) on coastal ecosystems.*

R1.1.3 *Information will be obtained to quantify effects of point and non-point source pollution, for example urban storm water runoff and agricultural runoff, on coastal ecosystems.*

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 freshwater flow and anthropogenic pollutants on coastal ecosystems.*

L1.1.3 *Local governments will become more aware of how their decisions affect coastal habitats and water quality, including information and coordination tactics that can guide the deployment, monitoring and management of artificial reefs.*

L1.1.4 *Coastal constituents will be better informed about coastal restoration projects.*

Action outcomes

A1.1.1 *Resource managers use new methods and tools to monitor and enhance coastal habitats and water quality.*

A1.1.2 *Regulatory agencies use new information about effects of altered freshwater flow and pollutants to guide their decisions about water quantity and water quality related rules and regulations.*

A1.1.3 *Local decisions protect natural coastal habitat and good water quality.*

A1.1.4 *Stakeholders benefit from coordination services that support the deployment and management of artificial reefs and citizens become more engaged in the monitoring of that reef habitat.*

Consequences

- *Coastal habitats are effectively monitored, managed and enhanced.*
- *Coastal water quality is more effectively monitored.*
- *The coastal zone is better protected from effects of altered freshwater flow*
- *The coastal zone is better protected from the effects of pollutants*

Goal 1.2 Coordinate programs that engage citizens in habitat restoration, water quality monitoring and awareness of the condition of coastal ecosystems.

Learning outcomes

L1.2.1 *Citizens learn about policies, regulations, methods and best management practices for conducting restoration of oyster reefs, salt marsh and coastal dunes, and about methods for installing and benefits of living shorelines.*

L1.2.2 *Citizens learn the proper methods to monitor water quality in the coastal zone.*

Action outcomes

A1.2.1 *Hundreds of citizens will lead and or participate in programs that restore natural coastal habitats, including oyster reefs, salt marshes and coastal dunes, and they participate in the deployment of living shorelines.*

A1.2.2 *Hundreds of citizens will participate in a program of coordinated water quality monitoring with data maintained by Florida Sea Grant in a centralized database.*

Consequences

Coastal residents are actively engaged in the restoration of habitat and the monitoring of water quality, they share information with other residents on the importance of diverse coastal habitats and clean water, and they actively voice their knowledge-based concerns when communicating with elected officials.

Goal 1.3 Coordinate a program that evaluates how climate change is affecting and is predicted to affect Florida's coastal natural resources, and provide science-based approaches to mitigate impacts or to adapt to changes.

Research outcome

R1.3.1 *The impacts of climate change on coastal habitats, water quality and human uses will be predicted, and where applicable, science-based approaches will be developed to evaluate those impacts.*

Learning outcome

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

Action outcomes

A1.3.1 *Information about the potential impacts 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.*

Focus Area 2 – Sustainable fisheries and aquaculture

There is an ever-increasing public demand for wild-caught and farm-raised seafood, and for other aquatic products like sponges. 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 aquaculture and product substitution of seafood. This highlights the need for a comprehensive program targeted at documenting the sustainability of wild-caught fish and the source of seafood products, educating consumers so that they can make informed choices about 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 recent and emerging research for the production of aquatic products that are more tolerant of extreme environmental events, and for increasing the productivity and reducing the environmental impacts of aquaculture. Florida Sea Grant will support an integrated program of research, outreach and education to support sustainable wild-harvesting of fish and other aquatic products, to reduce environmental impacts linked to the harvesting and production of aquatic products, and to ensure that seafood meets consumer expectations for safe and sustainable choices. Florida Sea Grant will continue to support research and outreach aimed at maintaining sustainable recreational fishing, which in Florida waters, accounts for a large percentage of the catch of many marine species.

Goal 2.1 Conduct programs to facilitate sustainable commercial and recreational fishing and develop a skilled and knowledgeable fisheries workforce.

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 in the Gulf of Mexico will independently evaluate the stock status of red snapper.*

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 the recreational and commercial fisheries.*

L2.1.2 *Fishermen and fisheries managers will become increasingly aware of sustainable fishing practices and collaborative decision-making.*

L2.1.3 *Recreational and commercial fishermen in the Gulf will be informed about results of the independent evaluation of the red snapper stock.*

L2.1.4 *Recreational fishers will continue to be provided with guidance about best practices for releasing fish in a manner that minimizes discard 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 and engage in collaborative decision making processes.*

Consequences

- *Fisheries are more sustainably used and managed.*
- *At-risk species are protected.*
- *Stakeholders are more engaged in fisheries management.*

Goal 2.2 Continue to develop methods and approaches that support sustainable and economically viable aquaculture and aquatic product industries. Aquatic products include wild-harvested sponges, oysters, scallops and other emerging food products such as certain gastropods.

Research outcome

R2.2.1 *New tools, technologies, methods and approaches will be developed to support cost-effective, 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, cost-effectiveness and to reduce their environmental impacts.*

Action outcomes

A2.2.1 *The aquaculture and aquatic product harvesting industries will have increased efficiency, product diversity, cost-effectiveness, and reduced environmental impacts.*

A2.2.2 *The aquaculture and aquatic product harvesting industries will become more sustainable.*

Consequences

- *The aquaculture and product industries in Florida's coastal zone are sustainable, environmentally-friendly and cost-effective.*

Goal 2.3 Ensure that all seafood products that are sold or consumed in Florida are safe, of high quality and of known origin.

Research outcome

R2.3.1 *New tools, methods, technologies and approaches will be developed to evaluate the source, identity, product quality and safety of seafood products.*

Learning outcomes

L2.3.1 *The seafood industry will be provided with tools, information and training related to evaluating source, identity, quality and safety of seafood products.*

Action outcome

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.*

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 where feasible, 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 can tolerate adverse conditions in coastal waters, such as rising 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 commercially produced with guidance from Sea Grant.*

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.*

Focus Area 3 – Resilient communities and economies

Most of the population of Florida and most of the state's gross domestic product is associated with the coastal and ocean 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 wellfields, 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 residents, businesses, communities and resource managers understand and employ best management practices for sustainable development and for preparing for and responding to hazards and disasters. This includes informing communities about adaptation options to sea-level rise and other adverse effects of climate change.

Goal 3.1 Support planning and policy research in order to help coastal communities become more resilient and adaptive to existing and emerging hazards including extreme weather, storm surge and sea-level rise.

Research outcome

R3.1.1 *Research will identify or develop effective methods 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 severe weather, flooding and climate change, and 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/products, 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.*

Consequences

- *Coastal communities are more resistant to and resilient from the impacts of severe weather, storm surge, disasters and sea-level rise.*

Goal 3.2 Develop tools, information and guidance to reduce the level of loss of 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 will be given new information and better models for evaluating community and household risk for both wind and storm surge/flooding.*

L3.2.2 *Communities 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 are better able to prepare for and respond to hazards.*

Goal 3.3 Support policy and planning actions that promote public and commercial access to and use of waterfronts and waterways.

Research outcome

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

Learning outcome

L3.3.1 Communities will be informed about new waterway and waterfront planning and policies.

L3.3.2 Communities will be informed about actions that can be taken to effectively manage mooring fields & anchorage areas and to remove derelict vessels.

L3.3.3 Boaters will continue to be informed about safe boating practices and about ways to avoid damage to seagrass, manatees and other aquatic biota.

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 Boaters practice safe and environmentally-friendly operations of their vehicles.

Consequence

- *Waterfronts and waterways are used and managed more effectively.*
- *Recreational boating has minimal negative environmental effects.*

Goal 3.4 Support local and regional efforts to enhance the ability of water-dependent communities to withstand natural and anthropogenic hazards and disasters.

Learning outcomes

L3.4.1 Information is provided to marinas, boatyards and other types of working waterfronts regarding effective pre- and post-disaster planning.

L3.4.2 *Decision-makers, resource managers, business owners and others are informed about climate change and sea-level rise science that can support their planning and actions related to waterfront and waterway development.*

Action outcomes

A3.4.1 *Marinas, boatyards and retailers are certified as Clean and Resilient operations.*

A3.4.2 *Pre- and post-disaster planning for water-dependent communities is enhanced.*

A3.4.3 *Decision-makers and resource managers incorporate climate change and sea-level rise science in their planning and actions related to waterfront and waterway use and development.*

Consequence

- *Improved pre- and post-recovery planning for water-dependent communities reduces adverse anthropogenic and environmental impacts.*

Goal 3.5 Promote activities that support water-dependent businesses and communities.

Learning outcome

L3.5.1 *Events including seafood and cultural heritage festivals will inform residents, tourists and elected officials about the values of local heritage maritime and waterfront communities.*

Action outcome

A3.5.1 *Actions will be taken at local and regional levels to preserve heritage maritime and waterfront communities.*

Consequence

The value of heritage maritime communities is widely known as an integral part of the coastal economy, and those communities and associated industries are preserved.

Goal 3.7 Inform coastal residents and local governments about practices and behaviors that contribute to sustainable coastal communities.

Learning outcome

L3.6.1 *Florida year-round and seasonal residents will be provided with science-based information about sustainable practices and behaviors such as appropriate beach-side lighting, how to avoid 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

A3.6.2 *Residents, visitors, and property owners adopt environmentally sustainable practices.*

Consequence

Changes in the behaviors and practices of residents, visitors and property owners 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 are 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 recent graduates to transition into the coastal workforce through targeted internship programs.

Goal 4.1 Residents and tourists 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, including for example apps and video games with embedded learning attributes.*

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 stormwater 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 more actively participate in activities led by Sea Grant that benefit the coastal zone.*

Consequence

Coastal habitats are protected and water quality is improved because of changes in actions by coastal 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 outcomes

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.*

L4.2.2 *Formal educators will gain knowledge about the effect of human activities on coastal habitats and water quality, for possible use in their science curricula.*

L4.2.3 *Student-oriented programs with researchers, agencies, organizations and businesses will provide on-the-job training.*

Action outcomes

A4.2.1 *People in the coastal workforce remain competitive in their jobs and have a greater opportunity for career advancement because of the new skills they acquire in Sea Grant training programs.*

A4.2.2 *Businesses are more competitive because they participate in targeted training programs provided by Sea Grant.*

A4.2.3 *Students are better equipped to enter the professional workforce.*

Consequence

- *Students and professionals in the coastal workforce are more competitive in their selected occupations.*

Capacity building

There are a myriad of major issues currently impacting Florida's coastal environments and economy and/or likely to impact them in the future because of climate change. This four-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 four years the leadership team of Florida Sea Grant will work with our Advisory Council and with local, state and federal partners to build capacity by enhanced collaboration and by increasing the level of program support from private sources. As a result, additional faculty and staff can be added and projects developed to address pressing issues such as recurring toxic algae blooms in estuaries, effects of prolonged drought on oysters and other estuarine-dependent fisheries, specific actions that coastal communities can take to reduce the risk to their critical infrastructure from sea-level rise, and increased prevalence of toxigenic and pathogenic micro-organisms in our coastal waters due to warming. Although we are a coastal and ocean focused program, fresh water is a core issue now and in the future – in regard to its quality, quantity and timing of flow into the coastal zone. In subsequent strategic plans we envision it becoming a more central element of our activities and our program having the capacity to make substantive contributions to tackling emerging challenges. 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 such as IFAS and the Florida Climate Institute, this capacity can be achieved by Florida Sea Grant and our collaborators within four to eight years.

Strategic program management

With this plan Florida Sea Grant intends to continue a long-standing record of implementing model programs that can be applied worldwide. 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 are major objectives of our strategic program management 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 substantively increase the private donations to our Sea Grant endowment fund in order to have financial resources to increase the number of student scholarship 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.
- 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 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.
- Continue to work in a seamless manner with our Land Grant partner, the UF Institute of Food and Agricultural Sciences.

Performance measures & targets 2018-21

This list corresponds to National Sea Grant performance measures, with five additional Florida-specific measures in bold.

- Number of acres of coastal habitat protected, enhanced or restored as a result of Sea Grant activities (1,000)

- **Number of citizens who participate in programs to restore and/or monitor coastal habitat or water quality (200)**

- **Number of new tools, policies, models and other sources of information developed to support management of coastal habitats and/or water quality (10)**

- 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 (1,800)

- **Number of new information sources, tools or technologies developed to enhance the efficiency, product diversity, environmental benefits, sustainability or cost-effectiveness of harvested aquatic products and aquaculture (5)**

- Number of communities that adopt / implement sustainable economic practices and policies as a result of Sea Grant activities (20)

- **Number of tools, policies and information sources developed for communities to implement resilient practices and policies to enhance water access, improve sustainability and/or reduce risk and vulnerabilities associated with severe weather, flooding and sea level rise (5)**

- 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

    - Number of communities (15)
    - Number of hazard resiliency trainings / technical assistance provided (15)
    - Community hazard resiliency improved (10)

- Number of Sea Grant products that are used to advance environmental literacy and workforce development (40)

- Number of people engaged in Sea Grant supported informal education activities (28,000)

- Number of Sea Grant supported graduates who become employed in a job related to their degree within two years of graduation (200)

- **Number of people who receive training that is beneficial to and/or required for continued employment and career advancement in the coastal workforce (800)**

- Economic and societal impacts derived from Sea Grant activities

    - Economic benefit ($40,000,000)
    - Jobs created (50)
    - Jobs sustained (2,000)
    - Businesses created (2)
    - Businesses sustained (500)
    - Patents (2)

- Number of marinas certified as clean by the Clean Marina Program as a result of Sea Grant activities (15)

- Number of individuals certified or recertified in Hazard Analysis Critical Control Point (HACCP) as a result of Sea Grant activities (800)

- Number of peer-reviewed publications produced by Sea Grant (200)