
Sea Grant
Florida
Florida Sea Grant
Where Innovation
Meets Impact
UF|IFAS
UNIVERSITY of FLORIDA
NOAA

Florida Sea Grant **SERVES FLORIDA'S COAST** with a **DYNAMIC** program of **RESEARCH** and **EXTENSION**

Most of Florida's 20 million residents live just a short drive from the coast. Another 97 million tourists are drawn to the state every year for its bountiful ocean resources.

With so many in close proximity to such economically-valuable property and sensitive natural environments, the challenges are great, as are the opportunities. Every research, education and extension project Florida Sea Grant conducts provides science-based solutions to assist in developing and managing the state's ocean potential.

We tap into the expertise of scientists at 18 Florida universities and labs. Through a partnership with the Institute of Food and Agricultural Sciences at the University of Florida, we provide technical assistance to communities, businesses, resource managers and residents.

In recent years we have expanded our programs with local governments and partners in the private sector, matching federal funding with dollar-for-dollar contributions. We invite you to read these stories of success, and learn how our innovative program directly supports outcomes that conserve and sustain the precious ocean and coastal resources of Florida.

Karl Havens
Director, Florida Sea Grant

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Savanna Barry is the regional specialized Florida Sea Grant agent for the UF/IFAS Nature Coast Biological Station on Florida's Big Bend coast. Her programs focus on ecotourism, fisheries and sustainable outdoor recreational activities.

UF/IFAS PHOTO BY TYLER JONES

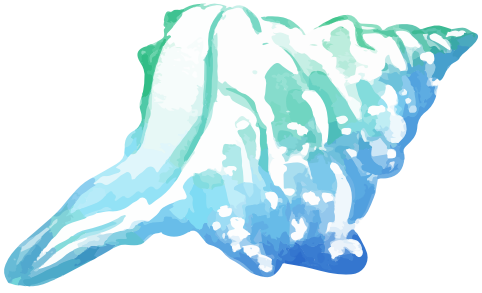
UF/IFAS PHOTO BY TYLER JONES

In Tampa Bay, **LIBBY CARNAHAN** helps **COMMUNITIES BUILD RESILIENCE** to rising seas

Hurricanes and storms are not new to residents of Tampa Bay, but as sea levels rise and communities grow in size, the threat to life and property is increasing. Many of the area's 3.2 million residents live on low-lying barrier islands and canals. Public and private infrastructure is especially vulnerable to impacts from flooding and sea-level rise.

Through technical workshops, a popular speaker's series, and field trips to the area's urbanized shorelines, Florida Sea Grant agent Libby Carnahan is teaching local citizens about the impacts of storm surge and rising sea levels.

In response to requests from two dozen local governments, she has also worked with an ad-hoc experts committee of the Tampa Bay Regional Planning Council to develop guidance on what sea-level rise projections should be incorporated into local comprehensive plans, a key first step toward a unified strategy to promote hazard resilience in the Tampa Bay region.



TOM ANKERSEN PHOTO

VANESSA DORNISCH PHOTO

GARY APPELSON PHOTO

PROTECTING and **ENJOYING** Florida's **GREATEST ASSET**

As the nation's love affair with Florida's beaches and waters continues to grow, so too will demand for access to the coast. Coastal communities are feeling the squeeze, balancing intensified demand for development with protecting heritage working waterfronts, sensitive habitat and public beach access.

Tom Ankersen, Florida Sea Grant's legal specialist, pursues innovative land-use solutions with state and local partners to help Florida's citizens and visitors access their coast and waterways responsibly. In his web portal, "Accessing the Florida Coast," his team has written and collected a number

of model laws, case studies and ordinances that help coastal communities address planning for beach nourishment, natural hazard risk management, redevelopment and other beach-related issues.

Florida Sea Grant's boating and waterways planning program works in tandem with Ankersen's legal program developing novel GIS mapping tools that communities need to manage boating-based marine recreation. Boating tools and technologies have helped communities delineate boat ramp service areas, optimize the placement of mooring fields, save costs associated with dredging channels, and quantify economic impacts derived from marinas and boat ramps.

UF/IFAS PHOTO BY AMY STUART

Above, many of the coastal access issues trending nationally first became acute in Florida, one of the nation's top boating destinations. Below, keeping sand on the beach is a challenge for Jupiter Beach and other communities that struggle to afford nourishment projects essential to retaining visitors.

FLORIDA SEA GRANT PHOTO BY KARL HAVENS

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION PHOTO

ANDY KANE PHOTO

ERIK LOVESTRAND PHOTO

A tale of **WATER QUANTITY** and **QUALITY** in Florida

Changes in weather patterns pose a serious risk to ecosystems across Florida and the benefits they provide to society. When combined with human alterations of the landscape, impacts may be particularly pronounced.

In the Florida Panhandle, a drought had devastating impacts on the state's most productive oystering grounds, when low river inflow led to high salinity in an estuary and collapse of the fishery. Our researchers identified the link between salinity and oyster mortality. They are now exploring ways, with the help of local oystermen, to restore reefs to make them more resilient to future changes in river flow and harvesting.

FLORIDA SEA GRANT PHOTO BY KARL HAVENS

At the opposite end of the state, south Florida is ditched for flood control and irrigation. As a result, natural systems often get too much or too little water. A modeling exercise co-sponsored by Florida Sea Grant quantified how future increases in evaporation caused by higher temperatures may worsen supply of water available during droughts.

The results can be used by Everglades restoration managers to build adaptable projects that provide adequate water in a drier future. Challenges at the intersection of landscape alterations, population growth and water pollution require sound science that protects the aquatic resources which provide critical habitats and sustain south Florida's urban centers and tourism-based economy.

MARY BETH HARTMAN PHOTO

Florida Sea Grant held a series of technical meetings with Florida Atlantic University and the U.S. Geological Survey to assess the effects of future climate scenarios on Everglades restoration efforts.

FLORIDA SEA GRANT PHOTO BY THOMAS RUPPERT

As **RISING SEAS** shift the **LEGAL LANDSCAPE** for **LOCAL GOVERNMENTS,** Sea Grant adds to the **POLICY TOOLBOX**

Much of Florida's coastal population now lives just a few feet above sea level. Flood damage from storms and hurricanes is expected, but some communities are flooding on sunny days at high tide because rising seas are overwhelming existing water control structures. Protecting people and property from flooding has become a daily challenge for engineers, public works directors and a local government's legal counsel.

"Communities will see more flooding from a lack of drainage and higher water levels," says Florida Sea Grant coastal planning specialist Thomas Ruppert. "As sea levels continue to rise, how are communities going to use their limited resources to adapt to the future?"

Ruppert's outreach provides planners, elected officials and land-use lawyers with the substantive information they need to understand legal issues likely to arise when sea-level rise adaptation measures are implemented. Ruppert's legal analyses are now widely used by communities adding sea-level rise adaptation elements to their comprehensive plans.

TRAINING and **EDUCATING** our **WORKFORCE**

UNIVERSITY OF MIAMI PHOTO

Rachel Silverstein (above) is a 2013 Knauss Fellow who now leads Miami Waterkeeper, teaching citizens to monitor water quality in Biscayne Bay.

To meet the nation's long-term need for a workforce skilled in science, technology and environmental management, Florida Sea Grant delivers a broad range of educational scholarships and training for both students and adult learners.

Professional training enables fishing guides and charter captains to learn new business marketing tools; oystermen can renew their required shellfish harvest licenses; resource managers know how to use GIS to create more feasible work plans; and seafood importers and processors can pass food safety inspections.

Many Sea Grant agents teach portions of the Florida Master Naturalist Program (below), an adult education curriculum that certifies more than 1,000 graduates each year. They in turn volunteer thousands more hours of service in their communities to increase awareness and

UF/IFAS PHOTO BY ERIC ZAMORA

understanding of Florida's natural world.

Florida Sea Grant also has an established track record of providing scholarships and other forms of financial support to undergraduate and graduate students. By leveraging our University setting, we are able to cultivate both public and private support for high-achieving students who emerge as leaders for future generations. The long-time Aylesworth Foundation for the Advancement of Marine Science, for instance, has provided Florida Sea Grant with more than $500,000 of scholarship support since 1986.


KEVIN JENSEN PHOTO


FLORIDA SEA GRANT PHOTO


CECILY BURTON PHOTO

Dawn and Bobby Aylesworth (below) believe supporting tomorrow's researchers will yield benefits for their fishing industry. Other Sea Grant programs meet Florida's need for a technically trained labor force that is prepared to contribute to economic growth and protection of the state's coastal resources.


UF/IFAS PHOTO BY TYLER JONES

In South Florida, **SHELLY KRUEGER** enlists residents as **CITIZEN SCIENTISTS** on **WATER WATCH**

Engaging citizens as volunteers in coastal science projects has multiple benefits. It increases their knowledge of issues affecting the coastal zone and helps them become better stewards of natural resources. It also results in enhancement of coastal habitats, saving coastal communities tens of thousands of dollars a year.

Florida Sea Grant agents in the Florida Keys and Biscayne Bay are training residents to sample and test residential canals and local bays through a new program called Water Watch. Collected water samples are tested for dissolved oxygen, pH, salinity and other water quality indicators. Data are then entered in a regional water quality database to help resource managers assess coastal water trends in areas where public funds can no longer support routine monitoring.

"If residents understand what causes poor water quality in their canals, then they will be more likely to practice actions they can do to help improve water quality everywhere," says Shelly Krueger, the Florida Sea Grant agent with UF/IFAS Extension in Monroe County. "We teach people to treat your canal like your pool – if you would not put it in your pool, do not put it in your canal."

FLORIDA SEA GRANT PHOTO BY BECCA BURTON

MISSISSIPPI-ALABAMA SEA GRANT PHOTO


OIL SPILL SCIENCE
SEA GRANT PROGRAMS OF THE GULF OF MEXICO

THE SEA GRANT and GOMRI PARTNERSHIP

TOP 5 FREQUENTLY ASKED QUESTIONS ABOUT THE DEEPWATER HORIZON OIL SPILL


OIL SPILL SCIENCE
SEA GRANT PROGRAMS OF THE GULF OF MEXICO

THE SEA GRANT and GOMRI PARTNERSHIP

FISHERIES LANDINGS AND DISASTERS IN THE GULF OF MEXICO

OIL, MICROPLASTICS and FUTURE OCEAN HEALTH

As Florida Sea Grant's Gulf oil spill specialist, Monica Wilson is helping Gulf Coast residents, industries, and community leaders to make better use of oil spill science.

Wilson works with three other specialists, one from each of the Sea Grant programs in the Gulf of Mexico. The new science education program is funded by the Gulf of Mexico Research Initiative, an independent program that studies the impact of the Deepwater Horizon oil spill.

Wilson is especially interested in how oil moves throughout the water, since understanding circulation patterns can be vital to minimizing a spill's damage to the surrounding environment and communities, and to predicting the track of future spills.

The wide use of plastics has resulted in another form of water pollution – tiny pieces of plastic so small they are not caught by wastewater treatment plants, and end up in the oceans. Through the Florida Microplastic Awareness Project, Florida Sea Grant is training volunteers statewide to collect and filter coastal water samples for microplastic bits. Sample results are entered online, and plotted with Google maps.

The goal is to help people better visualize the presence of marine debris and encourage them to reduce not only their personal contribution to plastic pollution, but the overall amount released into the environment.

When microplastics enter rivers and coastal waters, they do not break down, and can be eaten by aquatic life small and large, causing harm. Floridians are now learning to be 'plastic aware' through the Florida Microplastics Awareness Project.

MIAMI-DADE DERM PHOTO

BAZ YELVERTON PHOTO

CHUCK MANGIO PHOTO

RESTORING REEF habitats vital to **COASTAL HEALTH**

Reefs both natural and artificial provide essential habitat for marine life. Florida has one of the nation's most active artificial reef programs. Originally focused on increasing fishing access, artificial reefs now play a role in improving aquatic habitats, mitigating damage to natural coral reefs and providing recreational opportunities for divers.

For more than three decades, Florida Sea Grant has provided the state's artificial reef community with the scientific and technical assistance needed to ensure that reef deployment is done in a cost-effective and ecologically responsible manner. This includes co-organizing a statewide artificial reef summit with the Florida Fish and Wildlife Conservation Commission.

UF/IFAS PHOTO BY LYON DUONG

In more shallow water environments, Florida Sea Grant supports volunteer-based efforts to restore degraded oyster reefs around the state, and funds research that examines the efficacy of techniques to restore oyster reefs along the shores of the Gulf of Mexico. In the course of his restoration research, Peter Frederick at the University of Florida gathered strong ecological evidence that healthy oyster reefs act as natural dams, holding precious fresh water against the shoreline, and creating large areas of critical nursery grounds that better support oysters, sea grasses, juvenile game fish and invertebrates important to healthy coastal environments. The findings give new importance to the role that constructed oyster reefs have as an 'aquascaping' tool to moderate salinity levels in habitats vulnerable to low freshwater flows.

UF/IFAS PHOTO BY TYLER JONES

Reef-building projects introduce everyday Floridians to the importance of oyster reef ecology. Based on results of his small Florida Sea Grant reef restoration study, Peter Frederick has been awarded an $8.3 million grant to restore 32 acres of oyster reef chain.

UF/IFAS PHOTO BY TYLER JONES

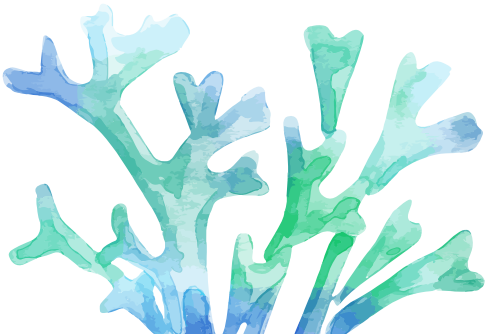
‘**WITHOUT** Florida Sea Grant, there would be **NO SPONGE FISHERY** in Florida today’

Jim Cantonis is the president of Acme Sponge and Chamois of Tarpon Springs, Fla., and a member of the Florida Sea Grant statewide advisory board. He is the fourth generation of a Greek sponge fishing family, and has seen his successful sponge processing and distribution business increase 30 percent over the last few years.

“There’s been a real surge in using natural product, and of course there’s nothing more natural than a sponge picked out of the ocean,” Cantonis says.

Many years ago, Florida Sea Grant demonstrated that sponges could be harvested using sustainable methods, which allowed the industry to continue in the face of severe and undue criticism.

Now, Florida Sea Grant researchers are learning about the biology of marine sponges — through studies of regeneration and repopulation in the Florida Keys hit by harmful algae blooms — to better understand the benefits they provide to fragile marine environments.



UF/IFAS PHOTO BY AMY STUART

UF/IFAS PHOTO BY TYLER JONES

FLORIDA SEA GRANT STOCK PHOTO

SUSTAINABLE COMMERCIAL and RECREATIONAL FISHING

Recreational and commercial fisheries are multi-billion dollar industries in Florida, and increasing demands for both high-quality seafood products and memorable fishing trips have placed increased pressure on fishing stocks. Knowledge is the key to good decision-making, and Florida Sea Grant is responding in multiple ways, including educating anglers about effective catch-and-release practices, as well as developing innovative efforts like public fisheries fora that constructively engage fishermen and scientists in the process of managing marine fisheries.

Mahmood Shivji's satellite tagging of shortfin mako sharks aims to improve population assessments and management options for a vulnerable shark species. The work is co-funded with the Guy Harvey Ocean Foundation.

Mitigating the impacts of the invasive lionfish on fisheries in the Gulf of Mexico and Caribbean has given Florida Sea Grant researchers and extension agents the opportunity to work regionally with the Sea Grant programs of North Carolina, South Carolina, Georgia and Puerto Rico, as well as with state and federal agencies. Results from these efforts underscore the value of ensuring healthy stocks of native fish species like snapper and grouper to reduce the impacts of the lionfish invasion. Sea Grant extension agents are also providing technical assistance to citizens groups and their localized "lionfish derby" removal efforts, as well as to divers and wholesalers wanting to investigate market demand for the fish's mild-tasting white flesh.

UF/IFAS PHOTO BY TYLER JONES

The fast-spreading invasive lionfish could hamper efforts to rebuild snapper and grouper populations in the southeast U.S. A recent Sea Grant-funded modeling workshop explored impacts that reef fish management strategies and lionfish removal efforts may have on native reef fish communities.


FLORIDA SEA GRANT STOCK PHOTO

FARMING CLAMS and other **CROPS** from the **SEA**

FLORIDA SEA GRANT STOCK PHOTO

Florida Sea Grant is conducting large-scale growout demonstrations to test adaptability of farmed oysters to various conditions on Florida's west coast.

Because of increasing global demand, edible, farm-raised aquatic products are the fastest-growing sector in world food production. In Florida, the commercial aquaculture industry is growing in economic importance and diversity as well, with a 'pond-gate' value of about $70 million. More species are currently being cultured in Florida than any other state in the nation.

Most of the industry's value comes from tropical ornamental fish, but a growing marine aquaculture sector is becoming more visible and attractive to potential investors.

Florida Sea Grant has funded development of one of the state's most dramatic success stories, the culture of hard clams and sunray venus clams. Through UF/IFAS Extension, we also provide the information needed to help shellfish growers innovate and diversify.

FLORIDA SEA GRANT PHOTO BY DEANNA BOOTAN

New avenues for aquaculture have opened. The technology for offshore culture of finfish is improving, and NOAA has announced plans to allow up to 20 culture operations in the Gulf of Mexico growing red drum, cobia and almaco jack. Sea Grant-funded research that investigated the nutrient discharge problems associated with offshore fish farming shows "cautious optimism" that cage culture can operate with minimal environmental impacts.

Aquaponics has primarily focused on freshwater production of fish and lettuce. In partnership with researchers at Mote Marine Laboratory and industry, we are testing a novel marine aquaponics system to produce marine fish and sea vegetables for local farmers' markets, emphasizing the need for sustainable sources of seafood and locally based, self-reliant food economies.


UF/IFAS PHOTO BY TYLER JONES

Florida Sea Grant leads the National Seafood HACCP Alliance, which provides technical training that helps seafood importers and processorts meet federal food safety standards for seafood.


MOTE MARINE LABORATORY PHOTO

What does **LEARNING TO FISH** mean to your child? In **MIAMI-DADE,** it **PROVIDES BENEFITS** for **AT-RISK YOUTH** and their entire family

Through innovative programs organized by Mahogany Youth Corporation, urban youngsters learn fishing skills and life skills.

"Fishing is the hook we use to get the kids' attention, and then we're able to help them with life choices and making good decisions," says Kathleen Elliott, the organization's vice-president and a member of Florida Sea Grant's statewide advisory board. "No matter what size fish they catch, they get excited."

In partnership with Florida Sea Grant, Mahogany Youth provides an opportunity for inner-city youth from disadvantaged communities to learn about ocean science while developing skills and knowledge important to their future.

It's just one example of Florida Sea Grant's long history of supporting environmental education for youth and adults so they become more aware of how their actions affect the health of our watersheds, oceans and coasts. They also learn to protect those systems. Currently, Mahogany Youth members are assisting a Sea Grant research project that is planting sponges in areas of Florida Bay to restore hard-bottom habitats.

UF/IFAS PHOTO BY TYLER JONES

Join us in creating science-based solutions to develop and manage our coastal and ocean resources, ecosystems and communities.

Your gift to Florida Sea Grant will provide direct support for research and extension programs that are building community resilience, conserving our greatest assets, and protecting Florida's future.

There are many opportunities for support:

- student scholarships
- research innovation grants
- educational travel funds

Or, you may choose any aspect of Florida Sea Grant you want to support. For more information on how you can invest in Florida's future visit:

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Science Serving Florida's Coast
PO Box 110400
University of Florida
(352) 392-5870
flseagrant.org