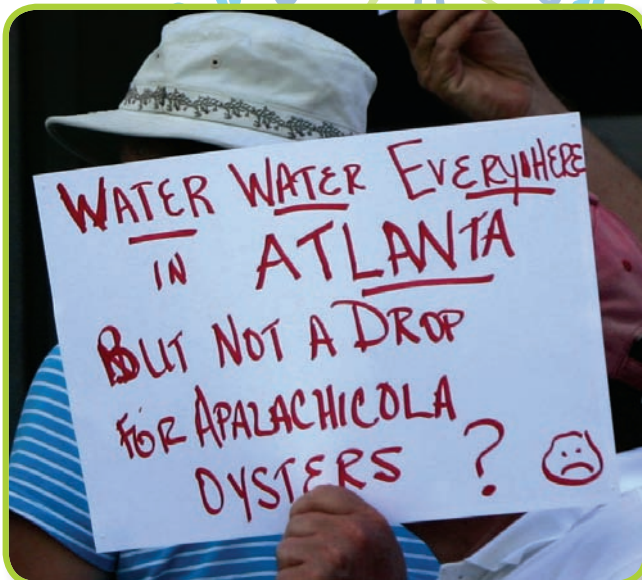


BRINGING BACK FLORIDA'S OYSTERS

Sea Grant Leads Efforts to Restore Apalachicola Bay



Apalachicola, home of world-famous oysters and producer of about 10 percent of the U.S. oyster supply, is once again making headlines, but this time it's for all the wrong reasons.

A steep decline in the oyster harvest has hundreds of fishermen, local leaders and seafood producers wondering if their unique fishery and way of life may be on the verge of collapse.

To help the industry bounce back, Florida Sea Grant, with funding from the Institute of Food and Agricultural Sciences at the University of Florida, has brought together university researchers, agency scientists and industry leaders to form the UF Oyster Recovery Team.

Concerns about the oyster harvest began in summer 2012, when sampling of Apalachicola Bay's primary producing reefs – the same reefs that produced \$6.6 million in dockside landings in 2011 – showed few oysters. State officials asked for and received a fisheries failure declaration from NOAA Fisheries.

While that petition awaits Congressional approval and funding, the UF recovery team has been addressing two main questions: the cause of the population collapse, and strategies for increasing the future resilience of the oyster industry.

Apalachicola Bay, a lagoon situated along Florida's northwest Gulf of Mexico coast, receives freshwater inputs from rivers flowing across three states – Georgia, Alabama and Florida. The freshwater inputs create

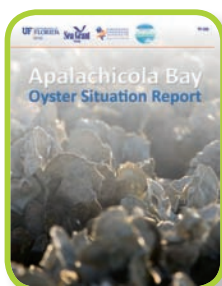
the brackish water habitat essential for oysters to thrive, but in 2011 and 2012, prolonged drought turned the river basin into the driest place in the U.S.

Karl Havens, director of Florida Sea Grant and the chair of the recovery team, told a U.S. Senate field hearing that the recovery team's investigations showed the main cause of the fishery's sudden collapse was a die-off of young oysters, mostly likely linked to disease, predators, and the stress of two years of high salinity.

While it is unclear whether reduced river flows were due to exceptional drought, or caused in part by upstream uses, resolving water allocation will be critical to finding a long-term solution for the oyster industry.

The team's research also suggests that recovery of the commercial harvest to historical levels may take as much as a decade, but could be reduced to just three to four years if harvesting is greatly reduced, and a large-scale oyster reef restoration project occurs to replenish degraded habitat.

Close collaboration with the oyster industry has been critical to the successful outcomes of the recovery team, and will continue to be so for future challenges. Community leaders and Apalachicola Bay seafood producers have already formed a citizens' action group, the Seafood Management Assistance Resource and Recovery Team, or SMARRT, to help facilitate cooperation that will lead to a lasting increase of oyster populations.



Public rallies and a U.S. Senate hearing have helped draw national attention to the collapse of the Apalachicola commercial oyster fishery. The UF Oyster Recovery Team is investigating the causes of the collapse, as well as facilitating the community's participation in recovery of the fishing industry.

3,600

anglers have learned effective catch-and-release fishing practices



975

clam farming and oyster harvesting jobs sustained

\$1,800,000

invested in research to address critical coastal issues

174 PROFESSIONALS 80 BUSINESSES

trained in estuary-friendly lawn care practices



\$226,000,000

annual economic benefits from leadership in Florida's artificial reef program



1,500

seafood businesses trained in safe seafood handling and processing

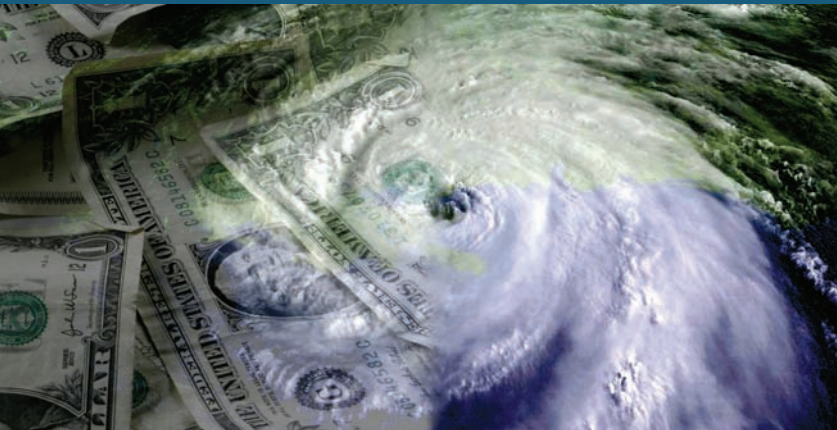
\$80,000

raised through support to heritage fishing community festivals



\$1,250,000

annual tax savings from streamlined permitting tool for waterways



DOLLARS & CENTS OF HURRICANE PREPAREDNESS

Hurricanes are expensive for both homeowners and the insurance industry. In 2004 and 2005, eight hurricanes slammed Florida, causing \$31.3 billion in insured losses. Two Florida Sea Grant research projects are helping reduce the economic impact of hurricanes on Florida's vulnerable residential structures, valued at \$1.5 trillion.

Because much of the hurricane damage to homes comes from leaking roofs, David Prevatt, assistant professor of civil and coastal engineering at the University of Florida, seeks to make roofs more water tight. Prevatt has found that roof panels treated with spray-applied polyurethane foam adhesives keep out 20 percent more water than untreated panels. The spray foam also helps roof sheathing withstand wind uplift significantly more than conventional roof construction.

"Our findings are being used by Florida's Building Commission to develop new design guidelines for spray foam adhesives in construction," said Prevatt. "Spray adhesives are a low-cost solution to protect older homes and new construction, which could save hundreds of millions of dollars in storm- and hurricane-related damages along our nation's coasts."



Arindam Chowdhury

Keeping damage at a minimum is essential, but so is knowing the value of what's at risk and having it properly insured. Florida Sea Grant researcher Arindam Chowdhury and his team at Florida International University's Wall of Wind hurricane testing facility are generating new information to update the method insurers use to assess damage.

Florida's current hurricane loss model does not adequately account for water damage to building interiors,

which causes more than half of total damage, Chowdhury said. "We've used the Wall of Wind to quantify the total interior damage for low-rise buildings based on the amount of external damage and storm intensity." The findings have already led to new building codes in Miami-Dade County that strengthen the exterior components of residential structures.

CITIZEN SCIENCE PROMOTES COASTAL STEWARDSHIP

The scientific community has long relied on support from everyday "citizen scientists" to develop new technology, collect data and test natural phenomena. For more than a decade, Florida Sea Grant has been cultivating citizen scientists with help from the Florida Master Naturalist Program.

Florida Master Naturalist is an adult education program comprised of three core modules—freshwater wetlands, coastal systems and upland habitats. Florida Sea Grant agents often teach the coastal systems module, which consists of 40 hours in the classroom and in the field.



Bryan Fluech, a Sea Grant agent with UF/IFAS Extension in Collier County, helps Master Naturalist students identify marine life collected with a seine net.

Participants learn about the habitats, wildlife and conservation issues of coastal uplands, estuarine and nearshore marine environments. The program also addresses peoples' role in coastal areas through discussions on environmental ethics.

In 2012 alone, Sea Grant agents taught more than 500 people who completed Master Naturalist courses.



Marty Main

"Florida Master Naturalist graduates have told us that our programs have helped them get jobs and obtain pay raises, but most importantly, they say the program helps them share information with others about coastal conservation strategies," said Marty Main, creator of the program.

"It's a perfect fit with Florida Sea Grant because our missions of providing innovative education and outreach to protect coastal resources and enhance economic opportunities coincide."

Main was appointed Florida Sea Grant's associate director of extension and education in January 2013. He and the Florida Master Naturalist program were recently given the Eugene P. Odum Award for Excellence in Ecology Education by the Ecological Society of America. The award recognizes an ecologist for outstanding work in ecology education, and a program's ability to connect basic ecological principles to human affairs.



Blake Wylie photo

NEIGHBORS SWITCH LIGHTS OUT TO **SAVE SEA TURTLES**

Every year, thousands of imperiled loggerhead, green and leatherback sea turtles come ashore to nest on Florida's Atlantic and Gulf coasts. Yet because of dwindling nesting habitat and a host of other threats, the long-term recovery of sea turtle populations is at risk.

Florida's nesting turtles dig tens of thousands of nests each summer. Each nest contains about 100 eggs, but it is estimated that only about 1 in 1,000 hatchlings survive to maturity.

In large part, this is due to excessive artificial beachfront lighting. Because newly hatched sea turtles use natural light and reflections to help them locate the water, excessive light on beaches can cause hatchlings to become disoriented and wander along the beach instead of out to sea. Lights can also discourage females from coming ashore to nest.

With support from Florida Sea Grant, students and faculty in the Conservation Clinic at the University of Florida Levin College of Law reviewed current artificial lighting laws and found them inadequate. The clinic worked with lighting experts at the Sea Turtle Conservancy to develop a set of best lighting practices and tested local ordinances against the best practices.

"We concluded that advances in lighting technology and a greater understanding of sea turtle biology, as it relates to lighting have rendered many if not most existing ordinances outdated," said Tom Ankersen, Conservation Clinic director and Sea Grant legal specialist. "Our new model ordinance better reflects the current state of the art in sea turtle-friendly lighting."

While Ankersen and students were developing the model ordinance, Florida Sea Grant extension agent Brooke Saari has been helping one Panhandle beachfront community comply with an existing ordinance.

The Gulf Trace community on south Walton County's Grayton Beach is nestled between two state parks on one mile of beach.

"Because of its location, Gulf Trace was making what would normally be a naturally dark beach, and good nesting grounds for turtles, too bright," said Saari. "They contacted me about helping them comply with the ordinance."



U.S. Fish & Wildlife Service photo

Lights on the beach interfere with moonlight that steers sea turtle hatchlings toward the sea. Sea Grant agent Brooke Saari, above, left, talks to a Walton County homeowner about recently installed turtle-friendly outdoor lights.

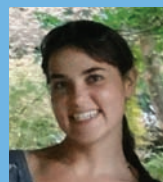
Saari helped the community receive grants to install 249 fixtures and 163 bulbs on 36 homes, and six solar turtle-friendly street lights.

Gulf Trace homeowner Nancy Lewis, who spearheaded the project, said the community has seen immediate results.

"Right now we have two turtle nests—one on the east end and one on the west end," Lewis said. "It's the first time in my 13 years living here that turtles have nested on our beach."

SCHOLARSHIP AND FELLOWSHIP RECIPIENTS

\$382,000 IN SCHOLARSHIPS AND FELLOWSHIPS AWARDED, AND 101 STUDENTS SUPPORTED THROUGH RESEARCH GRANTS



LAURA BHATTI

PH.D., BIOLOGY
FIU

Florida Sea Grant Scholar



DEVAN COFFARO

B.A., RADIO-TV
UCF

Florida Outdoor Writers
Association Scholarship



TARA DOLAN

M.S., MARINE AFFAIRS/POLICY
UM RSMAS

Knauss Fellow



ROBERT ELLIS

PH.D., BIOLOGY
FSU

Guy Harvey Scholarship



AMBER FERGUSON

M.S., INTEGRATIVE BIOLOGY
USF

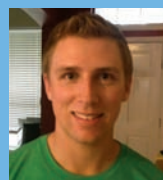
Guy Harvey Scholarship



AUSTIN GALLAGHER

PH.D., ECOSYSTEMS
UM RSMAS

Florida Sea Grant Scholar



EVAN GED

M.S., ENVIRON ENGINEERING
UF

Florida Sea Grant Scholar



ETHAN HUDGINS

B.S., ENGINEERING
UF

Skoch Scholarship



JOHANNA IMHOFF

PH.D., BIOLOGICAL SCIENCES
FSU

Guy Harvey Scholarship



KRISTIN KOPPERUD

PH.D., BIOLOGICAL SCIENCES
FIU

Guy Harvey Scholarship



YOGESH KHARE

PH.D., AG. & BIO. ENGINEERING
UF

Florida Sea Grant Scholar



MARK LADD

PH.D., BIOLOGY
FIU

Florida Sea Grant Scholar



ARIANNE LEARY

M.S., COASTAL BIOLOGY
UNF

Guy Harvey Scholarship



MICHELLE MASI

PH.D., MAR. RESOURCE ASMT
USF

Aylesworth Foundation
Scholarship



ERICA OMBRES

PH.D., MARINE SCIENCES
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Knauss Fellow



CAITLIN POMERANCE

LEVIN COLLEGE OF LAW
UF

Guy Harvey Scholarship



PATRICK RYNNE

PH.D., APP. MARINE PHYSICS
UM RSMAS

Florida Outdoor Writers
Association Scholarship



ALEXIS SEGAL

LEVIN COLLEGE OF LAW
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Guy Harvey Scholarship



RACHEL SILVERSTEIN

PH.D., MARINE BIO. & FISHERIES
UM RSMAS

Knauss Fellow



TYLER SLOAN

PH.D., BIOLOGICAL SCIENCES
FIT

Guy Harvey Scholarship

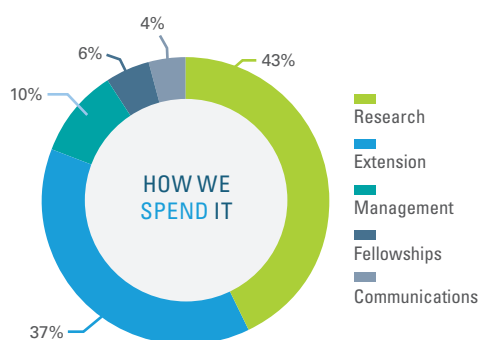
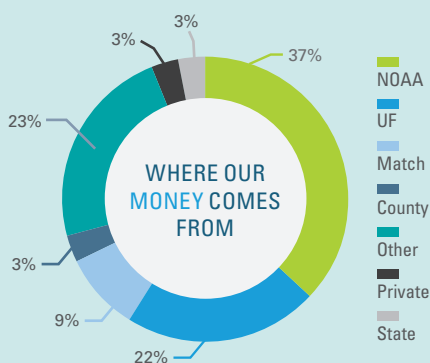


ALANA SMENTEK-DUERR

PH.D., OCEAN ENGINEERING
FAU

Knauss Fellow

2012-2013 FLORIDA SEA GRANT CUMULATIVE BUDGET



CUMULATIVE BUDGET 2012-2013	
FUNDING AREA	TOTAL
Research	\$ 2,684,000
Extension	\$ 2,285,000
Communications	\$ 254,000
Management	\$ 652,000
Fellowships	\$ 342,000
Total	\$ 6,217,000

VOLUNTEERS REVIVING THE INDIAN RIVER LAGOON ONE OYSTER REEF AT A TIME

Oysters are loved by seafood connoisseurs around the world, but these briny mollusks are much more than a taste treat. They also provide important benefits to a healthy coastal environment.

Oyster reefs act as natural filters to improve water quality, stabilize shoreline and provide habitat for young fish and other marine life. Unfortunately, oyster populations in the U.S. and around the world have been declining. The loss has been especially devastating for the



Indian River Lagoon on Florida's Atlantic coast, which has seen an 80 percent decline in oyster populations.

Florida Sea Grant is responding by partnering with St. Lucie County and the Florida Oceanographic Society to create a volunteer-based program

of reef restoration that has, since its creation in 2006, resulted in over 2 miles of new oyster reef in the Indian River Lagoon.

Each year, the program expands in scope and participation. Florida Sea Grant extension agent LeRoy Creswell helps coordinate it.

"We've had a lot of success," said Creswell. "We aren't just bringing oysters back to the lagoon. The program is helping us educate our entire community about the importance of oysters. Even the area restaurants are involved—that's where we get all of our oyster shells."

More than 200 adult and school-age volunteers participated in the program last year, logging more than 400 hours. They help bag the oyster shells that serve as the foundation for the new reefs and then relay the heavy bags into place, all the while getting a hands-on lesson in oyster ecology provided by Creswell.

In 2012 alone, volunteers put out four new reefs in the Indian River Lagoon. Each reef covers approximately a quarter-acre of lagoon bottom, and is made up of 3,200 oyster shell bags weighing an estimated 55 tons.

Deploying a reef isn't as simple as pitching bags of discarded shell into the lagoon, warns Creswell. That could be seen as pollution.

"The toughest part of deploying new reefs is the permitting process," he said. "You have to get permits

from Florida's Department of Environmental Protection and the U.S. Army Corps of Engineers. Years of experience have taught us how to streamline the process."



Oyster shells are recovered from area restaurants, then bagged by volunteers and placed by human relay in the Indian River Lagoon as one means of restoring oyster reefs that are essential for good water quality, stable shorelines and aquatic habitat.

In fact, the program has permitting down to such a science that it has become a model for environmental groups, government agencies, water management districts and national estuary programs.

To make future restoration efforts even easier, Creswell is working with Florida Sea Grant legal specialist Tom Ankersen and his legal students at the University of Florida to advise a statewide work group that is developing draft language to create a "general permit" for small-scale oyster reef restoration efforts. If the rule is adopted, restoration efforts that comply with its language will not have to spend precious time and resources obtaining permits for individual projects.



FLORIDA SEA GRANT NETWORK MEMBER INSTITUTIONS

University of Florida (Host) Gainesville, FL

Florida Atlantic University/
FAU at Harbor Branch Oceanographic
Boca Raton/Ft. Pierce, FL

Florida Gulf Coast University
Ft. Myers, FL

Florida A&M University
Tallahassee, FL

Florida Institute of Technology
Melbourne, FL

Florida International University
Miami, FL

Florida State University
Tallahassee, FL

Jacksonville University
Jacksonville, FL

Mote Marine Laboratory
Sarasota, FL

New College of Florida
Sarasota, FL

Nova Southeastern University
Dania Beach, FL

University of Central Florida
Orlando, FL

University of Miami
Miami, FL

University of North Florida
Jacksonville, FL

University of South Florida
St. Petersburg, FL

University of West Florida
Pensacola, FL

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