

Coastal Currents

Florida Coastal Management Program E-News—Summer 2009

A PUBLICATION OF THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Preserving Charlotte Harbor's Prehistoric Coastal Heritage

By Mary Glowacki

In 1877, archaeologist Frank Cushing reported the remains of an incipient, prehistoric site located at the southeastern tip of Pine Island in Charlotte Harbor. In his estimation, the builders of this 3,500 foot long, shell mound complex were in the process of construction when a great storm interrupted their work, damaging much of the nascent architecture. Cushing speculated that the site was being erected as a sister site to its mirror image on the southwestern end of Pine Island. This latter complex, Cushing tells, had been mined for island road fill.

The damage and destruction of these respective Pine Island sites has been an all too common occurrence in the Charlotte Harbor region that continues to this day. Looting has also been a serious problem, with numerous archaeological sites dug in hopes of recovering pirates' buried treasure, rumored to be hidden in remote corners of Charlotte Harbor. Fortunately, public conservation lands provide protection to archaeological sites from development and unauthorized excavation. However, many sites, regardless of ownership, are regularly damaged or destroyed

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Exploring Florida's Ocean Energy Future

One of the most exciting prospects for Florida is the potential for its oceans to be a source of renewable energy technology. Florida could be a new frontier for energy from wind, waves, ocean currents, solar and hydrogen generation.

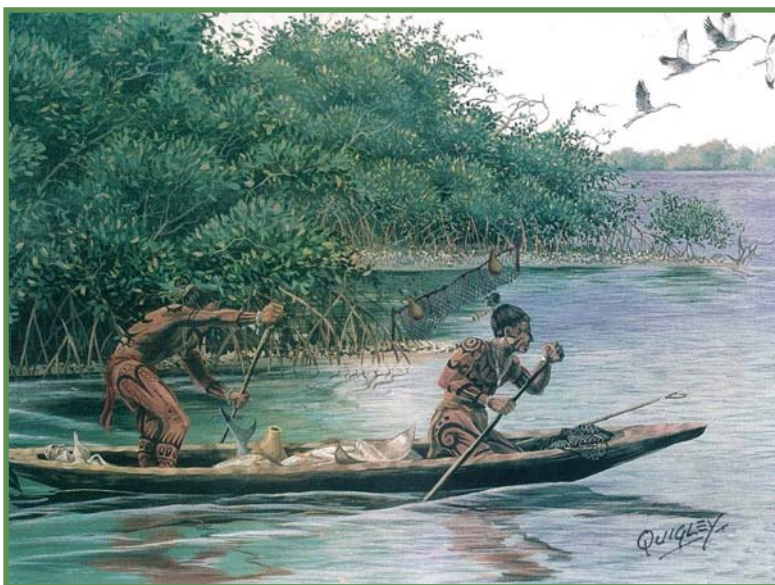
Percent Total Electric Generation from Renewable Energy Sources	
USA	8.4%
Florida	3%

Energy Information Agency 2007

The federal [*Energy Policy Act of 2005*](#) gave the U.S. Department of the Interior the authority to issue leases, easements or rights-of-way for activities in federal offshore waters to produce or support the production and transmission of renewable energy. Another law, the [*Federal Power Act*](#), gives the Federal Energy Regulatory Commission authority to license non-federal hydropower projects located on navigable waters, which could include energy generated by waves, tides or ocean currents. The regulatory responsibilities of both agencies are spelled out in a [*cooperative agreement*](#), and [*federal regulations*](#) for ocean renewable energy development have recently been finalized.

In the U.S., wind is likely to be the most readily developed offshore renewable energy source in the short-term. In Florida, however, there is more

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Early fishermen of Southwest Florida. Fish impoundment is shown in background with netting and gourd floats visible.

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Preserving Charlotte Harbor's Prehistoric Coastal Heritage (from page 1)

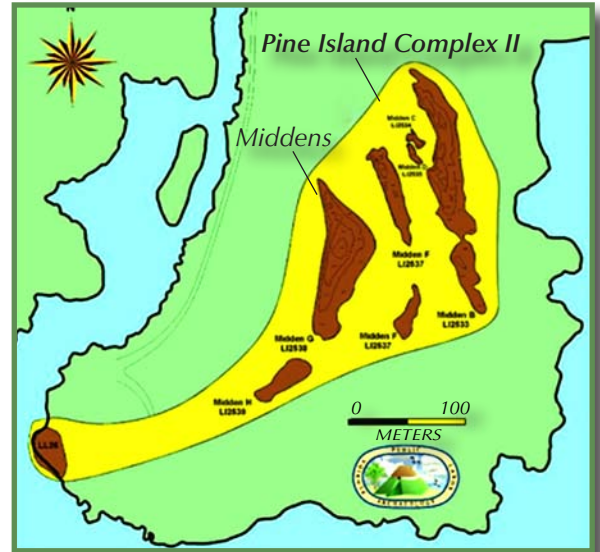
by heavy winds and rain, storm surges, tidal scouring and erosion accelerated by loss of native vegetation.

One way to preserve information conveyed by the remains of the early inhabitants of Charlotte Harbor is to cartographically record associated archaeological sites. Funded by FCMP grants, the Florida Department of State's Public Lands Archaeology (PLA) program has undertaken a mapping project in the Charlotte Harbor Preserve State Park (CHPSP) where approximately 100 archaeological sites have been recorded to date.

Since 2007, several significant and endangered sites in CHPSP have been mapped, including the sites at Pine Island described by Cushing. The location of the sites was essentially lost after Cushing's recording until PLA archaeologists relocated them using high resolution aerial photographs. Other sites being mapped in this project are those at Sword Point and Glover Bight, southwest of Cape Coral. Various sites along the harbor's East Wall may be mapped in the future.

In addition to its preservation goals, the CHPSP survey has generated considerable insight into the culture and practices of early Charlotte Harbor residents. Specifically, mound construction in the Cape Coral area differs markedly from construction in the East Wall area. Shell mounds of the East Wall tend to be larger in area, oval instead of linear-shaped, and substantially taller than those in Cape Coral. Separated by more than 20 miles, the differences appear to reflect a prehistoric cultural divide.

The sites in the Sword Point complex are particularly noteworthy because they contribute to understanding Charlotte Harbor's prehistoric occupation. In addition to the varied shell tool assemblage, the Sword Point complex is interesting because its low lying, flood prone isle has remained undisturbed by human visitors, despite its proximity to St. James City and Cape Coral. While storm and tidal action have worn away its western shoreline, numerous middens made up of shell and other refuse discarded by its original inhabitants remain intact.



Pine Island II Complex, first recorded by Frank Cushing in 1877



Demonstrative Tool Use - Hammer

Horse Conch shell tools - Pine Island II Complex

Five radiocarbon dates from one of the Sword Point sites indicate an occupation from approximately 1300 AD to 1400 AD, which corresponds to an environmental event known as the "Little Ice Age," when sea level was lower than it is today. The occupation of Sword Point during this time in climatic history makes sense given the area's present wetland nature. In addition, the complex includes evidence of a fish weir or impoundment built by early inhabitants of the island. Constructed with mostly oyster shell, two arms extend from land into the eastern inlet where deep water is still encountered. Remote sensing has detected what may be a line of stakes placed in the lagoon sediment and used to secure netting in which fish were caught as the tides subsided. PLA's work at Sword Point has shown that this complex is eligible for the National Register of Historic Places, and the maps resulting from the project will contribute to its nomination.

While time and nature take their toll on archaeological sites, especially in the coastal zone, the mapping project in the Charlotte Harbor Preserve State Park exemplifies how cultural resources can be preserved and also made accessible to future generations. The maps provide a blueprint of current site conditions and for the first time a systematic means to monitor site changes. The maps will also serve as basic data set for future archaeological research of the early dwellers of Charlotte Harbor. *For more information contact: [Mary Glowacki](#).*

Benefits of Federal Consistency

Many state programs and activities protect and enhance natural, cultural and economic resources and sustain communities in the coastal zone. The FCMP pursues these goals by using the legal and financial means provided by the federal Coastal Zone Management Act. While grant funding may be the FCMP's most visible activity, the legal avenues authorized by the act also play an important role in ensuring effective coastal resource management. The act empowers states to evaluate federal activities that might affect coastal resources and determine if they are acceptable. This process, called "federal consistency," ensures that federal decisions are compatible with state laws and goals.

To develop a coastal management program, a state can create an entirely new system of regulation, or create a program based on existing statutes. The Florida Legislature chose to use existing statutes administered by a network of nine agencies and five water management districts as the legal structure for the FCMP. This framework allows the state to make integrated, balanced consistency decisions that ensure the wise use and protection of the state's natural and economic coastal resources.

Each year, FCMP agencies review a wide variety of federal actions potentially affecting Florida to ensure that they are consistent with state laws and regulations. Some reviews are conducted through the [State Clearinghouse](#) process. Federal wetland permits, however, are evaluated for consistency as a part of the state Environmental Resource Permit (ERP) process implemented by the FDEP and the water management districts. Essentially, if an ERP is issued, the activity is consistent; if the ERP is denied, the activity is inconsistent and the federal permit may not be issued.

In conducting consistency reviews, agencies are given an opportunity to provide comments on the merits of the proposed action, address concerns, make recommendations and state whether the project is consistent with FCMP statutes. Few projects are determined to be inconsistent, but many projects are modified and improved because of recommendations and objections raised in consistency reviews. If an agency determines that a project is inconsistent, it must identify alternatives that would make the project consistent. This is important because it encourages applicants to consider revised project designs to minimize resource impacts and resolve agency concerns.

In recent years, consistency reviews have contributed to changing project designs that proposed to dredge large areas of seagrass in an aquatic preserve, expand marina facilities that would increase boat traffic in a manatee protection zone, and create deep boat channels in the Florida Keys [Area of Critical State Concern](#).

The federal consistency process is an important mechanism for interagency consultation and conflict resolution among federal and state agencies, applicants, local governments and other interested parties. 🌿

For more information on federal consistency in Florida, go to: <http://www.dep.state.fl.us/cmp/federal/index.htm>



Coastal Marshes near [Big Bend Seagrasses Aquatic Preserve](#)

Changes to Coastal Partnership Initiative Grant Procedures

Each year, the Florida Coastal Management Program's Coastal Partnership Initiative (CPI) provides grants to coastal governments, National Estuary Programs, National Estuarine Research Reserves and other eligible applicants to restore, protect and manage natural and cultural resources and sustain waterfront communities. Grant funds are awarded to the state by the National Oceanic and Atmospheric Administration under the federal Coastal Zone Management Act. The FCMP recently completed revisions to grant rule 62S-4, Florida Administrative Code (FAC) that will update, streamline and simplify the grant application and review process.

New! CPI Application Form

The **Coastal Partnership Initiative grant program** has a new Application Form in Rule 62S-4, FAC. that includes:

- Title Page
- Location Map
- Work Plan
- Budget Page
- Permit Requirements
- 306a Checklist (if applicable)

CPI funding proposals for fiscal year July 1, 2010, through June 30, 2011, must be submitted in paper form using the new [*CPI Application Form*](#).



Revised CPI Application Review Criteria

Coastal Partnership Initiative applications that meet the minimum requirements in 62S-4.007(1), FAC, will be evaluated using criteria in 62S-4.007(3). Minimum requirements, evaluation criteria and score amounts have been revised, making it important to complete each section of the application. The maximum points for each section are shown in the application. Applications must score at least 110 points to be eligible for funding.

Funding of applications will depend upon availability of funds and final approval by the National Oceanic and Atmospheric Administration.



Other Important Changes to Rule 62S-4

- CPI applicants may now request up to \$60,000 and no less than \$20,000.
- Projects that receive CPI grants for two consecutive funding cycles are not eligible to be funded again until two more funding cycles have passed.
- Grant procedures for state agencies and water management districts have been transferred from 62S-4, FAC to new Rule 62S-5, FAC.

Each year, the Florida Coastal Management Program's Coastal Partnership Initiative (CPI) provides

New! CPI Category: Resilient Communities

Eligible applicants may apply for grants under four categories: 1. *Access to Coastal Resources* 2. *Working Waterfronts* 3. *Coastal Resource Stewardship (previously Community Stewardship)* and 4. *Resilient Communities*. Typical access, stewardship and waterfront projects include: installing structures to provide water access, restoring natural habitat, and revitalizing waterfront districts.

Resilient Communities replaced the *Remarkable Coastal Places* category. This new category was created to help coastal communities prepare for and respond to the effects of climate change, natural hazard events and disasters. Project examples in the new category include:

- *Vulnerability Analyses and Risk Assessments.*
- *Post-Disaster Redevelopment Plans and Business Continuity Plans.*
- *Climate Change Adaptation Strategies.*
- *Policies, Guidance and Best Management Practices.*
- *Coastal Wetland and Shoreline Restoration.*
- *Energy Efficiency and Alternative Energy Strategies.*



What's Next?

FY 2010 CPI Grant Application Cycle

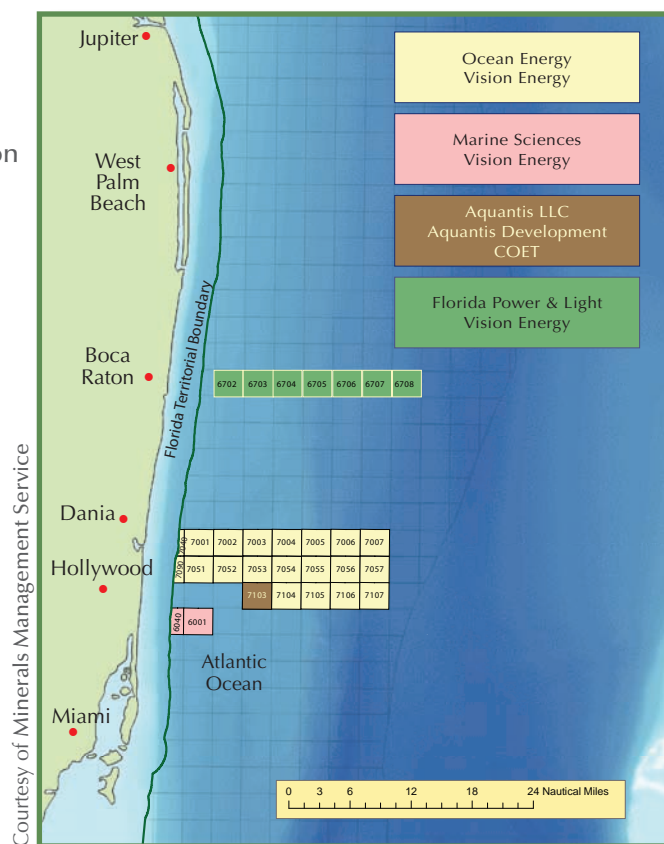
- August - October 2009: Notice of Availability of funds is published in the Florida Administrative Weekly, posted on www.dep.state.fl.us/cmp/grants/index.htm, and mailed to eligible applicants.
- Applications are due 60 days after the notice is published in the FAW.
- Applications should describe projects that can be completed between July 1, 2010, and June 30, 2011, and meet the requirements of Rule 62S-4, FAC.
- To receive the annual Notice of Availability of Funds, please contact [*Dornecia Allen*](#).

Exploring Florida's Ocean Energy Future

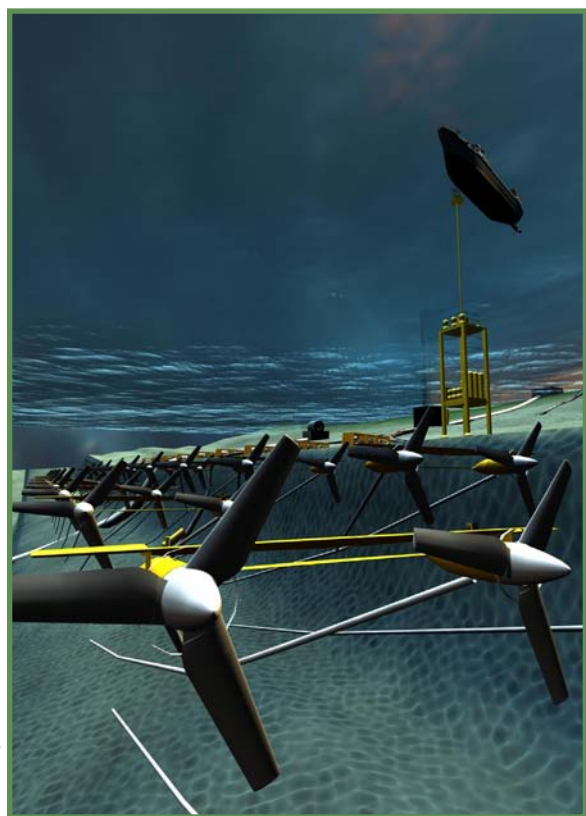
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interest in harnessing ocean currents because the energy in a 12 mph current is equivalent to a 110 mph wind, and because currents are generally more constant than wind. Florida is rapidly becoming a leader in the research and development of this emerging industry. In 2007, the U.S. Department of the Interior's Minerals Management Service developed an Interim Policy to allow resource data collection and technology testing and invited energy companies and researchers to nominate areas for lease in federal waters offshore Florida. Four areas off the southeast Florida coast were nominated by six entities interested in conducting ocean current studies.

Florida Atlantic University's Center of Excellence in Ocean Energy Technology (*COET*) nominated one of the areas, which is located off of Ft. Lauderdale. COET, established in 2007, has received about 15 million dollars in state and federal funds to develop and sustain a clean and reliable renewable energy industry. COET's interest is focused on the Gulfstream current. With a near constant speed of about 5.6 miles per hour and its nearshore location, the Gulfstream may be an ideal source of ocean current electricity to help meet Florida's energy demands. COET is working with a variety of academic, industry and government partners to study the Gulfstream current and test prototype turbines to determine their potential to produce commercial quantities of electricity.



Areas of interest for proposed ocean current studies



The turbines will be anchored to the sea floor, floating approximately 150 feet below the water surface. Since little is known about the environmental effects of ocean current energy development, COET's partners will also study the effects of turbines on marine life and the environmental impacts of placing them in the ocean off southeast Florida.

The FCMP's Offshore Projects Section is monitoring ocean energy activities and consulting with federal and state agencies and stakeholders on the potential for development activities to affect the marine ecosystem. The Offshore Projects Section is the state's lead coordinator for a variety of activities proposed in federal waters - such as oil, gas and mineral extraction; deepwater ports; pipelines; ocean disposal; and geological surveys - with a goal of protecting sensitive ocean habitats and biological communities. It will be vital for offshore energy activities to be well-planned and result in minimal environmental effects. In this way, Florida's oceans can continue to sustain its economy as in the past ~ and may play a key role in the state's energy future.

For more information about activities offshore of Florida, contact [Debby Tucker](#).

Conceptual drawing of turbines anchored to sea floor

Protecting Water Quality in Wakulla County

Wakulla Springs is one of the largest and most beautiful springs in Florida. The source of the Wakulla River, around 250 million gallons of groundwater per day flows out of the spring in a picturesque state park. The spring pool opens to one of the deepest and longest known underwater limestone cave systems in the world. Here, groundwater flows through a maze of passages dozens of miles in length and of varying depths, shapes and diameters.

The environmental quality of the Wakulla Springs ecosystem, however, has been diminished by dramatic increases in nutrients, algae, invasive aquatic plants and loss of native species. In response, a broad-based coalition of federal, state, local, private and academic partners has mobilized to conduct comprehensive studies of the geology and groundwater of the entire Wakulla Springs system. Significant conclusions from several years of investigations are helping chart a course to reverse the decline of Wakulla Springs and improve groundwater protection throughout the watershed.



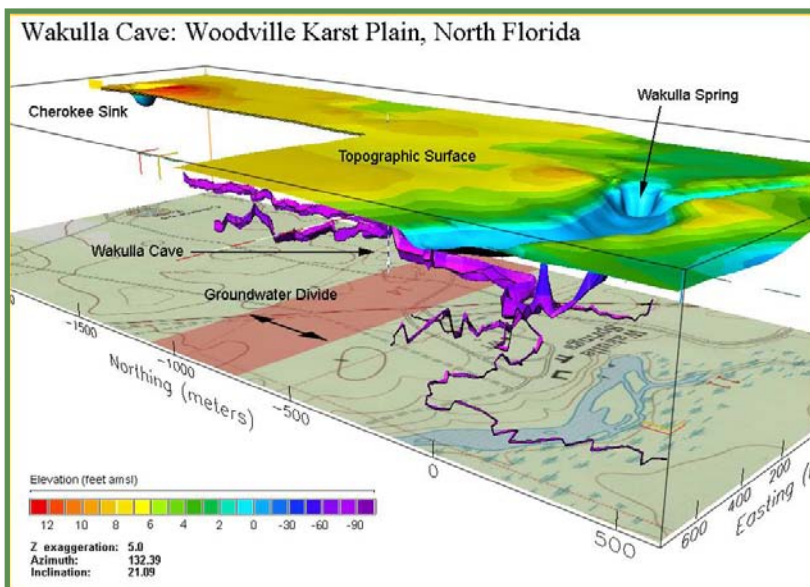
In much of Florida, especially the Panhandle, cities, roads, residential areas, parking lots, golf courses, feed lots and other land developments are situated over limestone aquifers. In places where surface sediment is thin or absent, openings in the limestone such as sinkholes, caverns and “windows” may form, exposing groundwater to the land surface. Such terrain is referred to as “karst.” Karst watersheds are particularly vulnerable to contamination because land-based pollution can readily move through the porous limestone or enter groundwater directly through surface openings. That is the case in Wakulla Springs, which lies within the Woodville Karst Plain (WKP), where the decline in environmental quality correlates with growth and urbanization of the watershed.

Complex groundwater-surface water interactions, especially in coastal karstic watersheds influenced by tides, make it difficult to determine and predict the consequences of natural events and human activities on water quality, water quantity and, ultimately, the marine environment. Studying the WKP will allow all parties

to better understand and predict the effects of upstream land activities on the springs, particularly stormwater runoff and wastewater treatment and disposal.

A key WKP partner, the FDEP Florida Geological Survey (FGS) is investigating groundwater flow through the extensive cave systems of the WKP by measuring changes in radon concentrations. Previous studies documented the underground connections between the City of Tallahassee’s sewage treatment disposal area and Wakulla Springs. FGS is now developing a model to simulate the flow and transport of groundwater and to predict how it interacts with surface water and the marine environment at the

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Spring Creek submarine springs system at the southern boundary of the WKP. Spring Creek is thought to be connected to Wakulla Springs via conduits and caves. To inform the current debate in Wakulla County, FGS will investigate the relative performance of central sewers and septic systems and the potential for raw or inadequately-treated waste water to be released during flooding and storm surge events.

Importantly, the WKP studies are providing scientific data and information directly to decision makers and to the public. The WKP team has participated in numerous workshops and town hall meetings to encourage implementation of its recommendations. As a result the City of Tallahassee committed to upgrade its two sewage treatment plants to reduce nitrogen in wastewater, and Wakulla County now

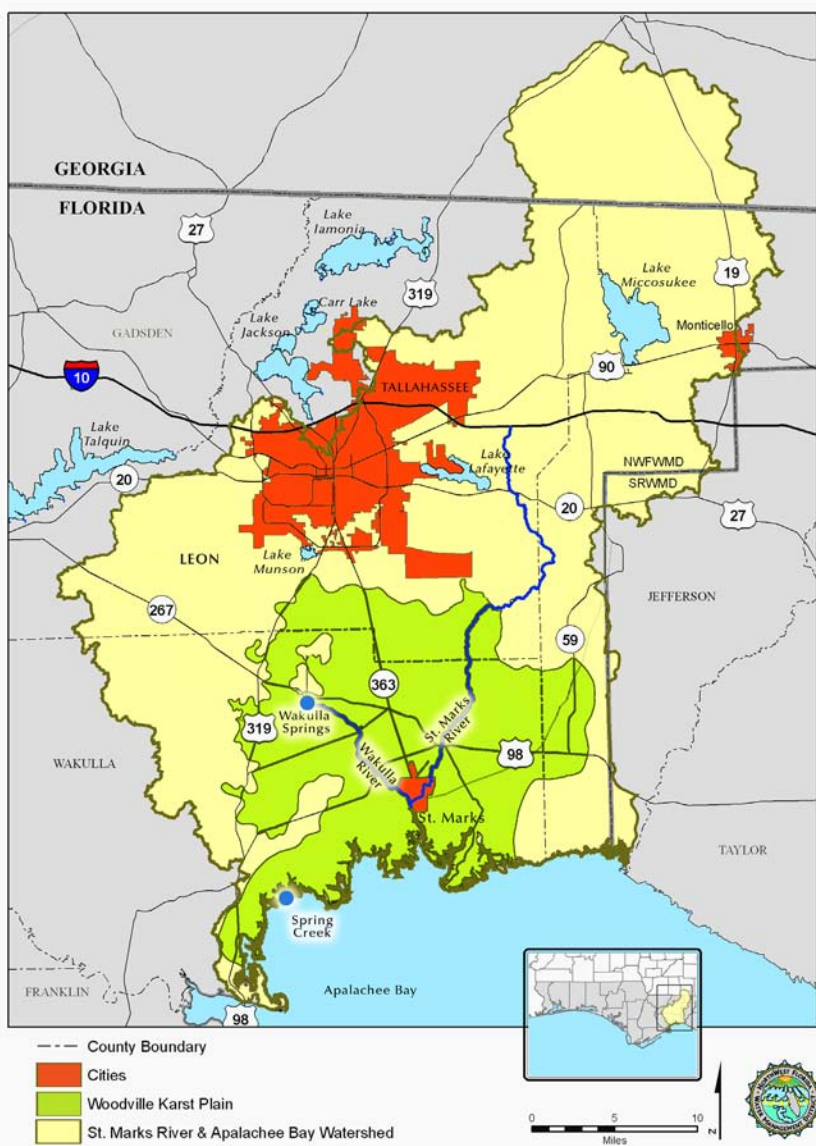
Protecting Water Quality in Wakulla County

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Wakulla Springshed Regional Partnership Agreement

In February 2009, at the Wakulla Springs Restoration Workshop, Leon County, Wakulla County and the City of Tallahassee agreed to implement strategies based on the conclusions of the WKP studies.

The agreement underscores the commitment of the three local governments to protect and restore the Wakulla Springs watershed using the best available science.



Courtesy of NW Florida Water Management District

requires advanced septic systems to be installed in new homes.

A unique part of the studies involves cutting-edge underground explorations and surveys by a team of expert volunteer divers. For more than 20 years, highly specialized underwater explorers have mapped the Wakulla Springs cave system hundreds of feet below ground and installed scientific instruments that feed critical data to researchers. In March 2009, this exceptional service was recognized by the Florida Governor and Cabinet which praised the work of the team and its contribution to important land use policy decisions and multimillion dollar investments to improve water quality and acquire public land.

Information from the WKP projects will also benefit watershed managers elsewhere in Florida and other states, especially because it documents the peculiarities of groundwater hydrology in karst systems. The WKP is proving to be an ideal laboratory to examine and chronicle surface/groundwater interactions, and how human activities can influence coastal karst ecosystems.

For more information contact
Dr. Rodney DeHan.

A Creative Approach to Beach Safety Education

Lynne Gagnon loves her job. She is a lifeguard/puppeteer with a traveling road show for 2nd and 3rd graders at 14 elementary schools in Indian River County. As Recreation Leader for the Indian River North County Aquatic Center, Lynne has implemented a two-part water safety program, part on dry land and part in the water, for the area elementary and special needs classes. Before launching the puppet show, volunteers and staff donated weeks of their time preparing scenery, painting, sewing and fabricating props. Jean Peters and Renea Chandler, two of the county's Water Safety Instructors, volunteer as the puppeteers. So far this year the program has reached approximately 500 enthusiastic students.

"Our goal with this program is to save lives by teaching students preventative measures through early education," said Gagnon. "We believe our approach to teaching students water safety skills through the puppet show and visual aids is one-of-a-kind. Each school chooses a student to be included in our skit about a puppet family, the Waters, who go to the beach for the day. One of the puppet children gets caught in a rip current and needs assistance." Lynne uses FCMP mini-flags and signs in the show as visual aids and offers students FCMP bookmarks and Rip Current Safety brochures at the end of the program in addition to Red Cross booklets.

The students learn life-saving rescue skills and how to help themselves and others if a dangerous situation ever occurs. Skills taught include how to rescue without placing one's self in harm's way, rules of swimming with a buddy in supervised areas, boating rules and regulations, and some basic first aid skills. The lifeguard also reminds students to protect the environment, sea turtles and other marine life by keeping beaches clean. The program has received much positive feedback from educators and the community.

"Students soak it up like sponges and appear to retain it," said Gagnon. "It is our hope that through early preventative education we will save lives. We need to be vigilant when our children are in, on and around the water, and ensure that responsible individuals are supervising and aware of all safety issues. The economy prompted the start of this outreach program, since the kids couldn't come to us, we went to the kids. We feel that all P.E. classes should require swimming lessons and use of life jackets, and teach the meaning of the warning flags."

Equally enthusiastic about water safety education is Carol Wagner with the Panama City Beach Police. The city's water safety program is run through the Red Cross where they teach all seven swimming strokes including the four survival strokes - elementary backstroke, treading water, sidestroke and breaststroke. They also teach beachgoers to recognize dangerous sea life such as the Portuguese Man o' War, sharks, sting rays and jelly fish. The kids enjoy learning about the jelly fish shuffle to avoid getting stung.

Wagner loves the educational materials that FCMP offers as she hands out rip current brochures and bookmarks to students around the city. She also uses the mini-flags sets supplied by the FCMP to teach the kids about the state warning flags and signs. She notes that with such a small budget for her program, the FCMP beach safety program is a wonderful help. ~



Lynne Gagnon takes beach safety to the classroom.

Courtesy of Lynne Gagnon

The FCMP recently joined with the United States Lifesaving Association (USLA) and the Florida Beach Patrol Chiefs Association to host a beach safety workshop in Panama City. The meeting provided an opportunity for open water lifesaving professionals and local interested parties to discuss effective beach safety strategies and exchange ideas to enhance and promote beach safety awareness.

Workshop Topics

1. Open Water Lifesaving as Part of the Emergency Medical Services System
2. Lifeguard Effectiveness and USLA Agency Certification
3. Florida's Beach Warning Flag System
4. Statistical Overview of Panhandle Drowning

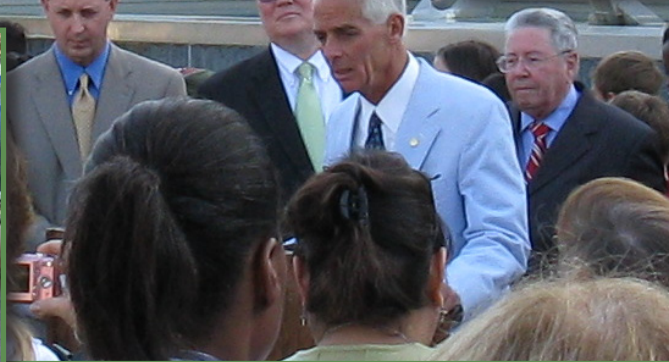
Beach Safety Workshop



The FCMP, USLA and the Florida Beach Patrol Chiefs Association can host similar workshops around the state if other communities are interested. Contact [Joe McManus](#) for further information.

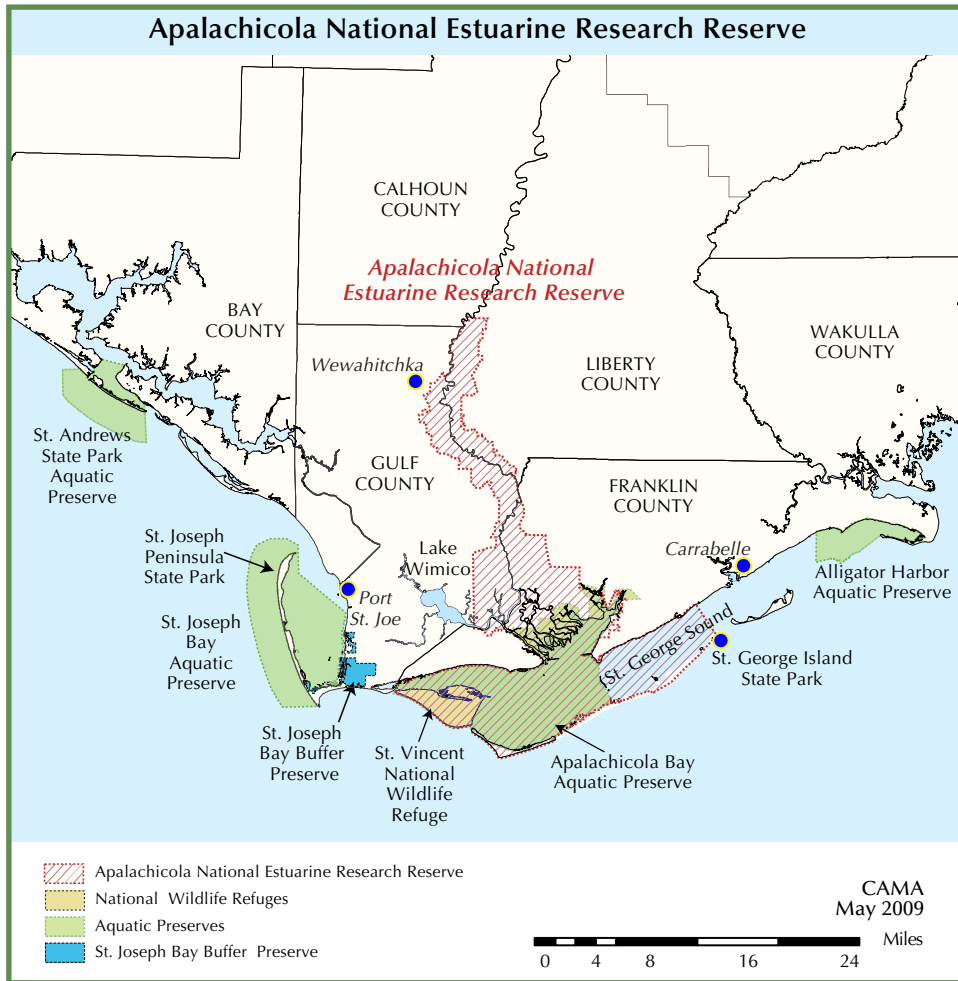
The FCMP continues to reach out to local governments to make beach safety educational material available. Many of the lifesaving professionals attending the workshop indicated that the materials were extremely helpful in their outreach efforts. If your organization has a beach safety outreach program and would like to use the educational materials prepared by the FCMP, please contact us at FCMPMail@dep.state.fl.us.

Earth Day 2009 at the Capitol



Research Reserve's Award-Winning Coastal Training Program

The past five years have been very busy and exciting for the Apalachicola National Estuarine Research Reserve's



Coastal Training Program, which promotes the biological diversity and economic value of the remarkable Apalachicola River and Bay system, one of the most productive estuarine systems in the Northern Hemisphere. Its economic value is well known to the local population, where 60-85 percent work in the fishing industry – many in reserve waters. The 246,000 acre reserve, part of a national network of 27 research reserves, is located in Franklin, Gulf, Calhoun and Liberty counties approximately 75 miles southeast of Tallahassee and 60 miles east of Panama City.

The reserve was established to preserve and protect estuarine land, water and wildlife; advance long-term estuarine research; and enhance public awareness and understanding

through education and interpretation. Reserve facilities include a nature center with natural and cultural history exhibits, aquariums, and a nature trail.

The Coastal Training Program (CTP) coordinator, Rosalyn Kilcollins, and her half-time assistant, Alan Knothe, work together to support the reserve's mission through environmental education. Their enthusiastic efforts provide coastal managers and public officials with the background to support informed decisions. Kilcollins interacts with a network of contacts to identify current issues and the information needed by decision-makers, and then develops and promotes appropriate CTP training programs. She and Knothe teach classes for the Florida Master Naturalist Program and for the highly popular Panhandle Habitat Series of workshops that they developed. This outstanding educational program was recognized by the EPA's Gulf of Mexico Program in 2008 when the reserve was presented with a Gulf Guardian Award.



CTP staff receives a 2008 Gulf Guardian Award

(continued on page 11)

Research Reserve's Award Winning Coastal Training Program (from page 10)

The CTP serves environmental professionals from Escambia to Citrus County, although its primary focus is the four counties within the reserve's boundaries.

Most workshops are 1-2 days and include a field component and guest speakers. Kilcollins also works with NOAA's Gulf Regional Training Coordinator and CTP coordinators from the other four Gulf of Mexico Research Reserves to meet the needs of the Gulf of Mexico Alliance ([GOMA](#)) Priority Issue Teams, the Gulf States, and local communities. She also represents the Apalachicola CTP on several committees, including the Carrabelle Waterfronts Partnership, Living Shoreline Initiative, and the GOMA Community Resilience Priority Issue Team.

Training Audiences	Recent Training Topics
Local Elected Officials	Coastal Inundation Mapping
Engineers	Ecological Impacts of Sea Level Rise
Emergency and Floodplain Managers	Innovative Floodplain Strategies
Resource Managers	Historic and Archaeological Resources
Community Planners	Phytoplankton Monitoring Network
Researchers	Planning and Designing with Florida Black Bears
Conservation Groups and Volunteers	Coastal Dune Restoration

The CTP ecotourism and ecosystem workshop topics include *Barrier Islands, Seagrass Beds and Salt Marshes, Estuaries, Flatwoods and Savannahs, Rivers and Floodplains, and Sandhills and Ravines.*

Other priority issues and audiences for the CTP are identified by the CTP Advisory Committee, needs assessments, program audience evaluations, and GOMA Action Plans. Priorities for the next three years are:

- Coastal hazards and community resilience, including climate change and sea level rise;
- Land-use planning and growth, including water quantity and quality, wastewater issues, living shorelines, green building, and sustainable practices; and
- Ecosystem education for environmental professionals.

Kilcollins and Knothe have been pleased with the program's progress. Attendance and satisfaction with CTP training events have increased and they are looking forward to the next five years. 🌿

To suggest or request programs and for more information please contact [Rosalyn Kilcollins](#).

Panhandle Habitats Seagrass and Saltmarsh class explores salt marsh.



Upcoming Events 2009

June 7-13 – Rip Current Awareness Week

July 29-23 – Coastal Zone 2009

August 17 – deadline for abstract submission Rip Current Symposium 2010

September 19 – 24th Annual International Coastal Cleanup

September 26th – National Estuaries Day

Coastal Training Program Events – Florida's National Estuarine Research Reserves

Coastal Currents is a publication of the Florida Department of Environmental Protection, Florida Coastal Management Program to update our partners on issues and projects of interest to the coastal community.

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