

ACCOMPLISHMENTS OF THE
GEORGIA COASTAL MANAGEMENT PROGRAM

Sustain
Enhance
Protect
Conserve



a brief History

A land of remarkable beauty, Georgia's coast is comprised of 14 barrier islands which buffer the mainland from the Atlantic Ocean. Of these islands, ten are generally undeveloped and support unique plant communities which provide homes for a wide variety of wildlife. Five major watersheds terminate at the Georgia coastline, forming an extensive estuarine ecosystem. Some 368,000 acres of marshland separate the barrier islands from the mainland providing a diverse and highly productive natural habitat for aquatic organisms, including fish, shellfish, waterfowl, and other wildlife species. These marshes serve as a natural filtration system to improve water quality, transform nutrients and retain sediment. Further to the west, brackish and freshwater marshes and

swamps extend up rivers and streams providing important aquifer recharge, flood control and habitat for wildlife including many endangered and threatened species. Rich in culture and history, the first known settlements on Georgia's coast date back over 10,000 years.

Georgia's beauty has attracted people for centuries and in each of the past several decades its population has grown at a rate of 20%. With population comes development pressure as people desire to access and enjoy the coast and its many opportunities. The Georgia Coastal Management Program was created to find a balance between this economic development and stewardship of our coastal resources. The following pages illustrate the Program's many successes in recent years.

It is the mission of the Georgia Coastal Management Program to balance economic development in Georgia's coastal zone with preservation of natural, environmental, historic, archaeological, and recreational resources for the benefit of Georgia's present and future generations.



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A matter of balance.

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COASTAL ADVISORY COUNCIL

Providing advice and sharing information.

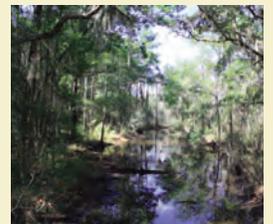
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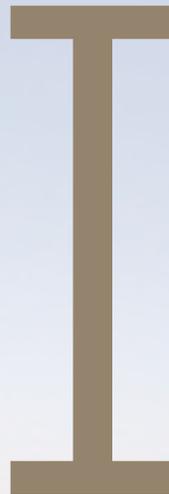
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Highlights





In 1992 Georgia embarked on a landmark project to balance economic development in Georgia's coastal zone with preservation of natural, environmental, historic, archaeological, and recreational resources by creating the Georgia Coastal Management Program (GCMP). Five years later, in April of 1997, the state's General Assembly authorized the Program with the passage of the Georgia Coastal Management Act (O.C.G.A. §12-5-320 et seq.). At that time, the Assembly designated the Georgia Department of Natural Resources, Coastal Resources Division as the lead agency for administering the GCMP.

Shortly afterwards, in January of 1998, the Program passed another milestone with its approval by the National Oceanic and Atmospheric Administration (NOAA). Georgia thus became the 32nd state to participate in the national Coastal Zone Management Program. Our state is now proudly entering its fourteenth year in this important federal-state partnership program.

The GCMP strives to balance economic development with the protection and preservation of invaluable coastal resources within its eleven-county coastal service area. Counties directly along the ocean are considered "first tier" counties and include Chatham, Bryan, Liberty, McIntosh, Glynn, and Camden. Immediately inland are the "second tier" counties: Effingham, Long, Wayne, Brantley, and Charlton. The core functions of the Program, which are highlighted in this report, include:

- Outreach and Education
- Technical assistance to local governments
- Coastal Incentive Grants
- Federal Consistency
- Compliance and Enforcement
- Coastal water quality monitoring
- Coastal non-point source pollution management

THE GCMP IS DIVIDED INTO THREE MAIN SECTIONS:

1. OPERATIONS

The Operations Program includes grant and program administration, technical assistance to local governments, outreach and education, facilitation of the stakeholder process, coastal water quality monitoring, and implementation of the Coastal Incentive Grant Program. The Operations Program also includes several special initiatives: the Coastal and Estuarine Land Conservation Program, Marsh Dieback Research and Documentation, and the Coastal Georgia Land Conservation Initiative, among others.

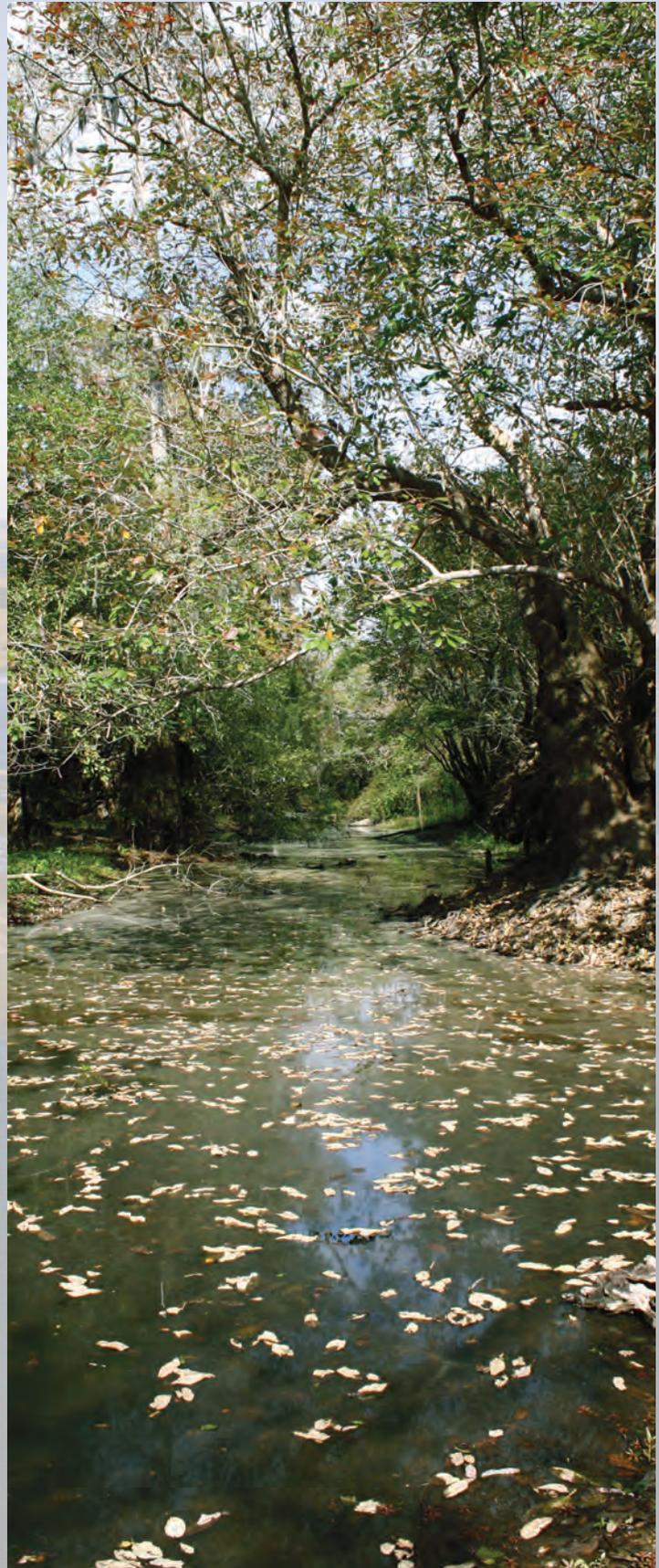
2. HABITAT MANAGEMENT

The Habitat Management Program implements the GCMP's permitting authorities under the Coastal Marshlands Protection Act and Shore Protection Act. This program also issues Revocable Licenses for the use of State coastal water bottoms as well as implements the Program's Federal Consistency provisions.

3. COMPLIANCE AND ENFORCEMENT

Developed over the past five years, the GCMP's Compliance and Enforcement Program enforces the Coastal Marshlands Protection Act, Shore Protection Act, and Revocable License authority along the entire coast of Georgia and in inland regions that stretch as much as fifty-five miles from the coast. The Compliance and Enforcement staff also monitors Marina Lease agreements and verifies permit applicants' ownership and eligibility.

The GCMP is routinely evaluated by NOAA to ensure that the core functions and responsibilities of the Program are being upheld. The most recent evaluation occurred in May 2011. Over a period of five days, NOAA met with program constituents to determine the Program's role and effectiveness in coastal management. While NOAA's findings are still in draft at the time this report is written, an exit interview with the agency suggested that the evaluation was very positive and that findings should generally be favorable. The next evaluation is scheduled for 2016.



SATISFACTION SURVEY

The triennial GCMP Satisfaction Survey polls constituents to verify that it is satisfying the needs of the State. This year, the Program sent over 1,800 survey opportunity notices to coastal stakeholders and citizens. One hundred responses were received from federal, state, and local governments; business interests; academia; non-governmental organizations; and interested citizens. Each respondent rated various aspects of the GCMP according to their level of satisfaction.

As with past survey results, constituents were, overall, generally satisfied with the Program. Highest marks went to the components for outreach and education and for water quality. Also ranked highly was the GCMP's commitment to the allocation of funds to the Coastal Incentive Grant Program. The Program's regulatory and enforcement components proved to be somewhat less popular, though the majority of respondents expressed some level of satisfaction with those activities.

The GCMP strives to satisfy its constituents and citizens of Georgia through implementation of core functions and regulatory responsibilities. The results from this survey demonstrate that the Program continues to be effective at satisfying stakeholders' needs and expectations.



COASTAL ADVISORY COUNCIL

Formed in 1992, the Coastal Advisory Council (CAC) was given the important task of guiding the development of a Coastal Management Program for Georgia. Since 1998, the Council offers advice and recommendations to the DNR on the implementation of the State's approved Coastal Management Program. The objectives of the Council are:

- To provide advice on the implementation of the GCMP and on the development and application of policies to guide the public and private uses of coastal resources
- To keep constituencies informed about the issues and activities of the GCMP and to provide feedback to the Program for improving the use of information for coastal management
- To facilitate public understanding of the value and vulnerability of coastal resources and of the role of the Georgia Coastal Management Program in the pursuit of its mission
- To set the themes and project-selection criteria for the Coastal Incentive Grant Program (the GCMP's annual sub-grant program).

The membership of the Coastal Advisory Council has remained steady at 40 or more members, including participation that is balanced among representatives from local governments, academia, state/regional agencies, nonprofit environmental organizations, and citizens. Meetings are held quarterly throughout the coastal region and provide information about important coastal issues and research. These meetings also provide a forum for lively discussions among the members. In addition, the GCMP provides an annual Program update to keep the Council abreast of the successes and challenges of the previous year.

Georgia Governor Nathan Deal speaks to the audience during Coastal Day at the Capitol.



Spreading the word about healthy coasts is an important part of the GCMP's work. GCMP has an excellent technical staff who works closely with local governments, community groups and coastal managers, providing information and tools to better manage and protect coastal natural resources. Through the GCMP's extensive public education and outreach program, staff participates in natural resource events and educational forums throughout the eleven coastal counties, including GCMP's annual Beach Week on Tybee, St. Simons and Jekyll Islands, Earth Day festivals in various communities and other regional and local events including:

LIBERTY COUNTY EARTH DAY
500 participants

FORT STEWART EARTH DAY
2,000 participants

CITY OF MIDWAY DAY
200 participants

BRANTLEY COUNTY OREMC ANNUAL FAIR
700 participants

RIVERS-ALIVE
72 participants

HURRICANE AWARENESS DAY
500 participants

GIRL SCOUT CAMP
250 participants

BEACH WEEK

Beach Week was started by the GCMP to promote awareness and stewardship of Georgia's coastal natural resources. Partnering with other local outreach programs as well as state and federal agencies, the Ark makes appearances at popular beach destinations each year shortly before July 4 to provide educational information. Over 3,000 local and visiting beachgoers stop by the Ark during their beach excursions, making this annual outreach event a great success.

COASTFEST

CoastFest is Georgia's largest celebration of the state's coastal natural resources. Since 1995, this annual event has been hosted by the GCMP on the first Saturday in October. It brings together more than 85 interactive environmental, educational, entertainment, and resource organizations. Attendance at this free family-friendly event has increased an average of 10 percent each year. CoastFest 2011 reached a milestone, with a record-breaking 9,143 visitors at the six-hour event. In the 17 year history of CoastFest, attendance has now exceeded 82,000 people.

The GCMP also participates in the Georgia Coastal Education Group (GCEG), made up of state and federal non-formal educators in the coastal Georgia area. GCEG members collaborate on a variety of educational initiatives to provide quality coastal-resource programming and interpretive materials.

COASTAL DAY AT THE CAPITOL

Coastal Georgia made a temporary move 300 miles north on February 8, 2011, when a group of state and federal conservation agencies gathered under the Gold Dome in Atlanta for Coastal Day At The Capitol. Co-hosted by the Coastal Resources Division of Georgia DNR and the Sapelo Island National Estuarine Research Reserve, Coastal Day At The Capitol presented a unique setting for coastal organizations to talk with legislators and their staff members about the many issues and opportunities available in coastal Georgia. Following a morning of exhibits and informal discussions, more than 350 state government leaders and legislators enjoyed a taste of the coast at a lunch of Wild Georgia Shrimp and Grits.

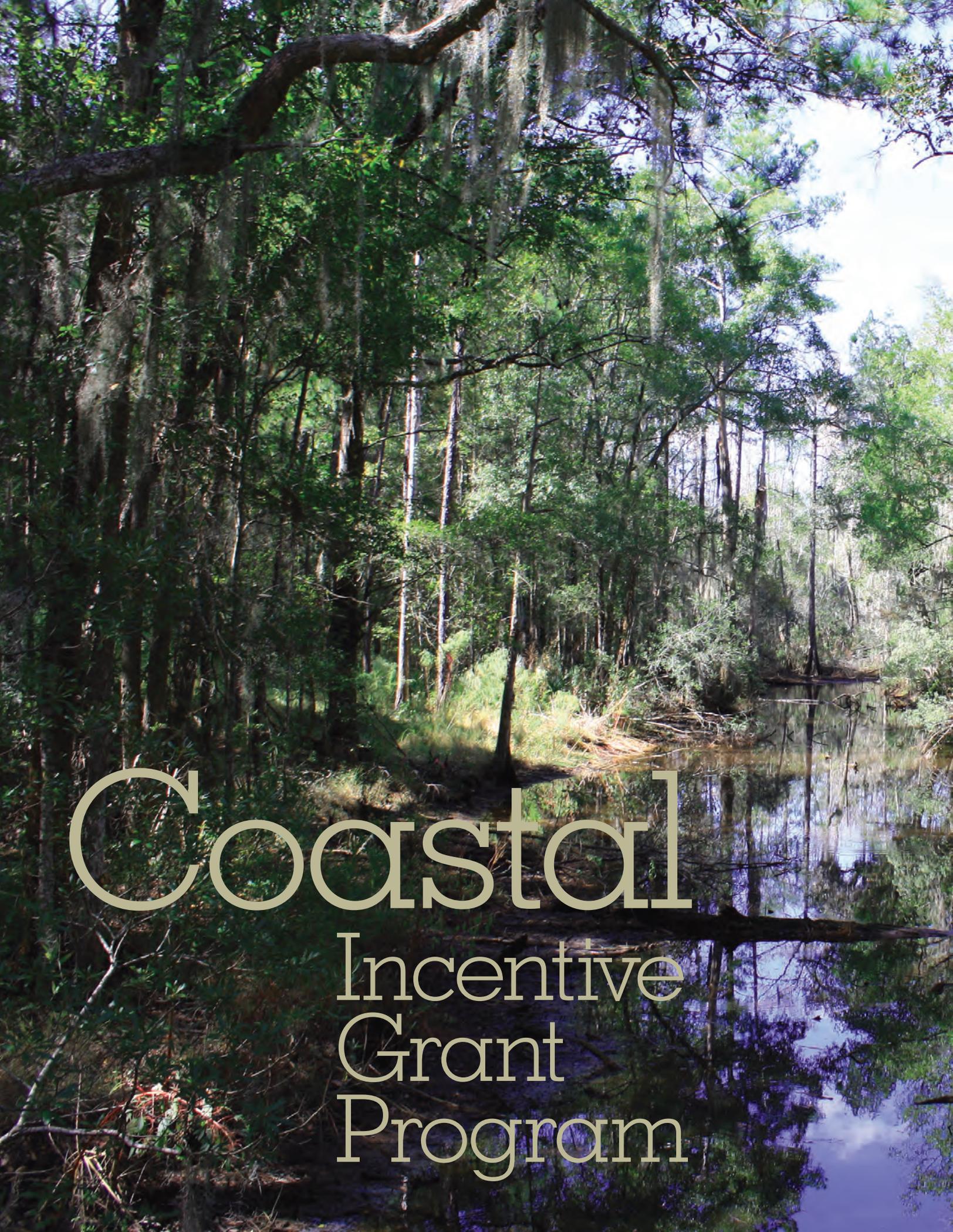
GEORGIA SOUND NEWSLETTER

The GCMP's outreach efforts also include the production and distribution of public materials such as the Georgia Sound, CRD's quarterly newsletter. With a circulation of over 1,800 through online access, Georgia Sound spotlights issues, events, and happenings within the Program. There is a direct link to the newsletter at www.GaSoundNewsletter.org as well as www.CoastalGaDNR.org, where current and past issues can be read, downloaded, and printed.





Children get up close and personal with many beach creatures at events such as CoastFest and Beach Week. The Coastal Ark, GCMP's 30-foot mobile outreach and education unit, is frequently seen at these events.



Coastal
Incentive
Grant
Program



COASTAL INCENTIVE GRANTS encourage regional and local coastal issues to be defined and addressed creatively and proactively at a grass-roots level.

Every year, Georgia's Coastal Management Program passes approximately 50 percent of its federal Coastal Management funds to local governments, research institutions, and state agencies. These Coastal Incentive Grants (CIGs) encourage regional and local coastal issues to be defined and addressed creatively and proactively at a grass-roots level.

A vital part of the GCMP's work, the CIG Program has distributed more than \$14,570,000 over its 14-year life span. Adding to this amount, the GCMP has also leveraged at least that much in state and local matching funds, for a total of more than \$27,000,000. These funds are put to work in a wide range of projects, including natural resource planning by local governments, public access, scientific research, and a wide range of outreach activities. The Coastal Advisory Council sets the CIG themes and determines the evaluation criteria each year.

The Coastal Incentive Grants serve two very important purposes. First, as GCMP staff provides technical assistance to coastal managers and local government leaders on the issues they face in their communities, CIG funds are often available to assist these governments to implement solutions. Second, the CIG funds allow the GCMP to access the expertise of universities and other research institutions for current, science-based research. Research results then guide decision-making for GCMP's internal programs and assists coastal managers. Because of the relatively small staff of the GCMP, pursuing this research would otherwise not be possible. Successful uses of Coastal Incentive Grant funds are highlighted in the following examples.

LOCAL COMMUNITY PLANNING AND GREEN DEVELOPMENT

Coastal Incentive Grants have been used to develop master plans and ordinances to encourage appropriate land use.

The City of Darien used a CIG in 2008 to develop a Masterplan for the Darien Waterfront Park and Multiuse Trail. With additional CIG support, the city has completed several projects, including the renovation of city docks for public use and a Plan for the conversion of the historic Huston Dairy Barn into a Coastal Interpretive Center. The city is also currently building a kayak dock on the Butler River as part of the Coastal Blueway and is constructing a boardwalk and birding platform on Butler Island. These are outstanding examples of the ways that Coastal Incentive Grants, along with technical assistance offered by the GCMP, are helping local governments complete strategic plans for ecologically sensitive development.

The City of Kingsland recently completed the Grove Park Neighborhood Conceptual Master Plan with CIG support. This project created a concept design for use of an infill property that will provide affordable housing and related commercial and governmental building space, all using sustainable development principles. The city is now actively pursuing a public/private partnership to implement the design.

Brantley County has adopted a Future Land Use Plan and a Stormwater Ordinance developed through a Coastal Incentive Grant. These plans pave the way for development of a county zoning ordinance to better protect the Satilla River and other natural resources in the county.



Planning for sensitive development is an important focus of many CIGs.

INCREASED PUBLIC ACCESS TO NATURAL RESOURCES

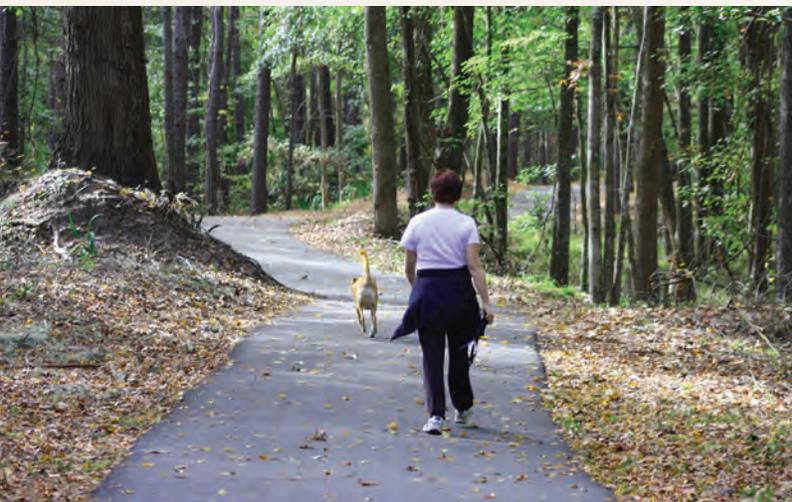
Coastal Incentive Grants have been used for many public-access projects, including trails, boat ramps, and docks. One outstanding example is the construction of the Historic Baptismal Trail, which leads to a culturally important historic baptismal site in the City of Riceboro. Completed in late 2011, the trail also provides access to a unique freshwater swamp habitat (See photo on page 8).

Using Coastal Incentive Grant funds, the Green Creek Interpretive Trail was developed for Bryan County, connecting nearby neighborhoods to a county park. As part of this project, a local naturalist identified native tree and shrub species, and signage was placed along the path.

CIG funds played an important role in building a new fishing pier on the St. Marys River in Charlton County's Traders Hill Campground, alleviating competing-use issues with the existing boat launch dock.

Yet another important project was completed in Brantley County, home to a 97-mile stretch of the Satilla River as it winds its way through the lowlands and forests of Southeast Georgia. Not long ago, the river was accessible to the public at only three difficult-to-reach sites, which were further hampered by inadequate parking. A new public boat ramp on the Satilla River, built with CIG funds, is now easily accessible off Highway 82 and includes ample parking.

Bryan County's Green Creek Trail opens up an interesting natural area for walkers and bikers to enjoy.



Waterfront improvements in Darien, Georgia have increased public access.



RESEARCH ON CURRENT COASTAL NATURAL RESOURCES ISSUES

CIG support has also been available when important questions arise about how to best protect coastal resources and monitor and improve the health of marshes and coastal waters.

As one example, a project to produce LiDAR for the entire coastal zone was recently completed. LiDAR data, which provides detailed elevation mapping, is used by local planners and decision-makers in a wide variety of projects, including flood plain mapping and risk analysis, telecommunication planning, mapping to support urban development planning, forestry management emergency response planning, and shoreline and beach volume studies.

In addition, findings from two recent grants—Field Assessment and Simulation of Shading from Alternative Dock Construction Materials and a study of the Wrack Disturbance in Saltmarsh Communities—will contribute to GCMP’s ability to make informed permitting decisions. The dock study looked at the impact that various materials used for dock construction have on surrounding marsh. The wrack study is exploring how accumulation of wrack (dead marsh grass that naturally appears in coastal rivers and marshes) affects living marsh grass and the time it takes to recover.

Another example is a three-year research project studying sea level rise. This has provided a basis for the development of a new Coastal Hazards Program within the GCMP. It has also identified other areas of research needs, as coastal Georgia leaders plan for the possibility of damaging storms and other coastal hazards.

CIGs support critical research that informs coastal management decision making. Several research projects in recent years have dealt with questions relating to marsh health and water quality.



PUBLIC EDUCATION

A major goal of the GCMP is to enhance the public’s understanding of the environment and to build awareness of coastal issues. Accordingly, all Coastal Incentive Grants incorporate some form of educational and outreach component. Many projects have achieved significant success in reaching the general public and school children in particular. The Sidewalk to the Sea program, working with the Savannah school system, provides age appropriate field based instruction and experiences which are followed up by curriculum plans that prepare them for Georgia’s standardized testing. Just beginning its second year this program is already producing impressive results.

The City of Savannah’s Sidewalk to the Sea program, supported by CIG funds, is working to develop the next generation of stewards for our coast and its resources.



Coastal and Estuarine Land Conservation Program

State coastal-management programs nationwide are invited to compete for grants from the Coastal and Estuarine Land Conservation Program (CELCP) of the National Oceanic and Atmospheric Administration (NOAA). Each year, subject to Congressional allocations, NOAA awards funding to top-ranked land conservation projects that serve to protect and preserve priority coastal and estuarine lands identified by the states. To qualify for CELCP funds, each state must submit a Coastal and Estuarine Land Conservation Plan to NOAA.

Georgia submitted its first plan in June 2005 and completed an update in August 2011, identifying the State's conservation priorities for coastal areas. Georgia's plan is based primarily on the State Wildlife Action Plan and also draws upon other coastal land conservation efforts from DNR Wildlife Resources Division, Sapelo Island National Estuarine Research Reserve and Game Management offices, The Nature Conservancy and the Chatham County Natural Resources Protection Council.

Since 2008, the GCMP has worked with the DNR Wildlife Resources Division (WRD) and local governments to identify and submit applications to NOAA for priority coastal land conservation projects. In 2010, Georgia was awarded \$1.26 million to help the State acquire 6,800-acres along the Altamaha River in Long County. The property, currently managed by WRD as part of the Townsend Wildlife Management Area, is a landscape of sand hills and bottomland forests, and is home to the long-leaf pine, gopher tortoises, and a champion cypress tree. The project was a strategic part of the State's efforts to preserve the Altamaha River corridor which, by connecting adjacent conservation lands, provides more than 41,350-acres of contiguous land along the river.



The Altamaha River basin drains almost 1/3 of Georgia's land surface. The basin provides a wide variety of important habitats such as cypress/gum swamps (pictured here), oxbow lakes, pine flatwoods, hardwood forests, coastal marshes, evergreen hammocks, and sandbars. These habitats in turn support over 100 rare and endangered plants and animals. Continued conservation of this corridor will further protect imperiled species and allow for exceptional recreation opportunities such as fishing, hunting, wildlife viewing, and kayaking.



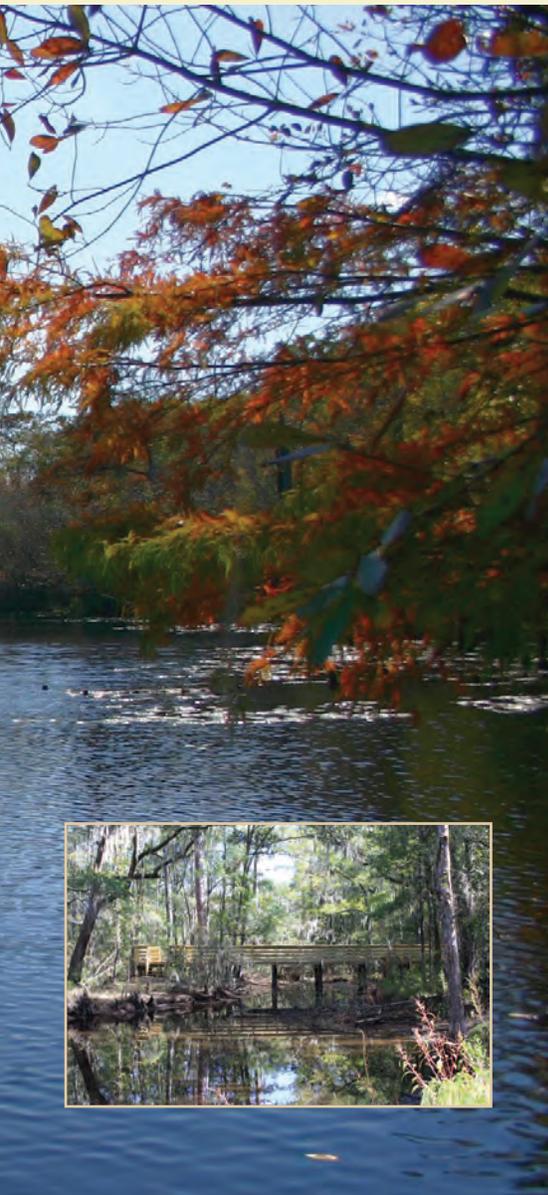
THE GCMP WORKS WITH LOCAL GOVERNMENTS
AND OTHER PARTNERS TO PRESERVE NATURAL AND
CULTURAL RESOURCES.



LAND CONSERVATION AND PUBLIC ACCESS

Coastal Georgia offers a wide range of landforms and ecosystems, encompassing over 100 miles of beaches, vast marshlands, maritime forests, cypress swamps, sand hills, and five major riverine systems. These combined ecosystems make the coastal plain one of the most bio-diverse regions in the state. The diverse assemblage of 25 high-

priority coastal habitats support 71 high-priority animal species and 91 high-priority plant species, as determined through these State Wildlife Action Plan. Conservation of the high-priority habitats will not only protect the plants and animals that depend upon on them but will also provide for resilient human communities.



The GCMP works with local governments and other partners to preserve natural and cultural resources. Through this conservation effort, the Program helps assure more resilient communities, water quality protection, heritage conservation, public access, and integrated development. The Program offers technical assistance to municipalities that have limited staff to address natural resource planning and conservation or to plan for and develop public access.

The Program also administers grants through the Coastal Incentive Grant Program to help communities further their land conservation and public access initiatives. Since 2008, eighteen projects have been awarded Coastal Incentive Grants, exceeding a total of \$630,000.

A great example of this combination of technical assistance, Coastal Incentive Grants, and Coastal and Estuarine Land Conservation Program funds can be seen in the City of Darien and McIntosh County. Grant money and staff assistance have, together, resulted in:

- Improved access to a working waterfront
- Capitalization of ecotourism dollars for support during difficult economic times
- Protection of water quality for fisheries
- New boating access
- Resource protection ordinances
- Natural resource educational programming for the community.

The Program worked with several partners at multiple levels to help the city and county protect and utilize their surrounding natural resources.

COASTAL GEORGIA LAND CONSERVATION INITIATIVE

In 2010, the GCMP along with DNR Wildlife Resources Division, the Georgia Conservancy, and the Association County Commissioners of Georgia combined efforts to create the Coastal Georgia Land Conservation Initiative. Building on the State Wildlife Action Plan, the Initiative mapped coastal habitats and developed tools for state and local conservation planning. The goal was to provide habitat information to local governments and landowners so they could be informed when making land management decisions. Project partners met with all coastal county governments and co-hosted the annual Coastal Georgia Land Summit. Two counties, Glynn and Camden, were chosen as pilot communities, and partners worked with them to develop specific scenarios on the ways land management decisions could affect state-priority plant and animal species.

The effort has helped officials make better decisions that avoided costly alternatives. Materials developed by the Initiative continue to be used for land conservation planning at the local level as well as regionally. Over the long term, the Initiative will be an ongoing venture for the Program's land conservation and public access activities.

GEORGIA SALTWATER PADDLING TRAIL

Coastal Georgia is home to myriad waterways that are utilized by recreational paddlers. Recently, through a Coastal Incentive Grant, the Program supported the Coastal Regional Commission in development of a Coastal Paddling Trail Guide. This guide provides paddlers information on public access points and distances between points all along Georgia's coast from Tybee Island to St. Marys. It was developed with assistance from the National Park Service and received input from the Coastal Resources Division, Wildlife Resources Division, State Parks Division, Law Enforcement, local governments, outfitters, and the public. The paddling trail guide not only provides information but has also been used by some local governments to enhance ecotourism in their area. The guide is easily accessible online. (crc.ga.gov/docs/bluewayplanfinal.pdf).







Sustain | Enhance | Protect | Conserve



GREEN



PROJECTS such as bioswales and rain gardens are a great way to decrease stormwater runoff and reduce impacts on our natural resources.

GROWTH

GEORGIA'S COASTAL POPULATION GREW

by about 18 percent between 1980 and 2000, and it is predicted that by 2030, the area could see a 50-percent increase in population (source: Georgia Tech Center for Quality Growth & Regional Development, 2006). Current development patterns used to accommodate such growth are sprawling in nature and tend to be prevalent in more sensitive areas. If these patterns continue, they will have significant effects, including habitat loss and fragmentation, nonpoint source and point source pollution, and increased demand on water supply.

Green-growth practices are one way to address development pressure on our natural resources. Green growth can be defined in many ways, but the overall goal is to responsibly support the future growth of coastal Georgia in a sustainable way by balancing natural resource protection and growth while preserving the health of our coastal ecosystems for future generations to enjoy.

There are many approaches to green growth, either through green certification programs such as LEED or EarthCraft, or through implementing Low Impact Development techniques in stormwater design. Local governments have the ability to adopt ordinances that address these issues, and regional entities such as regional commissions can provide guidance through comprehensive planning for the entire coast.

The GCMP can also provide guidance through its Technical Assistance Program and current Green Growth Specialty Area. Staff members are available to help local governments with green growth project development and implementation, as well as offering assistance through the Coastal Incentive Grant Program. Since 2008, staff members have become certified as LEED Green Associates through the U.S. Green Building Council, and have helped with the development of several green growth projects throughout the coastal zone.

In 2009, GCMP assisted with the design and installation of a GravelPave cart path at Georgia DNR Coastal Regional Headquarters as an alternative to traditional paving. This allows for permeability and reduction of runoff into the nearby saltmarshes. And in 2011, staff members designed and installed a sustainable garden project

on the site utilizing native, drought-tolerant landscaping, water-efficient drip irrigation, and rainwater harvesting. Later, staff assisted with the installation of a bioswale to address stormwater issues. These projects can be used as demonstration sites for the community and can serve as examples of local Low Impact Development techniques.

GCMP also worked with UGA County Extension, UGA Marine Extension, Golden Isles Engineering, Glynn County Public Works, and the Golden Isles Career Academy (GICA) to develop a rain garden at Gascoigne Park on St. Simons Island. Also included was educational signage for Low Impact Stormwater Retrofit practices on the GICA campus. Staff GCMP continues to meet with the Frederica Academy Middle School Class during its community service period to help them with monthly maintenance of the rain garden.

GCMP staff members also actively participated in the Coastal Stormwater Supplement (CSS) Technical Advisory Committee (TAC). The TAC was formed as part of an Environmental Protection Divisions Clean Water Act Section 319 grant awarded to the Coastal Regional Commission to develop and implement targeted training on the CSS for coastal communities. Strategic workshops were developed and held throughout the region, and assistance to local governments with implementation of the CSS is ongoing.

Coastal Hazards

COASTAL HAZARDS

More and more people throughout Georgia and across the nation are discovering the beauty and uniqueness of Georgia's coast. As a result, it becomes more important than ever to wisely manage the development and use of the coastal region. Conservation and preservation of irreplaceable natural resources are paramount. Yet coastal residents are challenged by a host of potential threats, including erosion, storm surge and flooding, hurricanes and tropical storms, drought, and sea-level rise. These threats have potentially significant economic, environmental, and social impacts on the region.

Local governments and other state agencies are looking to the GCMP for guidance and planning to assure a more resilient coast. In response, the GCMP has identified Coastal Hazards as a Specialty Area of emphasis, with a goal of giving coastal communities the tools and resources they need to prepare for and mitigate the effects of natural hazards. Although this is a fairly new issue for the GCMP, there is already a growing demand for more data, information, and planning from local, state, and federal governments, educators and researchers.



POST-DISASTER REDEVELOPMENT PLANNING

The GCMP recently embarked on a project to engage state and local governments in the post-disaster redevelopment planning process. With funding from NOAA, the GCMP will develop a state-level Coastal Post-Disaster Redevelopment Plan (Plan) and a guidance document to assist post-disaster redevelopment planning in the 11 coastal counties. The Plan will be piloted in two local communities. The guidance document will further be used as an educational and outreach tool for encouraging all communities to become more disaster resilient. The GCMP will work with the Georgia Emergency Management Agency (GEMA) to incorporate the Coastal PDR Plan where appropriate.

OUTREACH AND TECHNICAL ASSISTANCE

Through partnerships with the Sapelo Island National Estuarine Research Reserve and Georgia Sea Grant, the GCMP hosted a Preparing for Climate Change workshop for local governments, non-formal educators, and non-governmental organizations. Sixty-seven participants from North Carolina, South Carolina and Georgia were welcomed by Senator Buddy Carter as they gathered to exchange ideas and solutions to common coastal issues.

The GCMP also partnered with the Coastal Services Center, the Savannah Chatham Metropolitan Planning Commission and the Chatham Emergency Management Agency to kick off NOAA's Roadmap to Coastal Hazards workshop in Savannah. The process and activities resulting from the workshop were presented at the Southeastern

Climate Community of Practice seminar in Jacksonville, Florida in May of 2011. The same partners are also working with the GCMP to facilitate a Georgia Community of Practice for Climate Change stakeholders group as well as a Regional Community of Practice. These stakeholders are working together to share research and ideas and to develop consistent messages for all audiences.

RELATED COASTAL INCENTIVE GRANT PROJECTS

The GCMP'S Coastal Incentive Grant Program has supported several projects that have increased knowledge and resources about many aspects of coastal hazards. Some examples include:

- Planning for Sea Level Rise in Coastal Georgia with Visualization, Mitigation and Outreach: UGA River Basin Center
- Coastal Hazards Education and Outreach Portal for Georgia: Skidaway Institute of Oceanography
- Evaluating Plastics Abundance and Degradation within Coastal Georgia Marshes: Skidaway Institute of Oceanography
- Coastal Georgia Elevation Project (LiDAR imagery): Coastal Regional Commission
- Plan for a Disaster Resilient Community: City of Garden City
- A Plan of Action to Assess the Extent of Damages Caused by Coastal Hazards to Marsh Vegetation: Savannah State University

COMMUNITY VULNERABILITY ASSESSMENT

The GCMP is also working with state researchers and federal agencies to conduct a comprehensive coastal vulnerability assessment that will identify at-risk populations and infrastructure, such as roads and other critical facilities. The results of the assessment will be distributed to local government officials to help them make better-informed decisions. This assessment will use innovative models and newly acquired data to incorporate risks that are not traditionally included in local vulnerability assessments, such as shoreline change and sea-level rise.

GOVERNMENT COORDINATION

With such high demand for coastal hazard research, technical assistance, and outreach, the GCMP staff has submitted several grant applications for climate-related projects. Staff members also participate on climate change steering committees at local, state, and national levels, including the Governors' South Atlantic Alliance, the National Fish, Wildlife and Plants Climate Adaptation Strategy and the Georgia Emergency Management Agency's State Hazard Mitigation Plan update team.



Wetlands

The coast of Georgia features a richly varied array of wetlands, ranging from freshwater non-tidal and tidal wetlands to estuarine wetlands, or saltmarshes. Along its approximately 100 miles of coastline, Georgia boasts roughly 368,000 acres of estuarine tidal marsh.

These marshes are ecologically very important because they are the habitat for many aquatic organisms, including fish, shellfish, waterfowl, and other species. In addition, saltmarshes serve as feeding grounds for terrestrial vertebrates, as a buffer to protect against coastal storm surge, and as a natural filtration system to improve water quality, transform nutrients and retain sediment.

The GCMP has been deeply involved in each of the important efforts described below. With each project, the State has developed capacity in wetlands management.

In the spring of 2002, reports of saltmarsh dieback began to surface in Georgia. The areas affected had little or no live above-ground vegetation and spanned all six coastal counties. Current estimates of 2002 dieback exceed 1,000 acres; in some areas the marsh was down to bare mud and was beginning to slough into the water.

Scientists and resource managers worked diligently to determine the cause of marsh dieback. Drought is the cause, but the precise mechanics have not been fully determined. To date, monitoring efforts have reported natural recovery in dieback areas, and affected sites are still being monitored annually.

LIVING SHORELINES

Living shorelines are a creative approach to protecting estuarine shorelines from erosion. This is achieved by using bioengineered structures along with natural features to maintain or restore the shoreline's natural habitats. Living shorelines usually require bank grading combined with strategic placement of oyster-cultch material or other bioengineered techniques. All projects incorporate native marsh and/or upland buffer vegetation plantings.

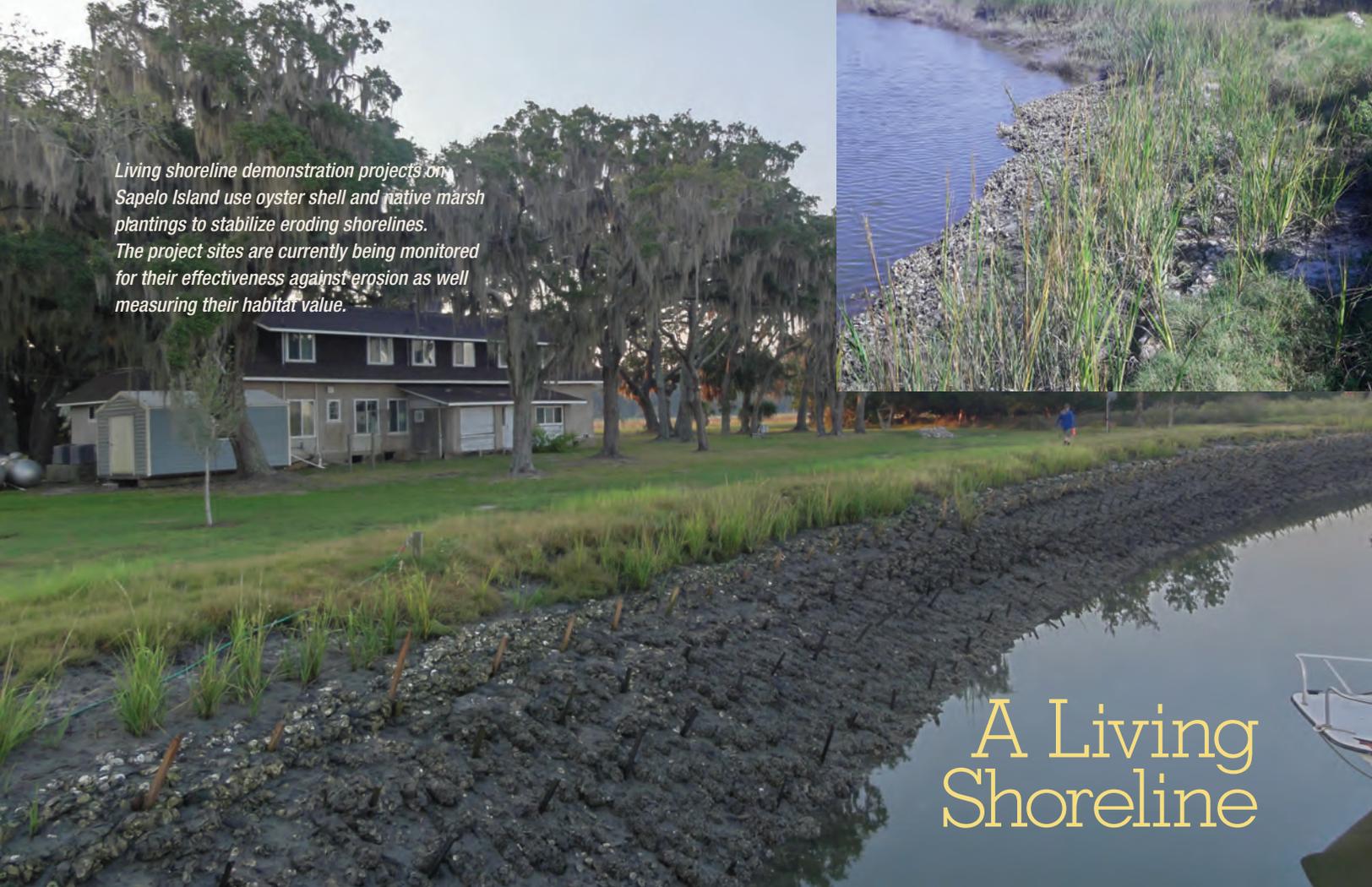
The goal of the living-shoreline approaches is to avoid designs that disrupt or destroy the natural connections between riparian, intertidal, and aquatic areas. These connections include the natural processes of tidal exchange, sediment movement, plant-community transitions, and shoreline retreat associated with rising sea levels.

In 2010, two living-shoreline demonstration sites were built along Post Office Creek on Sapelo Island. One site used bagged oyster shell combined with marsh and buffer vegetation. The other included a hybrid gabion technique with alternating treatments of gabions filled with rock, rock and loose shell, and rock and bagged shell. The alternating treatments were designed to compare oyster recruitment on three different substrates. This site also incorporated marsh and buffer plantings. Each site is being monitored to determine the success of the treatments for both stabilizing the banks and restoring habitat.



Marsh dieback in Georgia resulted in the loss of large expanses of *Spartina alterniflora*.

Marsh Dieback



Living shoreline demonstration projects on Sapelo Island use oyster shell and native marsh plantings to stabilize eroding shorelines. The project sites are currently being monitored for their effectiveness against erosion as well as measuring their habitat value.



A Living Shoreline

GIS INVENTORY OF IMPACTED WETLANDS

The Impacted Wetlands project was initiated in 2009 to identify wetlands with the potential for restoration. Specifically, the purpose of this study was to identify estuarine wetlands in Chatham, Bryan, Glynn, and Camden counties that have been structurally altered by human activities.

A file geodatabase with metadata was created in ESRI's ArcGIS 9.2 to generate an inventory of affected wetland sites with attributes to characterize the impact type, location, and estimated area for each county. Impacted wetland types include wetlands that were impounded, drained, and excavated, as well as those that were affected by vegetation removal, saltwater intrusion, sedimentation, spoil islands, spoil mounds, other, and unknown. The most common impact type was wetlands that had been drained, followed by impoundments and spoil islands, which accounted for 91% of affected coastal wetlands in Georgia. The GCMP will use this information to help prioritize wetland restoration activities in Georgia saltmarshes.

NATIONAL WETLAND CONDITION ASSESSMENT

In 2011, the GCMP participated in the National Wetland Condition Assessment project, which was initiated by the Environmental Protection Agency. This project randomly distributed wetland monitoring sites across the U.S. Georgia received 50 sites, with 32 of those being estuarine wetlands. GCMP monitored these sites in the summer of 2011 for vegetation, soils, algae, and water chemistry parameters. In addition, a Rapid Assessment Method (RAM) was conducted to overlay with field samples in order to determine the accuracy of RAMs to evaluate wetland habitats.

NATIONAL WETLAND INVENTORY UPDATES AND ENHANCEMENTS

The GCMP received funding to update the National Wetland Inventory (NWI) for the six coastal, ocean-facing counties. The original NWI was completed by the U.S. Fish and Wildlife Service in 1980 and there had been no updates since that time. All wetland habitats within the six counties were updated for location, extent, and characteristics. This funding also allowed for NWI "Enhancements," which characterized wetlands according to their functions.

Coastal Water Quality Programs

To help preserve our state’s invaluable water resources, the GCMP plays a key role in several water quality monitoring activities. While primarily aimed at protecting public health and safety, these programs have also produced a great deal of information about the condition of coastal Georgia’s estuaries and rivers.

SHELLFISH PROGRAM

The Georgia shellfish industry centers around the harvest of farm-raised clams and wild oysters. Reported landings for this fishery averaged 75,409 pounds of clam meats and 16,595 pounds of oyster meats since 2008. By conducting routine water quality monitoring for fecal contamination in DNR-designated Shellfish Growing Areas, the GCMP contributes significantly to the success of this industry. The GCMP currently manages 17 commercial harvest leases in the Growing Areas and seven additional areas that are designated solely for public harvest. The Program also issues permits for 15 “Master Collectors” and 99 “Pickers” currently employed by this industry.

Georgia actively encourages the growth of the shellfish industry and recently worked with the University of Georgia to inventory shellfish stocks along the coast. This study will help identify areas for potential expansion in the future.

NUTRIENT MONITORING

The GCMP’s monitoring effort is the most extensive on the coast, with a large collection of estuarine water-quality data. The Program monitors nutrients to track indicators of pollution. Until 2009, 84 coastal sites were monitored monthly, and the data was shared with the Environmental Protection Division (EPD). Recently, this state-funded effort has experienced significant cutbacks, and funding has ended. But thanks to an arrangement with EPD, the GCMP’s staff continues to collect data at 30 sites in an ongoing effort to watch coastal waters for signs of pollution. A recent analysis of the GCMP’s water-quality data by the University of Georgia revealed that Georgia’s coastal waters are generally in fair to good condition.

BEACH WATER QUALITY MONITORING PROGRAM

The Beach Water Quality Monitoring Program is funded by the U.S. EPA to monitor bacteria levels at the beaches and to notify the public when elevated bacteria levels are found at swimming beaches. This Program is a cooperative effort with EPD, the Coastal Health District, and local beach communities. Throughout the year, staff members perform weekly tests for the presence of bacteria at 17 popular swimming locations. When levels are above the established threshold, the local health department issues a swimming

advisory. Municipalities in the advisory areas then post signs, provided by GCMP, at beach access points. GCMP also provides a user-friendly online map so the public can check the status of their favorite swimming locations.

In an effort to minimize the number of beach advisories, EPD investigates the source of each bacterial spike. Most of the time, spikes are short-lived, and advisories are in effect for only a few days at a time. Research has suggested that high bacteria levels may be caused by wildlife and not by the failure of septic or sewer systems. Since 2008, the percentage of annual beach-advisory days along the coast averages 3% per year. This is excellent compared to other states across the nation.



A birds-eye view of a commercial hard clam (*Mercenaria mercenaria*) farm on a mud flat in McIntosh County. Hard clams currently account for 75% of the commercial shellfish landings in Georgia.

Shellfish Restoration

The GCMP has contributed to several projects to restore Georgia's oyster beds. These areas will provide many ecosystem benefits to the coast – essential fish habitat, bank stabilization, and improved water quality.



Signs throughout the estuary mark beach advisory status and shellfish harvest area designations.



HABITAT



A major component of the Shore Protection Act is the management of the sand sharing system. The system is often enhanced through the use of sand fencing and beach renourishment projects. Fencing is used to capture the drifting sand and encourage dune growth.

MARSH AND SHORE PERMITTING

The Habitat Management Program administers the regulatory work of the GCMP. It also manages activities affecting the marsh or oceanfront shoreline that fall under the authority of the Coastal Marshlands Protection Act and the Shore Protection Act. Actual permit decisions are made by the Marsh Protection and Shore Protection Committees, which are each made up of five members and are appointed by the Board of Natural Resources. The Committees meet six to eight times a year to decide on permits for waterfront developments such as marinas, community docks, residential and commercial shoreline development, beach crossovers, beach nourishment, and bank stabilization.

Before making recommendations to the Committees, GCMP staff members work with permit applicants to gain a clear understanding of projects and to consider their possible impacts and alternatives. The number of permits issued each year since 2008 has ranged from 20 to 30 for Coastal Marshlands Protection Act permits and from six to ten for Shore Protection Act permits. Because of the depressed economy, the number of permits has declined recently.





MANAGEMENT PROGRAM

REVOCABLE LICENSES AND PRIVATE RECREATIONAL DOCKS

The GCMP issues Revocable Licenses which give citizens permission from the state to use publicly owned tidal water bottoms. This is required for any activity, either permanent or temporary, that affects salt marshes, intertidal areas, mud flats, or other tidally influenced water bottoms. Examples of projects that require a Revocable License include private recreational docks, bank stabilization projects (bulkheads and riprap), and other projects permitted by the GCMP.

Private recreational docks for up to four adjacent households are generally exempted from GCMP permitting requirements, but they must be issued a Revocable License as well as a Programmatic General Permit. The GCMP issues Programmatic General Permits (PGP0083) for docks that meet specific criteria under delegated authority on behalf of the U.S. Army Corps of Engineers – Savannah District. For those not meeting the specific criteria, an Individual Permit is required from the U.S. Army Corps of Engineers. An Individual Permit cannot be issued until a Revocable License and Federal Consistency Certification has been issued by the GCMP. The GCMP issues between 135 and 175 Programmatic General Permits for private docks every year and

15 to 20 Individual Permits. Again, the number of these permits has decreased recently because of current economic conditions.

BEACH DRIVING

Driving on Georgia's beaches is allowed only under a special set of circumstances and only when a Beach Driving Permit, authorized under the Shore Protection Act, has been issued by the GCMP. The GCMP currently manages approximately 355 Beach Driving Permits.

MARINA LEASES

For marinas and docks with more than 500 linear feet of dock space, the GCMP works with the Marsh Protection Committee to manage for-profit and nonprofit leases of state-owned marshlands and water bottoms. In 2009, the Georgia Assembly passed House Bill 170 to set an annual rental (lease) rate of \$1,000 per acre for for-profit marinas in the jurisdiction of the Coastal Marshlands Protection Act. It also specified the method for quantifying lease areas. Through new rules and regulations passed by the Board of Natural Resources under the Coastal Marshlands Protection Act in 2010, the GCMP will annually adjust annual rental fees to reflect the effect of annual inflation or deflation noted in the Consumer Price Index. Fifty-one marinas hold leases, 31 of which are for-profit marinas.

FEDERAL CONSISTENCY

Participation in the federal Coastal Management Program enables the GCMP to ensure that federal agency projects, federally funded projects, and federally permitted projects—for example those projects through the U.S. Army Corps of Engineers—are consistent with State environmental laws, specified as Enforceable Policies in Georgia's Coastal Management Program. Of the thirty-four Enforceable Policies, the ones most often applicable to federal coastal projects include the Coastal Marshlands Protection Act, the Georgia Water Quality Control Act, and the Georgia Erosion and Sedimentation Act. The GCMP staff reviews between 115 and 155 federal project proposals annually and prepares Federal Consistency determinations for each.

STAKEHOLDER INVOLVEMENT

In 2005 the GCMP engaged a Community Dock and Marina Stakeholders' Group for two purposes: to examine permitting practices for marinas and community docks, and to propose standards or rules for permitting these types of projects while also accommodating the uniqueness of each application. This group's efforts culminated in new rules that were adopted by the DNR Board of Natural Resources in December 2009. The rules establish standards and procedures to be applied to the permitting of marinas, commercial docks or community docks and consist of a tiered system for processing permit applications based on the size, design, and range of services uses of the proposed structure.

MARSH delineations are requested for pending projects on marsh front properties where the line can change yearly. Marsh migration is a natural process that allows for ecosystem variety in preserving lower, middle, and upper marsh habitats.

C ompliance and Enforcement Program

COMPLIANCE AND ENFORCEMENT

Enforcing the laws that protect Georgia's coastal resources is a task of obvious importance. And it's one that is performed by the Compliance and Enforcement Program, working hand-in-hand with the Habitat Management Program. The enforcement program has been developed over the past seven years through additional federal funding designated by NOAA for program enhancements.

The Compliance and Enforcement Program conducts routine compliance inspections of all projects permitted by the Coastal Marshlands Protection Committee. This ensures that all projects conform to permit conditions. If any project does not meet the standards required by the permit, corrective action is taken to bring the facility or structure into compliance. Going even further, staff members conduct legal reviews of all Coastal Marshlands Protection Act and Shore Protection Act projects to ensure compliance with each act.

The sight of vessels or marine equipment sunk at docks is not uncommon throughout coastal Georgia.



Sunken and derelict vessels are of great concern to coastal managers because of the large amount of debris they generate that can harm natural resources. It is very expensive to properly dispose of vessel debris, so the GCMP works with many partners to clear local waterways of these hazards.



GCMP also investigates alleged violations of the Coastal Marshlands Protection Act and Shore Protection Act, including:

- Unauthorized dredging
- Filling
- Excavating
- Placement of unauthorized structures
- Altering of the marsh
- Storage of vessels in the dunes or beaches and dunes.

Some of the most common violations found are unauthorized removal of marsh, construction of unauthorized structures, sunken vessels, fill of jurisdictional wetlands, destruction of habitat, and the operation of vehicles in the marsh or on the beach.

SUNKEN AND DERELICT VESSEL PROGRAM

Since 2007, GCMP has mapped abandoned and derelict vessels. On the state's tidal water bottoms, 193 abandoned or derelict vessels have been identified as non-historic wrecks (vessels that have no significant historical value). These vessels include shrimp boats, sunken automobiles, aircraft, abandoned recreational vessels, barges and even cranes.

Recently, the GCMP began the task of locating, documenting, and cataloging these non-historic wrecks using Geographic Information Systems. GCMP staff members notify the public of these potential boating hazards by posting approximate locations of sunken vessels on the DNR website coastalgadnr.org/msp/comp/sv.

In 2007 and 2008, the Program received \$180,000 from the state legislature to fund the removal of several vessels. Today, even though state funds are no longer available, staff members have continued to work with local governments, police, and marina operators to facilitate the removal of 44 additional vessels. In addition, the GCMP coordinates and documents the Abandoned Vessel Act, which is similar to the act that regulates abandoned automobiles. This act requires that if a vessel is left unattended for five or more days in Georgia waters, it should be impounded. Currently, there are no funds available to effectively implement the program, and there is no cottage industry to purchase and dispose these abandoned and derelict vessels.



The GCMP conducts routine compliance inspections of several hundred facilities throughout the coast.

Coastal Nonpoint Source Pollution Control Program

In a nationwide effort to manage coastal water quality and habitats, the federal Coastal Management Program requires each state to develop a coastal nonpoint-source pollution control program. These programs are jointly developed and administered by each individual state's coastal program and water quality agencies. The central purpose of coastal nonpoint programs is to strengthen the links between federal and state programs for improved coastal zone management and water quality. The programs also aim to enhance state and local efforts to manage land use activities that degrade coastal waters and coastal habitats.

Developed and administered in partnership with the Coastal Resources Division, the responsibility for implementing Georgia's Coastal Nonpoint Source Program (NPS) rests with the Environmental Protection Division. Georgia's NPS Program has effectively leveraged GCMP funds with Clean Water Act Section 319 funds to enhance the management of coastal resources in the face of dwindling federal funding.

The focus of the Coastal Nonpoint Source Program has been on the development and promotion of sustainable growth tools. This is done in conjunction with several partner agencies and organizations that have interests in and responsibilities for the coast. A standing Nonpoint Source Advisory Committee, made up of state and local partners, works on solutions to nonpoint-source issues.

The Program created the Coastal Stormwater Supplement (April 2009) to the Georgia Stormwater Management Manual through partnerships and extensive stakeholder involvement. To address the effects of urbanization, a green infrastructure, runoff reduction approach is now used in the coastal zone. This approach integrates the use of ecosystem services through natural resource protection with better site planning and design and the use of structural stormwater best management practices. Georgia's manual is the only Green Infrastructure Stormwater Guidance in the nation known to establish direct connections with a state's Wildlife Action Plan, and it has been integrated with many initiatives.





Bioretention: A Sustainable Stormwater Approach

Bioretention areas capture and treat stormwater runoff from adjacent parking lots. Native grasses are planted to assist with stormwater infiltration and pollutant removal—and look great too!

Other Successful Projects Include:



St Marys River in Charlton County.

- One Coast, One Future, an extensive brochure that informs people about a wide range of growth issues
- A suite of model local-government ordinances for sustainable development, which serves as a companion to the well-established Green Growth Guidelines
- CoastScapes, a broad initiative with UGA Marine Extension to promote conservation landscaping using green infrastructure stormwater techniques, native plants, and water conservation.

The Coastal NPS Program had a direct effect on enhancing the state's water-quality programs by extending water quality certification capacity on the coast. In addition, the Program is partnering with public health officials and others to map existing septic systems and wells. This project has provided much needed GIS capacity to the State Department of Public Health with the WeIStROM model developed by the Southern GA Regional Commission. The Program's model initiative to improve coordination, review and compliance with erosion and sediment control has become the statewide prototype.

- Working in concert with the GCMP and other partners, many other projects are currently under way, including:
- Finishing a second edition of the Green Growth Guidelines
 - Launching a multi-agency model ordinance implementation technical assistance team
 - Extending technical assistance to small farms
 - Developing educational programs for the siting, maintenance, and operation of local transportation projects
 - Advancing green infrastructure initiatives and identification of critical coastal areas.

Sustain
Enhance
Protect
Conserve

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ACCOMPLISHMENTS OF
THE GEORGIA COASTAL MANAGEMENT PROGRAM

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