

## ONE SHINING MOMENT KNOWN AS CLAMELOT: THE CEDAR KEY STORY\*

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**ABSTRACT** The heritage and culture of rural communities along Florida's Big Bend coastline in the Gulf of Mexico have been linked intrinsically with commercial fisheries for generations. Over the past decade, closures of oyster harvesting grounds and a state-imposed ban on gill nets triggered economic decline and depression in this area. A transition to shellfish aquaculture as an alternative employment opportunity has been facilitated through the recent federally funded, job-retraining programs. Since 1993 when the first program graduates were placed with leases, the industry has grown and now supports over 300 hard clam, *Mercenaria mercenaria* (Linnaeus, 1758), growout operations on 950 acres of state-owned submerged lands with sales (farm gate value) estimated at \$10 million in 1997. The promise of prosperity has created a new excitement and common bond among the individuals of these communities. With a renewed sense of purpose and cohesion, people are working together to promote their livelihoods, and above all, to protect the coastal waters so critical to the success of these ventures. This revitalization has also spurred a reaction and responsiveness to the emergent industry by local governments and by state and federal agencies. Citizens of Cedar Key have formed advisory groups to work closely with elected officials and agency representatives in the planning and implementation of a wide range of water quality activities. These include storm water and wastewater treatment, environmental education, and water quality monitoring programs. Sustainable hard-clam aquaculture operations have proven to be an excellent opportunity to both protect and preserve the region's environmental qualities as well as support economic activity.

**KEY WORDS:** *Mercenaria mercenaria*, hard clam, aquaculture, partnership, pollution abatement, shellfish restoration and remediation, water quality monitoring, watershed management

### IN THE BEGINNING

*"Ask every person if he has heard the story and tell it strong and clear if he has not, that once there was a fleeting wisp of glory called Clamelot."\**

The history, character, heritage, and economy of this modern-day *Clamelot* are inextricably tied to Cedar Key's scenic, teeming coastal waters. Tourism, annual seafood festivals, restaurants, and commercial and recreational fishing all depend on good quality water. Yet, during the past decade, broken septic and stormwater systems have led to broken dreams, as a large number of the area's commercial oystermen and fishermen were forced out of business by contaminated Gulf of Mexico waters. With a renewed sense of purpose and determination, the community is now working together to develop and promote new livelihoods and to protect the coastal waters so vital to the success of these commercial ventures and the survival of their beloved *Clamelot*.

### CREATING NEW JOB OPPORTUNITIES

*"It's true, it's true the climate must be perfect, all the year. In short, there's simply not a more congenial spot for happy everaftering than here in Clamelot."\**

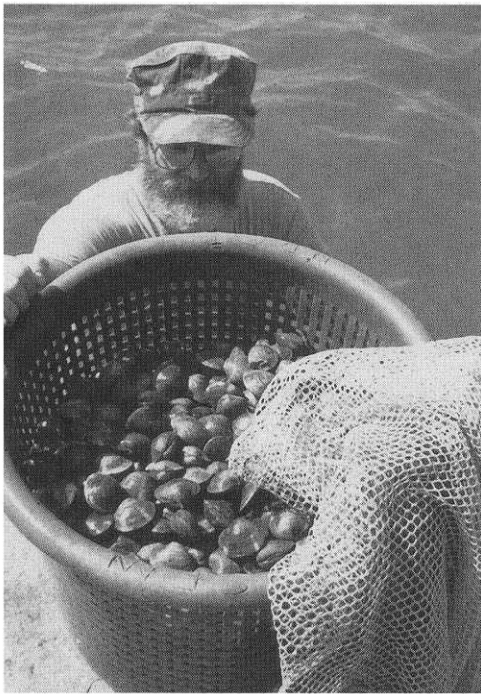
Florida's warm Gulf waters and high natural productivity levels create a superb environment for marine life and, by extension, for those who earn their living "on the water." The weather, market trends, and a variety of other factors have always made life inter-

esting, and at times uncertain, for local residents. Yet, the economic picture in *Clamelot* has not always been "rosy"—it has included the closure of oyster harvesting grounds due to water pollution and a state-imposed ban on gill nets.

Economic survival in *Clamelot* requires a willingness to adapt, and its residents have embraced a promising new industry with gusto. Beginning in 1991, the Florida Department of Labor and Employment Security introduced federally funded, job-retraining programs in shellfish aquaculture for unemployed or underemployed oyster harvesters and other seafood workers in a four-county area. Trainees were prepared for their new businesses through hands-on participation and a classroom curriculum. Instruction was provided by Harbor Branch Oceanographic Institution and the University of Florida's Institute of Food and Agricultural Sciences. The programs, Project OCEAN and Project WAVE, were headquartered in Cedar Key.

Through Project OCEAN, which incorporated both oyster and hard clam culture technology, over 130 program graduates received shellfish aquaculture leases in 1993 and the knowledge to put the submerged lands into production. The success of this program was the impetus for Project WAVE, which enabled displaced net fishermen in the same region to be instructed in the business of culturing hard clams. During 1995–1997, 69 fishermen were given leases for the startup of individual- or family-operated farms. Most of the trainees have made a successful transition to clam farming and are operating productive and profitable leases. Currently, the emergent industry now supports more than 300 hard clam growout operations on 950 acres of state-owned submerged lands off the coast of Dixie and Levy counties. Sales, (farm gate value) in 1997 were estimated at \$10 million. Shellfish aquaculture is now a primary source of income for many residents along the coast.

\*With apologies to Alan Jay Lerner and Frederick Lowe, whose wonderfully appropriate lyrics to the musical *Camelot*, published in 1960, were the inspiration for this presentation.



**Figure 1.** Clam farmer harvesting his crop from lease areas located in the productive waters of the Gulf of Mexico off Cedar Key, Florida.

### COMMUNITY INVOLVEMENT

There may be only one road leading in and out of Cedar Key, but there are many paths leading to the protection of the town's water quality and, consequently, its lucrative shellfish industry. When a statewide gill net ban was imposed in 1995, many commercial net fishermen found themselves out of work. Looking to reverse their misfortunes, they turned to clam farming, a newly emerging industry in which success is directly tied to water quality from the estuaries and from human activities in and around Cedar Key.

When inadequate stormwater and sewage treatment systems began posing threats to local water quality, citizens rallied to protect the natural resources on which their livelihoods were dependent. They formed the Cedar Key Water Alliance to encourage citizen participation in finding solutions to some of the town's most pressing water resource concerns. The committee's advisory groups worked closely with elected officials and agency representatives in planning and implementing a wide range of water quality activities, including improved stormwater and wastewater treatment systems and environmental education. The community received substantial funding from the state's Surface Water Improvement and Management Program to conduct a master stormwater system study and to develop a master stormwater plan. An additional \$500,000 has been appropriated for implementation of stormwater projects, with funds provided through the Florida Department of Transportation's wetlands mitigation program. One of Cedar Key's top priorities has been to replace all existing septic tanks with connections to the town's centralized sewer system. To achieve this ambitious goal, volunteers surveyed existing homes, as well as lots not yet on the system, and drafted a budget for both short-term and long-term goals. Homes that were within the existing collection area were targeted initially. With a \$52,000 grant from the Suwannee River Water Management District to purchase

the necessary supplies, committee members provided the labor to connect over 42 homes. Next the group sought to expand the sewer system to serve the more than 100 remaining homes still on septic tanks. The city and its water and sewerage district garnered support from their local legislative delegation, and in 1998 the Florida Legislature appropriated \$790,000 to eliminate every septic tank in the community by the year 2000. The result will be ongoing protection of the town's water quality and preservation of a shellfish industry vital to the community's economic survival. In addition, the community is committed to promoting an extensive water conservation program. Activities in progress or already completed include conducting a leak detection survey of all residences, retrofitting commercial toilets, and implementing "xeriscape" landscaping.

### WATER QUALITY MONITORING

The historic Suwannee River, immortalized by songwriter Stephen Foster, begins in Georgia's Okefenokee Swamp, and empties into the Gulf of Mexico near Cedar Key, one of the few remaining areas for shellfish harvesting in Florida. Designated an Outstanding Florida Water, the Suwannee River has managed to remain relatively free of the pollutants that have diminished the health and tarnished the beauty of many of our nation's waterways. Yet, even the Suwannee is in danger of becoming a casualty. In a stretch of river known as the Middle Suwannee, nitrate levels are at the highest level in 10 years. Animal waste and fertilizers from this rural region's many dairy and poultry operations are thought to be contributing factors, along with human waste from inadequate or poorly functioning septic systems, and fertilizers from other commercial and residential activities. To stem the tide of nutrient loading and other pollutants into this Outstanding Florida Water, state and federal agencies have joined in cooperative monitoring efforts to track the quality and quantity of water flowing through the river, its springs, and groundwater.

Recognizing that whatever flows into the Suwannee will eventually wash into the Gulf, efforts also are being made to monitor closely the condition of the state's coastal waters, vital to the survival of the state's fishing, shellfish, and tourism industries. Project COAST is one such monitoring project. Launched in 1997 by Florida's Suwannee River and Southwest Florida water management districts as a one-year water quality monitoring study, Project COAST is now an ongoing program coordinated by the University of Florida's Department of Fisheries and Aquatic Sciences in cooperation with the Florida Department of Environmental Protection and citizen volunteers. Using their own boats, trained volunteers take water samples at fixed sites adjacent to five coastal communities along more than 100 miles of the west central Florida coastline. They measure temperature, salinity, water clarity, chlorophyll concentrations, nitrogen, and phosphorous, and submit the data to the university for analysis. Results from this cost-effective sampling program will be used to develop a long-term data set, which will in turn be used to establish baseline water quality conditions for coastal waters. The results also will provide educational information concerning environmental issues to the public.

### CREATING QUALITY COMMUNITIES

The tiny coastal village of Suwannee suffered a severe economic blow in 1991 when high bacterial contamination caused by the town's poor septic systems prompted the federal government to

close Suwannee Sound to oyster harvesting, the community's main industry. To help preserve and protect the area's water resources and revive the \$1 million annual local shellfish industry, the Suwannee River Water Management District allocated \$25,000 for a detailed feasibility study that addressed the town's wastewater

treatment needs. The District also helped city and county officials obtain \$9.7 million in federal grants and loans to finance the town's new wastewater treatment system, which is now up and running. The resounding success of that effort was the inspiration for what is now the Quality Communities Program.

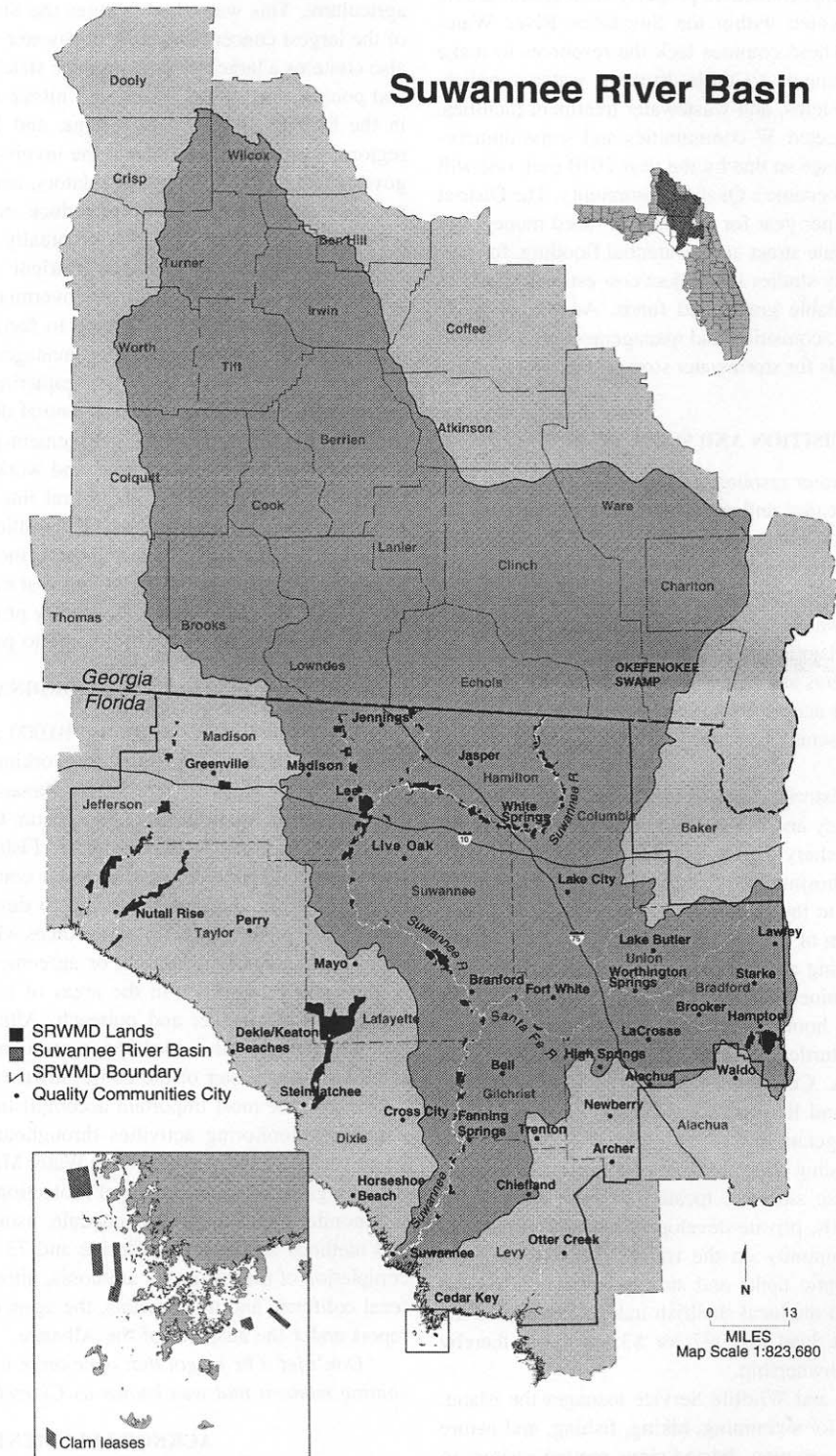


Figure 2. *Clamlot*, in relationship to the Suwannee River Basin and Big Bend coastline of north central Florida. Locations of shellfish aquaculture leases off Cedar Key, the boundaries of the Suwannee River Water Management District, land acquisitions of the Suwannee River Water Management District, and cities targeted for the Suwannee River Water Management District's Quality Communities Program are shown.

The goal of the Quality Communities Program is to help small rural communities protect water resources and at the same time improve their quality of life by offering technical expertise and funding needed to complete critical water quality and community infrastructure projects. Some of the state's poorest counties, in terms of per-capita income, education, property values, and taxable property levels, are located within the Suwannee River Water Management District. These counties lack the resources to make the necessary improvements to their drinking water supplies, stormwater drainage systems, and wastewater treatment facilities.

The District has targeted 37 communities and some unincorporated areas for assistance so that by the year 2010 each one will have the opportunity to become a Quality Community. The District will set aside \$500,000 per year for 10 years as "seed money" for projects that will eliminate street and residential flooding, for pre-engineering or feasibility studies for project cost estimates, and as leverage for other available grants and funds. Additional funds from the District's land acquisition and management program will be used to purchase lands for stormwater storage and water supply protection.

#### LAND ACQUISITION AND MANAGEMENT

Florida's land and water resources are forever linked. To protect the rivers, lakes, streams, and underground water supplies, the lands around them must be managed properly. The Suwannee River Water Management District currently owns and manages nearly 100,000 acres of riverfront and wetlands to provide natural storage areas for flood waters, reduce loss of life and property due to floods, protect ground and surface water resources of the region, and protect natural systems associated with floodplain ecosystems. One of the District's key acquisitions in terms of coastal protection was the purchase of Atsena Otie, a 60-acre barrier island located near Cedar Key.

An island of great historical significance, Atsena Otie was the original site of Cedar Key and in the 1800s served as Army headquarters for General Zachary Taylor. It later grew into a prosperous city with a school, hospital, post office, and several sawmills, one of which belonged to the Eberhard Faber cedar pencil manufacturer. Around the turn of the century, residents gradually abandoned the island following a series of devastating hurricanes, and the island has since remained uninhabited. Today the island and its surrounding waters are home to a variety of animals, including egrets, ospreys, ibises, turtles, squirrels, raccoons, Gulf sturgeon, dolphins, and manatees. Cordgrasses fringe the island, and the interior is alive with sand live oaks, red cedars, cabbage palms, palmettos, and other vegetation.

The waters surrounding Atsena Otie may be harvested for shellfish, and clam lease sites are located on each side of the island. In the early 1990s, private developers introduced plans to build a residential community on the island. Concern over the potential impacts of septic tanks and stormwater runoff on the coastal environment and the local shellfish industry prompted the District to purchase the land in 1997 for \$3.1 million, thereby placing it under public ownership.

Today the U.S. Fish and Wildlife Service manages the island. It is open to the public for swimming, hiking, fishing, and nature observation but not for camping. Posted signs remind visitors to carry out all of their trash, and a self-composting portable toilet has been placed on the island to accommodate visitors' needs and to reduce potential environmental impacts of human waste on the nearby clam lease sites.

#### PRESERVING AGRICULTURE, PROTECTING THE ENVIRONMENT

Residents of rural North Florida's Suwannee River Basin are struggling to balance and preserve the two things most vital to their economy and quality of life: clean and scenic natural resources and agriculture. This watershed features the Suwannee River and one of the largest concentrations of freshwater springs in the world. It also contains a large percentage of the state's farms, dairies, cattle, and poultry operations. When high nitrate levels were discovered in the Suwannee River, its springs, and local groundwater, the regional water managers sought the involvement of farmers, local governments, environmental regulators, and all citizen stakeholders in a collaborative effort to reduce nutrient loadings to the watershed, the waters of which eventually empty into the Gulf.

The Suwannee River Basin Nutrient Management Working Group, comprised of two dozen government agencies and independent organizations, was formed to facilitate that effort. Three technical committees, focusing on management of fertilizers, animal waste, and human waste, are gathering and coordinating information that will assist in the eventual design and implementation of a basinwide nutrient management plan. A program coordinator conducts public meetings and workshops, and serves as a liaison between agencies, agricultural interests, elected officials, and the public. Approximately \$6.3 million in state and federal funds has been earmarked for voluntary, incentive-based, nonregulatory cost-share programs to initiate best management practices at farms; 43 dairy farmers and 102 poultry producers in the two most highly impacted counties will be able to participate.

#### INTERSTATE COORDINATION

Florida and Georgia share the 10,000 square-mile Suwannee River Basin, and the two states are working together to protect it. In 1996 the Suwannee River Water Management District, Florida Department of Environmental Protection, Georgia Department of Natural Resources (DNR), and U.S. Fish and Wildlife Service joined in an informal alliance to foster communication and cooperation between the two states and to develop a comprehensive plan for safeguarding the water resources within the basin. Without the use of interstate compacts or agreements, the agencies have made significant strides in the areas of cooperative monitoring, information exchange, and outreach. Alliance activities include public meetings and workshops, a semi-annual newsletter, and a satellite-image poster of the entire Suwannee River Basin.

Perhaps the most important accomplishment yet is the coordination of monitoring activities throughout the entire Suwannee River Basin. The Suwannee River Water Management District and the Georgia DNR Environmental Protection Division are performing monitoring on a parallel schedule, using the same parameters and methods at 72 sites in Florida and 73 in Georgia. Following completion of the testing for ammonia, nitrates, total phosphorous, fecal coliform, and trace metals, the agencies will publish a joint report under the auspices of the Alliance.

*"Don't let it be forgot that once there was a spot for one brief shining moment that was known as Clamelot."*\*

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