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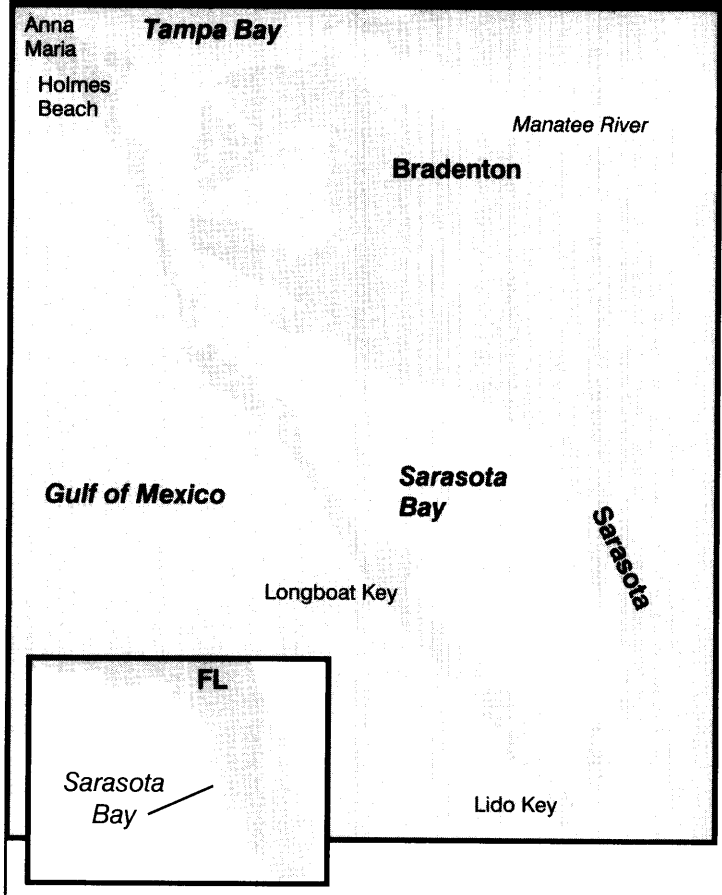
City Island Habitat Restoration Project

Demonstrating Practical Tools For Watershed Management Through The National Estuary Program

Sarasota Bay, Florida



Characteristics:

- The Sarasota Bay watershed comprises about 150 square miles of land and 52 square miles of water surface.
- Nearly 500,000 people live in the Sarasota Bay area.
- Land use is 42 percent residential, 10 percent commercial, 8 percent agricultural, and 40 percent open space.

The Problem: Habitat loss and encroachment of non-native plants are major problems threatening Sarasota Bay.

- Only 20 percent of the shoreline remains in its natural state.
- Intertidal habitat has declined about 39 percent Baywide since 1950.
- Non-native plants have invaded 66 percent of mangrove wetlands in the Bay.

The Project: The City Island Habitat Restoration Project was designed to reintroduce native habitat on 4.5 acres of public land in a dense urban area. Project objectives also included improving water quality, increasing public access to the Bay, and providing opportunities for public education and participation.

The National Estuary Program

Estuaries and other coastal and marine waters are national resources that are increasingly threatened by pollution, habitat loss, coastal development, and resource conflicts. Congress established the National Estuary Program (NEP) in 1987 to provide a greater focus for coastal protection and to demonstrate practical, innovative approaches for protecting estuaries and their living resources.

As part of this demonstration role, the NEP offers funding for member estuaries to design and implement Action Plan Demonstration Projects that demonstrate innovative approaches to address priority problem areas, show improvements that can be achieved on a small scale, and help determine the time and resources needed to apply similar approaches basinwide.

The NEP is managed by the U.S. Environmental Protection Agency (EPA). It currently includes 28 estuaries: Albemarle-Pamlico Sounds, NC; Barataria-Terrebonne Estuarine Complex, LA; Barnegat Bay, NJ; Buzzards Bay, MA; Casco Bay, ME; Charlotte Harbor, FL; Columbia River, OR and WA; Corpus Christi Bay, TX; Delaware Estuary, DE, NJ, and PA; Delaware Inland Bays, DE; Galveston Bay, TX; Indian River Lagoon, FL; Long Island Sound, CT and NY; Maryland Coastal Bays, MD; Massachusetts Bays, MA; Mobile Bay, AL; Morro Bay, CA; Narragansett Bay, RI;New Hampshire Estuaries, NH; New York-New Jersey Harbor, NY and NJ; Peconic Bay, NY; Puget Sound, WA; San Francisco Bay-Delta Estuary, CA; San Juan Bay, PR; Santa Monica Bay, CA; Sarasota Bay, FL; Tampa Bay, FL; and Tillamook Bay, OR.

Introduction To Sarasota Bay

Sarasota Bay is located on Florida's fast-growing southwest coast. It once teemed with diverse and abundant marine species supported by seagrass meadows, mangrove forests, and native plants that filtered runoff from the land before it reached the Bay. Scallops, oysters, and clams were abundant, as were many species of fish.

Rapid residential development has vastly changed the Bay's ecosystem by eliminating a large portion of the shallow-water habitat. Pristine shorelines have been replaced by seawalls, bulkheads, and riprap. Historically, disposal of dredged materials changed natural shoreline elevations and destroyed much of the vegetated areas that are vital to the Bay's health. These areas supply food and shelter for fish and shellfish, provide nesting places and habitat for birds and wildlife, filter pollutants, and slow erosion.

Overview Of City Island

City Island, like many areas of the Bay, had lost most of its intertidal habitat and native vegetation. The property is owned by the City of Sarasota. For years, the City used it as a disposal site for dredged materials and construction debris. Disposal activity disturbed the shoreline and dredged material piles created unnatural elevations susceptible to encroachment by non-native plants. Non-native species, particularly Australian pines and Brazilian pepper trees, invaded the site and smothered much of the native ground cover.

City Island was selected as a demonstration project because it was representative of many other developed areas along the Bay and is one of the few publicly-owned properties along the coastline. It was also a good candidate for restoration because the project site is highly visible and easily accessible. EPA joined resources with the City of Sarasota, the Florida Department of Environmental Protection, the Sarasota Bay NEP, the Florida Department of Natural Resources, Sarasota County Natural Resources Department, Sarasota County Parks and Recreation Office, and Mote Marine Laboratory to plan and implement the restoration project.

Project Objectives

The primary objective of the City Island project was to restore highly productive, diversified, and integrated habitats to the project site and, in the process, develop a model for restoration of similar sites in the Bay. Equally important objectives were to increase public access to the Bay and to provide opportunities for public education and participation.

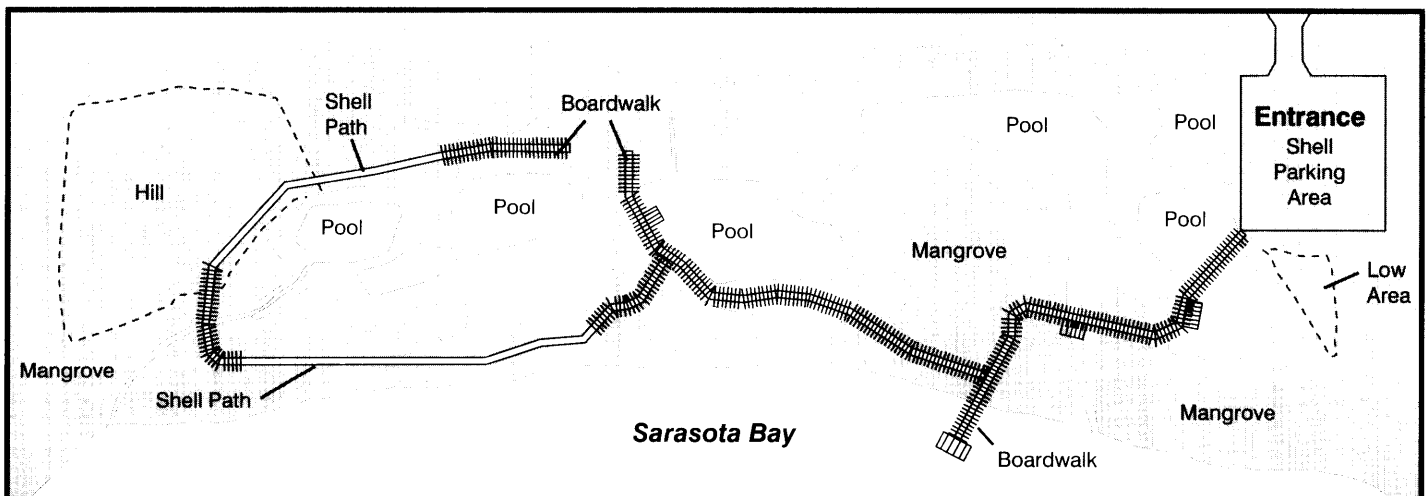
Implementing The Project

Project planning and design for the City Island site began in January 1990. Five key restoration components were identified:

- Removal of debris and non-native plant species.
- Restoration of natural land elevations.
- Excavation of six intertidal pools.
- Replanting of native vegetation.
- Construction of a public boardwalk (the BayWalk).

The project was implemented in several stages. Construction began in November 1990, and the restored City Island site opened to the public in August 1991.

- In November 1990, bulldozers and other heavy equipment rolled in to begin excavation and removal of the pines and pepper trees and other non-native vegetation. Two tons of debris were removed during this extensive site cleanup.
- Excavated material was stored on site and used for on-site fill to create wetland and upland habitat for native birds and animals.
- Once cleanup was completed, six intertidal pools were excavated. The pools were designed with variations in depth and size to attract a diversity of estuarine species such as scallops, mullet, redfish, and black drum that were once abundant in Sarasota Bay's tidal pools. Completion of the pools added one mile of shoreline to the Bay.



The City Island project includes six intertidal pools for wildlife habitat and a boardwalk for public access.

School students plant marsh grass at a habitat restoration site.

- In December 1990, more than 100 volunteers planted over 20,000 native plants (mainly marsh grasses). These plants helped create a transition from the shoreline to existing bay seagrasses about 15 feet offshore. Mangroves, gumbo limbo trees, and sea grapes were also planted around the island to create upland habitat and to help stabilize the shoreline.
- During the final phase of the restoration, the BayWalk was constructed, greatly expanding public access to the restored site. Throughout 1991, interpretative signs were developed and placed along the BayWalk to enhance public awareness of the need to balance development with protection of natural resources.

The Sarasota BayWalk was formally dedicated on April 2, 1992. The entire process of selecting the site, planning the approach, and implementing the restoration project took about three years to complete.

The City Island Success Story

By any account, the City Island project is a success story. It is an outstanding model for restoration projects in Sarasota Bay and for other estuaries where private land ownership makes acquisition and restoration of large areas of intertidal and subtidal habitat difficult, if not impossible. The City Island project successfully demonstrated that by using small, publicly-owned parcels of land, multi-use habitat modules can be developed quickly and cost-effectively.

Many species native to the Bay (scallops, conch, striped mullet, and sea trout) have been sighted in the tidal pools since 1991. The City of Sarasota and Mote Marine Laboratory are providing ongoing monitoring to gather data on species diversity and survival. Over 90 percent of the new vegetation, including over 200 red mangroves, is thriving. Volunteers and city employees work together to maintain the area and remove non-native vegetation regularly. All the information gathered to date indicates that the project has met the Sarasota Bay NEP's primary objective of habitat restoration.

Of equal importance, the BayWalk is used extensively by the public. County schools, Bay area residents, and tourists regularly make use of the area. The nearby Mote Marine Laboratory has developed environmental education outreach activities for teachers, school children, and the general public.

Lessons Learned

The City Island project demonstrated that successful habitat restoration is not dependent on availability of large areas of land, nor does it need to be prohibitively expensive. In Sarasota Bay, as in other areas where conventional restoration techniques are limited by dense urban development, there are still opportunities for highly productive habitat units.

The Sarasota BayWalk provides opportunities for public access and education.

Among the other lessons learned:

- A survey conducted in April 1990 by the Florida International University indicated that people are willing to support and participate in habitat restoration projects. The survey, conducted separately from the City Island project, determined that the public's favorite activity in wildlife areas is the viewing of the area itself. The City Island project has proven successful in that 10,000 to 20,000 people a year visit its BayWalk.
- Restoring intertidal habitat can cost as much as $20,000 per acre. The majority of the costs in City Island were for excavation and construction.
- Excavated materials can be used to restore natural elevations and create upland and wetland areas (a cost-saving bonus).
- Continued maintenance and regular removal of non-native species are critical to survival of restored areas. Employees from the Sarasota County Parks and Recreation Department remove unwanted vegetation and some cleanup about every other month. In addition, trash accumulates along the shoreline from the tides. Consequently, schools and organizations conduct beach cleanup programs about twice a year.
- Creative approaches to funding, such as grants, in-kind services, and donations, can result in more cost effective projects. EPA contributed $50,000 to the City Island project and the Florida Department of Environmental Protection contributed $150,000 through the Pollution Recovery Trust Fund. The City and the County of Sarasota also contributed in-kind services.
- Project officials learned that the shorelines were too linear and the bottoms too smooth to support enough micro habitats for fisheries. A subsequent restoration project successfully used more variations in hydrology and symmetry to correct the problem and create artificial reefs.

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