<=Back

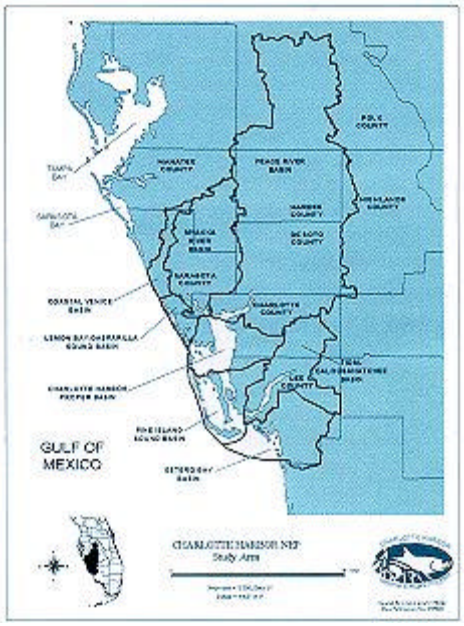
United States Environmental Protection Agency

Office of Water (4504F)

EPA842-F-00-005S

Punta Gorda Waterfront Juvenile Fisheries Habitat Project

Charlotte Harbor National Estuary Program



CHARACTERISTICS

Charlotte Harbor and its major tributaries are located in Florida's southern central interior and southwestern coast. The Charlotte Harbor watershed is one of the largest watershed systems on the southwest Florida coast, covering more than 4,400 square miles, incorporating three major river basins within southwest Florida. The Peace and Myakka Rivers flow directly into Charlotte Harbor, while the Caloosahatchee River connects to Charlotte Harbor through Pine Island Sound and Matlacha Pass. In addition to these major rivers, the watershed includes the Winter Haven Chain of Lakes, Coastal Venice, Lemon Bay, and Estero Bay. Charlotte Harbor is the nation's 18th largest estuarine system and is an important part of the Gulf of Mexico watershed.

There are 23 local governments in the Charlotte Harbor watershed, including Lakeland, Venice, Fort Myers, and Arcadia. The area is divided into a number of districts and jurisdictions, creating significant political challenges in terms of managing the watershed as an entire system. Upland areas in the watershed are dominated by agricultural activities and phosphate mining, while the coastal areas are more urbanized and undergoing rapid population growth. Maintaining water quality, wildlife habitat, and water supplies are concerns throughout the region as human populations grow and land use intensifies. Resolving these issues requires cooperative management in the private sector and across all levels of government.

The Problem

The rate of development in Charlotte County has been increasing since the 1940s. This early development led to large areas of wetlands being dredged and filled for residences. More than 200 miles of navigable canals are now part of the residential landscape of the metropolitan area along Charlotte Harbor where the Peace River enters into the harbor.

Charlotte Harbor has important recreational and commercial fisheries, including important species such as the tarpon (Megalops atlanticus), snook (Centroponus undecimalis), and spotted sea trout (Cynoscion nebulosus). Estuarine species are threatened by loss of vital habitats such as seagrass beds and fishing pressures. Fisheries habitats can be damaged by boats, dredging, nutrient overloading, and conversion of wetlands to upland area. The importance of fish populations to the Charlotte Harbor system has resulted in efforts to enhance fish habitat, control damage to seagrass beds, improve water quality and implement significant restrictions on fishing methods.

Project Implementation

The project was initiated by a group of conservation-minded fishermen who formed the Charlotte Harbor Reefs Association, Inc., a non-profit corporation. Driven by the desire to increase the number of fish in Charlotte Harbor, the group gathered information on how to best accomplish this goal and improve the aquatic resources of Charlotte Harbor. During the planning phase it was determined that concrete Reef Balls were the most environmentally compatible and appropriate type of fishery habitat for the project. With the support of many fishermen, as well as a number of public and private organizations, the Association set up a plan of action that included the construction and deployment of 500 Reef Balls in three distinctly different environments within Charlotte Harbor.

The Charlotte Harbor Reefs Association sought and obtained funding from a variety of sources, including the Charlotte Harbor National Estuary Program and Florida Department of Environmental Protection. In-kind support services were provide by Reef Balls Foundation, Inc., who donated the molds and assisted

Introduction to Charlotte Harbor

Charlotte Harbor is located in sub-tropical climate and its watershed contains large tracts of undeveloped areas which provide habitat for a wide array of rare plants and animals. General characteristics of Charlotte Harbor and its watershed include:

- Several endangered species, including the Florida manatee, wood stork, Florida panther, and Atlantic loggerhead turtle.
- The current human population of 1.1 million (1997 census) is expected to grow to 1.65 million by 2020.
- The area supports a wide variety of economic uses such as tourism, ranching, citrus farming, phosphate mining, vegetable crops, and residential and urban development.
- More than 275 species of shellfish are found in the Charlotte Harbor estuaries, including oysters, clams, and scallops. However, large areas are closed to shell fish harvesting due to bacterial contamination and periodic red tide events.
- The total coastal population increases by more than 30 percent during the wintertime, due to seasonal business and vacationing tourists. Total annual tourism expenditures can exceed $1 billion.
- Recreational fishing is a major attraction in both inland and coastal areas of the watershed.

Overview of the Project

The Charlotte Harbor National Estuary Program, Florida Department of Environmental Protection, Reef Ball Foundation, Inc., and the Charlotte Harbor Reefs Association formed a partnership to improve existing water quality and creating new juvenile fishery habitats in these residential canals, as well as under piers around the mouth of the Peace River and in the main body of Charlotte Harbor.

The partnership chose to construct and deploy five hundred Reef Balls in specified areas. Reef Balls are made of concrete, placed on the seafloor bottom, and provide a habitat for juvenile fish. Forty volunteers from the Charlotte Harbor Reefs Association worked full time for nearly four months to construct the concrete modules, using molds donated by the Reef in placing the Reef Balls on site, and the Florida Sea Grant Extension office provided technical assistance.

The process for obtaining the necessary permits began in July of 1997. Placing Reef Balls under private docks in dredged canals within the Punta Gorda Isles residential area was a first of its kind project. Obtaining permits for this phase required considerable time and effort. It is expected that the great success of the project will encourage state agencies to allow this kind of project to be conducted in other areas of Florida.

Fisheries habitat enhancement in the east central part of Charlotte Harbor involved renourishing an already established artificial reef. Once permits and additional funding were obtained for this project, 210 reef balls were added in two phases to a marginally productive reef created 10 years earlier using construction rubble. The site, located in a more offshore environment than the other locations chosen for enhancement, is a mile in length and 150 feet wide, with water depths ranging from 13 to 16 feet.

The final project involved providing fishery habitat under public piers where it would be accessible to everyone. Three existing park areas on the Peace River were selected, and the Reef Balls were recently deployed.

Success of the Project

- The project has united many interest groups, organizations and government agencies in fishery habitat development and enhancement. These groups included the Charlotte Harbor National Estuary Program, Florida Sea Grant Extension, Reef Ball Foundation, Inc., Florida Department of Environmental Protection, and the Charlotte Harbor Reef Association. Future projects are already being planned which include some of these same groups.
- The large group of volunteers, which dedicated many hours, is responsible for making this fishery habitat project a success. This group is now more educated about problems in the estuary and the value of its natural resources.
- Groups in other locations in Florida are interested in creating artificial fishery habitat under private docks. The response from the private residences to have Reef Balls placed under docks was overwhelming. More than 150 waterfront residents were willing to pay for Reef Balls to be placed under their docks. Not all of the requests could be fulfilled during this project; sixty of these residents were placed on a waiting list for future projects.
- Requests for further information regarding this project continue to come in. The State of Florida is looking at this project as a potential

Ball Foundation, Inc. Three types of sites were chosen for fish habitat improvement through the introduction of Reef Balls, including existing artificial reefs, under private docks, and under public piers.

- 210 Reef Balls were placed in groups of three in the harbor on an existing permitted artificial reef site.
- Homeowners in the residential area of Punta Gorda Isles paid for the installation of another 180 Reef Balls to be placed under 90 private docks within neighborhood canals.
- Finally, the remainder of the Reef Balls were placed under piers along the mouth of the Peace River.

Project Objectives

The primary objective of the project was to provide more habitat for fisheries and to improve fishery production in Charlotte Harbor. In addition to fish habitat enhancement, the Reef Balls encourage the colonization of oysters and other marine organisms, which filter the water and provide a forage base for certain species of fish.

The Charlotte Harbor project areas were chosen for fish habitat enhancement for the specific purpose of providing fishermen a fishing destination. Much of the damage to natural spawning grounds in the Harbor occurs when fishermen traverse seagrass beds looking for fish. Seagrass beds provide important habitat for fish by providing shelter and food, and are particularly important for nursery habitat. Providing fishermen a specific fishing destination will help to divert fishermen away from shallow waters and seagrass beds to an easily accessible location in deep water.

The placement of Reef Balls under the piers at the mouth of the Peace River in the upper portion of Charlotte Harbor and adjacent to downtown Punta Gorda, was done to create high quality habitat and attract fish to these sites. The three piers chosen for the project extend into the river from two parks along the water and are heavily used by the public for nature watching and fishing. Fishermen and nature lovers alike will be able to enjoy the large populations of fish from these easily accessible piers.

form of mitigation for wetland projects.

Lessons Learned

Although the Reef Balls have only recently been deployed, ongoing monitoring has provided some initial observations:

The Reef Balls colonized with oysters and other marine organisms much more quickly than expected under the private docks.

- Within weeks of deployment, large numbers of juvenile and adult fish were utilizing the structures deployed under private docks.
- Water monitoring efforts over the last twelve months around the Reef Balls under private docks have shown "better than expected" levels of dissolved oxygen.
- Reef Balls placed in the harbor were colonized quickly, but crab predation scoured larger organisms. However, regrowth occurred and different species of fish are now attracted to the area.
- Obtaining permits required considerable time and effort. The great success of the project has encouraged state agencies to allow this innovative project to be duplicated in other areas of Florida.

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 the 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 basin-wide.

The NEP is managed by the US. 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; Neil, 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.

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<=Back