U.S. Fish & Wildlife Service

The Coastal Program

Success in Galveston Bay

Caring for Our Coastal Habitats

Brown pelican. Corel Corp. photo

Big Reef Nature Park Restoration

In Galveston Bay, the U.S. Fish and Wildlife Service's Texas Coastal Program partnered with the city of Galveston to conserve a natural area consisting of 210 acres of intertidal lagoon, salt marsh, mudflats, and dunes at Big Reef Nature Park. This area provides important habitat for a great array of wildlife species, including fish, crustaceans, and birds that depend on this area for feeding, breeding, nesting, and resting sites.

Of Flyways and Fishes

One might think that nature would be lost against Houston's backdrop of petrochemical complexes and smoke stacks, but the opposite is actually true. More than 465 species of birds have been found on the upper Texas coast, more than any other state in the country. The Texas Gulf Coast is known as the "funnel of the flyways" and is used by millions of birds as a refueling and rest stop on their spring migration to points north. Big Reef is one site that provides important seasonal habitat for large numbers of migratory shorebirds including the threatened piping plover. Brown pelicans can be found feeding and resting here daily. Many species of waterfowl feed and roost in the lagoon in winter. In addition to the high values these habitats provide for bird species, these marshes are extremely important nursery areas for fin- and shellfish species. Due to its close proximity to the Gulf of Mexico, a very diverse assemblage of fishes use this area, with over thirty different species documented. (Slide of brown pelican)

Flocks of Birders

Nature tourism is the fastest growing segment of the travel industry, averaging a 30% increase each year since 1987. Texas' Rio Grande Valley attracts visitors nationally and internationally each year who travel through the region to watch the birds and participate in major events such as the Great Texas Birding Classic, held every April. Bird watching already contributes more than $100 million annually to the Lower Rio Grande Valley. (Slide of indigo bunting)

Threats and Solutions

Threats to Big Reef are primarily due to use of the area by motor vehicles. Extensive use by cars, four-wheelers and motorcycles has damaged dunes and mudflats, harassed resting and feeding birds, and killed nestlings too young to fly. Illegal dumping is also a threat in these remote areas.

The restoration project consists primarily of limiting vehicular access to sensitive habitat areas with 1,500 feet of traffic bollards. The project also provides funding and technical assistance for a mile-long hiking trail complete with dune bridges and interpretive signage. The project has proven so successful that the local conservation community has adopted it and coordinates regular trash clean-ups of the area.Galveston Bay State Park Restoration

Wetland habitats in Galveston Bay are disappearing at an alarming and accelerating rate. Since the 1930s, what was once a near continuous system of wetlands has shrunk from over 1,300 acres to about 200 acres. Without intervention, scientists predict those remaining acres of wetland will disappear in five years. Thanks to a Federal/State partnership formed in 1997, the Galveston Island State Park Marsh

Years of Decline

Healthy, interspersed tidal marsh in Galveston Bay State Park in 1981. These salt marshes provided important habitat for fish and birds. (Note sign in foreground.)

Same view 16 years later: subsidence of the West Bay's soft, sandy bottom combined with sea level rise and wetland conversion to overwhelm the salt marshes.

Restoration Project is protecting, restoring and enhancing 749 acres of aquatic habitat and wetlands just east of Jamaica Beach in the west end of Galveston Bay.

Where Did the Fish Go?

Area fishermen first noticed the problem and complained to the Texas Parks and Wildlife Department (TPWD), urging the agency to reverse marsh and wetland losses. Older anglers fondly remember the lush seagrass beds and canals that led into secluded ponds attractive to speckled trout, red drum and flounder. "Forty years ago, the band of emergent marsh from Galveston to San Luis Pass was 1,000 feet wide," said Ted Hollingsworth, Natural Resource Protection manager for TPWD. "Now, it's down to 50-100 feet. When the marsh is gone, so is the fishery." As much as 96% of commercial fishery landings and 70% of recreational landings along the Texas coast are species that depend on estuaries at some point during their life cycle.

Without the marshes, wading birds don't have the small fish and shrimp to feed on. Half of the 23 species of colonial water birds known to nest around Galveston Bay feed primarily in marsh or marsh-edge habitat. The rest rely on food sources that are themselves marsh-dependent. Wetlands also protect against flooding by slowing and dispersing runoff, and healthy vegetation in coastal wetlands filters silt, sewage and non-point source pollutants before they enter the bay.

Partners to the Rescue

A team of biologists and engineers from several state and Federal agencies formed a Task Force to evaluate existing data on the site, gather new data, and devise a restoration strategy. About 75% of the funding for the project - or $1.46 million - comes from the National Coastal Wetlands Conservation Grant Program, administered by the U.S. Fish and Wildlife Service. Another $105,000 in administrative funding comes from this agency's Texas Coastal Program. The state-funded Galveston Bay Estuary program contributed an additional $50,000. The remaining $537,000 comes from the Apex Restoration Fund, a compensatory settlement made after a 1990 Apex barge oil spill in Galveston Bay. Other partners on the Task Force include the National Marine Fisheries Service, the U.S. Army Corps of Engineers, the Texas General Land Office and the Galveston Bay Foundation.

Project Details

This project is the second largest of its kind ever undertaken in the nation. Plans call for protection of 100 acres of inter-tidal marsh, restoration of 115 acres and enhancement of another 20 acres. Another 350 acres of tidal lagoon are earmarked for enhancement and restoration, 100 acres of high marsh for protection and 25 acres of salt flat for protection or restoration. In addition, 41 acres of seagrass beds are targeted for either protection or creation.

The first step is to construct a levee made of "geotube" (heavy fabric socks which are hydraulically filled in place with sediment) around the site to be restored. The basin contained by the levee is then filled to "target elevation" with sediment. As the sediment consolidates, it is planted with the appropriate marsh vegetation. Over time, new drainage patterns form and the levee is removed in places to allow a natural exchange of water and organisms with the new marsh. Once complete, the site will be monitored closely.

According to U.S. Fish and Wildlife Service Biologist Phil Glass, one of the lead players in coordinating and overseeing the Galveston Bay restoration project, these coastal wetland habitats are the "batteries that provide the energy for the entire bay ecosystem."