

Restoring and creating fringe wetlands along the bay and bayou shorelines will help prevent or reduce erosion and protect adjacent land uses. Wetland plants stabilize shoreline soils at the shoreline and reduce the erosive energy of waves, currents, and tides (Marble, 1992). Mud and sand transported by water is trapped in the marsh, raising the elevation of the intertidal area and eventually preventing waves from breaking on the shoreline.

Texas wetlands serve as nursery grounds for over 95 percent of the recreational and commercial fish species found in the Gulf of Mexico. The abundance and biomass of crustaceans and fishes are significantly higher in salt marshes than in open-water habitats (Zimmerman and Minello, 1993). Wetland loss and degradation are detrimental to many important fisheries because of the loss of vital nursery functions such as enhanced food supplies and protection from predation (Boesch and Turner, 1984; Minello and Zimmerman, 1991; Zimmerman and Minello, 1993).

The TPWD coastal fisheries data for the Galveston Bay system show declines for a few wetland-dependent species, such as brown shrimp and Atlantic croaker (Walton and Green, 1993). However, Walton and Green (1993) state that fishery declines due to wetland loss are not conspicuous, probably because the time series of coastal fisheries data postdates the period of most rapid wetland loss, and the former abundance of marsh-dependent species is unknown. In addition, Zimmerman et al. (1991) point out that, in the near-term, sea-level rise increases the production of secondary consumers by enhancing access to drowning marsh surfaces; however, the long-term effect on fisheries production is unclear, and wholesale declines in fisheries are still a possibility.

Although there is little debate over the importance of wetlands to the coastal ecosystem, there is still considerable controversy over whether transplanted marshes function like natural systems, especially as fisheries habitat. Minello and Zimmerman (1992) compared habitat values of natural versus transplanted salt marshes on dredged material on the Texas coast. Transplanted marshes had significantly lower densities of decapod crustacea than natural marshes; however, fish densities of natural and transplanted marshes were similar. Minello and Zimmerman (1992) concluded that, given enough time, transplanted marshes can function as natural marshes. Minello (1994) suggests that in the northern Gulf of Mexico, the functional development of created salt marshes peaks within five years after marsh construction. Transplanted marshes may reach equivalency with natural marshes after one or two growing seasons for some marsh habitat functions, such as protection from predators (Minello and Zimmerman, 1992).

In summary, Dickinson Bay and the Dickinson Bayou watershed would greatly benefit from comprehensive wetland restoration and creation projects. Water and sediment quality data, erosion information, and wetlands status and trends data indicate that the bay and bayou are damaged ecosystems in need of restoration. Scientifically-based plans for wetland restoration and creation at the demonstration level are only an initial step toward restoring environmental health to the estuarine ecosystems of the bay and bayou. Besides more comprehensive planning and plan implementation, additional steps should include eliminating or minimizing the causes of wetlands degradation or destruction and preserving existing wetlands and upland buffers. Watershed management practices should be implemented to minimize the impacts of activities such as stormwater discharges on wetlands.

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