

EXECUTIVE SUMMARY

by William A. White and Jeffrey G. Paine

Wetlands and aquatic habitats are critical components of the biologically productive Galveston Bay estuarine system. This report is the culmination of a field investigation of wetland plant communities, and is one phase of the project, "Trends and Status of Wetland and Aquatic Habitats of the Galveston Bay System, Texas," sponsored by the Galveston Bay National Estuary Program (GBNEP). For purposes of this topical report, wetlands are defined and classified in terms of more classical definitions, for example, salt, brackish, and fresh marshes, in accordance with project requirements. The relationship of these wetland classes to the Cowardin and others (1979) classification system used to map wetlands is presented through various examples. Wetlands in this study were not defined in accordance with the "Federal Manual for Identifying and Delineating Jurisdictional Wetlands" (currently being revised) and, thus, should not be regarded as jurisdictional wetlands.

More than 150 sites were examined in the Galveston Bay system. Wetland plants were identified at selected field survey sites, principally along transects aligned perpendicular to the hydrologic gradient so that plant assemblages from the water's edge to upland areas were intercepted. Topography surveys were conducted along several transects. Measurements of elevation, distance, and plant community composition were made along the survey lines, which crossed salt marshes and brackish to fresh marshes. Elevations were measured to the nearest 0.5 cm and distances to the nearest meter. County soil surveys were used to define and characterize soils at the various field check sites. The locations of field survey sites were plotted on aerial photographs, and later accurately transferred to USGS 7.5-minute quadrangle topographic maps. Universal Transverse Mercator (UTM) coordinates were determined for each site and these data were entered into computer data management systems, including the geographic information system, ARC-INFO.

The most widely distributed wetland environments in the Galveston Bay system are marshes, the most extensive of which are brackish. Brackish marshes compose roughly 65 to 70 percent of the marsh system in the Galveston Bay project area. Salt marshes are a distant second, composing roughly 25 to 30 percent. Fresh marshes make up the remaining 5 to 10 percent of the marsh system. Many species can tolerate varying salinity regimes as well as water regimes, and there is, therefore, considerable overlap in the species composition of these marsh systems. Because of the predominance of brackish and salt marshes in the project area, more than 60 percent of the field surveys were located in these marshes. With reference to all sites visited, the 15 most frequently encountered species were headed by *Spartina patens* and *Distichlis spicata*. Other major species include *Spartina alterniflora*, *Batis maritima*, *Salicornia* spp., *Iva frutescens*, *Spartina spartinae*, *Borrchia frutescens*, *Juncus roemerianus*, *Aster* spp., *Typha* spp., *Scirpus maritimus*, and *Monanthochloe littoralis*. Of the species identified at the survey sites, about 34 percent are classified as obligate wetland plants, which means that under natural conditions these plants occur in wetlands with an estimated probability of 99 percent. Among these species are those typically found in wetter conditions (for example, those characterizing topographically low salt, brackish, and fresh marshes). Approximately 37 percent of the species listed are classified as facultative wetland plants. These species usually occur in wetlands or have an estimated probability of 67-99 percent of occurring in wetlands but occasionally they occur in nonwetland areas. These species typically define topographically higher marshes. About 19 percent of the listed species are classified as facultative. These species are equally likely to occur in wetlands or nonwetlands (estimated probability 34-66 percent). At the more than 135 sites surveyed for vegetation around the Galveston Bay system, approximately 40 soil types were identified from county soil surveys. Several soils were encountered more frequently than others, and can be considered the dominant soils corresponding to wetland communities. For example, the soil most frequently occurring at wetland survey sites was the Harris clay. This typically saline, poorly-drained soil is flooded by abnormally high tides, and supports a vegetation assemblage composed predominantly of *Spartina patens* and *Distichlis spicata*. These species were the most frequently encountered during field surveys.