

AN ENVIRONMENTAL INVENTORY OF THE CHRISTMAS BAY COASTAL PRESERVE

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EXECUTIVE SUMMARY

The goal of this report was to gather and integrate existing data, identify data gaps, and describe the environmental attributes of Christmas Bay relevant to the development of a management plan for the Christmas Bay Coastal Preserve. Christmas Bay can be influenced by events anywhere within its watershed.

Christmas Bay remains a near-pristine, 5,660-acre habitat worthy of Coastal Preserve protection. There are no known water quality problems, nor indications of potential water quality problems, in Christmas, Drum, or Bastrop Bays. The current water quality monitoring program is inadequate, however, in that the monitoring station at Christmas Point does not reflect conditions within Christmas Bay and samples are collected infrequently. Freshwater inflow is estimated to be 63,500 acre-feet per year, with point source discharges from permitted outfalls contributing 7.7 percent of the volume. It is recommended that one or more additional water quality monitoring stations be established. Sampling should be conducted monthly for at least two years to establish current baseline conditions, and quarterly, at a minimum, thereafter.

Christmas Bay is inhabited by 96 fish species, 68 crustacean species, 140 mollusk species, and numerous other invertebrate animals. Existing fisheries data, collected for other purposes, is inadequate to determine fisheries trends within Christmas Bay. The Christmas Bay complex is an important finfish and shellfish nursery area and a monitoring program designed specifically for the complex would provide useful information regarding the natural variability in fisheries productivity.

Christmas Bay harbors eight endangered or threatened species - bald eagle, brown pelican, peregrine falcon, whooping crane, piping plover, reddish egret, white-faced ibis, and green sea turtle - while three additional species - wood stork, white-tailed hawk, and swallow-tailed kite - inhabit the adjacent Brazoria National Wildlife Refuge. Seven waterbird nesting colonies surround the bay. Potential exists to create a colonial bird nesting island, of sufficient elevation and vegetated with suitable substrate, to stabilize and enhance colonial wading bird productivity.

The peripheral emergent wetlands experienced a 8.4 percent loss in total acreage of emergent vegetation between 1956 (4,701 acres) and 1979 (4304 acres). Changes in wetland vegetation type are difficult to interpret from the existing wetland maps. The seagrass meadows, composed of four species - shoalgrass, widgeon grass, clover grass, and turtle grass

- are the most valuable and productive habitat associated with the bay. Only widgeon grass is found elsewhere in the Galveston Bay ecosystem. The seagrass meadows have declined 36 percent in area, from 299 acres in 1956 to 191 acres in 1987, at an average rate of 3.5 acres per year. Studies should be undertaken to establish the relative abundance and seasonal dominance of these four species of submerged aquatic vegetation, for the extinction of turtle grass and clover grass may be eminent.

The 12,199-acre Brazoria National Wildlife Refuge has been a major, positive influence on the health and maintenance of the Christmas Bay ecosystem. The planned addition of 30,000 acres to the refuge will bring all of the Bastrop Bay shoreline into public ownership and further bay preservation. The presence of a hundred authorized cabins within the ecosystem has a negative impact on waterbird colonies, seagrass meadows, oyster reefs, and visual aesthetics.

Bastrop Bayou, Bastrop Bay, Drum Bay, Christmas Bay and Cold Pass function as an integral ecosystem. Drum Bay and Bastrop Bay would be valuable additions to the Christmas Bay Coastal Preserve.