

**Preliminary Habitat Management Plan for the Corpus Christi Bay Area**  
Outlining an Ecosystem-based Management Plan for the Corpus Christi Bay

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# Preliminary Habitat Management Plan for the Corpus Christi Bay Area

## Introduction

The Coastal Bend Bays & Estuaries Program (CBBEP) seeks to develop a habitat management plan (Plan) that would be used to direct habitat preservation, creation and/or restoration activities in the Corpus Christi/Nueces Bay area. The Plan would facilitate application of fiscal opportunities and resources associated with coastal development, impact restitution, supplemental environmental and community service projects and grants. The Harte Research Institute for Gulf of Mexico Studies (HRI) has been selected as a contractor to the CBBEP to perform tasks to further develop the Plan.

During the first phase of development, the major tasks were to:

1. Conduct individual meetings with stakeholders to explain the project and solicit feedback on what the needs are for the Corpus Christi area.
2. Host a workshop with stakeholders in order to discuss project components, boundaries, strategies, and methodologies.
3. Create a map that shows project plan boundaries, habitats within the boundaries, and its regional influence.
4. Develop a preliminary plan report (this document).

To date, three major deliverables have been submitted to the CBBEP (in chronological order):

1. Palmer, T., J. Brenner, T. Nance, and P. A. Montagna. 2009. Workshop Summary: Habitat Management Plan for the Corpus Christi Bay Area. Report for Coastal Bend Bays and Estuaries Program Project 0708. Harte Research Institute for Gulf of Mexico Studies, Texas A&M University - Corpus Christi, Corpus Christi, Texas, 118 p.
2. Brenner, J., P. A. Montagna, and J. Pollack. 2009a. Initial Meetings Summary - Habitat Management Plan of Corpus Christi/Nueces Bay. Report submitted to the Coastal Bend Bays & Estuaries Program for project 0708. Texas A&M University - Corpus Christi, Harte Research Institute for Gulf of Mexico Studies, 17 p.
3. Brenner, J., P. A. Montagna, T. Nance, and T. Palmer. 2009b. Boundary Map Report - Habitat Management Plan of Corpus Christi Bay. Report submitted to the Coastal Bend Bays & Estuaries Program for project 0708. Texas A&M University - Corpus Christi, Harte Research Institute for Gulf of Mexico Studies, 33 p.

The first deliverable (Brenner, Montagna, and Pollack 2009a) was a report describing the results of completing Task 1 of the scope of work of this contract. The second deliverable (Palmer, Brenner, Nance, and Montagna 2009) was the result of Task 2. The third deliverable (Brenner, Montagna, Nance, and Palmer 2009b) was the result of the third task. The current document is the final report for the fourth task.

## Findings

The initial meetings were held with 43 organizations of key stakeholders ranging from federal, state and local government agencies, universities, development, industry, citizen, environmental, and conservation groups. The purposes of the meetings were to confer on the objectives of the plan, to identify fundamental environmental services and goals, to assist in plan formulation, to outline metrics of successful implementation, and to identify mechanisms or actions to support plan implementation. In general, stakeholders agreed that creation of the Plan is a good idea and that the Plan would provide helpful guidance for the conservation of Coastal Bend habitats. The most frequent comment given by stakeholders was the need to make the Plan accessible and applicable to other bay systems. Stakeholders were also interested in expanding the scope of the Plan to include freshwater areas such as reservoirs, riparian areas, and bird sanctuaries. Other issues of concern were the potential impacts of climate change, beneficial uses of dredge materials, ecosystem services, beach & bay access, and beach raking. Stakeholders also wanted the Plan to incorporate adaptive management strategies, including scheduled review and update periods every 5-10 years.

A workshop was held for the stakeholders on February 18th 2009. The objectives of the workshop were to collectively identify:

1. Priority habitats and ecosystem services.
2. Geographic coverage of the Plan.
3. Range and scope of activities that should be part of the overall Plan.
4. Mechanisms and resources needed to support the Plan.

Input was received from 63 stakeholders representing 35 organizations including agencies from the three main levels of government (local, state, and federal) and other stakeholders from both private and public organizations. Participants identified 33 priority habitats. The most commonly listed habitats were freshwater wetlands, man-made structures, rookery islands, and dune habitats. A total of 21 ecosystem services were identified as important. Ecosystem services identified for different habitats were providing habitat, water regulation, disturbance regulation, soil retention, food provisioning, and recreational. A total of 65 specific locations were mentioned with the intention of being included in the future Plan. The most commonly mentioned locations were Packery Channel, the bayside of Mustang Island, and Mustang Island sand dunes. When grouped into larger areas, the most frequently mentioned locations were Oso Creek Watershed and Upper Laguna Madre. Many stakeholders suggested that the areal extent of the Plan include the entire watersheds for each bay, the area out to 10 miles offshore, and the Nueces watershed up to the Wesley Seale Dam. Numerous activities were proposed for the Plan. There was consensus that education was the most important activity in promoting the sustainable production of ecosystem goods and services. Three other activities, all regulatory, were deemed important activities, including the implementation of best management practices (BMP's), smart growth and park space planning. Several federal, state, city and other funding opportunities were identified in the Habitat Management Plan workshop. Other sources of support for implementing activities were also identified. Many private and public barriers were identified that may hinder implementation of actions. Over 45

organizations from governmental, educational, non-profit and private organizations were identified as potential partners for participation in the Plan.

Based on the results from the initial meetings and workshop, a Plan Boundary Map has been created (Figure 1). The Boundary was developed using criteria that were created after analyzing feedback from the workshop. The boundary map was created using an ecosystem-based perspective. The primary guidelines were natural hydrologic units and ecoregional boundaries. These natural guidelines were modified to include relevant socio-economic units. The resulting boundary merged both natural and human criteria and has an area of 247,363 hectares (611,247 acres). Therefore, the boundary represents the core planning area for representative habitats, and it comprises 7.94% of the CBBEP working area. The area surrounding the boundary will influence the Plan, and this total area is also within the working area of the CBBEP. This characteristic will provide CBBEP with the opportunity to guide planning by ensuring that conservation and sustainable development projects are conducted in this buffer area. Major biophysical features included within the boundary are the Nueces River Delta, Corpus Christi, Nueces, Oso, and Redfish Bays, in addition to parts of the upper Laguna Madre. The cities of Corpus Christi, Robstown, Aransas Pass, and Port Aransas are entirely included within the boundary. Robstown, Portland, Rockport and Ingleside are partially included in the plan. Mustang Island and the Texas State owned waters in the Gulf of Mexico are also included in the Corpus Christi Bay Boundary Map. The boundary represents the spatial framework at an appropriate scale for the design and implementation of ecosystem-based projects.

To summarize the findings, there is a strong consensus among regional stakeholders that an ecosystem-based habitat management plan is needed for the region. The plan should be focused on the Nueces Bay and Corpus Christi Bay area (Figure 1). There are numerous activities that can be proposed, and stakeholders are ready and willing to participate in cooperative and collaborative efforts to implement the plan.



Figure 1. Corpus Christi Bay Area Habitat Management Plan Boundary Map. Map shows criteria used to define the boundary

## Preliminary Plan

What follows is an outline of a preliminary plan that integrates the information obtained during initial meetings, workshop, and review by selected participants. These are in the form of recommendations to the CBBEP concerning future potential activities and implementation of the ecosystem-based management plan.

***Future activities.*** The range of potential activities is broad (Palmer et al. 2009). However, there was consensus that they are in four broad areas: 1) Communication, 2) Regulatory/Planning, 3) Habitat Management, and 4) Construction and Acquisition. The overall consensus was that two most important activities that are needed are: 1) a communication strategy that includes education, youth, and community programs, and 2) a program focused on regulatory and environmental planning to include best management practices, smart growth, green-space, and conservation.

The prioritization of individual habitats to be managed did not occur in the workshops held. However, several habitats were added that were deemed to be missing from the Corpus Christi Bay Conceptual Model (Figure 1 and Table 4 in Palmer et al. 2009). General locations that were of most concern were the Oso Creek Watershed and upper Laguna Madre. More specific locations that were of most concern were Packery Channel, the marsh on the Corpus Christi Bay side of Mustang Island and sand dunes on Mustang Island. It may be useful to create a habitat and location prioritization survey for stakeholders to complete. Analysis of such a survey would allow CBBEP to accurately prioritize which habitats and locations are of most concern to stakeholders.

This Plan will provide a new view of habitat conservation by focusing on the goods and services provided by habitats to people and by connecting economic development activity in the project area with ecosystem and habitat creation, restoration, conversion, conservation, and preservation goals. The Plan will be based on an evaluation of many factors including: the relative habitat abundance, habitat status and trends, habitat assessment, and a description of ecosystem services that are provided by the habitat. The services provided by habitats will be contrasted to what is being mitigated in various projects. The Plan will describe the regulatory and governance framework to facilitate economic development decisions and achievement of the Plan goals. The Plan will provide ecological and social and economic justification on how projects are prioritized, selected, implemented and how they shall contribute to overall ecosystem services needs.

There was also consensus that there is a need for specific projects, such as education, best management practices, smart growth, and green-space planning.

Stakeholders were very interested in making the Plan accessible and applicable to other systems. We propose creating a “how-to” template on developing habitat management plans. The “how-to” template could be made available, along with the Plan, on the Texas Digital Library. This will provide valuable information to groups seeking to develop similar plans.

As part of the Plan development, stakeholders expressed interest in the production of targeted end-products that would be beneficial to their goals and missions with respect to the Plan. The creation of GIS map products of habitat changes over various time scales would be one possible end-product of Plan development that could be made available to stakeholders. Stakeholders also expressed interest in the Plan incorporating a long time horizon in order to facilitate using an adaptive management philosophy. To this end, activities could include an examination of potential climate change scenarios and development of long-term alternate scenarios for habitats within the Plan boundary.

***Future implementation.*** Any management plan is going to require support to carry out the activities. Support will come in a variety of forms including: 1) collaboration and cooperation, and 2) funding. There was strong consensus that organizations want to partner on both fronts. Many funding opportunities were identified by stakeholders.