

# **A Coastal Wetlands Priority Acquisition Plan for Hancock, Harrison, and Jackson Counties, Mississippi**



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## INTRODUCTION

The Mississippi coast is located on the north-central Gulf of Mexico. The Mississippi shoreline extends approximately 70 statute miles from the Alabama State line near the Grand Bature Islands in Jackson County, to the Louisiana State line on the Pearl River in Hancock County. This area encompasses some 369 statute miles of tidal shoreline (Christmas, 1973). Eleuterius (1973) estimated that over 67,785 acres of coastal marshland existed in 1972. Much of these wetlands contain natural landscapes, fragile ecological communities and a diversity of unique fauna and flora. The abundance and productivity of resources occupying wetlands are a product of the quantity and quality of the wetland habitat. The rapid loss or modification of the coastal wetland habitat has increased the need for management to maintain, improve, and prevent further deterioration of the wetland habitat and associated resources.

The State of Mississippi public policy regarding protection of coastal wetlands is:

It is declared to be public policy of this state to favor the preservation of the natural state of the coastal wetlands and their ecosystems and to prevent the despoliation and destruction of them, except where a specific alteration of specific coastal wetlands would serve a higher public interest in compliance with the public trust in which coastal wetlands are held. Section 49-27-3, Mississippi Code, 1972, as amended.

And

In recognition of the national policy expressed in the Coastal Zone Management Act of 1972, Public Law 92-583, the council is directed to include an overall plan for use of coastal and private wetlands in the Mississippi Coastal Management Plan being prepared by the council, and the council is further directed to identify and include in such plan specific coastal and private wetlands which the council recommends should be set aside as estuarine sanctuaries. Section 49-27-65, Mississippi Code, 1972, as amended.

In an effort to protect and manage Mississippi's diminishing coastal wetland resources, the Mississippi Department of Marine Resources initiated the Coastal Preserves Program in 1992. The Mississippi Secretary of State's Office (SOS) is an active partner in the Coastal Preserve Program through an established cooperative agreement whereby both agencies agree to work together towards effectively acquiring, managing, and protecting Mississippi's coastal wetlands. The Coastal Preserves Program land acquisition effort is an important nonregulatory instrument for acquiring, protecting and managing Mississippi's remaining coastal wetland ecosystems.

The Coastal Preserves Program has identified approximately 83,000 acres of coastal wetlands and associated uplands within twenty Coastal Preserve sites (Figure 1). All lands within the twenty Coastal Preserve sites have been assigned a high priority acquisition status because of their unique habitats and the multiplicity of functions they perform as pollution filters, sediment and toxicant traps, flood control, groundwater recharge areas, primary production areas and important nursery habitat which contribute to the productivity of an abundant fishery resource.

The two most important criteria governing the acquisition of properties within the Coastal Preserves are: 1) properties can only be bought from willing sellers; and, 2) funding must be available. This wetland ranking system will be applied to Coastal Preserve sites when comparing two or more wetlands with willing sellers. Different point systems are used for each theme to take into account the importance of the factor towards accomplishing the goals and interests of the Coastal Preserves Program. When prioritizing coastal wetlands, it must be recognized that the thirteen ecological factors listed in this plan interact in complex ways, and using them to prioritize a wetland's significance can be more complex than simple summation of each factor. In some instances, the final rating will probably require some degree of professional judgment.

Wetlands are a dominant part of Mississippi's coastal landscape and are vitally important to many aspects of the coastal economy and ecology. Management of these properties will recognize the importance of conserving and utilizing coastal wetlands as a natural resource essential to the functioning of the entire estuarine ecosystem (Montague and Odum, 1997). In the past, interest in the public values of coastal marshes has paled within the broader context of coastal development. As development of the coastal zone continues, public policy questions involving management of Mississippi's remaining coastal wetlands will certainly intensify.

This Coastal Wetlands Priority Acquisition Plan will complement efforts to identify and prioritize sites with ecologically significant characteristics for acquisition, create criteria and guidance for prioritizing functional wetlands or uplands contiguous to the Coastal Preserves, and guide acquisition efforts and selection of sites suitable for future mitigation efforts. This procedure will fit within the context and objective of the Coastal Preserves Program and is expected to complement other federal and state acquisition efforts in Hancock, Harrison and Jackson County, Mississippi.

## **AMENDING THE PRIORITY ACQUISITION PLAN**

The attached priority acquisition plan is considered a living document. The numerical "value" given to each of the thirteen ranking factors reflects a "snap-shot" of the current functional and value priorities influencing coastal wetland acquisition along the Mississippi Gulf Coast today. This document should be amended on a regular basis to address newly developing threats and impacts to Mississippi's coastal wetland habitats in the future.

When prioritizing coastal wetlands for acquisition, the Coastal Preserves Program recognizes that the ecological function criteria within this plan interact in complex ways, and using them to prioritize a wetland's significance can be more complex than simple summation of individual characteristics. The results obtained from this plan are designed to give, in numerical terms, the current relative acquisition merits of a tract of land. The numbering system is relative and based upon the assumption that the user will have some understanding of the key characteristics of each site and of the functional criteria. Because of this, rating of a site will probably still be subject to a significant amount of best professional judgment and/or the quality of the documentation for each site.

The Coastal Preserves Program tested this priority acquisition plan on four chosen sites along the Mississippi Gulf Coast and found the plan to be effective for prioritizing coastal wetland parcels for acquisition. After reviewing the results of this test, the Department of Marine Resources agreed that the parcels were prioritized correctly. As this document is amended to address newly developing threats and impacts to Mississippi's coastal wetland habitats, previous site prioritization's should also be amended to reflect current changes in acquisition priorities.

## **WETLAND FUNCTION AND VALUES**

It is the intent of this document to use the functional role of a wetland site as the basis for its prioritizing. This requires an understanding of the role a wetland plays in the watershed, and how these functions are linked to the biological, physical, and chemical integrity of the watershed. In addition to performing important ecological functions, wetlands provide many services to humans, including flood protection, storm buffering, water quality maintenance, erosion control, and recreational opportunities. The wetlands rated as most valuable are those that play the most significant roles of maintaining the stability and integrity of the entire watershed process (Kiker and Lynne, 1997).

A key consideration when prioritizing acquisition sites is ensuring that the procedure is ecologically sound and scientifically valid, and based on the best information available about the functions of the wetland. A major goal of a priority acquisition plan is to develop and utilize a comprehensive database that would make it possible to examine each wetland for its functional significance within a watershed. Reaching this goal will improve planning, impact assessment, and mitigation for development projects that impact wetlands. Rather than minimizing acres of wetland impact as is currently being done, the new objective would be to minimize impacts to the most important wetland functions. Mitigation can be improved by giving priority to sites with the highest potential for performing the same functions as the site that was impacted.

The three broadest groupings of wetland functions include water quality, hydrologic, and habitat functions. These factors determine potential impacts to the ecological integrity of a watershed if a particular wetland function were lost. These functions may also be used as a means of considering cumulative impacts and the practicality of replacing lost functions through mitigation in determining a wetland's overall significance.

## **WATER QUALITY**

Population increases along the Mississippi Gulf Coast are resulting in increased land development and a corresponding increase in significant urban pollutant runoff. The presence or absence of wetlands can have a significant impact on water quality within a watershed. Wetlands have attracted attention as components of pollution treatment systems because of their large plant production, high decomposer activity, anaerobic condition and adsorptive areas in the sediments (Valiela et. al., 1976). By first flowing through wetland areas, suspended or dissolved pollutants may be transformed to less harmful or even useful forms by being bound into organic matter, buried in sediments, or converted into gases and vapors (Montague and Odum, 1997).

Three parameters contribute to a wetland's ability to perform this important water quality function. The closer the wetland is to a pollutant source the greater its ability and better opportunity is has to perform significant water quality functions (1). Wetlands contribute similar water quality functions for surface water bodies based upon position within the watershed in relation to the surface water source (2). All wetlands have the ability to perform critical water quality functions, however, to what degree they will be required to perform these functions will depend upon future development of the area (3).

1. Proximity of wetland tract to pollution source within watershed.

	<u>Points</u>
Wetland is located within 5 miles of a major pollution source.....	5
Wetland is located within 10 miles of a major pollution source.....	3
Wetland is located greater than 10 miles from a major pollution source.....	1

2. Proximity of wetland tract to surface water source within watershed.

	<u>Points</u>
Wetland is located at the headwaters of a watershed or within 2 miles of a surface water source.....	5
Wetland is located within 5 miles of a surface water source.....	3
Wetland is located greater than 5 miles from surface water source.....	1

3. Development threat.

Incompatible development of site is highly likely in near future.....	10
Plans for development of site are under consideration but not expected in near future.....	5
Site is remote, no threat of development in area.....	1

**HYDROLOGY**

Hydrologic functions within a wetland include storage of surface runoff and floodwaters. The capacity of a wetland to perform these functions is determined by watershed position and size. Wetlands located within headwaters (2) receive more overland runoff and their position high in the watershed results in their water storage capacity having greater impact on overall watershed

hydrology and water quality. The larger the undisturbed wetland, the longer floodwaters remain in a wetland, thus there is more area available for water retention, pollutant removal, nutrient transformation and processing, removal of dissolved materials, organic carbon export, and retention of plant materials to provide on-site energy sources for microbial activity (4). Also, the longer the length of shoreline that the wetland occupies (5), the more significant the function in relation to other wetland functions.

4. Acreage of undisturbed wetland site.

Site is greater than 300 acres of undisturbed wetlands.....	5
Site contains 100 to 300 acres of undisturbed wetlands.....	3
Site contains less than 100 acres of undisturbed wetlands.....	1

5. Significant shoreline features.

Wetland site borders Gulf, bay, or major river.....	5
Wetland site contains bayous or streams.....	3
Wetland site without shoreline.....	1

**HABITAT**

The habitat function of wetlands is particularly difficult to assess, since good habitat for one species may be poor habitat for another. Overall habitat quality and value is highest where biodiversity and production is highest. The more habitat requirements the wetland fills for the greatest number of species, the higher the habitat significance.

Among various types of undeveloped lands, coastal wetlands make the largest contribution to regional biodiversity. The role of wetlands in providing habitat for both terrestrial and aquatic animal species is a well-known and widely accepted wetland function. Many species are dependent upon unique wetland habitat to meet one or more life cycle requirements and could not exist in a landscape without them (6). The high productivity of wetlands provides nutrients, other resources, and necessary structural habitat diversity needed by a variety of wildlife populations. Cheniers and maritime forests are unique habitats that provide wildlife corridors for movement pathways through areas of unsuitable habitat, and should be considered priority acquisition sites.

Coastal wetland habitats are essential to numerous commercial and recreational fisheries along the Mississippi Gulf Coast, and it can be asserted that destruction of these coastal wetlands and deterioration of the estuarine environment will destroy these fisheries. In the Gulf of Mexico nearly 95% of the total commercial catch is estuarine dependent species (McHugh, 1976). Any

wetland immediately adjacent to a vital spawning/nursery habitat that supports a commercial or recreational fishery should be considered a high priority acquisition site (5).

Nationwide about one-third of the species listed as threatened or endangered are dependent on wetlands, and more than fifty percent of the species of protected migratory birds depend upon or frequent wetland habitats. If threatened or endangered species on either state or federal lists are verified as present, or if the Natural Heritage Program designates an area as a significant natural habitat for threatened or endangered species, then the site is considered a high priority acquisition site (7).

Coastal wetland and surrounding upland areas with higher internal heterogeneity generally provide suitable habitat for more species and often better habitat for individual species due to greater food sources, nesting sites and cover. Areas supporting numerous interspersed habitats normally support higher wildlife diversity than homogenous areas because of the increased number of ecological niches available (8).

**6. Wetlands contain outstanding/unique natural habitat features.**

Site contains uncommon, unique or irreplaceable habitat.....	10
Site contains scarce or potentially scarce habitat.....	5
Site contains common habitat.....	1

**7. Endangered or threatened species habitat or occurrence.**

Confirmed habitat for federal or state recognized threatened or endangered species of wildlife or plants.....	10
Unconfirmed potential habitat for federal or state recognized threatened or endangered species of wildlife or plants.....	5
Marginal habitat for federal or state recognized threatened or endangered species of wildlife or plants.....	1

**8. Habitat for native wildlife and plant species.**

Habitat contains high diversity.....	5
Habitat contains low diversity, high productivity.....	3
Habitat contains low diversity, low productivity.....	1

## RESTORATION AND ENHANCEMENT

The overall goal of the Mississippi Coastal Preserves Program is "no net loss" of state-owned coastal wetlands. In an effort to address the nationally recognized "no net-loss" policy for wetlands, degraded wetland sites suitable for restoration or enhancement should be considered for acquisition. If a wetland has low functional significance because it is degraded or disturbed, it may still have the potential to be restored to higher levels of function. Restoration or enhancement of wetlands may be used to replace similar wetland functions lost elsewhere.

### 9. Site suitable for wetland creation.

Property contains sites suitable for wetland enhancement.....	5
Property contains sites suitable for wetland restoration.....	3
Property contains sites suitable for wetland creation or preservation.....	1

## MANAGEMENT

Management of wetlands must consider the wetland's functions in a more holistic landscape and watershed context. It is important to address the significance of each wetland function and manage the wetlands in a fashion that preserves the integrity of the entire watershed. Priority acquisition criteria include whether the site is contiguous to, or an inholding within, existing managed lands and could be incorporated into an existing management plan (**10**), suitability for public use (**11**), whether the site contains historical or cultural resources which could be protected through proper management (**12**), and management costs (**13**).

### 10. Manageability.

Site is an inholding or addition that will contribute significantly to management of region.....	10
Site addition will contribute significantly when added to other non-contiguous sites in region.....	5
Site is minor contributor to management of region.....	1

### 11. Suitability for public use.

Site is suitable for:	
hunting.....	1
fishing.....	1
hiking.....	1
camping.....	1
wildlife observation.....	1

**12. Historical and cultural resources protection.**

Contains sites eligible for listing in National Registry of Historic Places.....	10
Contains sites potentially eligible for listing in National Registry of Historic Places.....	5
Contains historic sites ineligible for listing in National Registry of Historic Places.....	1

**13. Maintenance and operating costs.**

Site will not add to State's maintenance costs.....	5
Site will increase public recreation but would add to State's maintenance costs.....	3
Site will not provide public use and would add to State's maintenance costs.....	0

**MISSISSIPPI COASTAL PRESERVES PROGRAM**  
**PRIORITY ACQUISITION CRITERIA**

Water Quality

1. Proximity to pollution source.
2. Proximity to surface water source
3. Development threat

Hydrology

4. Acreage of undisturbed wetland
5. Significance of shoreline feature

Habitat

6. Outstanding/Unique natural habitat features
7. Threatened or endangered species habitat
8. Wildlife and plant species habitat

Restoration/Enhancement

9. Site suitable for wetland restoration, enhancement, or creation

Management

10. Manageability
11. Public use
12. Historical and cultural resources
13. Maintenance

## **LITERATURE CITED**

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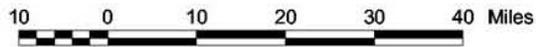
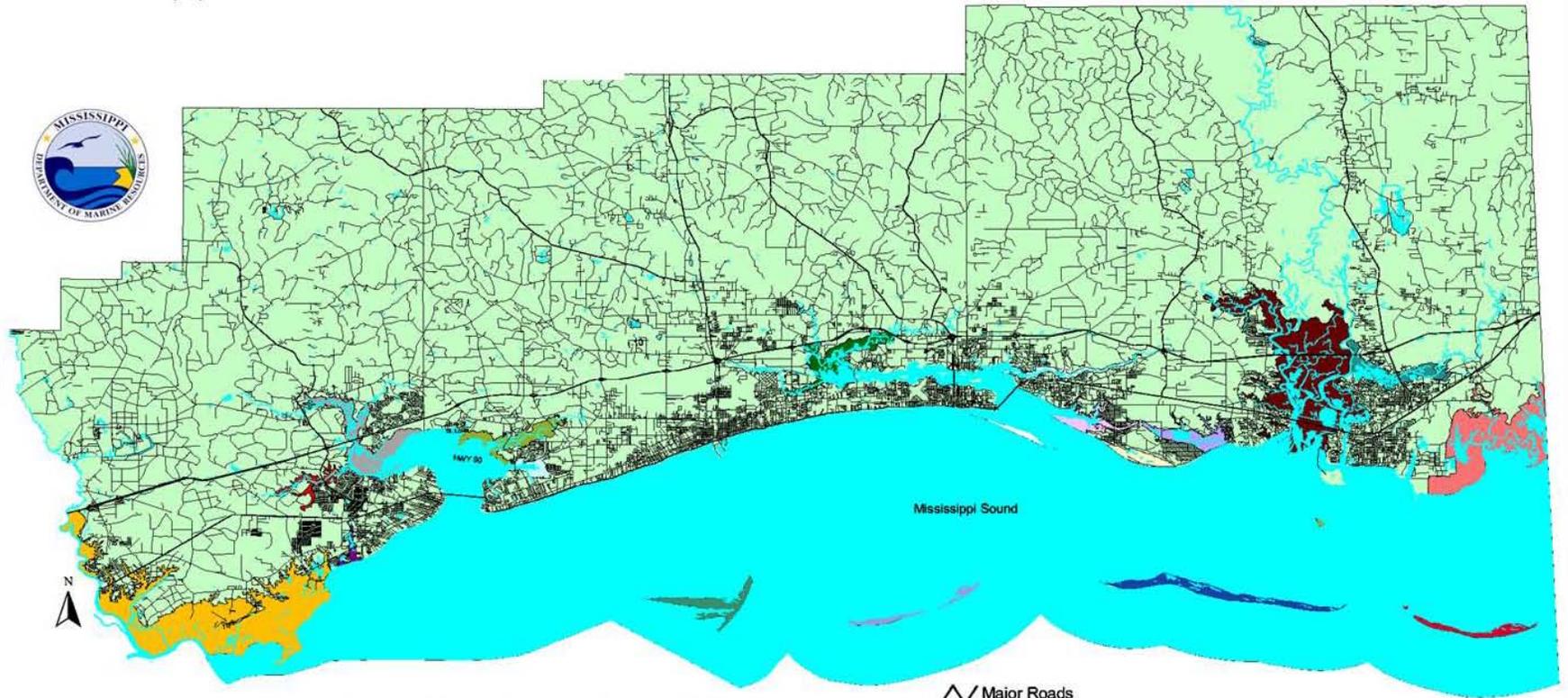
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# Mississippi Coastal Preserves



– For Planning Purposes Only –

Based on USGS 1:100,000 Digital Line Graph (DLG) data. Contact the Mississippi Department of Marine Resources (DMR) for questions concerning contents.

- Major Roads
- Roads
- Pascagoula River Marshes
- Round Island
- Ship Island
- Petit Bois Island
- Horn Island
- Hancock Co. Marsh
- Grand Bayou
- Graveline Bay
- Grand Bay
- Old Fort Bayou
- Escatawpa River Marshes
- Deer Island
- Davis Bayou
- Cat Island
- Belle Fontaine Marshes
- Biloxi River
- Bayou LaCroix
- Wolf River
- Bayou Portage
- Jourdan River