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Coastal Zone
Information
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UNIQUE ECOLOGICAL FEATURES OF THE LOUISIANA COAST

Louisiana State Planning Office



PREPARED FOR
THE LOUISIANA STATE PLANNING OFFICE

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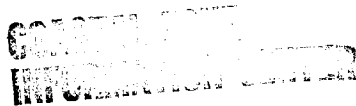
PREPARED FOR
THE LOUISIANA STATE PLANNING OFFICE

COASTAL RESOURCES PROGRAM

BATON ROUGE, LOUISIANA

JUNE 1976

Louisiana State Planning Office



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UNIQUE ECOLOGICAL FEATURES OF THE LOUISIANA COAST

INTRODUCTION

The Louisiana coast possesses a richness and diversity of natural resources that is unparalleled in the United States. From the ecological standpoint, the coastal deltaic and chenier plains have many unique features. The diverse habitats provided by isolated Pleistocene deposits, alluvial ridges, swamps, marshes, cheniers, salt domes, beaches, bays and nearshore Gulf waters support extremely dynamic and productive biotic communities.

In addition to supporting dense populations of many commercially important species, critical habitat for several rare or endangered species is provided. The marshes and bays of the coastal area are responsible for Louisiana being the premier state in annual production of fisheries and fur. This phenomenal productivity is in itself unique, for the Louisiana marshes are among the largest and most productive in the world. The brackish and saline marshes serve as prime nursery grounds for over 100 species of estuarine dependent fish and shellfish. The majority of species that are the basis of Louisiana's renowned commercial and sport fishery utilize these marshes during certain phases of their life cycle. Louisiana's wetlands normally winter five to six million waterfowl and provide nesting habitat for many species of wading and sea birds.

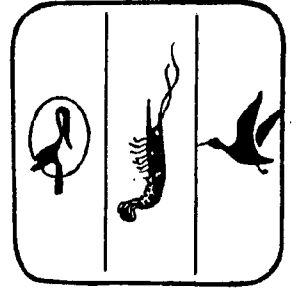
This report describes twenty three categories of unique ecological features of the Louisiana coast. These features have been divided into zoological, botanical and geological components. A unique ecological feature is defined as an area or a resource that is either (1) critical habitat for rare or endangered species, (2) of extremely high biological productivity, (3) of vital importance as a nesting, feeding, wintering or spawning area for fish and wildlife, (4) a rare or unusual occurrence for a species that may be near the limits of its range, (5) vital to the maintenance of a coastal ecological process, (6) a unique physiographic feature or (7) of exceptional recreational value. For each feature, the location, number, approximate size or acreage, unique importance and source of information is presented. Reference should be made to the unique ecological features overlay on which these features are mapped.

ENVIRONMENTAL MANAGEMENT UNITS

The Louisiana coast has been divided into nine environmental management units represented by Roman numerals on the overlay. These units correspond to hydrologic units which are natural catchment and drainage basins opened to the Gulf of Mexico. For purposes of coastal management, the landward boundary of these units is the coastal zone boundary. The natural levees of bayous and rivers and certain man-made features divide the environmental management units into natural drainage basins. These units are hydrologically distinct and can be managed as separate sub-systems. The geographical boundaries of each environmental management unit is as follows:

<u>Environmental Management Unit</u>	<u>Boundaries</u>
I	Coastal zone boundary to Pearl River to Bayou Terre aux Boeuf, including Lakes Maurepas and Pontchartrain
II	Bayou Terre aux Boeuf to the Mississippi River
III	Active Mississippi Delta south of Baptiste Collette Pass and Red Pass
IV	Mississippi River to Bayou Lafourche including the Barataria Basin
V	Bayou Lafourche to the Atchafalaya River
VI	Atchafalaya River to the Wax Lake Outlet, including the Atchafalaya Basin
VII	Wax Lake Outlet to Freshwater Bayou, including Vermilion Bay
VIII	Freshwater Bayou to Highway 27 and the Creole Canal including the Mermentau Basin
IX	Highway 27 and the Creole Canal to Sabine Pass including the Calcasieu and Sabine Basins

**ZOOLOGICAL
FEATURES**





Southern Bald Eagle nest on oak ridge below Lafitte



A. ZOOLOGICAL FEATURES

1. Endangered Species Habitats

a. Southern Bald Eagle Nests

Seven active confirmed nests of Southern Bald Eagles are known in coastal Louisiana. Eagles migrate into the area in September and nest in the winter months. Nests are usually built in large cypress or oak trees located on natural levee ridges such as are found along some abandoned river distributaries. Young eagles are ready to leave the nest by March. Other nesting sites have been reported but are unconfirmed by the Fish and Wildlife Service. Three possible nesting locations are north of Lake Boeuf, near Grassy Lake in the Atchafalaya Basin and on the Lacassine Refuge.

The seven confirmed nesting sites are in the following locations:

1) Bayou Mauvais Bois natural levee ridge approximately one-half mile northeast of Peoples Canal; Terrebonne Parish, Environmental Management Unit V.

2) Bayou Black natural levee ridge approximately one mile south of Greenwood, Louisiana; Terrebonne Parish, Environmental Management Unit V.

3) Turtle Bayou, approximately one mile south of the Intracoastal Waterway and 6 miles southeast of Amelia, Louisiana; Terrebonne Parish, Environmental Management Unit V.

4) Avoca Island, near Bayou Chene about three miles northeast of the junction of Bayou Chene and Bayou Penchant; St. Mary Parish, Environmental Management Unit V.

5) Natural levee ridge along abandoned portion of Bayou Barataria approximately one mile east of Bayou Rigolettes; Jefferson Parish, Environmental Management Unit IV.

6) Natural levee ridge along abandoned portion of Bayou Barataria, approximately one mile south of site 5; Jefferson Parish, Environmental Management Unit IV.

7) Bayou Bois Piquant natural levee ridge approximately one-half mile north of the junction of Bayou Bois Piquant and Louisiana Cypress Lumber Canal; St. Charles Parish, Environmental Management Unit IV.

Source of Information: Ray Acock, Fish and Wildlife Service, Baton Rouge. Personal communication.

b. Brown Pelican Nesting Area

There is a small colony of brown pelicans that live and nest in the Queen Bess Island and Grand Terre Islands area of southern Barataria Bay. The population has fluctuated between one hundred and four hundred birds due to recent die-offs. Currently there are 170 adults by head count. Successful nesting was observed in March, 1976 when 35 young pelicans and 30 eggs were counted in nests on Queen Bess Island.

The pelicans can usually be found feeding from sand spits or shell reefs and nest in black mangrove of these islands. They range out of this area westward to Bay Champagne and eastward towards Four Bayous Pass. The range covers portions of southern Lafourche, Jefferson and Plaquemines Parishes and is in Environmental Management Unit IV.

Source of Information: Louisiana Wildlife and Fisheries Commission.

c. Red Wolf

There are a few remaining red wolves in Southwestern Louisiana in Cameron and Vermilion Parishes. This wolf has hybridized with the dog and coyote and pure strains are not common. The Red Wolf usually is found on the higher ridges and cheniers that are found throughout the prairie marshes of the Chenier Plain.

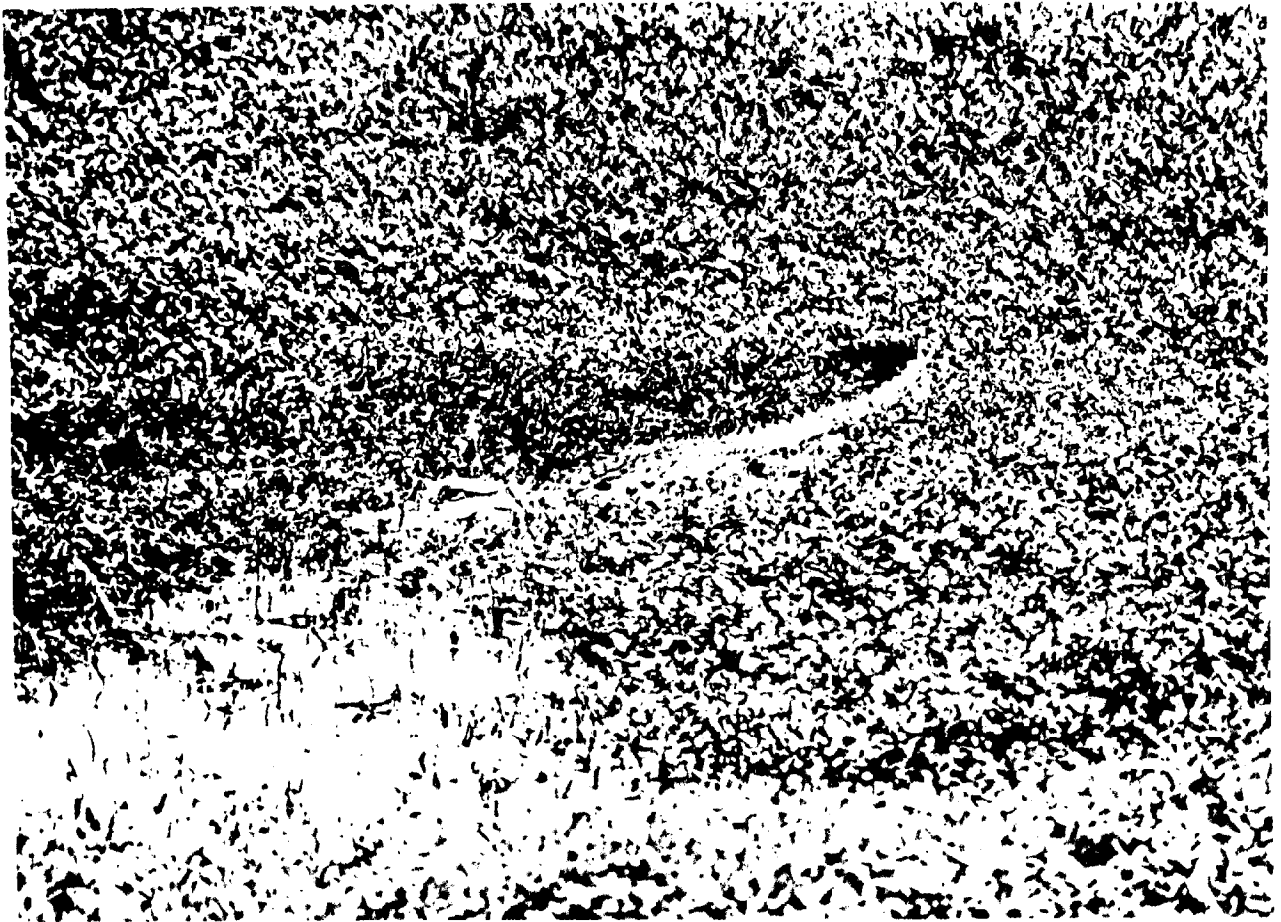
Environmental Management Units VIII and IX.

Source of Information: Fish and Wildlife Service.

d. American Alligator

Although an endangered species in the United States, the American Alligator is not considered either rare or endangered in coastal Louisiana. An estimated 250,000 alligators reside in the state's wetlands. The abundance of alligators in the freshwater swamps and marshes of the coastal zone is unique in itself, for nowhere else in the United States is there habitat to support similar numbers.

Although alligators are widespread throughout the coastal area, and are found in all nine environmental management units, peak concentrations occur in the freshwater marshes of Southwestern Louisiana, particularly on the state and federal wildlife refuges. Large alligator populations are seldom found in marshes where salinities greatly exceed 10 ppt. The ecological features overlay shows areas of peak alligator concentrations in coastal Louisiana. It should be noted that each alligator symbol on the overlay represents general areas where alligator populations are higher. Alligators are also found in adjacent areas where their range and population is increasing. Peak concentrations occur in the following general areas:



American alligator atop alligator weed

- 1) Sabine Refuge, west of Highway 27, Cameron Parish
- 2) Lacassine Refuge pool, Cameron Parish
- 3) Freshwater marshes south of Grand Lake, Cameron Parish
- 4) Rockefeller Refuge impoundments, Cameron Parish
- 5) Marsh Island, Iberia Parish
- 6) Marshes north of West Cote Blanche Bay, St. Mary Parish
- 7) Atchafalaya Basin, St. Mary Parish
- 8) Turtle Bayou - Bayou Penchant area, Terrebonne Parish
- 9) Carencro Lake area, Terrebonne Parish
- 10) Rathborne Swamp area west of Lake Boeuf, Lafourche Parish
- 11) Lake Maurepas Swamp, St. John the Baptist Parish
- 12) Freshwater marsh west of Lake Salvador, St. Charles and Lafourche Parishes
- 13) Mississippi River Delta, Plaquemines Parish
- 14) Delacroix Island area westward towards the Mississippi River, Plaquemines and St. Bernard Parishes
- 15) Honey Island Swamp and freshwater marsh near mouth of Pearl River, St. Tammany Parish

Source of Information:

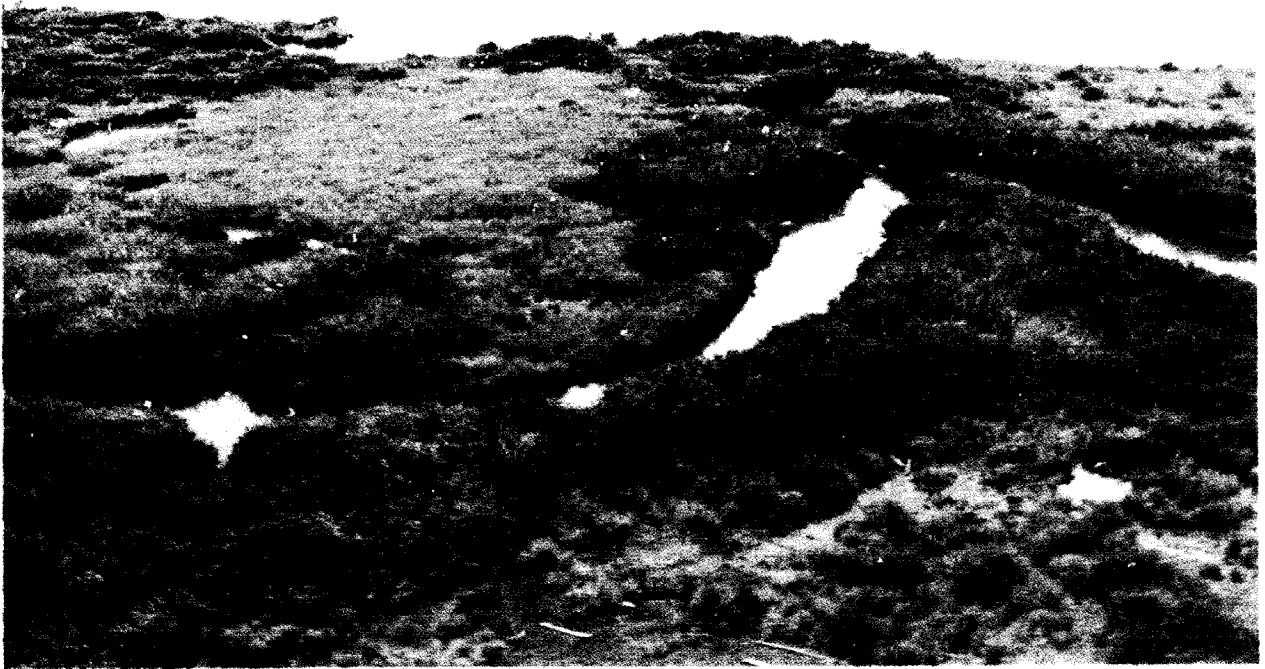
- Burk and Associates, Inc. Field surveys by staff personnel.
- Chabreck, Robert H. U.S. Fish and Wildlife Service.
Personal communication.
- Ensminger, Allen. Louisiana Wildlife and Fisheries Commission. Personal communication.
- O'Neil, Ted. Louisiana Wildlife and Fisheries Commission.
Personal communication.

2. Seabird Colonies and Wading Bird Rookeries

Seabirds and wading birds utilize the Louisiana coastal wetlands heavily for nesting. Several surveys of nesting colonies and rookeries have been made in recent years by the Fish and Wildlife Service and the National Audubon Society. The most recent, upon which the following list is largely based, is currently being done by John Portnoy of the Louisiana Cooperative Wildlife Research Unit in Baton Rouge.

The sites in the following list are locations that have been used for nesting at least once since 1973 with the great majority having active nesting every season. The seabird colonies are most heavily used by laughing gulls, least, royal and sandwich terns, black skimmers and willets. Wading birds occurring most commonly in rookeries are great blue, Louisiana and little blue herons; yellow and black-crowned night herons; American, common, snowy and cattle egrets; white-faced, white and glossy ibises and anhingas. The brown pelican rookery on Queen Bess Island was considered separately because of the bird's endangered status.

<u>No.</u>	<u>Type</u>	<u>Location</u>	<u>Parish</u>	<u>Latitude</u>	<u>Longitude</u>
1	Rookery	Johnson's Bayou	Cameron	29°49'	93°49'
2	Rookery	Shell Hill, Sabine Refuge	Cameron	29°55'	93°34'
3	Rookery	Pool 1-B, Sabine Refuge	Cameron	29°52'	93°27'
4	Rookery	Pool 1-A, Sabine Refuge	Cameron	29°55'	93°26'
5	Rookery	North of Black Lake	Cameron	30°03'	93°24'
6	Rookery	Rabbit Island	Cameron	29°51'	93°22'
7	Rookery	West of Creole Canal	Cameron	29°53'	93°07'
8	Rookery	Little Chenier	Cameron	29°51'	92°58'
9	Rookery	Lacassine Refuge	Cameron	30°00'	92°56'
10	Rookery	Blue Grove, Lacassine Refuge	Cameron	29°57'	92°56'
11	Rookery	Black Grove, Lacassine Refuge	Cameron	29°57'	92°55'
12	Rookery	North shore Lake Misere	Cameron	29°55'	92°54'
13	Rookery	Lacassine Refuge	Cameron	29°59'	92°51'
14	Rookery	Lacassine Refuge	Cameron	29°58'	92°51'
15	Rookery	Lacassine Refuge	Cameron	30°00'	92°50'
16	Rookery	North end Grand Lake	Cameron	29°58'	92°47'
17	Rookery	Northeast of Blackfish Lake	Vermilion	29°52'	92°37'
18	Rookery	Grand Volle Lake	Vermilion	29°43'	92°35'
19	Rookery	North of Chenier au Tigre	Vermilion	29°36'	92°14'
20	Rookery	Belle Isle (Rainey Refuge)	Vermilion	29°37'	92°11'
21	Colony	Belle Isle Lake	Vermilion	29°41'	92°12'
22	Rookery	West of Southwest Pass	Vermilion	29°35'	92°05'
23	Rookery	Deadman Island, Vermilion Bay	Vermilion	29°35'	92°01'
24	Rookery	Avery Island	Iberia	29°55'	91°55'
25	Rookery	Avery Island	Iberia	29°53'	91°52'
26	Rookery	Weeks Island	Iberia	29°48'	91°48'
27	Rookery	Weeks Island	Iberia	29°49'	91°55'
28	Colony	Shell Keys Refuge	Iberia	29°36'	91°50'
29	Rookery	East of Weeks Island	Iberia	29°49'	91°44'
30	Rookery	West of Franklin	St. Mary	29°48'	91°34'
31	Rookery	ICWW and Bayou Sale	St. Mary	29°26'	91°50'
32	Rookery	Eugene Island	St. Mary	29°22'	91°24'



**Wading bird rookery on mangrove island
in Southern Barataria Bay**

<u>No.</u>	<u>Type</u>	<u>Location</u>	<u>Parish</u>	<u>Latitude</u>	<u>Longitude</u>
33	Colony	Point au Fer	St. Mary	29°20'	91°21'
34	Rookery	North of Sweet- bay Lake	St. Mary	29°37'	91°14'
35	Rookery	East of Sweetbay Lake	Terrebonne	29°34'	91°13'
36	Rookery	Palmetto Bayou	Terrebonne	29°28'	91°22'
37	Rookery	South of Kent Bayou	Terrebonne	29°36'	91°08'
38	Rookery	Near Bayou L'Ourse east of Amelia	Assumption	29°42'	91°03'
39	Colony	Raccoon Point on Isle Dernieres	Terrebonne	29°04'	90°58'
40	Rookery	Just east of Raccoon Point	Terrebonne	29°03'	90°57'
41	Rookery	Isle Derniere	Terrebonne	29°03'	90°44'
42	Rookery	South of Lake Penchant	Terrebonne	29°26'	90°56'
43	Rookery	North of Lake De Cade	Terrebonne	29°25'	90°54'
44	Rookery	Lake Hatch	Terrebonne	29°31'	90°48'
45	Rookery	Island east of Whiskey Pass	Terrebonne	29°03'	90°44'
46	Rookery	Island 1 mi. NE of # 45	Terrebonne	29°04'	90°43'
47	Rookery	Point Mast	Terrebonne	29°06'	90°38'
48	Rookery	Lake Boeuf	Lafourche	29°48'	90°40'
49	Rookery	NW shore of Lake Maurepas	Livingston	30°18'	90°34'
50	Rookery	Ponchatoula Marsh	Tangipahoa	30°24'	90°24'
51	Rookery	Swamp south of Lake Maurepas	St. John the Baptist	30°06'	90°30'
52	Rookery	East of Lac Des Allemands	St. Charles	29°56'	90°30'
53	Rookery	West of Lake Salvador	Lafourche	29°39'	90°24'
54	Rookery	South of Long Lake	Lafourche	29°34'	90°33'
55	Rookery	Timbalier Island	Terrebonne	29°06'	90°32'
56	Rookery	SW of Jacko Bay	Terrebonne	29°11'	90°29'
57	Rookery	East of Old Lady Lake	Lafourche	29°14'	90°24'
58	Rookery	Felicity Island	Lafourche	29°18'	90°23'
59	Rookery	4 mi. W. of Temple Bay	Lafourche	29°41'	90°25'
60	Rookery	1 mi. NW of #59	Lafourche	29°42'	90°26'
61	Rookery	NW of Pierle Bay	Lafourche	29°11'	90°19'
62	Rookery	West of Pierle Bay	Lafourche	29°10'	90°17'
63	Rookery	Devils Island	Lafourche	29°09'	90°16'

<u>No.</u>	<u>Type</u>	<u>Location</u>	<u>Parish</u>	<u>Latitude</u>	<u>Longitude</u>
64	Rookery	Bay Marchand	Lafourche	29°05'	90°13'
65	Rookery	Bayou L'Ours	Lafourche	29°26'	90°13'
66	Rookery	Caminada Bay	Lafourche	29°17'	90°03'
67	Rookery	New Orleans East	Orleans	30°02'	89°59'
68	Rookery	West Champagne Bay	Jefferson	29°16'	90°05'
69	Rookery	Queen Bess	Jefferson	29°18'	89°57'
70	Colony	Pass Abel	Jefferson	29°18'	89°55'
71	Rookery	Crane Island	Plaquemines	29°23'	89°53'
72	Rookery	North of Big Island	Plaquemines	29°25'	89°51'
73	Rookery	Gulf shore 3 mi. W of Robinson Canal	Plaquemines	29°19'	89°49'
74	Colony	Bay Joe Wise	Plaquemines	29°18'	89°43'
75	Rookery	Bayou Grand	St. Bernard	29°56'	89°44'
76	Rookery	SE. of Long Bay	Plaquemines	29°29'	89°39'
77	Rookery	Lanaux Island	Plaquemines	29°16'	89°38'
78	Rookery	Pelican Island	Plaquemines	29°15'	89°36'
79	Rookery	Sandy Point	Plaquemines	29°13'	89°28'
80	Colony	SW. Pass Spoil Bank	Plaquemines	28°57'	89°24'
81	Rookery	Between Zinzin Bay & Riverside Bay	Plaquemines	29°08'	89°18'
82	Rookery	1/2 mi. North of Quarantine Station	Plaquemines	29°14'	89°16'
83	Rookery	3/4 mi. North of Main Pass	Plaquemines	29°15'	89°15'
84	Colony	Pass a Loutre Mud Lump	Plaquemines	29°11'	89°00'
85	Rookery	Carencro Bay Island S. of Bird Island	Plaquemines	29°23'	89°20'
86	Rookery	Bird Island	Plaquemines	29°24'	89°19'
87	Colony	Telegraph Point	Plaquemines	29°33'	89°31'
88	Colony	Mozambique Point	Plaquemines	29°40'	89°31'
89	Rookery	S.W. Lake Machias	St. Bernard	29°41'	89°31'
90	Rookery	Raccoon Island Area		29°39'	89°28'
91	Rookery	Island W. of Deadman Point	St. Bernard	29°44'	89°22'
92	Colony	Point Chicot	St. Bernard	29°44'	89°16'
93	Rookery	Anderson Point	St. Bernard	29°54'	89°20'
94	Rookery	Conkey Cove	St. Bernard	29°56'	89°15'
95	Colony	Isle au Pitre	St. Bernard	30°09'	89°10'
96	Rookery	Martin Island	St. Bernard	29°58'	89°11'
97	Rookery	Mitchell Island	St. Bernard	29°54'	89°12'
98	Colony	North Island	St. Bernard	29°53'	88°53'



White Pelicans on East Timbalier Island

<u>No.</u>	<u>Type</u>	<u>Location</u>	<u>Parish</u>	<u>Latitude</u>	<u>Longitude</u>
99	Colony	New Harbor Island	St. Bernard	29°51'	88°51'
100	Colony	Redfish Point	St. Bernard	29°53'	88°48'
101	Colony	Monkey Island	St. Bernard	29°48'	88°51'
102	Colony	Curlew Island	Plaquemines	29°38'	88°58'
103	Colony	Grand Gosier Island	Plaquemines	29°34'	89°04'
104	Colony	S. Breton Island	Plaquemines	29°29'	89°11'
105	Colony	S. Breton Island	Plaquemines	29°28'	89°13'
106	Rookery	Lower Cow Island	St. Martin	30°09'	91°31'

Source of Information:

Brown, Bobby W. Refuge Manager, Lacassine National Wildlife Refuge. Written communication.

Portnoy, John W. Louisiana Cooperative Wildlife Research Unit, LSU, Baton Rouge, La. Written communication.

U.S. Fish and Wildlife Service. 1975 Wading Bird Rookery Survey.

3. Primary Fish and Shellfish Nursery Grounds

Nursery grounds are shallow estuarine marshes vital to the juvenile stages of estuarine dependent fish and shellfish. The great majority of commercial and sport fish and shellfish harvested along the Louisiana coast are dependent on nursery grounds for completion of the early life history stages of their life cycle. Called nursery grounds because they are used during post larval and juvenile stages, these areas are unique because they support one of the world's largest estuarine fisheries. Estuarine dependent organisms rely on these waters to provide food, habitat, favorable growth conditions and protection from predators during vulnerable periods of their lives. The nursery grounds also provide important habitat for migratory waterfowl, fur-bearing animals and many other forms of wildlife and support an increasingly important sport fishing and recreational industry.

Although utilized by well over 100 species of fishes and invertebrates, the dominant species are bay anchovy (Anchoa mitchilli), Atlantic croaker (Micropogon undulatus), Gulf menhaden (Brevoortia patronus), Atlantic threadfin (Polydactylus octonemus), spot (Leiostomus xanthurus) white shrimp (Penaeus setiferus), brown shrimp (Penaeus aztecus) and blue crab (Callinectes sapidus). All but the bay anchovy are commercially important.

The primary nursery grounds shown on the unique ecological features overlay were delineated on the basis of salinity zones, marsh vegetation and marsh-water interface. The inland limit of the nursery grounds was mapped as the 5 ppt. isohaline. This is generally regarded as the cutoff point between the freshwater and brackish communities. Although many estuarine organisms

are euryhaline and can tolerate both freshwater and seawater, the majority are most abundant in the salinity range from 5 to 25 ppt. Tidal movement and flushing, a key to estuarine productivity and faunal migration, is also more significant in waters with salinities greater than 5 ppt. This zone includes intermediate, brackish and saline marsh types. The seaward boundary of the nursery areas was more difficult to delineate because of the highly indented configuration of the coastal bays. The boundary between the inner nursery areas and the larger embayments was chosen as the seaward margin of the nursery areas. These large embayments serve as staging areas where maturing fish or shellfish concentrate prior to their offshore emigration. Although open water areas are utilized by estuarine dependent forms, particularly for movements, the prime nursery is the marsh itself. The nursery areas were also mapped on the basis of the amount of marsh-water interface in each environmental management unit. Prime nursery areas have a high surface acreage of marsh and a high pond density.

The Barataria Basin from the fringes of Barataria Bay northward to near Lake Salvador represents a typical nursery area. This area is shallow brackish marsh with numerous small ponds, lakes and bayous. This region has a very high marsh-water interface. Movement of food, nutrients and organisms is provided for by the ebb and flow of the tide.

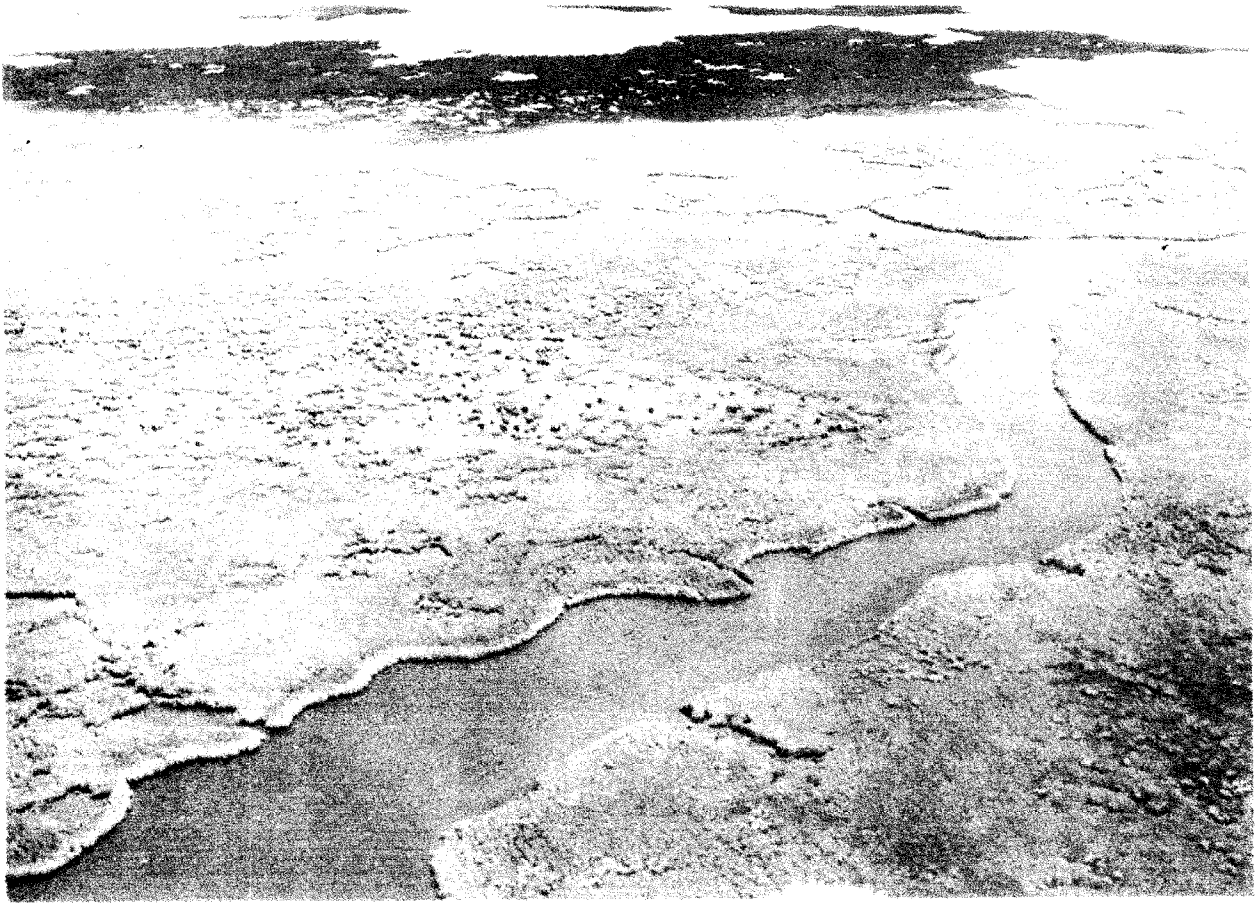
The largest acreages of nursery grounds are found in environmental management units I, IV and V in Southeastern Louisiana. In the southwestern part of the state, nursery grounds are confined to a relatively narrow band between Chenier au Tigre and Calcasieu Pass and around Calcasieu and Sabine Lakes.

Source of Information:

- Chabreck, Robert H. 1972. Vegetation, Water and Soil Characteristics of the Louisiana Coastal Region. Agricultural Experiment Station, Bulletin No. 664, Louisiana State University, Baton Rouge, La.
- Gaidry, Wilson J. III and Charles J. White. 1973. Investigations of Commercially Important Penaeid Shrimp in Louisiana Estuaries. Louisiana Wildlife and Fisheries Commission. Technical bulletin no. 8.
- St. Amant, Lyle. Louisiana Wildlife and Fisheries Commission. Personal communication.

4. Public Oyster Seed Grounds

Public oyster seed grounds are located in the parishes of Plaquemines, St. Bernard, Jefferson, Lafourche and Terrebonne. These are areas of natural seed grounds in which the state has planted cultch material (generally clam shells) as a supplement for the production of seed oysters. All oysters produced on these seed grounds are for the use and benefit of the oyster industry and are available to the public.



Typical shallow brackish marsh nursery grounds

Oyster seed ground reservations are located in Caillou Lake (9,772 acres) in Terrebonne Parish, Hackberry Bay (4,015 acres) in Jefferson and Lafourche Parishes, and in Bay Gardene (2,666 acres) in Plaquemines Parish. These are areas managed by the state, with open and closed seasons for the taking of seed oysters.

"Red line" areas in Plaquemines and St. Bernard Parishes encompass 450,000 acres. These are areas of natural oyster seed grounds which have some remaining slow productive live reefs and in which clutch material is periodically planted. Approximately 80 percent of the oysters planted on private leases are transplanted by oyster fishermen from the seed grounds east of the Mississippi River. These public seed grounds are therefore extremely important to the Louisiana oyster industry which currently ranks second nationally in volume landed.

All public oyster leases, seed ground reservations and "red line" areas are shown on the unique ecological features overlay as "oyster-1" areas.

Source of Information:

Louisiana Wildlife and Fisheries Commission. 1971. Gulf of Mexico Estuarine Inventory and Study, Louisiana. Phase 1, Area Description and Phase IV, Biology.

5. Privately Leased Oyster Beds

There are approximately 180,000 acres of state owned water-bottoms leased to private individuals for cultivation of oysters on private beds. The acreage has increased in recent years as new areas have become available for leasing. Flooding on the Mississippi River in 1973 and 1974 has driven conches and other oyster predators away from reefs that were formerly too saline for good production. In addition, the introduction of freshwater and nutrients from this flooding should increase production on many of the private oyster beds.

The greatest acreage of private beds is in St. Bernard, Plaquemines, Terrebonne and Jefferson Parishes. All private oyster beds are shown as oyster-2 areas on the overlay. The overlay shows boundaries around the major oyster - producing areas. Not all areas within these boundaries are leased. Due to the extensive number of leases and their various sizes, each reef was not individually mapped.

Source of Information:

Tarver, Johnny. Louisiana Wildlife and Fisheries Commission. Personal communication.

6. Live Rangia Clam Beds

Rangia cuneata is a small brackish-water clam found in low salinity waters that possesses a unique ecological and commercial importance. Rangia is generally found in waters with salinities less than 5 ppt. These clams dominate the benthic community of Lake Pontchartrain, Louisiana's largest estuarine lake. They serve a very important role in the estuarine food web and are a major component in the diet of many fishes, crustaceans and waterfowl. From the economic standpoint, eight major industrial users utilize clam shell in the manufacture of cement, glass, chemicals, chicken and cattle feed, wallboard, lime and as fill material for road construction and general construction. Dredging of clam shell for commercial purposes occurs primarily in Lake Pontchartrain.

Viable populations of Rangia occur in Lake Pontchartrain, Lake Maurepas, Lake Salvador, Lake Verret, Atchafalaya Bay, East and West Cote Blanche Bays, White Lake, Grand Lake, Calcasieu Lake, Sabine Refuge Pool and Sabine Lake.

Source of Information:

Center for Wetland Resources. Louisiana State University.
Baton Rouge, Louisiana

Tarver, J.W. and R.J. Dugas. 1973. A Study of the Clam;
Rangia cuneata, in Lake Pontchartrain and Lake
Maurepas, Louisiana. Louisiana Wildlife and Fisheries
Commission. Technical bulletin No. 5.

7. Exposed Shell Reefs

Exposed shell reefs consist of layers of oyster or clam shell that have accumulated to the point that they are at or above the normal water level. These reefs are normally dead or consist of a thin crust of live oysters on top of layers of oyster shell.

The most extensive reef deposits are between Southwest Pass (near Marsh Island) to Point au Fer. This reef development is most pronounced south of Marsh Island where numerous reefs extend in a general north to south direction for several miles out into the gulf. Shell Keys Refuge consists of about eight acres of reefs that are an important sea bird nesting area. An extensive area of reefs exists between Marsh Island and Point au Fer reef although these natural reefs are being dredged for commercial use and covered with sediment deposited from the Atchafalaya River.

Many small oyster reefs are found in Southeastern Louisiana in the marsh-lake-bay complexes of Plaquemines, St. Bernard, Terrebonne and Jefferson Parishes. There is an extensive oyster reef development in Southern Barataria Bay, although most of these reefs are at or below the water surface.

Numerous reefs are found between Baptiste Collette Pass and Grand Pass east of the Mississippi River and in the shallow bays and lakes of the "Louisiana" marsh north of Hopedale. These reefs are irregular in shape although most are linear. They range in size from a few feet in diameter up to a mile in length. Oyster reefs seldom exist as clean surfaces because of sedimentation. Often the oyster shell of these reefs is mixed with sand and mud or may be part of a marshy shoreline. Many of the shoreline shell deposits in the marshes of Southeastern Louisiana are clam shell marking the location of Indian middens. The larger reefs that are above the water's surface include Mitchell Key and Battledoor Reef.

Exposed shell reefs have several ecological functions. They provide habitat and shelter for many species of small benthic fishes and invertebrates. Larger fish, such as black drum, feed directly on the live oysters of the reefs. The biological productivity and species diversity on these reefs is usually much higher than bare mud or sand waterbottoms. Reefs also help to regulate saltwater intrusion, reduce wave action on marshy shorelines and increase sediment deposition. Many shorebirds utilize these reefs for nesting. Fishermen find sport fishing near these reefs highly productive.

Source of Information:

Burk and Associates. Field checking by staff personnel.

U.S. Army Engineer District, New Orleans. 1974. Louisiana Coastal Area Study (Draft). Fish and Wildlife Study of the Louisiana Coastal Area and the Atchafalaya Basin Floodway.

U.S. Geological Survey. 1974. Infrared photography of coastal Louisiana. Scale 1:130,000.

8. Other Unique Wildlife Habitat

a. Sea Turtle Nesting Area in Chandeleur Islands

The Chandeleur Islands are uniquely important as a nesting area for loggerhead sea turtles. These turtles annually return to the undeveloped beaches of these islands to lay their eggs in the sand. Although seldom observed, the tracks of these turtles are occasionally noted where they have crawled up the beach from the Gulf and deposited eggs in holes dug in the sand. The Chandeleurs are one of the few remaining barrier islands with beaches sufficiently remote for these large sea turtles to nest undisturbed. Developments along other beaches have reduced the nesting territory of the loggerhead making retention of these beaches in a natural state even more important to this species. The Breton Bird Refuge, including the main Chandeleur Island, has recently been designated as a National Wilderness Area.

Environmental Management Unit I.

Source of Information:

- U.S. Fish and Wildlife Service. 1969. Breton Wilderness Proposal, Breton National Wildlife Refuge, Louisiana.
- U.S. Bureau of Land Management. 1975. Color Map number 14; Undersea Features, Endangered Wildlife and Natural Vegetation of the Central Gulf of Mexico. Outer Continental Shelf Office, New Orleans, Louisiana

b. White-tailed Deer Concentrations (Mississippi Delta)

Numerous deer herds are scattered on scrub cypress-tupelo forest, natural levee ridges, cheniers, and in the marsh itself throughout the coastal wetlands. Peak populations occur in the Maurepas swamp area and in the scrub cypress-tupelo forest in western Terrebonne and southern St. Mary Parishes. A unique population of marsh deer, Odocoileus virginianus mcilhennyi, exists in the delta marshes at the mouth of the Mississippi River. Approximately 150 to 200 marsh deer live on the alluvial ridges of the river passes. This race of deer differs from the north Louisiana race of whitetail in being smaller, darker, with smaller inturned antlers and larger hooves. These are adaptations to survival in the marsh environment.

Populations fluctuate with the changing conditions of the delta habitat. Severe storms and hurricanes often temporarily decimate the populations. In past years, numerous marsh deer from the delta were live-trapped and transplanted to other areas of the state.

Environmental Management Unit III.

Source of Information:

- Lowery, George, Jr. 1974. The Mammals of Louisiana and its Adjacent Waters. Louisiana Wildlife and Fisheries Commission.
- McMullan, Cecil. Refuge Manager, Delta-Breton National Wildlife Refuges. Personal communications.

c. Black Bear - Atchafalaya Basin

The few native black bears that remain in Louisiana today are largely confined to the heavily wooded bottomland hardwood terrain of the south central part of the state. Black bears in the coastal zone are most numerous in the lower Atchafalaya Basin in St. Mary Parish in the swamp north and south of Morgan City. Just north of the coastal zone, in Pointe Coupee Parish, 161 black bears were released from 1964 through 1967.

This was part of a restocking program in which bears were transported from Cook County, Minnesota and released near Lottie and Krotz Springs. Other sightings of black bear in the coastal area have been near Gueydan, Cote Blanche Island, Houma, Mandeville and Slidell.

The bottomland hardwoods and swamps of the Atchafalaya Basin, which is the bear's prime habitat, represents probably the largest remaining overflow swamp in the United States. For this alone, the basin is ecologically unique. It also has outstanding value from the wildlife and recreational standpoint. Frequent annual flooding is the key to the high biological productivity and the diverse array of aquatic and terrestrial life forms. The basin harbors many resident and migratory wildlife species. Because of its near wilderness state, it supplies habitat for several animal species which are becoming less common throughout the southeastern United States. A diverse array of wildlife occurs including black bear, white-tailed deer, turkey, grey and red fox, grey and fox squirrel, swamp and cottontail rabbit, numerous other fur animals such as the beaver, raccoon, mink, otter, nutria, muskrat and bobcat, many nongame animals such as armadillo, weasel and smaller rodents, migratory waterfowl, and other birds including wading and shore birds, songbirds and raptors, and reptiles including alligators and amphibians. Sport and commercial fishing is a big activity in the basin. Dominant fishes present in the basin include black bass, warmouth, bluegill, redear sunfish, black crappie, several species of catfishes and bullheads, gar, buffalo, carp and bowfin.

Environmental Management Unit VI.

Source of Information:

- Herring, Joe, 1962. Black Bear in Louisiana. Louisiana Conservationist, January, 1962.
- Lowery, George, Jr. 1974. The Mammals of Louisiana and its Adjacent Waters. Louisiana Wildlife and Fisheries Commission.
- U.S. Army Engineer District, New Orleans. 1974. Fish and Wildlife Study of the Louisiana Coastal Area and the Atchafalaya Basin Floodway. Draft Louisiana Coastal Area Study.

d. Red Swamp Crayfish - Atchafalaya Basin

The red swamp crawfish, Procambarus clarkii is the basis for a unique south Louisiana fishery with an annual harvest of over 10 million pounds. This fishery is valued at approximately \$5 million and is centered in the Atchafalaya Basin where over half of the crayfish are harvested. The red swamp crayfish inhabits the shallow waters of lake edges, bayous, ponds, ditches, marshes, swamps and other overflow lands

in fresh to slightly brackish water. In the basin, the crawfish harvest is centered north of Morgan City around Belle River and Pierre Part. Crawfish play a vital ecological role as a major food source for not only humans but also for many fish and other animals such as grackles, wading birds, ducks, frogs, turtles, snakes, raccoon, mink and otter. In turn, crayfish feed on a wide variety of organic materials and are useful in weed control, particularly alligator weed.

Environmental Management Unit VI.

Source of Information:

U.S. Army Engineer District, New Orleans. 1974.
Fish and Wildlife Study of the Louisiana Coastal
Area and the Atchafalaya Basin Floodway. Draft
Louisiana Coastal Area Study.

e. Roseate Spoonbill - Sabine Refuge

The roseate spoonbill, Ajaia ajaja, is a unique bird resident to the southwestern Louisiana prairie marshes of Cameron and Vermilion Parishes. The spoonbill is unique because of its pink and white color, spoon-shaped bill and long legs. The only confirmed nesting sites in Louisiana are Rabbit Island in Calcasieu Lake (where 10 breeding pairs were noted in 1975) and Lacassine Refuge. These Louisiana colonies are the northernmost for the species. Spoonbills in Louisiana do not migrate and remain in the southwestern marshes all year. Although classified as uncommon on the Sabine Refuge, populations have made a strong comeback in Cameron and Vermilion parishes. On the 1972 Christmas Bird Count, the Sabine Refuge had 252 birds.

Environmental Management Unit VIII and IX.

Source of Information:

Lowery, George H. Jr. 1974. Louisiana Birds.
Louisiana Wildlife and Fisheries Commission.
Louisiana State University Press.
U.S. Fish and Wildlife Service. 1975. Wading Bird
Rookery Survey in Louisiana.

f. Big Burn - Deep Peat Burn Near Creole

Between the Intracoastal Waterway and Little Chenier east of Louisiana Highway 27 is an area of deep freshwater marsh that is called the Big Burn. This area, consisting of intermittent ponds and broken marsh, was created by a marsh fire that burned much of the peat deposits down to the clay pan. This burn created ponds and lagoons which are gradually being revegetated by cattail, bullwhip, bulltongue, alligator weed,

coffee bean and white water lily. Owned by the Miami Corporation, this area is unique because of the excellent fresh water fishing that has been created by the burn. Many of the other lakes in the freshwater marshes of the area were created as the result of deep peat burns.

Environmental Management Unit VIII.

Source of Information:

Burk and Associates. 1976. Field investigation by staff personnel.

Chabreck, Robert H. Wildlife Biologist, U.S. Fish and Wildlife Service. Personal communication.

O'Neil, Ted. 1949. The Muskrat in the Louisiana Coastal Marshes. Louisiana Wildlife and Fisheries Commission.

g. American Oil Company Waterfowl Impoundment South of Gueydan

This area consists of approximately 10 square miles of freshwater marsh on the northwestern shore of White Lake in Vermilion Parish. Impounded by the American Oil Company, the area is managed for waterfowl hunting. Water levels are regulated by a series of dikes and control structures. Water levels are lowered so that annual plants such as wild millet and wild rice may germinate. When water levels are raised, these highly desirable waterfowl food plants then become accessible to waterfowl. This area annually holds a very large body of ducks. Due to this water level manipulation, plant species composition of the area differs from the surrounding marshes which are all within the Mermentau Basin system.

Environmental Management Unit VIII.

Source of Information:

Chabreck, Robert H. Wildlife Biologist, U.S. Fish and Wildlife Service. Personal communication.

h. Peak Duck Concentrations

Coastal Louisiana's marshes, swamps and rice fields constitute the largest and one of the most important waterfowl wintering areas in the United States. Coastal Louisiana is at the southern terminus of the Mississippi Flyway and normally winters between 5 and 6 million ducks. Additional millions of ducks use the Louisiana marshes for staging, resting and feeding before continuing across the Gulf of Mexico to wintering grounds in Central and South America. Thirty species of ducks have been

recorded in Louisiana and five of these nest here. The mottled duck, fulvous tree duck, and the wood duck breed in significant numbers with the blue-winged teal and hooded merganser in lesser numbers.

Ducks do not blanket the entire coastal area but tend to concentrate in areas with preferred foods and proper water levels. Fresh and intermediate marshes 1 to 6 inches deep produce the prime habitat conditions. The production of preferred waterfowl foods, such as wild millet, smartweed, cyperus, three-cornered grass, wild rice, delta duck potato, bulrush, spikerush, pondweeds and wild celery, is higher in fresh and low salinity marshes. Saline marshes are generally of little value to ducks because they don't produce preferred foods. Ducks will shift between feeding and resting areas depending on highly variable local food and water conditions. Although conditions may change from year to year, there are certain areas that attract peak duck concentrations. Under normal conditions, duck populations are greater in Southwest Louisiana because of more preferred habitat. Twenty eight of these areas have been shown on the overlay. It should be noted that the symbols used to represent duck concentrations on the overlay indicate general areas of concentration and do not imply ducks are not to be found in other areas. The following locations are areas, year in and year out, that normally concentrate ducks.

Louisiana Coastal Areas Attracting
Peak Duck Concentrations

<u>Location</u>	<u>Parish</u>
1. Black Bayou Area	Cameron
2. Johnsons Bayou Area	Cameron
3. Sabine Refuge	Cameron
4. Lacassine Refuge	Cameron
5. Grand Chenier to Grand Lake Area	Cameron
6. Rockefeller Refuge	Cameron, Vermilion
7. Nearshore Gulf waters	-
8. Nearshore Gulf waters	-
9. American Oil Co. Impoundment	Vermilion
10. North of White Lake	Vermilion
11. South of Pecan Island	Vermilion
12. Rainey and State Refuge	Vermilion
13. Marsh Island Refuge	Iberia
14. West of Wax Lake Outlet	St. Mary
15. West of Lower Atchafalaya River	St. Mary
16. Duck Lake Area of Atchafalaya Basin	St. Martin
17. Lost Lake Area	Terrebonne
18. Carencro Bayou Area	Terrebonne
19. Bayou Penchant Area	Terrebonne
20. South of Lake Maurepas	St. John the Baptist

<u>Location</u>	<u>Parish</u>
21. Bayou Blue Area	Lafourche
22. West of Lake Salvador	St. Charles
23. Lake Pontchartrain (particularly near grass beds)	St. Tammany, Orleans
24. Scarsdale - Delacroix Island Area	Plaquemines
25. North of Little Lake near Pearl River	St. Tammany
26. Biloxi Wildlife Management Area	St. Bernard
27. Delta Refuge	Plaquemines
28. Pass a Loutre Public Hunting Grounds	Plaquemines

Environmental Management Units I-IX.

Source of Information:

Burk & Associates, Inc. 1976. Field investigations by staff personnel.

Chabreck, Robert H. Wildlife Biologist, U.S. Fish and Wildlife Service. Personal communication.

Ensminger, Allen. Head, Refuge Division. Louisiana Wildlife and Fisheries Commission.

Personal communication.

U.S. Army Engineer District, New Orleans. 1974. Fish and Wildlife Study of the Louisiana Coastal Area and the Atchafalaya Basin Floodway. Draft Louisiana Coastal Area Study.

i. Geese Concentrations

Four species of geese winter in coastal Louisiana - Canada, blue, lesser snow and white-fronted geese. Geese tend to concentrate into large bodies even more so than ducks. They can be locally scarce or abundant, often giving false impressions of actual number of birds. Louisiana winters a yearly average of 390,000 geese that concentrate in Cameron and Vermilion Parishes, the Mississippi River Delta and the outer fringes of the marshes in St. Bernard Parish near Mississippi and Chandeleur Sound.

Individual species concentrate in different types of habitat, based primarily on food preferences. Canada goose populations have greatly declined in recent years due to changes in migratory patterns. A resident population of about 2,000 birds still exists around and on the Rockefeller Refuge. White-fronted geese winter in rice field areas along the Intra-coastal Waterway from Vermilion Bay west to Texas. Blue and lesser snow geese are more widespread in coastal Louisiana. Concentrations occur in the rice fields and pastures near Kaplan, Gueydan and Lake Arthur, near Johnsons Bayou, Sabine Refuge, in the brackish marshes of State and Marsh

Island Refuges and along the north shore of Vermilion Bay, in the lower Terrebonne Parish marshes, north of Little Lake near the mouth of the Pearl River, in the brackish and saline marshes bordering the outer fringes of the St. Bernard sub-delta and on the mud flats along the passes at the mouth of the Mississippi River. These areas of geese concentration are shown on the overlay. Louisiana's coastal marshes are critical wintering habitat, particularly for blue and lesser snow geese. The majority of the continental population of these geese winter in the marshes and rice fields of coastal Louisiana and southeastern Texas.

Environmental Management Units I, III, V, VII, VIII and IX.

Source of Information:

- Burk & Associates, Inc. 1976. Field investigations by staff personnel.
- Chabreck, Robert H. Wildlife Biologist, U.S. Fish and Wildlife Service. Personal communication.
- U.S. Army Engineer District, New Orleans. 1974. Fish and Wildlife Study of the Louisiana Coastal Area and the Atchafalaya Basin Floodway. Draft Louisiana Coastal Area Study.

j. Osprey Nest

The osprey (Pandion haliaetus) is a threatened species that is an uncommon resident of the Louisiana coast. Only one nest of the osprey has ever been observed in the state. It was discovered by Mac Myers about one mile northwest of Venice on March 30, 1974. Ospreys have been recorded in the state in every month of the year, although the greatest number of records fall in April, September and December.

Environmental Management Unit IV.

Source of Information:

- Lowery, George H. Jr. 1974. Louisiana Birds. Louisiana Wildlife and Fisheries Commission.

9. Unique Fishery Habitat - the Barataria Basin

The Barataria Basin (Environmental Management Unit IV) is the most productive Louisiana estuary. It is located in the center of the "Fertile Fisheries Crescent" considered to be one of the most productive fisheries regions on earth. Barataria Bay and surrounding marshes are responsible for nearly half of the fisheries harvest on the Louisiana coast, which annually leads the nation in fishery harvest. With the exception of Gulf menhaden which are harvested in offshore and nearshore waters, it is

the most productive bay system in total finfish and shellfish harvest. More croakers, black drum, red drum, gar, spotted and sand seatrout, crabs, shrimp and oysters are taken from this basin than any other on the Louisiana coast. Many of the fish that are dependent on its marshes as a nursery ground are harvested in nearshore Gulf waters. From 1968 to 1970, the average annual fisheries harvest from the Barataria Basin was 20.2 million pounds. This phenomenal productivity is due to the input of nutrients and freshwater from the Mississippi River, a subtropical climatic regime, abundant rainfall, cycling of nutrients, minerals, and organic detritus by tidal flushing, high rates of plant production, and a high ratio of marsh to water. The bay has a highly irregular and indented shoreline consisting of many marshy islands, small lakes, ponds and bayous. This is the ideal configuration for estuarine productivity because there is a large zone of marsh-water contact. This interface zone between marsh and water supports higher fish biomass due to the higher availability of detritus and small invertebrate food organisms.

Source of Information:

National Marine Fisheries Service. Fisheries Statistics.

Lindall, W.N. et.al. 1971. Louisiana coastal zone: analysis of resources and resource development needs in connection with estuarine ecology. Section 10 - Fishery Resources. Report of the Comm. Fishery Work Unit, Nat. Mar. Fish. Serv. Biol. Lab., St. Petersburg, Fla.

Wagner, Paul R. 1973. Seasonal Biomass, Abundance, and Distribution of Estuarine Dependent Fishes in the Caminada Bay System of Louisiana. Ph.D dissertation. Louisiana State University, Baton Rouge, Louisiana.

**BOTANICAL
FEATURES**



B. BOTANICAL FEATURES

1. Unique Botanical Specimens or Communities

There are 21 areas of unique botanical importance on the Louisiana coast that represent rare occurrences of certain plants, specimens of unusual size (State Champion Trees), or outstanding natural plant communities of special aesthetic, scientific or ecological significance. These specimens or communities are listed in the following table.

<u>Parish</u>	<u>Environmental Management Unit</u>	<u>Name/Description</u>
1. Vermilion	VIII	<u>Canna glauca</u> , a rare plant just east of Highway 82 south of Forked Island
2. St. Martin St. Mary Assumption	VI	Atchafalaya floodway natural area and overflow swamp. A second growth cypress swamp with some original cypress and tupelo gum trees. Extremely productive habitat supporting dense populations of terrestrial, avian and aquatic fauna.
3. Terrebonne	V	Swamp loosestrife, <u>Decodon verticellatus</u> , a rare shrub found in the marsh north of Houma
4. St. James	IV	Oak Alley, a famous row of oaks
5. Livingston Ascension St. James	I	Blind River swamp and natural area, an abandoned Mississippi River distributary about 20 miles in length containing about 25,000 acres of cypress-tupelo gum forest. Affected by ebb and flow of tides through Lake Maurepas, this swamp supports a very rich and diverse faunal community.
6. Livingston	I	Amite River Natural Area. Example of a river bank swamp.
7. Livingston	I	Clio cypress swamp community, possibly virgin trees.

<u>Parish</u>	<u>Environmental Management Unit</u>	<u>Name/Description</u>
8. Livingston	I	Largest living specimen of the Laurel oak, <u>Quercus laurifolia</u> , located on the northwestern shore of Lake Maurepas, circumference 20' 4".
9. Livingston	I	Tickfaw River Natural Area. River bank swamp similar to Amite River.
10. Livingston Tangipahoa	I	Dense stands of Spruce pine, <u>Pinus glabra</u> , occur along streams in this area which is the western limit of its range.
11. Tangipahoa	I	Ponchatoula Marsh, a freshwater marsh with a cypress swamp border. <u>Panicum hemitomum</u> with <u>Typha</u> , <u>Sagittaria</u> and <u>Pontederia</u> forms a thick mat over what was probably a former lake bed. Proposed for natural landmark status, 1971. Estimated 4000 acres.
12. Jefferson	IV	State Champion hackberry, <u>Celtis laevigata</u> , circumference 19' 2".
13. Jefferson	IV	Avondale virgin swamp community.
14. Jefferson	IV	Oak tree, largest living specimen in the state, circumference 22' 2". Near Mississippi River in Kenner.
15. St. Tammany	I	State Champion Live Oak, <u>Quercus virginiana</u> , called the Seven Sisters oak. Located near Mandeville north of Lake Pontchartrain. Circumference 37' 1".
16. St. Tammany	I	Saw Palmetto, <u>Serenoa repens</u> , a rare plant in Louisiana found along Bayou Lacombe.
17. Orleans	I	Duelling oaks in New Orleans, scene of many duels.

<u>Parish</u>	<u>Environmental Management Unit</u>	<u>Name/Description</u>
18. Orleans	I	Pakenham Oaks near Chalmette Battle ground.
19. Orleans	I	Saw Palmetto, <u>Serenoa repens</u> , a rare plant found along Chef Menteur Pass.
20. St. Tammany	I	Pearl River bottomlands, dense stands of Spruce Pine and palmetto.
21. St. Tammany	I	Honey Island Swamp, excellent example of a cypress-tupelo gum river overflow swamp of about 5,760 acres. Area remains in its natural state and is bisected by several tributaries of the Pearl River. Supports high populations of deer, turkey, squirrel, feral pigs, smaller furbearers, wood ducks and many species of freshwater fish, molluscs, and crustaceans.

Source of Information:

Engineer Agency for Resources Inventories. 1973.
Inventory of Basic Environmental Data, South Louisiana. Prepared for U.S. Army Corps of Engineers, New Orleans District.

2. Submergent Grass Beds

Submergent beds of marine grasses are an extremely important, although relatively small, component of the Louisiana coastal ecosystem. These benthic grasses grow in shallow, relatively clear and protected waters with predominantly sand bottoms. There are seven areas in Louisiana coastal waters where habitat conditions are favorable for the establishment of submergent marine grasses. These areas are centered around Terrebonne Bay, Lake Pontchartrain and the Chandeleur Islands. Barataria Bay lacks many of these grasses but has a seasonal community of benthic marine algae. The generally turbid waters and soft bottom of most of Louisiana's estuaries are the primary limiting factors to more widespread distribution. The seven areas where submergent marine grasses occur are in the following locations.

- 1) Bay side of Isle Dernieres, Timbalier and East Timbalier Islands
- 2) Along the north shore of Lake Pelto, Old Lady Lake and the southeastern shore of Timbalier Bay

- 3) Western side of the main Chandeleur Islands from North Point westward to Freemason and North Islands and south toward Curlew Island
- 4) Southwestern corner of Lake Salvador in Temple and Catahoula Bay
- 5) Northeastern corner of Lake Catherine
- 6) Northeastern shore of Lake Pontchartrain between Green Point near Mandeville and Big Point near Slidell (approximately 2000 acres)
- 7) North Pass between Lakes Maurepas and Pontchartrain.

Two basic communities of submergent grasses occur in these areas. A marine community of grasses including turtlegrass, Thalassia testudinum; shoalgrass, Halodule wrightii; manateegrass, Cymodocea manatorum; Gulf Halophila, Halophila engelmanni; and Syringodium, Syringodium filiforme occurs on the back side of the islands in Terrebonne and Timbalier Bay and on the western side of the Chandeleurs. Shoalgrass and manateegrass are the predominant species in the Terrebonne Bay area. A brackish water community of grasses including wild celery, Vallisneria americana; widgeongrass, Ruppia maritima and Southern naiad, Najas guadalupensis; occurs in Lake Salvador, Lake Catherine and Lake Pontchartrain. Horned pondweed, Zanichellia palustris, is found in North Pass. These species, especially widgeongrass, also occur in abundance in small brackish water ponds and lagoons but no attempt was made to map this distribution.

These submergent grass beds have many important ecological functions and roles in the coastal ecosystem and are a component of special value. The true value of submerged grass communities is not fully understood and is generally underestimated. They supply food to grazing animals, detrital material and nutrients to the water, add oxygen to the water through photosynthesis and stabilize bottom sediments by increasing sedimentation of suspended sediments. This latter function is often responsible for waters being clearer over the top of grass beds. They provide nursery areas and refuge for the young of many fishes and small invertebrates and attract a diverse and prolific epiphytic biota, often creating unique habitat for the existence of certain species. Marine grass beds are also extremely productive, in some cases about as productive of detrital nutrients as salt marshes.

Environmental Management Units I, IV and V.

Source of Information:

Burk and Associates, Inc. 1976. Field checking by staff personnel.

Clark, John. 1974. Coastal Ecosystems. The Conservation Foundation, Washington, D.C.

- Hass, Sue. 1975. Biologist, U.S. Army Corps of Engineers, New Orleans District. Environmental Quality Section. Personal communication.
- Montz, Glen N. 1975. The Submerged Vegetation of Lake Pontchartrain, Louisiana. U.S. Army Corps of Engineers, New Orleans District. Environmental Quality Section.
- Thayer, Gordon W., Douglas A. Wolfe and Richard B. Williams. 1975. The Impact of Man on Seagrass Systems. *American Scientist*, 63 (3): 288-296.
- University of Southwestern Louisiana. 1972. U.S.L. Studies on the Chandeleur Islands, Research Series No. 10. Edited by H.D. Hoese and J.M. Valentine, Jr.
- U.S. Geological Survey. 1974. Infrared photography of coastal Louisiana, Scale 1:130,000.

3. Black Mangrove Areas (*Avicennia nitida*)

The occurrence of black mangrove in coastal Louisiana is ecologically unique because it represents the northernmost point in the range of this species. This small evergreen shrub occurs near the southern margins of Lake Pelto, Terrebonne Bay, Timbalier and Barataria Bay on the west side of the Mississippi River and from Carencro Bay northward to the Mississippi River Gulf Outlet and the main Chandeleur Island east of the river. It is most commonly found on the edges of small islands in southern Barataria, Terrebonne and Timbalier Bays. In some areas, such as Calumet Island in Timbalier Bay, it covers the entire island. It is limited to these southern margins of the bays by its requirement for high salinity and its inability to survive frost. During cold winters, many of the plants die. After two or three years of relatively mild winters, it grows luxuriously and may reach five to six feet high.

Black mangrove has several ecological functions similar to marine grass beds. It aids in shoreline and marsh stabilization by trapping sediment and reducing wave action, provides detrital food material and supplies shelter and substrate for many small fishes and invertebrates. Many small animals such as periwinkles, mussels, fiddler crabs, mud crabs, small blue crabs and hermit crabs find shelter and food in and on the pneumatophores (subaerial roots) of the mangroves. Mangrove fruits are transported long distances by tidal currents and often colonize bare mudflat areas or exposed marsh shorelines thus helping to reduce marsh erosion and land loss. It is also used extensively by many wading and sea birds, including the brown pelican, for nesting and roosting habitat.

Environmental Management Units I, II, IV, and V.

Source of Information:

- Burk and Associates, Inc. 1976. Field checking by staff personnel.
- Gagliano, S.M. et.al. 1973. Environmental Atlas and Multiuse Management Plan for South-Central Louisiana. Hydrologic and Geologic Studies of Coastal Louisiana. Report 18, Volume 2. Center for Wetland Resources, LSU. Baton Rouge, La.
- U.S. Geological Survey. Infrared photography of coastal Louisiana. Scale 1:130,000.

4. Bottomland Hardwoods

Bottomland hardwoods are considered to be the prime forest game habitat for the most popular sport species of wildlife as well as for certain rare or endangered species. In coastal Louisiana, bottomland hardwood habitat is most prevalent in the upper Atchafalaya Basin and Pearl River Basin (see overlay).

The alluvial ridges of the Mississippi River's deltaic plain were once dominated by bottomland hardwoods. Today, most of these ridges and natural levees have been cleared for agriculture and urbanization. Remaining hardwood forests are located on the flanks and distal ends of the alluvial ridges.

The dominant trees of bottomland hardwoods are live oak, water oak, willow oak, nutall oak, overcup oak, Shumard oak, white oak, cherrybark oak, bitter pecan, green ash, redgum, willow, sycamore, hickory, cottonwood, hackberry, American elm, black and water locust. These species comprise various successional and climax communities, depending on elevation and degree of annual flooding that may occur. These forested areas of mixed hardwoods provide the best habitat and game range for white-tailed deer, turkey, black bear, squirrel and many other small mammals, fur animals and many songbirds. The ideal hardwood game range is one that is comprised of the maximum variety of tree species of all age classes. Oaks and hickory produce high quality acorns and mast for forest game on a year-round basis. Bottomland oaks sustain higher mast yields than upland oaks. In both the Atchafalaya and Pearl River Basin, cypress-tupelo brakes and sloughs intermingle with the hardwood forest. This creates an alternating hardwood ridge and cypress swale pattern that provides a good and varied food supply and escape cover.

Environmental Management Units I and VI.

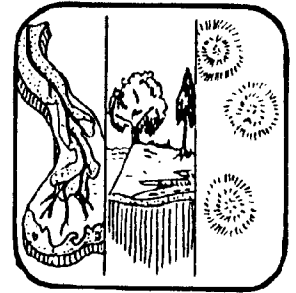


Black Mangrove on small island in Timbalier Bay

Source of Information:

- Brown, Clair A. 1965. Louisiana Trees and Shrubs.
Louisiana Forestry Commission, Bull. No. 1.
- U.S. Army Engineer District, New Orleans. 1974. Fish
and Wildlife Study of the Louisiana Coastal Area and
the Atchafalaya Basin Floodway. Draft Louisiana
Coastal Area Study.
- U.S. Geological Survey. 1974. Infrared photography of
coastal Louisiana. Scale 1:130,000.

**GEOLOGICAL
FEATURES**





Grand Isle, a barrier island



C. GEOLOGICAL FEATURES

1. Barrier Islands and Beaches

Barrier islands on the Louisiana coast represent relicts of abandoned deltas of the Mississippi River. These elongate islands characteristically have a smooth sandy beach on the Gulf side and a highly indented shoreline with black mangrove and salt marsh on the protected bay side. Several complexes of barrier islands are found along the coast. The major island groups are: Isle Dernieres; Timbalier - East Timbalier; Grand Isle - Grand Terre; and the Chandeleur Island chain.

Barrier islands are constantly changing shape and form in response to wave action, tidal and longshore currents, sediment supply and storms. A pattern of continual erosion and deposition constantly shapes and reshapes the islands. Of foremost importance in the maintenance of a stable ecology is the frontal sand dunes and the mangrove and salt marsh on the back side of the islands. These features stop storm waves from breaching the islands and catch sediment thus holding the shore intact. Vegetation, such as baccharis, wax myrtle and rattle box, helps to stabilize the dunes. Dunes on most of the Louisiana barrier islands are 3 to 6 feet high. On some of the islands, such as Grand Isle, oak trees help to stabilize the island.

Barrier islands are extremely important in regulating and maintaining water exchange and salt water balance between the Gulf and the bays. Between the islands are tidal passes through which water exchange between the Gulf and bays occurs. The islands help reduce storm surge and wave action on the marshes in the bays behind the islands. They are also prime nesting and roosting areas for many shorebirds and sea birds. Other rare or endangered wildlife, such as brown pelicans and loggerhead sea turtles utilize the islands. The salt marsh and mangrove on the back side of the islands serve as nursery and feeding grounds for many fish and shellfish. The barrier islands also have a high recreational potential and value. Many people utilize them for fishing, camping, swimming, nature photography or beachcombing. The lack of accessibility helps maintain some of the islands in a semi-wilderness state. The Breton Bird Refuge, including the main Chandeleur Island and South Breton Island, has recently been included in the National Wilderness Preservation System and is Louisiana's only designated wilderness area.

A brief listing of the major barrier islands and beaches on the Louisiana coast follows. These areas have been divided into seven groups.

1) Sabine Pass to Southwest Pass. This area includes a continuous thin band of sand and or mud beach that is part of the mainland and not separated as the true barrier islands. Included are Ocean View Beach, Constance Beach, Peveto Beach, Holly Beach, Rutherford Beach and Cheniere

au Tigre. From Cheniere au Tigre to Point au Fer, mud beaches predominate due to sediment deposition from the Atchafalaya River.

2) Point au Fer to Bay Junop. Small narrow sand and shell beach.

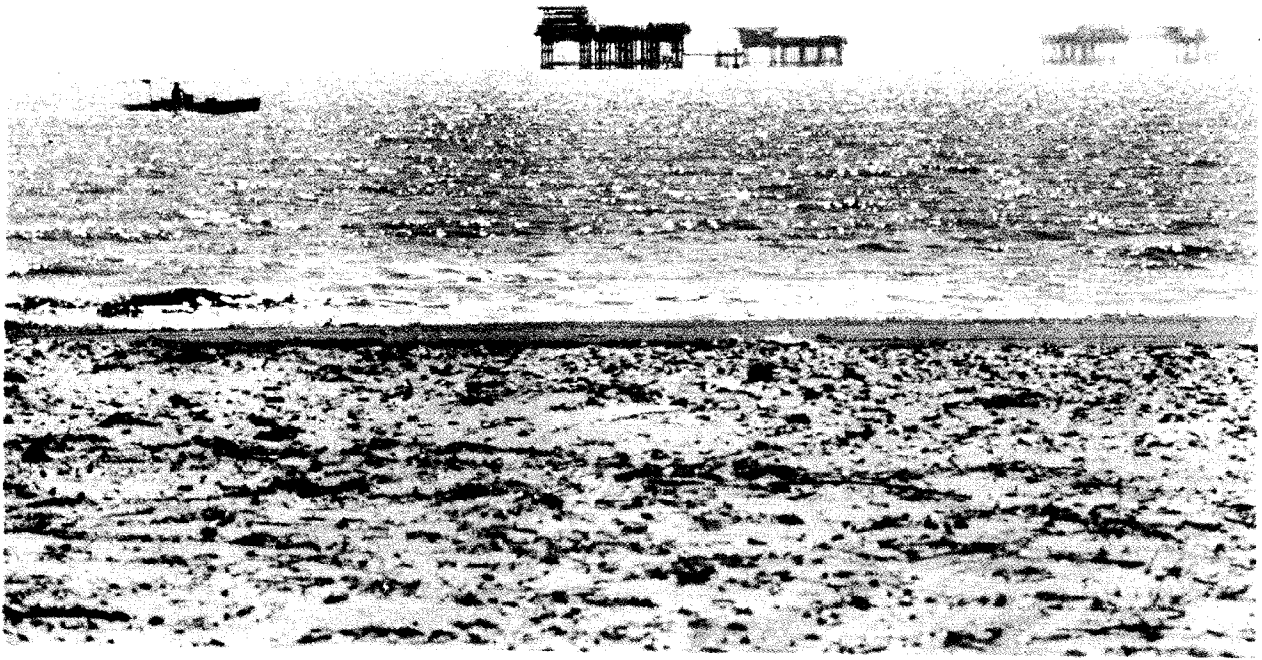
3) Isle Dernieres from Raccoon Point to Wine Island Pass. Beaches of fine sand approximately 100 feet wide backed by dunes rising 3 to 5 feet. These islands separate Lake Pelto from the Gulf, run east to west and are approximately one half mile wide and 24 miles long. They are broken by several channels.

4) Timbalier - East Timbalier Islands. Separate Terrebonne and Timbalier Bays from Gulf. Same approximate dimensions as Isle Dernieres, Timbalier Island is 9 miles long and East Timbalier is about 9.5 miles long. The two islands are separated by Little Pass Timbalier.

5) Grand Isle - Grand Terre Islands. Separate Barataria Bay from Gulf. These islands are separated by Caminada Pass, Barataria Pass, Pass Abel and Four Bayous Pass. Grand Isle extends about 7.5 miles in a north-east to southwest direction and is about three quarters of a mile wide at the center. The beach is up to 300 feet wide but averages 50 feet wide and is composed of fine sand and shell fragments. Grand Terre is split into two islands, the larger being approximately 3 miles long and three quarters of a mile wide. The smaller island is about 2.5 miles long and much narrower. Similar topography to Grand Isle except without trees.

6) Lanaux - Pelican Island. These are not true barrier islands but narrow sand beaches between Bastian and Shell Island Bay and the Gulf. Narrow sand and mud beach.

7) Chandeleur Islands including North and South Breton Island, Grand Gosier Island, Errol Island, North Islands, New Harbor Islands, and the main Chandeleur Island complex. The Chandelers are truly a unique area in Louisiana and closely resemble coastal Florida with its clear high salinity waters, sand beaches, black mangrove and turtle grass shoals. They are unlike most of Louisiana's coast, which is characterized by turbid low-salinity waters and highly organic substrate. These islands form a North-South arc approximately 20 miles off the coast and mark the eastern end of the old St. Bernard delta system. They are approximately 50 miles long from the North Point of the Chandelers to the West Point of Breton Island. Within the arc, a few miles to the west, lie North Islands, New Harbor Islands and Freemason Island. The Smack Channel area between New Harbor Islands and the main Chandeleur Islands is an extremely unique area. It possesses a rich and diverse fauna of certain small crustaceans molluscs, invertebrates and fishes that represent a combination of temperate Northern Gulf species and tropical West Indian species. Many species are



Sand beach near Bay Marchand

endemic to the grass beds around North Islands. The islands are composed of fine quartz sand and shell beaches on the Gulf side and mangrove and salt marsh on the sound side. The beaches are backed by low sand dunes. The oldest and largest dunes are colonized by dense thickets of baccharis and wax myrtle.

Environmental Management Units I, IV, V, VII, VIII and IX.

Source of Information:

Burk and Associates, Inc. 1976. Field investigation by staff personnel.

U.S. Army Engineer District, New Orleans. 1974. Fish and Wildlife Study of the Louisiana Coastal Area and the Atchafalaya Basin Floodway, Draft Louisiana Coastal Area Study.

2. Deep Migratory Tidal Passes

Deep tidal passes connecting the estuaries and the Gulf of Mexico are ecologically important as migratory pathways for many estuarine dependent fish and shellfish. Post larval and adult forms of many marine and estuarine species immigrate in and emigrate out of these passes at certain seasons of the year. In the spring and summer, there is a large inshore migration of larval and post larval shrimp, crabs, and fishes that ride tidal currents through the passes towards the upper ends of the estuarine basins. In the fall, these same species migrate back out through these passes into the Gulf for spawning and overwintering after utilizing estuarine waters as nursery grounds. Because of tidal scouring and high volumes of water movement, the passes are often 50 to 100 feet deep.

Through these deep passes, nutrients, detritus and sediments derived in the inshore bays are exported into the Gulf where they provide food for the marine food web. Phytoplankton, the basis of the marine food web, flourish on the nutrients supplied by decomposition of marsh grasses and land drainage. Many large marine fishes enter the passes and lower portions of the bays on feeding forays. Tidal currents, on which all life in the estuaries depend, ebb and flow through the passes. Deep tidal passes are therefore vital to the maintenance of both inshore and nearshore fisheries productivity.

Although the Louisiana coast has a highly irregular shoreline and many connections between the bays and Gulf, the deeper passes are the most important migratory pathways. The following 25 passes are the most significant in terms of fishery migration and tidal movements. Most of these passes are located between the Gulf and the lower ends of the bays or large inshore lakes.

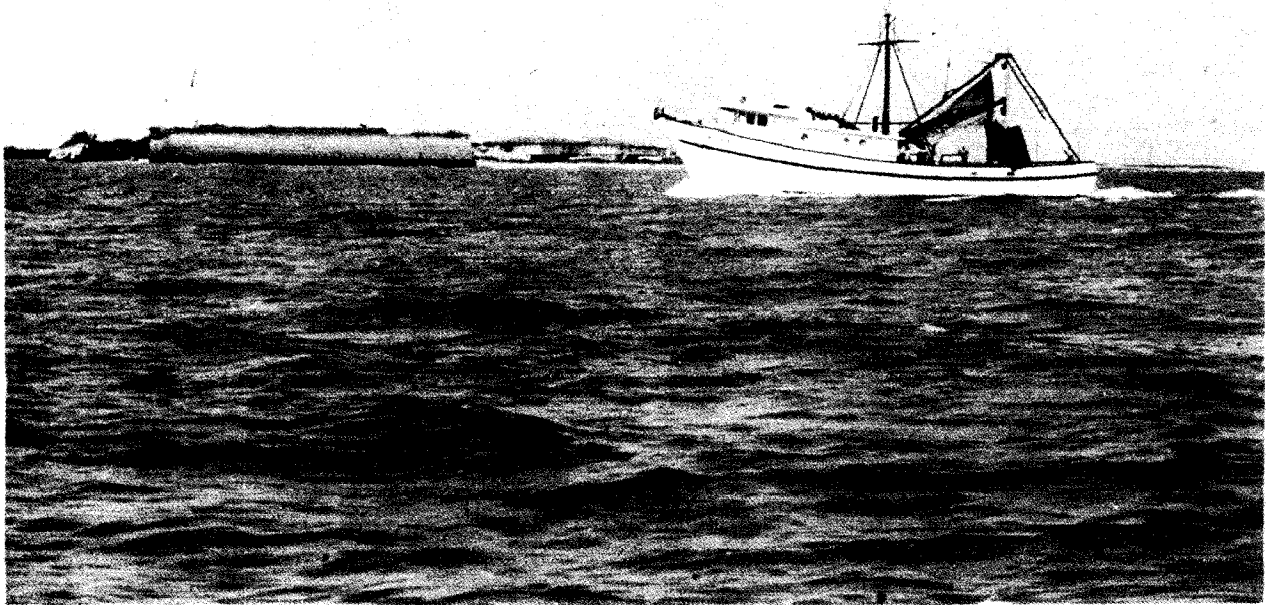
- 1) Sabine Pass
- 2) Calcasieu Pass
- 3) Rollover Bayou
- 4) Southwest Pass (near Marsh Island)
- 5) Oyster Bayou
- 6) Bayou Grand Caillou
- 7) Grand Pass des Ilettes
- 8) Whiskey Pass
- 9) Wine Island Pass
- 10) Cat Island Pass
- 11) Little Pass Timbalier
- 12) Belle Pass
- 13) Caminada Pass
- 14) Barataria Pass
- 15) Pass Abel
- 16) Quatre Bayou Pass
- 17) Mississippi River Gulf Outlet
- 18) Deep Pass
- 19) Grand Pass
- 20) Three Mile Pass
- 21) Nine Mile Pass
- 22) Le Petit Pass
- 23) Rigolets
- 24) Chef Menteur Pass
- 25) Industrial Canal at the Seabrook Bridge

Environmental Management Units: I, IV, V, VI, VIII and IX.

Source of Information:

Burk and Associates, Inc. 1976. Field investigation by staff personnel.

U.S. Geological Survey. Topographic maps of various dates and scales.



**Barataria Pass, deep tidal pass connecting
Barataria Bay and Gulf of Mexico**



Live Oaks on Little Chenier ridge

3. Cheniers and Beach Ridges

Cheniers and beach ridges are linear geological features unique to a deltaic coast such as Louisiana. They represent ancient Gulf beaches that were stranded by deposition of alluvial sediments Gulfward from the former shoreline by deltaic sedimentation. The cheniers lay in parallel belts to the Gulf and are composed of sand and shell ridges and dunes deposited by wave action. Cheniers furthest inland represent the oldest cheniers while those closest to the Gulf are youngest. Cheniers were formed by the constant shifting of the Mississippi River across its flood plain. This resulted in alternating erosion and deposition and construction of extensive mud flats and marshes which presently separate the cheniers. When the Mississippi shifted eastward, the process was reversed from build-out to retreat and beaches were formed by wave action on marshy shorelines. These beaches became stranded when the river shifted its discharge to the west side of its flood plain again. Most are 4 to 5 feet above sea level and are lined with large old live oaks (Quercus virginiana). The cheniers reach maximum elevations of about 10 feet above the marsh and a maximum width of about a quarter mile. Chenier is a French word meaning "place of oaks" and the oak trees are visually the most outstanding feature of the cheniers.

The cheniers are the most distinct topographic feature of the Chenier Plain in Southwestern Louisiana. They are located from near Sabine Pass eastward to Cheniere au Tigre. The largest include Blue Buck Ridge, Smith Ridge, Front Ridge, Back Ridge, Hackberry Beach, Oak Grove Ridge, Little Chenier, Pumpkin Ridge, Eugene Island, Grand Cheniere Ridge, Cheniere Perdue, Pecan Island, Mulberry Island, Bill Ridge and Cheniere au Tigre. These cheniers and smaller cheniers are shown on the overlay. In many cases where subsidence has occurred and marsh deposits have built up, the marsh ridges may be only a foot or two above the marsh and are discernable by the presence of rattle box or roseau cane.

The name cheniers have also been given to abandoned natural levees (e.g. Bayou Grande Cheniere) and beach ridges (e.g. Cheniere Caminada) in Southeastern Louisiana. Although these "chenieres" have a similar appearance and vegetation, they were formed differently from the cheniers of Southwestern Louisiana.

Ecologically, the cheniers and beach ridges serve an important function as wildlife habitats, storm barriers, and in limiting salt water intrusion into the marshes. This is particularly evident along the Grand Cheniere-Pecan Island ridge complex. Marshes south of these chenieres are brackish while marshes to the north are primarily fresh. The cheniers are very important as resting areas for birds completing trans-Gulf migrations. They also have high recreational value for camping, hiking, bird-watching and picnicking.

Environmental Management Units: IV, VIII and IX

Source of Information:

- Howe, Henry V., et.al. 1935. Geology of Cameron and Vermilion Parishes. Geological Bulletin No. 6. Department of Conservation. La. Geological Survey.
- U.S.G.S. 1974. Infrared photography of coastal Louisiana. Scale 1:130,000.

4. Salt Domes

Salt domes are prominent geological features around which most of the oil and gas drilling in South Louisiana occurs. Most are subsurface in both the coastal marshes and offshore areas. Of the many domes on land in South Louisiana, only the "Five Islands" in Iberia and St. Mary Parishes are truly conspicuous. Four of these islands occur within the coastal zone - Avery Island, Weeks Island, Cote Blanche Island and Belle Isle. These domes are spaced at 7 to 9 mile intervals along a line of geologic activity. They are round with diameters of approximately two miles.

Called "islands" because they represent areas of significant topographic relief surrounded by near sea level marshes, the salt domes are unique from a geological, botanical, zoological, historical and archeological standpoint. They reach elevations of up to 152 feet above sea level creating quite a striking vista as they seem to "rise" up suddenly out of the marshes. The abrupt change in elevation from sea level to over 150 feet is unique in coastal Louisiana where changes in elevation of only a few inches often cause botanical differences. The islands are heavily wooded and have numerous small ponds and lakes. The domes have a distinct flora and fauna quite different from the surrounding marshes. Vegetative types range from marsh to upland hardwoods. The dominant trees on the well drained areas of the domes are bitternut hickory, pecan, pignut hickory, southern magnolia and live oak. Many other species of lowland hardwoods, shrubs, vines, herbs, grasses, ferns, liverworts and mosses are found. Some of the mosses have a very disjunct range being found only in tropical America, Florida and on the Five Islands. The islands are also important wading bird rookeries and habitats for white-tailed deer, small mammals and occasional black bears. From the archeological standpoint, excavations on Avery Island have revealed evidence of the earliest records of man in coastal Louisiana.

Environmental Management Units VI and VII.

Source of Information:

- Kniffen, Fred B. 1968. Louisiana, Its Land and People. Louisiana State University Press.

U.S. Army Corps of Engineers, Vicksburg District, 1973.
Report on Gulf Coast Deep Water Port Facilities,
Texas, Louisiana, Mississippi, Alabama, and
Florida. Appendix F. Environmental Assessment,
Central Gulf.

5. Mud Lumps

The mud lumps are small mud islands unique to the mouths of the Mississippi River passes. Mud lumps are found near the ends of Southwest Pass, South Pass, Southeast Pass and Pass a Loutre. They range up to twelve feet in height and vary in diameter from a few square feet to twenty acres. They are produced by geological processes occurring at river mouths and consist of mostly bowed-up sediments of sandy silts and clay. The mud lumps are formed by the upward thrusting of fine clays between heavier coarser sediments being deposited on bars at the mouths of the river passes. The clay is forced upward through overlying materials and may emerge rapidly like a small volcano, spewing marsh gas and mud. Small mounds are formed that usually are eroded by wave action within 15 years. The action of waves and uplift on the mounds may produce features such as cliff faces and step-like terraces. In addition to being unique geological features, the mud lumps are important bird nesting areas.

Environmental Management Unit III.

Source of Information:

Kniffen, Fred B. 1968. Louisiana, Its Land and People.
Louisiana State University Press.

6. Freshwater Impoundments in the Marshes

There are four areas within the coastal marshes that have been impounded for waterfowl management or water supply. Freshwater pools have been created by leveeing off natural marsh in which water levels are manipulated by pumping or control structures. Although natural marshland processes have been somewhat altered, productive waterfowl and fishing areas have been created. Two of these impoundments are on refuges in the prairie marshes of Southwestern Louisiana, another is in the saline marshes of lower Barataria Bay and the fourth is in the delta marshes near the mouth of the Mississippi River. Other impoundments are found on Marsh Island and Rockefeller Refuges, but these are brackish water types. A description of each freshwater impoundment follows.

1) Sabine Refuge Pool. This area, along with two other smaller pools, consists of 34,000 acres of freshwater marsh. The area is heavily utilized as wintering and nesting habitat by many species of waterfowl, shorebirds and wading birds, and also provides good to excellent freshwater fishing.

2) Lacassine Refuge Pool. This pool consists of 16,000 acres and serves as a roosting and feeding area for peak populations of 400,000 ducks, white-fronted geese and blue and snow geese. Many wading birds nest in the pool including roseate spoonbills, white-faced ibises, white ibises, common and snowy egrets, Louisiana and little blue herons, black-crowned and yellow-crowned night herons and anhingas. Here also is the first American nesting colony of cattle egrets outside of Florida. Vegetation consists primarily of bulltongue, maidencane, watershield, waterlily, spikerush, and southern bulrush. The pool provides excellent largemouth bass fishing.

3) Grand Ecaille Sulphur Pits. Freeport Sulphur Company has created a unique situation in Southeastern Barataria Bay with the impoundment of two pits of 134 acres. These pits were created by leveeing off an area of saline marsh and are utilized as a source of freshwater for the nearby Sulphur mine. Freshwater is heated in boilers and then pumped underground to melt sulphur deposits. The need for freshwater for the mining process has led to the impoundment of the reservoirs. Surrounded by the saline waters of Lake Grand Ecaille, the pits support excellent populations of largemouth bass.

4) Garden Island Bay Sulphur Pits. These pits were created for the same purpose as those at Grand Ecaille by Freeport Sulphur Company. They are located off Cadro Pass south of Pass a Loutre and consist of two pits of approximately 650 acres with an average depth of 6 to 8 feet. The periodic pumping of nutrient rich river water into the reservoir continually rejuvenates and fertilizes its waters and produces a lush growth of submergent grasses. Small forage fish such as gizzard shad, skipjack herring, and different species of shiners are also introduced into the pits when pumping occurs. Due to the warm waters of the Gulf that surround the Delta and the fact that the Delta extends for over 100 miles into the Gulf below New Orleans, a nearly year round growing season occurs. Temperatures are characteristic of a tropical to semi-tropical climatic regime and the area annually has over 350 frost-free days. These conditions combine to produce a phenomenal growth rate of the fishes present in the pits. Large populations of large mouth bass, yellow bass, black crappie, bluegill, blue catfish, striped mullet, and alligator gar occur which provide excellent sport fishing. The pits are located within the Pass a Loutre Public Shooting Grounds and also provide good waterfowl hunting.

Environmental Management Units III, IV, VIII and IX.

Source of Information:

Burk and Associates, Inc. 1976. Field investigations
by staff personnel.



Deep freshwater marsh, Sabine Refuge pool

Bureau of Sport Fisheries and Wildlife. 1974. Proposed
Lacassine Wilderness Area, Louisiana. Draft
Environmental Statement.

Walther, John. Refuge Manager, Sabine Refuge.
Personal communication.

7. New Atchafalaya Delta

Deposition of alluvial sediments by the various sub deltas of the Mississippi River is the primary factor responsible for the creation of all of what is today's coastal Louisiana. This basic geological process has been greatly restricted due to man-made levees along the Mississippi's channel. Today, the dominant geological process in the coastal area is one of land loss due to subsidence, salt water intrusion and wave induced erosion. The Mississippi's deltaic plain is in various stages of deterioration as the Gulf's tides and waves constantly eat away at the coastal marshes. However, in Atchafalaya Bay, the Atchafalaya River is building a new delta. The Atchafalaya is the Mississippi's major tributary and carries a tremendous load of silt. Much of this silt is being deposited as mud flats at the river's mouth and a new land mass is gradually taking form in northern Atchafalaya Bay. Eventually, as natural levees and interior marsh develop, the delta will take on the physical appearance of the active delta at the mouth of the Mississippi. Fish and wildlife characteristic of the Mississippi Delta will gradually become established. Ideal habitat for waterfowl, fur-bearers, freshwater and estuarine fishes will develop. The new delta will contain approximately 192,000 acres and will extend out beyond Point au Fer Island by the year 2020.

Although this process of delta building was an inherent characteristic of the past geological history of coastal Louisiana, it is unique today because of man's activities. This new delta represents the major area on the coast where accretion and land building is occurring.

Environmental Management Unit V.

Source of Information:

- Gagliano, S.M. and J.L. van Beek. 1970. Geologic and Geomorphic Aspects of Deltaic Processes, Mississippi Delta System. Hydrologic and Geologic Studies of Coastal Louisiana, Report No. 1, Coastal Resources Unit, Center for Wetland Resources, LSU, Baton Rouge, La.
- Duffy, McFadden. 1976. Of Time and the River. Louisiana Conservationist, Vol. 28 (3 & 4).

8. Big Woods Island, Deweyville Terrace

Big Woods Island represents the westernmost meander scar of the Mississippi River delta. Originally part of an active channel of the Vermilion River, an old Mississippi distributary, this island is on the dividing line between the deltaic and chenier plain marshes. Geologically, it is known as a Deweyville Terrace and consists of a series of ridges and swales that were produced by the gradual movement of the Vermilion River channel. This shifting of the river deposited sediments along cut banks which accumulated into low arcuate ridges.

Big Woods Island and adjoining Palmetto Island have dense growths of bottomland hardwoods and are surrounded by cypress swamp. The swamp probably represents the old filled river channel. Both islands are about 4 square miles in size and elevated 5 to 6 feet above the surrounding swamp. Palmetto Island has been proposed as a state preservation area in the state parks system. The islands are located near Esther, Louisiana.

Environmental Management Unit VIII.

Source of Information:

Burk and Associates, Inc. 1976. Field investigation
by staff personnel.

McIntire, William. Geologist, Coastal Studies Institute.
Personal communication.



MISCELLANEOUS FEATURES

D. MISCELLANEOUS FEATURES

1. Potential Registered Natural Landmarks

Five of the areas listed as unique botanical communities have been nominated as Potential Registered Natural Landmarks. The National Registry of Natural Landmarks is a program administered by the National Park Service with the objective of encouraging preservation of sites significantly illustrating the geological and ecological character of the United States. The landmarks are also chosen to enhance the educational, scientific and cultural value of the sites and to foster a greater concern for the conservation of the nation's natural heritage.

The sites recommended as natural landmarks are the Pontchatoula marsh in Tangipahoa Parish; Honey Island Swamp in St. Tammany Parish; Blind River Swamp in Livingston, St. James and Ascension Parishes; Amite and Tickfaw Rivers in Livingston Parish and the Atchafalaya Basin in St. Martin, St. Mary and Assumption Parishes. The Atchafalaya Basin has also been proposed as a preservation area.

Environmental Management Unit I, V and VI.

Source of Information:

Goodwin, Richard H. and William A. Niering. 1971.
Inland Waterways of the United States Evaluated
as Potential Registered Natural Landmarks. Vol. I.
Alabama to Missouri. U.S.D.I. National Park
Service, Washington, D.C.

Numerous other sites that have been described in this report should be evaluated as possible registered natural landmarks. Some of these areas meet the criteria established for natural landmarks, yet have not been recommended for this status. It is only through programs such as this that these unique environments can be preserved and protected. All of the coastal features discussed in this report should also be evaluated for possible designation as preservation areas as required by the Coastal Zone Management Act of 1972. Undoubtedly, certain ones will meet the criteria established for designation of such areas.

In the final analysis, it is the ecological, hydrological and geological processes that produced these unique features that ultimately need preserving. In a deltaic environment as dynamic as coastal Louisiana, many of the landforms are only temporary. They constantly change in response to dominant processes such as erosion, accretion, tidal currents, storms and organic production. If these processes are maintained, unique features that exist in today's coastal Louisiana will always be a part of this valuable ecosystem.

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