A Guide To The Wetlands of The Lake Pontchartrain Basin 2004

A project of the University of New Orleans Pontchartrain Institute for Environmental Sciences and the Lake Pontchartrain Basin Foundation
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Without boats and a reliable guide it is hard to get to know the wetlands. Thanks to Byron Almquist and Jim Landry of Canoe and Trail Adventures, exploration of the places described in this booklet has been possible.
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A Guide to the Wetlands of the Lake Pontchartrain Basin

This guide was originally produced in 2000 by a partnership between the Lake Pontchartrain Basin Foundation Education Program and UNO’s Coastal Research Laboratory. This second edition is a production of the Pontchartrain Institute for Environmental Sciences at UNO and the Lake Pontchartrain Basin Foundation.

The purpose of this publication is to help educators, students, and interested members of the public explore and learn more about the beautiful and varied wetland habitats of the Lake Pontchartrain Basin. We hope that a deeper understanding of the wetlands will lead to a greater appreciation and a desire to help to preserve what is left.

The Lake Pontchartrain Basin Foundation

The Lake Pontchartrain Basin Foundation, a non-profit, membership-based citizens’ organization, is the public’s independent voice dedicated to restoring and preserving the Lake Pontchartrain Basin. Through coordination of restoration activities, education, advocacy, monitoring of the regulatory process, and citizen action, the Lake Pontchartrain Basin Foundation works in partnership with all segments of the community to reclaim the waters of the Basin for this and future generations. LPBF’s programs include water quality monitoring, habitat preservation, public access planning and education.

The Lake Pontchartrain Basin Foundation offers a variety of environmental education resources for teachers, students, and the general public. LPBF’s goal is to educate citizens about important issues affecting the Basin and to involve the community in efforts to SAVE OUR LAKE. The Foundation’s education program provides water quality reports; field trips for teachers, students, and the general public; workshops; student water quality monitoring; classroom presentations; grants to schools; and public service opportunities. Products available for educators include curriculum guides, maps, videotapes, and other publications. Go to LPBF’s website at www.saveourlake.org for more information on products and programs. The educator’s guide Lessons on the Lake is also available on-line at this site.

The Pontchartrain Institute for Environmental Sciences

The Pontchartrain Institute for Environmental Sciences at the University of New Orleans is a partnership of scientists and educators combining rigorous scientific analysis with education, outreach and planning in order to develop practical solutions to the environmental challenges found in the Pontchartrain Basin, in other areas in Louisiana and in similar ecosystems elsewhere in the world. The Institute’s director is leading coastal geologist Dr. Shea Penland. The Institute is comprised of eight research laboratories and two academic programs. The faculty and staff are diverse and consist of biologists, computer scientists, ecologists, educators, engineers, geographers, geologists and GIS specialists. Wetland education specialists conduct educational activities including wetland field trips for students and facilitate service projects to help students play an active role in protecting valuable wetland habitats in their communities. They also produce educational materials such as this guide.
The Lake Pontchartrain Basin

The Lake Pontchartrain Basin, or the watershed of Lake Pontchartrain, consists of 16 parishes (counties) in southeastern Louisiana ranging from rural to suburban to highly urban and supports a population of approximately 1.5 million people. Water drains into rivers and bayous throughout the drainage basin, making its way to the Gulf of Mexico via a series of large open water bays. These bays - Lake Pontchartrain, along with its neighbors Lakes Borgne and Maurepas - comprise a large, shallow estuary where fresh water from rivers and bayous mix with the salty waters of the Gulf. This expanse of open water is fringed by swamps and marshes and provides a major recreational and commercial resource for the people of the Basin.

But during the latter part of the 20th Century to the present, the estuary has been plagued by the results of poor planning and over-development. Urban runoff and nonpoint source pollution are the most pervasive of these problems. Loss of wetlands and their capacity to filter pollutants from water increases the damaging effect of these types of pollution. Wetlands also provide many other benefits in the Lake Pontchartrain Basin. These benefits are outlined below.

The Lake Pontchartrain Basin contains a wide variety of wetland habitats, from bottomland hardwood forests and cypress-tupelo swamps to fresh, brackish, and saline marshes, shallow bays, and barrier islands. The only way to become truly familiar with these habitats is to experience them firsthand. This booklet provides information to help you explore the wetlands of the Lake Pontchartrain Basin.

A good place to begin any exploration is with maps. In addition to the maps provided in this publication, the United States Geological Survey (USGS) topographical maps and the aerial photo-maps produced by Standard Mapping Services are valuable resources.

The Geology of the Lake Pontchartrain Basin

Within the Pontchartrain Basin are sedimentary deposits belonging to two main geologic periods, or epochs, known as the Pleistocene and the Holocene. On the north side of the Lake, stretching west to the Mississippi River Valley and north into Mississippi, is the Pleistocene Terrace. These sedimentary rocks were deposited before the last ice age (The Wisconsin Glaciation). The rocks are made mostly of silts, sands, and clays that have been compressed and hardened over time. The rivers of the north shore have cut into the Pleistocene sediments and made valleys. During the last Ice Age, the sea level was low because water was locked in glaciers. As the glaciers melted, the sea level rose and at one time the coast of the Gulf of Mexico followed the present north shore of Lake Pontchartrain.

Gradually sediment being eroded from the continent and transported by the rivers began to accumulate in the shallow water along the coast. Over the last 10,000 years these sediments have formed the great Mississippi Delta. This is the Holocene Epoch, the most recent geologic time period. The soft sediments deposited by the Mississippi River in the Holocene make up the broad expanse of coastal wetland habitats now found on the southern, western, and eastern shores of Lake Pontchartrain. Holocene deposits also line the north shore, having accumulated along the shoreline during this time of delta building.

Map 1: “The Underlying Geology of the Basin”
Factors Determining Wetland Habitat Types

To determine that a particular habitat is indeed a wetland, three criteria must be met. The habitat must have: hydric soils (soils that are saturated long enough to create low oxygen or anaerobic conditions); hydrophytic plants (plants that are adapted to growing in waterlogged hydric soils); and a specific hydrologic regime (presence of water at or above the ground surface for more than seven consecutive days in the growing season). This definition is derived from the US Army Corps of Engineers definition as stated in the LSU Agricultural Center’s publication Wetland Functions and Values in Louisiana, and from a definition provided in Wow! The Wonders of Wetlands, curriculum guide. Most of the wetland habitats of the Basin are clearly wet, though some have more subtle characteristics and may appear dry at some times of the year.

We classify wetland habitats according to the vegetation that grows in them. There are two very broad classifications of wetland habitat: forested wetlands and marsh. Forested wetlands include swamps and bottomland hardwood forests. True cypress-tupelo swamps are dominated by bald cypress (Taxodium distichum) and tupelo gum (Nyssa aquatica), while the bottomland hardwood forests are dominated with a wide variety of tree species including water oak (Quercus nigra), sweetgum (Liquidambar styraciflua), hackberry (Celtis laevigata), and red maple (Acer rubrum).

There are four different types of marsh: freshwater, intermediate, brackish, and saltwater. Marshes are characterized by grasses and herbs. In the wetlands of the Mississippi River Delta, salinity, elevation, and soil type are the three most important factors determining the type of habitat. The delta is so low and flat that a very small change in elevation can make a big difference both in the types of plants found and the appearance of the area.

Salinity

Technically, Lake Pontchartrain is not a lake but an estuary, connected to the Gulf of Mexico to the east by the Chef and Rigolets Passes, and receiving freshwater drainage from many rivers and bayous. In an estuary, fresh and salt water mix, resulting in a range of salinities. Salinity is the measure of salts dissolved in the water, expressed in parts per thousand (ppt). Within the Pontchartrain Basin, water salinities can be found anywhere on the scale of 0-35 ppt. Most salinities in the southern and eastern areas are in the intermediate and brackish range, with fresher water being found on the western and northern sides of the basin. Below is a scale showing the ranges of fresh, intermediate, brackish, and salt water.

In any given location, salinity constantly changes with environmental conditions such as wind and weather. Certain plants and animals are adapted to living in a particular salinity range. Differences in salinity help create distinct wetland habitats. However, many plants and animals of the estuary are adapted to tolerate quite a wide range of salinity, making the estuarine wetlands a complex and fascinating ecosystem.

Elevation

Elevation is the height of the land above sea level. The swamps and marshes of the Pontchartrain Basin are all at or near sea level. Here the only natural higher ground occurs along the banks of rivers and bayous. These natural levees and ridges can be recognized easily on a USGS topographical map. The ridges created by the rivers and bayous have provided better-drained ground for roads and towns to be located. In many cases these are the only areas suitable for development. New Orleans itself began on the natural levee of the Mississippi River and has only been able to expand with the use of artificial drainage methods. The only true upland areas in the Basin are on the Pleistocene Terrace north of the Lake. On this higher ground wetlands are restricted mostly to low-lying areas along rivers.
Wetland Habitats of the Lake Pontchartrain Basin

Salt Marsh
Salt marshes are those with water salinity above 20 parts per thousand (ppt). They are characterized by a dominant species, Spartina alterniflora, sometimes called oyster grass. It is a tough, salt-tolerant grass. Other grasses grow along with oyster grass, such as salt grass (Distichlis spicata), and black rush (Juncus roemerianus), and a few shrubs like black man-grove (Avicennia germinans). The salt marsh has the fewest species of all the wetland habitats. The species surviving in the salt marsh have special adaptations enabling them to survive harsh, saline conditions.

Brackish Marsh
Those marshes with water salinities between 10 and 20 ppt are classified as brackish. The dominant grass is Spartina patens, or wire grass, which is usually shorter and finer in appearance than its relative Spartina alterniflora. Three-cornered grass (Scirpus olneyi) and hogcane (Spartina cynosuroides) also grow with wiregrass. Shrubs such as groundselbush (Baccharis halimifolia) and marsh elder (Iva frutescens) are also common. A wider variety of species are found in the brackish marsh than in the salt marsh.

Intermediate Marsh
Intermediate marshes are those with water salinities between 2 and 10 ppt. They can be thought of as low-salinity, brackish marshes, or an overlap between brackish and fresh habitats. In fact, it is sometimes hard to distinguish one from another without measuring the salinity, but species that are less salt tolerant grow in the intermediate marsh along with Spartina patens and other brackish marsh plants. They include bulwhip (Scirpus californicus) and roseau cane (Phragmites australis), as well as other species that thrive in the brackish and freshwater marsh.

Freshwater Marsh
In the true freshwater marsh the salinity measures no more than 2 parts per thousand (some classification systems allow only 0.5 ppt or lower to be classified as fresh). Several species such as bulltongue (Sagittaria lancifolia) and spider lilies (Hymenocallis caroliniana) are found in both the fresh and intermediate marshes. Others are confined to the freshwater habitat only. These species include wild rice (Zizaniopsis aquatica), maidencane (Panicum hemitomon), and Louisiana iris (Iris gigantacaerula). There are also many species of submergent plants (plants that grow beneath the water) in the freshwater marsh. The freshwater marsh has the greatest species diversity of all the marsh types. It is also the habitat that has been impacted the most by wetland loss in the Pontchartrain Basin.
Natural and Artificial Levees
In wetlands there are often ridges of higher ground, usually along the banks of bayous and rivers. These are natural levees built over time by the waterways. Also, human activity has added many artificial levees and spoil banks where dredging has taken place. On these areas of higher ground a wide diversity of tree species is found. These include live oak (Quercus virginiana), black willow (Salix nigra), and red maple (Acer rubrum). The old natural levee habitats are also characterized by the presence of dwarf palmetto (Sabal minor), which creates an understory layer beneath old oak trees in undisturbed areas.

Cypress-Tupelo Swamp
This freshwater habitat is dominated by bald cypress (Taxodium distichum) and Tupelo Gum (Nyssa aquatica) trees. Many shrubs and other species of trees also grow in the swamp, including buttonbush (Cephalanthus occidentalis). The Pontchartrain Basin contains large areas of cypress-tupelo swamp especially on the western side around Lake Maurepas. However, this habitat was greatly altered by the logging industry. Virtually every good sized, healthy cypress was cut for lumber between the late 19th century and the early 20th Century. This swamp continues to deteriorate. Without the freshwater overflow from the Mississippi River that once brought nutrients and sediment each year, the cypress swamps will continue to subside, rendering the swamp unsustainable.

Bays, Lakes, and Waterways
The open waters of the Pontchartrain Basin interact with the surrounding wetlands, so it is impossible to completely separate the two. Tides and winds bring water into and out of the marsh and swamp and the aquatic organisms move freely between the open water and the vegetated wetland habitats. In the shallow open water, there is one of the most important, but often overlooked habitats, which is described next.

Submersed Aquatic Vegetation or Grass Beds
Grassbeds, or submersed aquatic vegetation (SAV) occur in shallow water near the shore. This delicate but critically important habitat is often overlooked because it lies beneath the surface of the water. Grassbeds require water clear enough to allow sufficient light for photosynthesis, and the correct balance of nutrients. The plants that grow in the grassbeds include water celery (Vallisneria americana) and widgeon grass (Ruppia maritima). The vegetation provides habitat for many small organisms including shrimp, crabs, and smaller fish. The grassbeds of Lake Pontchartrain were once much more extensive than today.

Bays, Lakes, and Waterways
Also known as riverine wetlands, bottomland hardwood forests are found along the rivers that drain into the north shores of Lake Pontchartrain and Lake Maurepas, as well as in the Pearl River Basin. This habitat is more diverse than the cypress-tupelo swamp. In addition to cypress and tupelo trees, there are several species of pines, oaks, and a variety of hardwood trees found in the bottomland habitat, due to the presence of higher, better-drained ground.

The Bottomland Hardwood Forests
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Cypress-Tupelo Swamp at Tickfaw State Park

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The Chandeleur Islands are composed of sand and shell beaches on the Gulf side, and areas of salt and brackish marsh on the sound side. Only those plants adapted to this highly unstable, saline environment can survive. On higher areas, plants to be found include marshelder (Iva frutescens) and waxmyrtle (Myrica cerifera). A number of herbs, some of which are succulents, such as Salicornia sp. thrive throughout the islands. Black mangrove is common on the sound side of the islands. The marsh is dominated by wiregrass (Spartina patens) and oyster grass (Spartina alterniflora). The shallow water on the sound side is populated by very large grassbeds.

The wetlands of the Pontchartrain Basin are not only vitally important to Lake Pontchartrain but also to the entire Basin ecosystem. If the remaining wetlands that exist today are destroyed or removed, the entire Pontchartrain ecosystem could collapse. As a case study, we can look at the south shore, where most of the wetlands have been drained and developed. This region of the lake presents the biggest challenge to restoration. Please refer to the sections on Bayou Sauvage National Wildlife Refuge and the LaBranche Wetlands for more details.

**Wetland Functions**

Wetlands are extremely complex ecosystems and they perform many functions. The most important of these functions are:

**Pollution Filter**

Pollution that runs off the land from many different sources (often called nonpoint source pollution) is the biggest threat to water quality in Lake Pontchartrain. Wetlands serve the important function of filtering many pollutants from the water. The types of pollution most effectively removed by wetlands include excess nutrients, such as nitrates and phosphates coming from lawn and farm fertilizers and other sources, and sediment. The plants in wetlands take up the excess nutrients, using them for growth, while sediment is trapped by the stems of the plants as water flows through the vegetation.
The Basis of the Food Web

The wetlands fringing Lake Pontchartrain are the source of energy for an enormous number of organisms, from microscopic plankton to fish to large mammals like otters and nutria, to birds such as pelicans. Wetland food webs begin with living plants as well as decaying plant material called detritus. In addition, many of the species we associate with open lake water, like blue crabs, shrimp, and mullet, spend much of their lives in the marsh feeding on detritus or other products of the wetlands. Because of these complex food webs, the Pontchartrain Basin provides habitat for thousands of plant and animal species, including several endangered and threatened species.

Erosion Control

The thick growth of plants found in the wetland habitats of the Pontchartrain Basin performs the vital function of anchoring the fragile wetland soils. Whenever plants are removed from the soil, the action of the water washes the soil away. Vegetation buffers of woodlands and wetlands can also absorb and hold sediment before it runs off into the lake.

Water storage

During times of high rainfall wetlands act as giant sponges, soaking up excess water and releasing it slowly during times of low rainfall. Forested wetlands and marshes can hold excess water that would flood cleared and paved inhabited areas.

Storm Buffer

Wetlands provide an important buffer zone during hurricanes and tropical storms. Again, they absorb the waters of the storm surge and help to weaken the storm itself. Without this buffer, storm surges and floods can endanger lives by moving directly into inhabited areas, or hitting protection levees with greater impact.

How the Wetlands Benefit the People of the Pontchartrain Basin

All of these functions are valuable to the people living in the Pontchartrain Basin. By filtering pollutants, the wetlands help to maintain high water quality for all of the activities people enjoy on and around Lake Pontchartrain. By providing an energy source and a "nursery ground" for many aquatic organisms of the Basin, the wetlands support the commercial and recreational fishing industries. Also, animals other than fish and seafood, such as ducks and alligators, provide recreational and commercial hunting opportunities for many people. People also frequently visit the wetlands to observe the abundant wildlife and enjoy the outdoors. In recent years, swamp tours offered to out of town visitors have become increasingly popular. This "ecotourism" is important to the economy of the area and garners additional public attention to the importance of wetlands.

The maintenance of healthy wetlands can also help reduce the serious problem of coastal land loss in Louisiana, as well as protect developed areas. Healthy wetlands provide a valuable service by absorbing floodwaters and buffering the effects of storm surge. Continued clearing of forests and wetlands is increasing the threat of flooding from rainstorms and hurricanes for residents of the Pontchartrain Basin, especially those in low-lying areas.

Challenges Faced by Wetlands in the Pontchartrain Basin

In spite of their undeniable values, wetlands continue to disappear. Since 1900 almost 50% of the wetlands of the Pontchartrain Basin have been lost or destroyed. Most of this loss has occurred since 1950. In the 1980's scientists estimated that the fish production in the Lake ecosystem had declined by 49% since 1900 due to wetland loss.

Scientists have also shown that as the area of wetlands shrunk, the amount of phosphate nutrients in Lake Pontchartrain increased. The restoration and maintenance of the wetlands of the Pontchartrain Basin is therefore vital to the health of the estuary and the whole Basin.

Causes for the Decline of Wetlands

All of the following factors have played a part in the deterioration of the Pontchartrain Basin wetlands. None of the influences can be taken alone. They are all interrelated and influence each other.

Urban Growth

It is hard to imagine that almost all of what is now the metropolitan area of Orleans and Jefferson Parishes was once marsh and swamp. As the population of New Orleans grew, ways to effectively drain the wetlands were found and the city spread. Rapid growth in Jefferson Parish took off after 1950. If you talk to older residents of Metairie or Kenner they may remember how different these areas used to look. Today the fastest growing area in the Basin is on the north shore of Lake Pontchartrain. Growth in Livingston and Ascension Parishes has recently surpassed that of St. Tammany Parish where the towns of Mandeville and Covington have grown rapidly as people moved from New Orleans. Development in these areas continues to claim wetlands, in spite of laws designed to control the draining and altering of wetlands. On the south and western shores, St. Charles and St. John Parishes are also experiencing growth as people move further from the city. Baton Rouge is also growing rapidly, expanding eastward along I-10 and I-12. Urban growth affects wetlands directly by draining and filling, and indirectly by increasing runoff and altering the way water flows (hydrology).
Subsidence and the Mississippi River Flood Control Levees

Even those wetlands not yet affected by urban development are likely to have declined in some way in the last 50 years. Some of this decline is due to the natural subsidence of the sediments of the Mississippi River Delta. Human activities have exacerbated this process. After the levees on the Mississippi River were completed, sediment-laden floodwater was no longer allowed to flow over the land. The deposition of sediment by floods originally built and maintained most of the land in southern Louisiana. Since levees now prevent this process from taking place in many areas, land continues to sink, but it is no longer built up. This is a serious threat to the wetlands surrounding Lake Pontchartrain.

Altered Hydrology

During the 20th Century, an intricate network of canals, roads, railroads, and levees was built throughout the Louisiana coastal zone to serve the growing population. These human alterations often disrupt the complex patterns of water movement within the wetlands. The Bayou Sauvage area, noted later on, may be the best example in the Pontchartrain Basin of altered hydrology in wetlands. Here a hurricane levee surrounds and impounds the marsh, preventing tidal exchange with the estuary, while canals and other levees have altered the way in which the water flows. These changes can have a disastrous effect on the quality of the wetland.

Saltwater Intrusion

Saltwater intrusion occurs when salty water enters fresher water habitats and alters the ecology, often killing freshwater vegetation. Both subsidence and the construction of artificial waterways have caused saltwater intrusion. Because freshwater marshes are more productive than saltwater marshes, saltwater intrusion reduces the biological productivity of wetlands. Within the Pontchartrain Basin saltwater intrusion is most prevalent in St. Bernard Parish marshes where impacted forested wetlands are a common sight. This is due to the Mississippi River Gulf Outlet allowing saltwater far into the marsh (noted later).

The Effects of these Changes: Marsh Breaking and Ponding

Many marshes that were once areas of solid, unbroken grassy vegetation, now are broken up into smaller patches in expanses of open water. This effect is the result of subsidence combined with human interference. The long-term effect of breaking and ponding results in lowered biological productivity of the marsh. Initially, the number of organisms supported by the marsh does not decline. In fact it tends to increase due to increased surface area of marsh edge. However, as the patches of marsh become smaller and eventually disappear due to edge erosion, a point is reached when productivity rapidly declines. This phenomenon could have a devastating effect on the fisheries of coastal Louisiana.
Coastal Wetland Restoration

Louisiana leads the way in the development of innovative wetlands restoration strategies. This is because of the great need to find ways to sustain our coastal wetlands on which we depend for their many benefits. Through research and on the ground experience, coastal restoration technology has evolved dramatically over recent years. It is clear that we must make this a priority and find sufficient funds to build effective projects if we are to continue to enjoy the benefits provided by our wetlands. In the Pontchartrain Basin a number of projects are working to restore wetlands. For example, the Mississippi River’s natural land building ability is being utilized by the Caernarvon Freshwater Diversion Project and soon the Maurepas Freshwater Reintroduction Project will use river water to restore the Maurepas swamps. Hydrologic modification projects are at work at Fritchie Marsh and Bayou Sauvage, attempting to restore damaged marsh. In the LaBranche Wetlands, marsh was restored by dredging sediment from the lake bottom, while the shoreline is protected from erosion with the use of rocks. These are just a few examples of restoration work in the Pontchartrain Basin.

Wetlands Protection

There are a number of local, state and federal regulations and laws in place designed to protect our wetlands and waterways. If a person wishes to alter a wetland in some way, he or she must apply for the correct permits from one or several agencies, depending upon the size and nature of the proposed project. Some important federally administered legislation that protects wetlands and water quality include Sections 401 and 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, the Coastal Zone Management Act and the National Environmental Policy Act. The federal agencies administering these acts and responsible for reviewing and granting or denying permits are the US Army Corps of Engineers, the Environmental Protection Agency, The US Fish and Wildlife Service and The National Marine Fisheries Service. State agencies include the Department of Environmental Quality and the Department of Natural Resources.

This sounds complex but in reality most permit applications are granted. However, the process may be lengthy and a developer may be expected to provide funds for mitigation for the damage caused to wetlands. Even with these regulations in place, wetlands are being rapidly developed, despite the federal government’s “No Net Loss” policy regarding wetlands.

Your Role in Wetland Protection

The public has the right to participate in the wetland permitting process. To become involved, you have to be aware of active permit applications in your area. The US Army Corps of Engineers posts permit applications on their web site at www.mvn.usace.army.mil (New Orleans District). If you are concerned about a permit to alter wetlands, you can make written comments within a specified time period during the application process. Often public meetings and hearings are held to discuss larger projects. It is very important that your voice is heard.

To learn more about your role in wetlands protection in the Pontchartrain Basin you can obtain a copy of A Citizen’s Guide to Protecting Wetlands in the Pontchartrain Basin from the Lake Pontchartrain Basin Foundation. Call 504.836.7208 or visit the web site at www.saveourlake.org.
**Other Ways You Can Help the Wetlands**

Join organizations that protect wetlands like the Lake Pontchartrain Basin Foundation, and take an active role in projects that have a positive impact on wetlands.

Educate your friends, neighbors, and community about the importance of problems affecting wetlands and help them to get involved.

Let your government representatives know how you feel about issues affecting wetlands and stay up to date on what state and federal agencies are doing about wetland loss.

Do not over-harvest seafood, game birds, or any other game species from the Basin.

Dispose of toxic wastes properly. Reduce or eliminate your usage of toxic products, choosing alternative, more environmentally friendly products.

Reduce or eliminate your use of chemical fertilizers, pesticides, herbicides, and fungicides. These end up in our watershed and have a detrimental effect on living organisms (that means you too!). Instead, opt for alternative, non-toxic or “natural” pest control methods.

Report toxic spills and illegal dumping to the US Coast Guard Marine Safety Office, the Louisiana Department of Environmental Quality (LDEQ), the Environmental Protection Agency (EPA), the Lake Pontchartrain Basin Foundation, as well as the local media.

Practice clean boating. Do not throw any trash or excess fishing line overboard. Do not discharge your bilge into the water, empty portable toilets and marine sanitation devices (MSDs) at marinas with sewerage disposal facilities. Refuel your boat while it is on its trailer if possible to avoid the chance of spilling at a dockside gas pump. Educate other boaters about the importance of keeping the water clean and how to do it.

Clean, sand and paint your boat away from water bodies. Additionally, put down drop cloths to gather paint dust and dispose of this properly.

Practice composting, reusing products, and recycling.

Never dump oil, gasoline, or any other chemical product into the water or onto the street as this will end up going into the storm drains and then to the Lake.

Organize your own group and “adopt” a wetland near you. Keep it clean, pay attention to what people are doing in it, plant indigenous marsh vegetation in areas where it has been damaged, and work to have sustainable restoration projects implemented.

Coordinate with people working in coastal restoration at area universities and state and federal agency offices. They often need volunteers for service projects such as planting projects and beach cleanups.

Continue to educate yourself about ways to truly help the wetlands, stay involved, and pass your knowledge on to others. Always be open to new ideas, and don’t be afraid to speak up.
The Wetland Regions of the Pontchartrain Basin

Region 1. Western Region

Lake Maurepas and the Pontchartrain-Maurepas Land Bridge

The forested wetlands surrounding Lake Maurepas are a prime example of cypress-tupelo swamp. Still largely uninhabited and crisscrossed by numerous waterways, these swamps remain a true wilderness. However, despite their outward appearance, they have been impacted by human activity. During the late 19th and early 20th Centuries, the cypress logging industry had its heyday. Fortunes were made as the huge cypress trees, many more than 1,000 years old, were felled to supply a voracious demand for the highly valuable wood. Ruddock, a community on US Highway 51 in St. John Parish between Lakes Maurepas and Pontchartrain, was home to one of the largest cypress mills in Louisiana.

Cypress, called the wood eternal, was valued for its durability and resistance to rot and insect damage. It was used all over the United States to build boats, bridges, houses, and many other structures. Even the first oil well derricks were made of cypress. At the time little thought was given to the fact that cypress trees do not grow quickly enough to be a truly renewable resource. By the 1930’s there were 1,628,915 acres of denuded cypress swamp, and only 22,356 acres of intact swamp remaining in Louisiana as a whole.

Reforestation became an important issue in the 1930’s, and a timber tax was proposed to fund it. However, few regeneration projects were implemented and since that time the cypress swamps have been left to regenerate without human intervention. Some areas have successfully regenerated, while others have not. Before levees were placed on the Mississippi River to provide secure flood protection, the floodwaters regularly overflowed into the swamps and eventually into Lakes Maurepas and Pontchartrain. This provided necessary freshwater, sediment, and nutrients to nourish the cypress swamps. It also provided the correct hydrologic regime as cypress trees cannot regenerate if the ground is flooded year round. Now that the River’s annual floods are controlled, the forests do not receive sufficient sediment and nutrients. In some places rapid subsidence rates and saltwater intrusion have combined with lack of river water. In these places the swamp has given way to marsh.

These conditions exist to the east of Interstate 55 near Manchac and at Southeastern Louisiana University’s Environmental Research Station at Turtle Cove where scientists are attempting to restore the denuded swamp. Turtle Cove, built in 1908, was a hunting and fishing lodge belonging to Edward Schlieder, president of Salmen Brick and Lumber Company, the company that logged Manchac Swamp. The stark black ghosts of the few trees left standing by the loggers can be seen dotted through the bulltongue marsh. Ditches used to drag out cypress logs, still visible from the air, radiate like spokes of a wheel from central loading points on larger waterways. These have altered the hydrology of the wetlands, while the fragile land bridge between Lakes Maurepas and Pontchartrain is subsiding very rapidly. These factors have contributed to the inability of the swamp to regenerate. In spite of many challenges, the cypress regeneration project at Turtle Cove has achieved a 70-80% survival rate of the 8,000 cypress trees planted so far. Elsewhere in this region of the Pontchartrain Basin the cypress swamps have been better able to regenerate. The shores of Lake Maurepas are thickly wooded with cypress swamps and a number of large old cypress trees passed over by the loggers may be found in the Maurepas and Manchac swamps. Many of these trees are more than 500 years old.

Although the cypress-tupelo swamps look very different today than when the early settlers arrived, they remain beautiful and valuable wetlands in need of careful protection.

Joyce, Manchac and Maurepas Wildlife Management Areas

In the 1970’s and 1980’s two large tracts of land in the land bridge between Lakes Maurepas and Pontchartrain were set aside to create the Manchac and Joyce Wildlife Management Areas. In 1982 the Joyce Foundation of Chicago donated 13,569 acres of land to the Louisiana Department of Wildlife and Fisheries. A further 2,040 acres of privately owned land were leased and the Joyce Wildlife Management Area was created. Joyce lies north of Pass Manchac, bordering Highway 51, and includes cypress swamps and large areas of freshwater floating marsh known as the “prairie.” Manchac Wildlife Management Area lies to the south of Pass Manchac. Recently, a third Wildlife Management area has been added to this collection of protected land. The Maurepas Wildlife Management area is found to the south of Lake Maurepas. The State Department of Wildlife and Fisheries manages all three of these areas.

Field Trip Opportunities in the Pontchartrain-Maurepas Land Bridge Area

1. Turtle Cove Environmental Research Station

Turtle Cove is Southeastern Louisiana University’s environmental science teaching and research station. Education programs have been offered at Turtle Cove for many years. Turtle Cove is fully equipped with a state of the art computer lab, while at the same time providing an unforgettable “wetland immersion” experience. Teachers’ workshops take educators from around the Pontchartrain Basin deep into the marsh for a weekend. Currently there are several workshops offered at basic and advanced levels. The advanced workshops include topics such as field collection techniques and digital photography. Groups of students may visit Turtle Cove for the day to learn about wetland issues related to Turtle Cove and to
2. The Swamp Walk at Joyce Wildlife Management Area

The Swamp Walk is a 1,000-foot boardwalk trail. It passes through a beautiful cypress-tupelo swamp that contains many pond cypress trees (Taxodium ascendens or Taxodium distichum var. imbricarium). Pond cypress is a close relative of the more abundant bald cypress, although scientists do not agree on whether they are separate species or if pond cypress should be considered a variety of bald cypress (Taxodium distichum). Whereas bald cypress trees have open, feather-like leaves, the leaves of the pond cypress lie flatter against the central petiole. This gives the leaves a more needle-like appearance. In spring, when the leaves are newly open, the pond cypresses have a beautiful delicate appearance, and are more blue-green than the bald cypress, which is a bright green. The swamp is also very diverse in other plant species, including water lilies, ferns, and many submerged and floating aquatic plants.

At the end of the board walk there is a view across the "prairie" which is, in fact, a freshwater marsh that is floating on a layer of water. This "flotant" marsh occurs in many places in coastal Louisiana subject to subsidence. The overlying marsh breaks away from the underlying soil and creates a floating layer. This allows the marsh to survive, despite the ongoing subsidence.

Directions:

The Swamp Walk is located on Highway 51, 8 miles north of Manchac. From Ponchatoula take the Frontage Road exit off southbound I-55/ Hwy 51. The Swamp Walk is very close to the end of this exit ramp. From Manchac, follow Highway 51 north approximately 8 miles. The Swamp walk is on the right, beginning in a parking area. Beware of fast-moving trains as you cross the railroad tracks at the start of the walk. 3/4 miles south of the Swamp Walk, a second parking area is found at the Mainline Boat Trail. This provides canoe access to an old, narrow logging canal leading into the swamp. (See Map on Page 16.)
3. Ruddock Canal to Lake Maurepas

There are several boat launches along Highway 51 providing access to the waterways leading to Lake Maurepas. The preferred canoe launch is at a picnic area just north of the large motorboat launch located less than a mile north of the Ruddock exit on Interstate 55. This launch leads to a natural bayou via which you can easily reach the Ruddock Canal. This canal leads straight to Lake Maurepas and is scenic and usually quiet. Once at Lake Maurepas you can turn north or south to explore the shoreline, which is populated with a network of stumps and snags remaining from the cypress swamp. As the shoreline recedes, the trees are left standing in shallow water. Some huge stumps left behind by the loggers of the turn of the 20th Century can be seen. Be cautious about venturing far into Lake Maurepas in a canoe. Even a small squall can make for a treacherous time. Always bring a topographic map and compass.

Directions:

From New Orleans take I-10 west, and I-55 north. Exit I-55 at Ruddock. Travel north on Highway 51 for about one mile, passing a large motorboat launch and look for a picnic area on the left, which serves as an excellent canoe launch. (See Map to the left.)

Note: Shell Bank Bayou:

In the first edition of this guide we included the Shell Bank Bayou Launch. This has been a favorite place for canoe trips in the past, but the swamp between the launch and Lake Maurepas is privately owned and paddlers are not welcome on the bayous and canals. This situation may change in the near future, so stay posted.

The North Shore of Lake Maurepas

4. Tickfaw State Park

Tickfaw State Park is unique in the State Park system in its emphasis on interpretation of wetland habitats. Every effort has been made to provide a park for the public to enjoy without unduly disturbing the wildlife and the natural habitats. The 1,200 acre park offers educational programs, camping, and day use facilities in rich bottomland habitat. The interpretive center contains a freshwater river habitat aquarium, touch tables, a diorama depicting the swamp, bottomland, and upland forest habitats of the park, other interactive exhibits, and a theater. There are tent and RV camping available, as well as a group camp and meeting area. There are also vacation cabins available for rent. There are plenty of short trails to wander and observe the wildlife. A canoe launch provides access to the Tickfaw River, a slow-moving stream that is very easy to paddle and winds through beautiful swamp and bottomland hardwood forest.

Extensive, well-designed boardwalks, pavilions, and shelters provide vantage points from which to view and enjoy the four main habitats found in the park. These are: cypress-tupelo swamp, bottomland hardwood, upland, and riverine forests. Each boardwalk trail introduces the visitor to at least one habitat. The Gum Cypress Swamp Trail winds through the cypress-tupelo swamp, while the Bottomland Hardwood Trail passes through the slightly higher, dryer woodland of beeches, oaks, pines, and other species. The trails have interpretive signs for self-guided visits.

Among the trees the bird species are plentiful. The mature woodland, complete with dead, decaying trees, is ideal habitat for woodpeckers, of which there are a number of species including red-headed, pileated, downy, hairy woodpeckers, and yellow-bellied sapsuckers. Just outside the park is a colony of nesting endangered red cockaded woodpeckers. In the swamp egrets, turtles, snakes, and other reptiles are common, while signs of mammals such as beaver, coyote, deer, fox, and raccoon may be seen.
Directions:
The park is located 7 miles south west of Springfield. To get there, take Highway 22 west from Ponchatoula, then 1037 south in Springfield. Follow the signs. The park is at the end of Patterson Road.

Field Trip Sites in the Upper Maurepas Basin
Field Trip Sites in the Upper Maurepas Basin. The rivers and wetlands connected to Lake Maurepas are also part of the Pontchartrain system. Two sites at the upper end of the Lake Maurepas Basin offer field trip opportunities.

5. Alligator Bayou
Alligator Bayou is part of the 13,000-acre Spanish Lake Basin. Spanish Lake Basin is bordered by historic Bayou Manchac. This bayou was the route taken in 1699 by explorer Pierre LeMoyne, Sieur D’iberville to travel from the Mississippi River to the Gulf of Mexico via Lakes Maurepas, Pontchartrain and Borgne. It remained an important short cut from the River to the Gulf for the early residents of Louisiana. The bayou was cut off from the River during the war of 1812, isolating the Maurepas swamp from the nourishment provided by the spring floods.

Much of the Spanish Lake area has been saved from logging and development and is now a private reserve. The Bluff Swamp Wildlife Refuge and Botanical Gardens protects hundreds of acres of ancient cypress, alligators, snakes, owls, deer, black bear, and more than 250 species of birds. Educational group tours are offered in the Alligator Queen, a canopied boat. Canoes can be rented from the Bait Shop.

Directions:
From Baton Rouge and New Orleans, exit 1-10 at Highland Road (Exit 166) and drive east on La. Hwy 42 for about a half block, then turn right on Old Perkins Road. Turn right again at La hwy 928, cross over 1-10, and turn right onto Alligator Bayou Road. For more information, call 1.888.3SWAMPS, or look up www.alligatorbayou.com. (See map on Page 18.)
6. Bluebonnet Swamp Nature Center

Located in metropolitan Baton Rouge, the Bluebonnet Swamp was preserved by The Nature Conservancy and is now managed by the Baton Rouge Recreation and Parks Commission (BREC). The swamp drains an area in which development has been rapid in recent years, so it performs important functions as a nature preserve and a wetland buffer. The Nature Center’s 101 acres feature bottomland hardwood and cypress stands. It provides Baton Rouge residents with a natural haven for bird watching and other nature-related pursuits. Resident animal species include yellow crowned night herons, prothonotary warblers, owls, hawks, raccoons, foxes, bobcats, snakes, turtles, and alligators. Educational programs are offered for groups and the general public. The Center is open Tuesday through Saturday, 9am-5pm, and Sundays 12pm-5pm.

Directions:
Take Bluebonnet exit off I-10, head south, and cross Perkins Road. Turn right on North Oak Hills Parkway. For more information: 225.757.8905 or go to www.brec.org/nature/

Region 2. The North Shore of Lake Pontchartrain

The preservation of the wetlands on the north shore of Lake Pontchartrain is critically important as the population of the north shore continues to grow. These wetlands function to protect water quality, maintain habitat for wildlife, provide a flood and storm buffer, and provide recreational and educational opportunities for north shore residents. The importance of protecting the wetlands that fringe the shore of the Lake and occupy the river bottoms of the north shore has fortunately been recognized and addressed in time to preserve large areas. Even so, development continues to threaten valuable wetlands. In order to preserve the wetlands and other habitats of the north shore of Lake Pontchartrain, the population must understand their values, and it is only through education and by providing places for people to enjoy the outdoors that these values can be instilled. The north shore parishes offer a rich selection of wetland sites to visit for educational and research purposes.

7. Northlake Nature Center

Located on Highway 190 just east of Mandeville and close to Fontainebleau State Park and Big Branch National Wildlife Refuge, this facility has great value in this area of rapid development. The site presently consists of 400 acres of upland pine and hardwood forest, with the cypress swamp along Bayou Castine forming its western border. An active beaver pond, linked to Bayou Castine is the centerpiece of the Nature Center and provides many opportunities for wildlife observation. Board walks and extensive trails wind through the habitats, with something new to see at every turn. Northlake Nature Center is currently undertaking a longleaf pine restoration project on site.

The Northlake site has an interesting history that includes being home to Acolapissa Indians who still resided there in the late 1700’s, around the time that European settlers first began to colonize the area. Much later it became state-owned property and in the 1930’s, Governor Leche sponsored a golf course development project, which was never completed. The remnants of the golf course and clubhouse remain.

Northlake Nature Center presently offers a variety of programs for adults and children. These include the children’s education programs, adult volunteer opportunities, and The Great Louisiana BirdFest, an annual event highlighting the best birding locations in the region. The BirdFest includes guided field trips to area birding locations, as well as on-site walks, seminars, and other activities.
8. Cane Bayou

Cane Bayou flows between Big Branch Wildlife Refuge and Fontainebleau State Park. It provides the perfect one-day canoe trip to explore several habitats. The boat launch on Highway 190 is in the upland forest with mixed pine and hardwood woodland. As you paddle down Cane Bayou towards Lake Pontchartrain you pass through the pine woods of the Pleistocene terrace, which give way quite suddenly to a narrow area of freshwater swamp and marsh. You soon leave behind the cypress trees and the bayou flows through intermediate marsh all the way to the Lake.

The banks are lined with shrubs such as groundselbush (Baccharis halimifolia). There are many stark, dead cypress trees in the marsh, indicating that once the swamp habitat extended further out than today. This is a sign of saltwater intrusion, one of the causes of the loss of our coastal wetlands. After Hurricane Georges in 1998 and the subsequent drought, many cypress trees that were previously thriving succumbed to salt stress. At least two of the dead cypress trees near the bayou support an osprey’s nest.

When the water levels are high enough you can take a detour into the marsh by taking one of the sloughs that branch off from the main bayou. About one mile downstream from the boat launch you reach the shore of Lake Pontchartrain. Just before rounding the last bend and seeing the lake ahead, there is a large Indian midden on the left (west) side of the bayou. Look for higher ground and scattered clam shells (Rangia cuneata). It is easy to understand why the Native Americans chose this hunting and fishing base. In the shallow water near the mouth of the bayou there is a large area of submersed aquatic vegetation. This is ideal habitat for blue crabs (Calinectes sapidus) and many other aquatic species. Be very cautious if you venture into the Lake in canoes. Do so only on a calm day, and stay near the shore. Always bring a topographic map and compass.

Directions:

Northlake Nature Center is just east of Mandeville on Highway 190. Look for the sign on the left after crossing Bayou Castine. For further information call 985.626.1238 or visit www.northlakenature.org
Directions:
From New Orleans, take the Causeway to Mandeville and take Highway 190 west through the town of Mandeville. Begin measuring the mileage at the intersection of Highway 190 and Highway 59 in Mandeville. Go approximately 3.7 miles and look for a turning on the right into the boat launch area. This is soon after the last entrance to Fountainbleau State Park. If you cross the Cane Bayou bridge, you have just missed the boat launch. From Slidell, take Highway 190 east from LaCombe, and go approximately 4.25 miles. Immediately after crossing the Cane Bayou bridge, take a left into the boat launch. (See Map on Page 21.)

9. Big Branch Marsh National Wildlife Refuge
Established in 1994, Big Branch Marsh National Wildlife Refuge is our newest refuge in the Pontchartrain Basin. It serves a critical function by protecting a broad swath of wetlands and pine forest on the north shore of Lake Pontchartrain from Cane Bayou on the eastern border of Fontainebleau State Park to Highway 11 in Slidell. Recently, the Fritchie Marsh tract on the eastern side of Slidell was added to the refuge, increasing the land area to 17,094 acres. The majority is donated private land. The combination of State Park and Federal National Wildlife Refuge (NWR) effectively preserves much of the remaining lakeshore wetlands between Mandeville to just east of Slidell.

Much of Big Branch Marsh NWR is composed of wetland habitats, with fresh to brackish marsh bordering the lakeshore, giving way to pine and mixed hardwood forest at the contact between the Holocene and Pleistocene sediments. The pine and hardwood habitats contain several sloughs and bayous where cypress and tupelo swamp habitat thrives. Bayous Cane, Lacombe, Liberty, and Bonfouca pass through the refuge on their way to Lake Pontchartrain.

Directions:
Big Branch Marsh NWR is easily accessed from Highway 190 and Highway 434 in Lacombe, where the US Fish and Wildlife Service Southeast Louisiana Refuges Headquarters are located.

The refuge is open for hunting, fishing, birdwatching, photography, hiking, canoeing, and educational use. There is an active education program operated from the US Fish and Wildlife Service Headquarters. It is important to remember that US Fish and Wildlife Service Refuges are generally open to various forms of hunting during the hunting seasons. For safety reasons, before exploring independently, check with refuge personnel about hunting seasons and rules. For more information about Big Branch call the US Fish and Wildlife Headquarters in Lacombe, call 985.882.2000 or the Visitor Center at 985.882.3881 or visit our website at: http://southeastlouisiana.fws.gov/big-branch.html.

At present there are three public access points to explore the refuge without a boat:

9a. Lemieux Rd:
Turn off Highway 190 at Lemieux Road close to the Cane Bayou bridge. This takes you to an access point with two short trails, including an overlook on Cane Bayou. This area is the site of most day education programs conducted by the US Fish and Wildlife Service personnel.

9b. Lake Road in Lacombe:
In downtown Lacombe, turn south off Highway 190 onto Lake Road (Hwy 434). Follow the road down to the Lake. The marsh stretches out on either side of Bayou Lacombe. From the vantage point of Bayou Road you can appreciate the fragile fringe of marsh that stretches along the north shore of Lake Pontchartrain. It is easy to see the distinct point where the younger marsh land gives way to the older upland with hardwood and pine forest. Several homes and camps are dotted along the bayou, including Glockner’s Place Restaurant. There also are several boat launches along this road. You can launch a canoe or small boat to explore the marsh. However, it is easy to become lost in the maze of small ponds and patches of marsh, so proceed cautiously and always bring a topographic map and compass.

9c. Boy Scout Road:
Boy Scout Road is located on Bayou Paquet Road. From Highway 190, take a right on Transmitter Road. At the intersection with Bayou Paquet Road, turn right and go about one mile. You will pass a Refuge sign to the boat launch before you reach Boy Scout Road on your left. There is a short boardwalk at the Boy Scout Road access point, which takes you into the unusual and beautiful pine flatwood habitat. This is a transitional zone between the marsh and the upland forest. The US Fish and Wildlife Service manages this pine forest with controlled
burning. This clears the undergrowth and maintains the pine habitat. Near the end of the boardwalk, some of the slash pines are marked with white paint. These trees have red-cockaded woodpecker nesting boxes in them. The US Fish and Wildlife Service established this colony to increase the numbers of this endangered species. The red cockaded woodpecker is a colony nester. Many adults raise young in one nest cavity inside a living, mature pine tree. The birds make holes in the bark of the nesting tree so that it exudes sap that runs down the tree around the hole. This keeps away snakes and other predators. The boardwalk ends where this habitat gives way to a lush freshwater marsh with a wide variety of wetland plants.

For a longer hike or a bike trip, you can take Boy Scout Road itself. This takes you deep into the refuge through the various habitat zones that make Big Branch Marsh NWR unique. The road begins in the pine flatwoods and crosses a beautiful cypress break. Finally, the road reaches the point where the pines end and the true marsh begins. Here there is another red cockaded woodpecker nesting colony. The road turns to the right at the forest-marsh interface and soon enters a hardwood area in which there are low-lying sloughs of tupelo swamp, with mayhaw trees which blossom in very early spring. Huge live oaks line either side of the road here. The road runs east-west until it meets Bayou Lacombe.

9d. The Non-motorized Boat Launch:
This launch is located on Bayou Paquet Road about 0.5 miles to the east of Boy Scout Road. Here there is a parking lot and a small boat launch onto the pipeline canal that traverses the refuge to Lake Pontchartrain. This is an excellent place to launch a canoe or pirogue for a quiet trip through the habitats of the refuge. Motorized boats are not allowed at this launch. This old canal is lined with pines and live oak trees. Closer to the lake, there are ways through the broken brackish marsh where the water is deep enough to navigate. But these ponds are so shallow this can be tricky. The shoreline of the lake is composed of sand and clam shells and makes for an interesting walk. On a calm day you can paddle along the shoreline where the submerged aquatic vegetation grass beds are lush.

There is also a trail that begins near the boat launch. This runs parallel to the canal and takes you to the edge of the marsh where a ridge that was once the shoreline is home to beautiful mature live oak trees. You can walk a little way into the marsh on the spoil bank next to the canal from where there are spectacular views across the marsh and Lake Pontchartrain.

Bayou Paquet Road East
As you continue west along Bayou Paquet Road, you leave the refuge. The remainder of the refuge is further to the east, accessed from Bayou Bonfouca and Bayou Liberty (see map).

10. Fontainebleau State Park:
Fontainebleau State Park is located on the site of Bernard de Marigny de Mandeville’s sugar plantation. Marigny, owner of the Marigny Plantation in New Orleans founded the town of Mandeville as a resort for New Orleansans and operated the sugar plantation until the 1850s. The remains of the sugar mill are found next to the road through the park. Today, Fontainebleau State Park offers day use and camping facilities for groups, families, and individuals, so it may be used as a base for exploring the wetland habitats of the north shore of Lake Pontchartrain. The boundaries of Fontainebleau are Bayou Castine, Bayou Cane, the shore of Lake Pontchartrain, and Highway 190. The St. Tammany Trace Rails-to-Trails biking and hiking trail runs through the park. Within this 2,800-acre site are pine woods, mixed hardwood habitats, and the marshes fringing the Lake itself. These varied habitats ensure a rich diversity of wildlife. According to the State Park brochure, 400 species of animals, including birds, live within the park. Interpretive nature trails, including a marsh boardwalk, run through the park, providing opportunities for self-guided exploration. There is also a naturalist-guided interpretive program available. For a program of activities or for more information, call 985.624.4443 or visit: www.lastateparks.com/fontaine/fontaine.htm.
Directions:
From Mandeville, take Highway 190 east. The main entrance into the park is on the right, approximately 2.5 miles east of the intersection of Highway 190 and Highway 59 in Mandeville.

11. The Nature Conservancy's Longleaf Pine Savanna Preserves
The Nature Conservancy plays an important conservation role in the Lake Pontchartrain Basin by acquiring and managing property containing valuable and rare ecosystems and habitats. One such habitat is the longleaf pine savanna. Longleaf pine forest used to stretch from east Texas to Virginia, while today only 3% of the longleaf forests survive, having been logged and replaced by other pine species grown for timber or by other land uses such as agriculture. Longleaf pine forest is maintained by fire. The longleaf pine and the plants found associated with it are all adapted to and even dependent upon regular fires sweeping rapidly through the forest. Without regular burning, the long leaf habitat becomes choked with other species as ecological succession occurs.

Longleaf pine savannas are a specialized open-pine forest found in the “flatwoods” of the north shore of Lake Pontchartrain. They have the characteristics of a prairie with trees and shrubs scattered throughout. The savannas are true wetlands due to the presence of a high water table and poorly drained soils that are usually saturated.

The diversity of plant species per square meter of longleaf pine savanna is greater than that of any other habitat found in North America. Particularly interesting are the carnivorous plants such as pitcher plants and sundews. These plants obtain their nutrients by trapping and digesting insects. This is an adaptation to the nutrient poor soil in the pine wetlands. In addition, there are many species of herbs and grasses that occur nowhere else and many that are extremely rare. By preserving or protecting over 4,000 acres of longleaf pine habitat, The Nature Conservancy is ensuring the survival of these rare plant communities and the wildlife they support.

The Nature Conservancy uses prescribed burning to manage the longleaf pine habitats. They also remove unwanted vegetation and replace species such as slash and loblolly pine with longleaf pine, which is able to thrive on the fire managed land.

Currently, The Nature Conservancy manages three preserves: Lake Ramsay, Abita Creek Flatwoods and Talisheek Pine Wetlands. Two of these preserves, Lake Ramsay and Abita Creek Flatwoods currently have public access. More information can be found on the web site: www.nature.org/louisiana. Or call The Nature Conservancy’s Northshore office at 985.809.1414.
Region 3.
The South Shore of Lake Pontchartrain

Since New Orleans began to grow out from its original location in the "Vieux Carre", the wetlands of the south shore of Lake Pontchartrain have made way for human habitation and industry. During the 20th Century, tens of thousands of acres of swamp and marsh were consumed as Orleans and Jefferson Parishes expanded. In the latter decades of the 20th Century, development pressures on the wetlands to the west and east of New Orleans reached a critical point. It became apparent that they were in danger of disappearing completely, so decisions had to be made about whether and how to preserve what was left. What remains after much debate on this issue are Bayou Sauvage National Urban Wildlife Refuge to the east and the LaBranche Wetlands to the west. These two areas have different histories but also many parallels. The wetlands remaining on the south shore are there today largely because enough people developed a greater appreciation of their value.

11a. Lake Ramsay Preserve - Horse Branch Trail

Lake Ramsay Preserve is just north of Covington and The Nature Conservancy's holdings adjoin the Lake Ramsay Savanna Wildlife Management Area, managed by the Louisiana Department of Wildlife and Fisheries. The two areas preserve about 1,300 acres of longleaf pine savanna, bayhead swamp and creek bottom riparian forest. The savanna is found on the higher ground, while close to Horse Branch and the Little Tchefuncte River, the other two habitats are found. Horse Branch Trail leads from the parking lot on Penn Mill Road for about one mile through the savanna and other forested areas. Interpretive signs help the visitor understand these unusual habitats. Alternatively, the more adventurous can cross Horse Branch and make their way to the Little Tchefuncte River, where beautiful swamp habitat is found. It is easy for the nature lover to spend a whole day enjoying the diversity of this beautiful preserve. Please note that while no hunting is allowed along the nature trail, some hunting is allowed in other areas. Please check with the Northshore Field Office ahead of time.

Directions:
The Lake Ramsay Preserve is located off Horse Branch Road. From the intersection of LA Highway 25 and US 190, go west on Highway 190 for 1.5 miles. Turn right (north) on Penn Mill Road (about .5 miles past Covington High School) and go about 2 miles. The road turns into Horse Branch Road. The Nature Conservancy's sign and parking lot are located on the left.

11b. Abita Creek Flatwoods - Pitcher Plant Trail

The Nature Conservancy has worked in partnership with the Goodyear Family, owners of Money Hill Plantation to the east of Abita Springs, in order to preserve the longleaf pine savanna and associated habitats in a large area. The Nature Conservancy purchased the Talisheek Pine Wetlands from the Goodyear Family and this preserve and the Abita Creek Flatwoods protect a total of 3,600 acres of valuable pine wetlands habitat.

At the Abita Creek Flatwoods you can explore longleaf pine savanna, longleaf flatwoods, bayhead, slash pine/pond cypress woodland and riparian forest. A boardwalk runs through portions of the preserve near the entrance. This is the Pitcher Plant Trail, from which the visitor can observe many species of carnivorous plants. The trail also crosses bayhead swamp and longleaf pine forest, extending for about _ miles. Much of the trail is handicap-accessible.

Directions:
The Abita Creek Flatwoods Pitcher Plant Trail is located about 4.5 miles northeast of Abita Springs along LA Highway 435. Turn at The Nature Conservancy sign across from Green Street. Park before the gate, but do not block the gate.

One of the longleaf pine’s distinguishing features is the silver-white bud seen during the winter.