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## LOUISIANA

The Louisiana Natural Heritage Program distinguishes two types of savanna: upland Longleaf Pine forest and (wet) Longleaf Pine savanna. The Kisatchie has the finest remaining upland savanna. The finest wet savanna, at least in the southeastern part of the state, and the only such savanna under conservation management, is within what is known as **\*\*Lake Ramsay Savanna**, a somewhat fragmented area, comprised of a mosaic of communities and probably more than 2000 acres in size (Saint Tammany Parish). Lake Ramsey is not described below, because most of the Longleaf Pines in the savanna were removed, possibly as recently as 1920. However, the ground cover is intact, and, as Nelwyn McInnis points out, it is easier to restore one species of tree than the many plant species in the ground cover. The Wildlife and Fisheries Department owns the 800-acre Lake Ramsay Wildlife Management Area, and The Nature Conservancy owns the 414- acre Lake Ramsay Preserve. In parts of the savanna, young trees are growing, but where trees are not coming back naturally, restorationists can use cones from a nearby genetic source (McInnis 1993 and 2001, Carr 1993). Hurricanes Katrina and Rita in 2005 snapped off or uprooted up to 50% of the bayhead forest at the Nature Conservancy's preserve. In the Longleaf Pine savanna and flatwoods, only 5-10% of the trees were felled (Sightings 2006, TNC Web 2006). [*Updated April 2, 2006*]

**\*\*Talisheek Wetlands**, southeastern Louisiana (across Lake Pontchartrain from New Orleans, Saint Tammany Parish) is another example of an area with high quality Longleaf. Here mature Longleaf Pine uplands grade into wet pine savanna and bayhead forest. The Longleaf was cut in the past (Martin 1998) and is now periodically thinned; but the ground cover is very good (McInnis 2001). The Nature Conservancy owns 3013 acres as the Talisheek Pine Wetlands Preserve (McInnis 2008). The balance is in private hands. An eye-wall of Katrina passed approximately 15 miles to the east of the preserve. The majority of Longleaf Pine on 70 acres of second-growth Longleaf woodland were blown down (Sightings 2006, TNC Web 2006); but, in general, the pines held up. In 2008 the preserve is "well on the way to recovery" (McInnis 2008) [*Updated December 25, 2008*]

In the 35,032-acre **Pearl River Wildlife Management Area**, Margaret Devall and colleagues have cored several cypress trees that were around 1000 years old. The oldest was 1172 years. The swamp, in St. Tammany Parish, is owned by the Louisiana Department of Fisheries and Wildlife (Devall 2003).

David White and Stephanie Skojac searched for remnant bottomland hardwood forests in extreme southeastern Louisiana, around and south of New Orleans. Using aerial infrared photography followed by ground truthing, they found nothing that they could characterize as old growth. They located only seven small areas "that in whole or in part could be labeled older-growth—**Sauvage, Airline, Lafitte, Oak, Verret, Hermit, and Jackson**. . . . It seems likely that these forests became established by the turn of the last century on abandoned plantation land or on variously disturbed land near plantations." Two of the forests are on federal land: Sauvage (Bayou Sauvage National

Wildlife Refuge) and Lafitte (Jean Lafitte National Historical Park). Two others were wholly or partially logged between the time that White and Skojac did their research and the publication of their article on the research. The rest were threatened (2002).

The 13,168-acre **Bayou Cocodrie National Wildlife Refuge** in east-central Louisiana (Concordia Parish) is “thought to represent one of the least disturbed areas of bottomland forest remaining in the” Lower Mississippi Alluvial Valley (Ouchley et al. 2000); but it apparently is not primary forest. The highest quality portion, a 750-acre area, was logged as recently as the thirties. Usually loggers left young trees and malformed trees, and this appears to have been the situation here. Today the site has trees up to 100 years in age representing 30 bottomland hardwood species (Simpson 2003). The tract will be proposed as a Research Natural Area (Ester 2003), and the US Fish and Wildlife Service (FWS) uses it as a model for old-growth restoration in southeastern Louisiana (Simpson 2003).

Ouchley et al. have a contrasting view of the Refuge. Although they agree that the Refuge is less disturbed than most bottomlands in the Lower Mississippi, they have found that the entire Refuge has “undergone several timber harvests dating back to the late 1920s.” Furthermore, they sampled the Refuge as a whole and discovered that the composition of the forest has changed since 1830. At that time the most abundant tree species were, in order of occurrence, Sugarberry, Sweetgum, and all oak species combined. In 1994 oak species combined were the most abundant. Sugarberry and Sweetgum were tied for second place. Oaks combined were 9.54 per acre in 1830 but 40 per acre in 1994. Ouchley et al. draw the conclusion that the Refuge, does not represent historic conditions and therefore should not be used as a model for restoration (Ouchley et al. 2001).

We have not been told of any specific old-growth areas in the **Tunica Hills**, but the thousands of acres in this region of eastern Louisiana likely include four- to five-acre pockets of western mesophytic old growth. The old growth would be found in narrow coves at the bottom of steep ravines (Meier 1997). The Tunica Hills are the southern end of the loess zone that begins in western Kentucky and Tennessee (see the introduction to Mississippi). The Tunica Hills Wildlife Management Area, owned by the Louisiana Department of Wildlife and Fisheries, encompasses some 5000 acres of the Tunica Hills. The terrain in the Wildlife Management Area is characterized by “rugged hills, bluffs and ravines” (LDWF 2003).

A revision of the management plan for the Kisatchie National Forest was adopted in 1999 (see below).

**KISATCHIE NATIONAL FOREST**, in several segments in west-central and northern Louisiana

The Forest has considerable old growth, but it is fragmented, usually in sites of 50 to 100 acres in size, often embedded in regenerating forests. There are many riparian sites, and scattered small pieces of upland old-growth forest. When the areas that are now the National Forest were logged between 1890 and 1930, the uplands were more thoroughly cut than the land along rivers and streams.

Through a challenge cost-share program involving the US Forest Service (USFS), The Nature Conservancy, and the Louisiana Department of Wildlife and Fisheries

Natural Heritage Program, David Martin and Latimore Smith conducted and published analyses of the natural plant communities of the Winn, Kisatchie, Evangeline, and Catahoula Districts; Roger A. Williams and Smith of the Caney District; and Susan L. Grace and Smith of the Vernon Unit of the Calcasieu District. The sites below are drawn from these reports. For lack of space, the authors describe in detail only a selection of the sites they studied, those "most similar to their assumed presettlement condition." We summarize here their descriptions of sites they characterize as old-growth that are forty or more acres in size or that are the largest old-growth areas representative of particular types.

In deciding which sites constitute old growth the authors looked for forests in which "the relative abundances and age-class distributions of the dominant species approximate those expected under presettlement conditions." For their purposes, presettlement is the period from 1830 to 1880, after which industrial technology, particularly railroads, began to make itself felt. They considered the presence of trees obviously predating the logging period and of old-growth characteristics such as snags more important than evidence of selective logging.

The researchers did not survey the following management zones: "Research Natural Areas, recreation areas, seed orchards, military bases, no-entry zones, scenic areas, administrative sites, and cultural resources sites." Therefore the list below does not represent all old growth on the Kisatchie. The Forest's only designated Wilderness, the Kistachie Hills Wilderness, for example, probably has pockets of old growth (Dancak 2000). Lands allotted to Fort Polk are the site of hundreds or thousands of acres of Longleaf Pine that would have had logging at the turn of the century but that are now a hundred years old and in good condition due to fires sparked by military activities (Smith 2000).

The Revised Land and Resource Management Plan for the Kisatchie adopted in 1999 states that "most high-quality (A and AB) natural community sites identified through [the challenge cost-share program] were included in old-growth patches or streamside protection zones." Remaining A and AB sites will be tracked "through at least the next stand examination and silvicultural prescription period." At that time USFS will decide whether to continue tracking them and offering them special protection or to release them for management according to the prescriptions for the areas in which they are located (USDA 1999).

The Kisatchie has an ongoing problem with military use. When the plan was adopted, the US Army at Fort Polk was authorized to use intensively 40,026 acres and to make limited use of 44,799 acres on the Vernon Unit of the Calcasieu District. It was also authorized to make special limited use of 12,820 acres and intensive use of 480 acres on the Kisatchie District. The Army had proposed conducting increased military training in the southern portion of the Vernon, the then 44,799-acre Limited Use Area, and was preparing an environmental analysis of the proposal. The US Air Force Reserve unit at Barksdale Air Force Base in Bossier City, Louisiana, operated the Claiborne Bombing and Gunnery Range on the Evangeline Unit of the Calcasieu District. The range was a 3207-acre intensive use area composed of a 672-acre impact area and a 2535-acre safety fan. The Air Force had proposed expanding buffer zone and was to draft an environmental document for public comment. The Louisiana National Guard was authorized to use a total of 27,106 acres on the Caney, Catahoula, and Evangeline

Districts for bivouac and other military training activities. However, it could not actually conduct a training exercise on that land without an additional permit for that specific activity, and each permit normally involved only 10 acres or less. Another authorization allowed the use of 11.48 acres on the Catahoula for training in rapid runway repair (USDA 2000).

**Caney District**, northern Louisiana (Webster and Claiborne Parishes)

The Caney Ranger district is composed of the last land to become part of Kisatchie National Forest and was created out of federal Land Utilization Projects. Therefore much of the land has been farmed. In the pre-settlement era Shortleaf Pine/hardwood forests dominated the northern Louisiana uplands, while mixed hardwood-Loblolly Pine forests grew in small bottoms and on lower slopes and stream terraces. Today Shortleaf Pine and Shortleaf Pine-oak account for only 3 percent of the forest cover on the Caney District. Loblolly Pine and Loblolly Pine-hardwood account for 72 percent.

Williams and Smith identified only one class "A" old-growth stand in the district, 18 acres of Loblolly Pine/Water Oak/Laurel Oak riparian forest in the Corney Bayou floodplain. The 19 "AB" sites are mostly in small, though valuable, remnants. They include 55 acres of Shortleaf Pine/oak-hickory forest that is even-aged and is found in a location that was presumably farmed. However, the site supports the species described by early surveyors (Williams and Smith 1995).

**Catahoula District**, west-central Louisiana (Grant Parish)

The Longleaf Pine forest that once covered the district has shrunk to only a few large islands surrounded by Slash and Loblolly Pine plantations. Much Shortleaf-dominated forest can still be found but, because canopies have closed due to fire suppression, the herbaceous ground cover has often been lost and there is little Shortleaf regeneration. The district still has many old-growth riparian stands, and also many riparian stands that are classified as mature but not old growth because of evidence of widespread selective cutting.

--**Spanish Mound Riparian** (Catahoula District). Three hundred and fifty-nine acres of riparian forest of the US Forest Service's Sweetgum-Nuttall Oak-Willow Oak type. The US Forest Service has assigned it a 1932 birth date, but Martin and Smith found the forest to be old growth. It is in the Iatt Creek floodplain, which has big tracts of old-growth riparian forest that have characteristics approaching those of bottomland forest. The area has very few stumps, but feral hogs are present.

--**Dyson Creek Riparian** (Catahoula District). A 40-acre beech-magnolia forest, in which a "very few stumps" can be seen. Logging has "encroached into its perimeter" (Martin and Smith 1993).

**Calcasieu District, Evangeline Unit**, west-central Louisiana (Rapides Parish)

The entire district was within the range of Longleaf Pine. In the northern part of the district a mixture of public and private lands makes prescribed burning difficult. Therefore Longleaf forests have been reduced in size and degraded. Large areas of Longleaf remain in the southern part, but the vast majority of this forest is immature and even-aged. Loblolly Pine plantations have replaced most of the Shortleaf Pine/oak-hickory forests, although small patches of old growth remain. Little old-growth mixed

hardwoods-Loblolly can still be found. Shortleaf remain along the shore of Lake Kincaid. On a more positive note, "Evangeline has a wealth of superb riparian forest, much of which is old-growth" (Martin and Smith 1993).

--**Brushy Creek Riparian** (Evangeline District). On a tributary of Castor Creek, a 188-acre beech-magnolia forest, adjacent to "relatively undisturbed uplands, including a hardwood slope forest." Beech, Southern Magnolia, White Oak, Black Gum, Sweetgum, and Loblolly Pine dominate the canopy, which also includes Cherrybark Oak, Water Oak, Pignut Hickory, and Laurel Oak. The well-developed midstory includes Ironwood, Common Sweetleaf, Winged Elm, Eastern Hophornbeam, Flowering Dogwood, Red Maple, and Black Cherry. The understory is sparse but varied, with blueberries, hawthorns, and viburnums among other taxa.

--**Loving Creek Riparian** (Evangeline District). A 101-acre beech-magnolia forest on a tributary of Castor Creek. American Beech, White Oak, Southern Magnolia, Black Gum, and Loblolly Pine dominate. The midstory includes Ironwood, Common Sweetleaf and Red Maple. With only a few stumps, the "forest has been very little disturbed."

--**Castor Creek Riparian** (Evangeline District). A 70-acre beech-magnolia forest on "an exceptionally unpolluted and unaltered stream." The species in the canopy and midstory are similar to those at the Loving Creek site. The understory includes both woody species, like blueberries, and herbs such as Partridge Berry and Elephant's Foot. A few stumps, mainly Loblolly Pine, are found; but the site includes very large Loblollies.

--**Cathedral Longleaf** (Evangeline District). Fifty-five acres of upland Longleaf Pine forest, with tall Longleaf variably spaced, and lesser numbers of Shortleaf Pine, Loblolly Pine, Blackjack Oak, Southern Red Oak, Post Oak, Black Gum, Flowering Dogwood, and Sweetgum. The understory, which consists mostly of vines and shrubs, includes Wax Myrtle and Farkleberry. The canopy is closed, and the herbaceous layer sparse. A few stumps appear; and a new logging road to another site passes through the area. The site has not had a fire for at least fifteen years and is suffering from fire suppression; but could be restored by burning.

Other identified upland Longleaf Pine forests are the 18-acre Sand Spur Longleaf in Catahoula District and the 14-acre Bayou Luce Longleaf and the 14-acre Stunted Longleaf in the Kisatchie District. The last includes four Longleaf that were cored and dated at 150 to 250 years. One of them had a dbh of only 9 inches yet was 196 years old.

--**Bayou Boeuf Cypress** (Evangeline District). A 37-acre cypress-tupelo forest along Bayou Boeuf in the floodplain of the Red River. Additional species in the canopy include Overcup Oak, Water Oak, Water Hickory, American Elm, Sugarberry, Green Ash, and Red Maple. The mid-story and understory are sparse. The stand has "a few stumps." The survey identified two other old-growth cypress-tupelo forests: the 15-acre Castor Creek Cypress in the Evangeline District and the 3-acre Drake's Dome Cypress, part of a larger old-growth swamp in the Winn District (Martin and Smith 1993).

### **Kisatchie District**, west-central Louisiana (Natchitoches Parish)

As in the Winn District, the predominant pre-settlement communities were upland Longleaf Pine, Shortleaf Pine/oak-hickory, mixed hardwood-Loblolly Pine, and riparian. In the Kisatchie, the initial loggers left many patches of Longleaf; and USFS and CCC

replanted with Longleaf many of the uplands that had been cut. Wildfires and then prescribed burning prevented major hardwood invasion, although most of the Longleaf has experienced some degree of unnatural hardwood growth. In the stands that Martin and Smith surveyed, around 70 percent of the original Longleaf had remained as Longleaf.

A substantial amount of Shortleaf Pine/oak-hickory forest remains in the northern part of the district, but only a little of this is old growth. The hardwood forest slopes that occurred in a few steep areas "are essentially untouched." "Very few of the stream bottoms have been clearcut." In fact, the first wave of logging in Louisiana spared many of the stream bottoms throughout Kisatchie National Forest.

--**Middle Creek Riparian** (Kisatchie District). A 115-acre forest "intermediate between riparian forest and bottomland hardwood forest." In the south part are American Beech and a little Loblolly Pine; in the north, Nuttall Oak and Overcup Oak. The dominant midstory species throughout is Ironwood. A "number of stumps" and "some old roads" indicate past disruption.

--**Bayou L'Ivrogne Riparian** (Kisatchie District). Eighty acres of riparian forest, dominated by American Beech, Loblolly Pine, White Oak, Cherrybark Oak, Laurel Oak, Southern Magnolia, Sweetgum, and Pignut Hickory. Ironwood dominates the midstory, in association with Eastern Hophornbeam, American Holly, Common Sweetleaf, and Flowering Dogwood. The canopy is closed, and the understory sparse. A few stumps are the only signs of disruption. "This is an excellent example of riparian forest . . . The streams themselves are magnificent and appear quite undisturbed."

--**Jackson Ravine** (Kisatchie District). In a ravine, an 80-acre hardwood slope forest dominated by American Beech, White Oak, Cherrybark Oak, Southern Magnolia, Sweetgum, Black Gum, and Mockernut Hickory. The midstory includes unusually big American Holly. The herbaceous layer is sparse. The site has "only a few stumps" and "seems very pristine." The US Forest Service birth date is 1873. The two other examples of hardwood slope forest that have been identified are the 29-acre Kisatchie Bayou Ravines and the 11-acre Bynoque Branch Ravine, both in the Kisatchie District.

--**Gibbs Slough Bottom** (Kisatchie District). In the Kisatchie Bayou floodplain, a 72-acre bottomland forest, dominated by Overcup Oak, Nuttall Oak, Water Oak, Sweetgum, Sugarberry, American Elm, Green Ash, and Water Hickory. In the lower patches are Water Tupelo and Baldcypress. The sparse midstory includes Red Maple, Deciduous Holly, and Ironwood. Because the site is frequently flooded, the ground cover is very sparse. The Forest Service assigns the stand a birth date of 1875. Apart from off-road vehicle trails, the area appears undisrupted.

--**Old Shortleaf Slope** (Kisatchie District). A 37-acre Shortleaf Pine/oak-hickory forest, dominated by Shortleaf Pine, Southern Red Oak, Post Oak, White Oak, and Mockernut Hickory. Elliott Blueberry (*Vaccinium elliottii*) is the main species in the sparse shrub layer. Eastern Hophornbeam and Flowering Dogwood dominate the midstory. Under the closed canopy, the herbaceous layer is sparse. A selective cut has taken place, and fire has not occurred for at least fifteen years. Before fire suppression, the fire frequency probably averaged a fire every five to fifteen years.

The other Shortleaf Pine/oak-hickory forests identified are the 20-acre Bobs Creek Shortleaf on the Kisatchie District and the 15-acre Kincaid Shortleaf in the Evangeline District.

--**Kisatchie Loblolly** (Kisatchie District). An 11-acre mixed hardwood-Loblolly forest, dominated by American Beech, Loblolly Pine, White Oak, Southern Red Oak, Laurel Oak, Southern Magnolia, White Ash, and Mockernut Hickory. Old-growth examples of this community are rare. Two other "A" quality sites were identified in the survey, one of them the 6-acre Pine Grove Church Loblolly in the Kisatchie District.

--**Flat Glade** (Kisatchie District). A 9-acre sandstone glade on a flat-topped knoll on a ridge crest. Old Longleaf Pine and a smaller number of Shortleaf Pine and Loblolly Pine grow in the very open forest. Yaupon and Wax Myrtle are the most common of the few understory shrubs. The many rock outcrops bear only lichens. The site has burned every two to five years. It seems to have been only selectively cut and is in excellent condition. This is the only old-growth sandstone glade located in the survey (Martin and Smith 1991).

### **Winn District**, west-central Louisiana (Winn Parish)

In the Winn District many of the upland forests logged between 1890 and 1930 have not yet been cut a second time. The ground cover would by now be essentially intact had not fire suppression following the logging allowed hardwoods to increase in size and density. Prescribed burning was begun in the 1960s and is restoring some areas. Substantial acreage in stream bottoms has been and continues to be clearcut in this district, although essentially intact old-growth riparian forests remain.

--**Mile Branch Riparian** (Winn District). A 118-acre riparian forest on a swift-running creek with a sandy bed. American Beech, Loblolly Pine, White Oak, Sweetgum, Cherrybark Oak, and White Ash dominate the closed canopy. Some Loblolly Pine stumps and old logging roads evidence past cutting. Neighboring clearcuts have "heavily encroached" on the floodplain in places. Miles Branch is among the largest of the 133 old-growth riparian sites identified by Martin and Smith.

--**Malaudos Creek Riparian** (Winn District). A 106-acre forest of the American Beech-Loblolly Pine-Sweetgum type. Many large Cherrybark Oak and Sweetgum grow here, at least six of the Sweetgum with dbhs of 32 to 46 inches. Ironwood, Eastern Hophornbeam, Winged Elm, and Chalk Maple are among the species in the understory. The ground cover is sparse. Signs of disruption are a few softwood stumps, an off-road vehicle trail, and encroachment of a clearcut to the south.

--**Dugdemona Bottomland** (Winn District). An 83-acre bottomland hardwood forest, dominated by Overcup Oak, Cherrybark Oak, Nuttall Oak, Sugarberry, Water Hickory, and Sweetgum. Red Maple and Winged Elm are found in the midstory, and vines, including Poison Ivy and Trumpet Vine, are common. The forest has "a few stumps," but seems "essentially undisturbed."

Other old-growth bottomland forests are the 29-acre Little Bear Creek Bottomland, also in the Winn District; and the 23-acre Middle Creek Bottom and the 6-acre Shagbark Bottom in the Kisatchie District.

--**Wolf Creek Riparian** (Winn District). Sixty-six acres of riparian forest dominated by American Beech, Loblolly Pine, White Oak, Laurel Oak, White Ash, and Black Gum. The site is "largely undisturbed," but includes "a number of stumps" and a logging road.

--**Caskey Branch Riparian** (Winn District). A 43-acre riparian forest of the US Forest Service's Sweetgum-Nuttall Oak-Willow Oak type. Apart from a few Loblolly

Pine stumps, the site appears to be undisrupted (Martin and Smith 1991).

**Calcasieu District, Vernon Unit**, west-central Louisiana (Vernon Parish)

In the pre-settlement era, Longleaf Pine forests dominated the sandy uplands and most of the coastal plain in the Vernon District. The predominant forest types were upland Longleaf Pine, Longleaf Pine/flatwoods/flatwood savannah, mixed hardwood-Loblolly forest, and riparian forest. Most of the district was clearcut by the 1930s, and much of the Longleaf Pine has been replaced by Loblolly Pine or Slash Pine. However, of the 45,000 acres in the surveyed part of the Vernon District, around 15,000 acres (42%) are still Longleaf.

--**Big Branch Longleaf** (Vernon District) Two hundred and fifty acres of relatively intact Longleaf Pine forest. The stand exhibits many old-growth characteristics, including numerous age classes, standing dead trees, and woody debris. Some of the Longleaf are more than 100 years old. The mid-story is composed of scattered Yaupon, Southern Red Oak, and small dogwoods. Sassafras, sumac and huckleberry dominate the understory. A diverse herbaceous layer is dominated by legumes and Little Bluestem and other grasses. The site has experienced fire once every year to three years. On the negative side, the area has some stumps, old fire breaks, and old haul roads. Moreover, little natural regeneration of pine is taking place. It is ranked A/AB.

--**Sixmile Uplands** (Vernon District). One hundred and two acres of upland, uneven-aged Longleaf Pine forest. A few of the large trees, which are older than 75 years, shelter Red-cockaded Woodpeckers. The site has scattered hillside bogs and a diverse ground cover dominated by Little Bluestem, other grasses, legumes, and Bracken Fern. Some natural regeneration of Longleaf is taking place. The site has burned once every three to five years. Fire breaks and a road cross a part of the stand.

--**Drake's Creek Fishing Trail** (Vernon District). Some 100 acres of closed canopy riparian forest, dominated by Loblolly Pine, American Beech, and White Oak. The canopy also includes Sweetgum, Black Gum, and Water and Laurel Oaks. The mid-story is largely composed of saplings of the canopy species plus Red Maple. The forest is along the flat bottoms of Drake's Creek. Some trees have been removed, and a parking area has been cleared. However, the stand is uneven aged, and there are many standing dead trees and many fallen trees. It includes some of the largest Loblolly in the Vernon District.

--**Whisky Chitto Loblolly** (Vernon District). Some 90 acres of mixed hardwood-Loblolly forest grading into riparian forest near Whisky Chitto Creek. The site shows few signs of disruption: some stumps and, on the north side, an old logging railroad bed. The mostly closed canopy is dominated by Loblolly Pine. The structure is uneven-age.

--**Black Branch Bottoms** (Vernon District). Approximately 80 acres of mixed hardwood-Loblolly forest along the banks of Black Branch, a small tributary of Drake's Creek. The site has some stumps and shows evidence of past fire breaks; but otherwise has been little disrupted. The canopy species represent different age classes and include many Loblolly Pines that are probably more than one hundred years old, older Southern Red Oaks and White Oaks and American Beech, and hickory and Sweetgum.

--**Drake's Creek Bottoms** (Vernon District). A 60-acre riparian forest that follows the floodplain of Drake's Creek. Loblolly Pine, Water Oak, Laurel Oak, White

Oak, and American Beech dominate the canopy. The midstory is diverse, but includes young canopy species. The ground layer is dominated by sphagnum moss, sedges, spangle-grasses, and panic grasses. The forest has previously been thinned, as is indicated by stumps and some open canopy gaps. The majority of trees are less than sixty years in age, but older trees are scattered throughout the stand, and the structure is uneven age. The rank is A/AB (Grace and Smith 1995).

**Fort Polk Army Reservation**, west-central Louisiana (Vernon County)

At the 67,000-acre property, 1200 acres of Longleaf-bluestem ecosystem that has never been logged. The Army maintains the area by burning. Furthermore, scattered old Longleaf Pine can be found in various stands across the Reservation (Mann 2000). The Reservation is located just north of the Vernon District of the Kitsachie National Forest.

**Chenier Plain**, southwestern Louisiana

The Chenier Plain is a complex of uplands, wetlands, and open water, created from Mississippi River sediment that currents in the Gulf of Mexico had pushed westward. Within this ecosystem, the cheniers are themselves wooded, "linear-arrayed ridges," now surrounded by marsh (to the extent that they are in a natural condition). Tree species commonly found include Live Oak, Sugarberry, American Elm, Pecan, and Honey Locust. Buttonbush and Black Willow are common where the cheniers grade into marsh. Since Native Americans came to the area before the cheniers were created, the ridges have always been affected by human activity, but the remnants listed below have been relatively undisrupted since European settlement. All have at least some Live Oak with diameters at breast height of at least one meter.

--**Tiger Island** (Cameron Parish). Some 740 acres (300 ha) of unlogged forest bisected by a north-south road. The forest interior on the west side of the road, the portion analyzed by Neyland and Meyer, has a mesic-type herbaceous groundcover, unfortunately invaded by the exotic Chinese Tallow (*Sapium sebiferum*). Sugarberry is the most prevalent tree. The forests to the east and to the west of the road have separate private owners.

--**Pecan Island** (Vermillion Parish). Two hundred and fifty or more acres (100 or more ha) of chenier swamp with many "very big trees." The forest has apparently not been logged. Buttonbush is the most important species. The center and east and west sides are in natural condition. Pasture now edges the south and north sides, but cattle do not seem to be on the chenier itself. Chinese Tallow is present. The chenier is privately owned.

--**Grand Chenier 2** (Cameron Parish). Some 74 acres (30 ha) of forest that have been no more than selectively logged. The chenier has retained its original dome-shaped architecture with the forest tapering down to marsh on all edges. The interior has a mesic-type herbaceous groundcover; Live Oak is the most important woody species. Large, old Osage Orange trees are present. They are not native to the parish and may have been introduced by Native Americans. Unfortunately cattle are on the site, and Chinese Tallow has invaded even the interior. The chenier is privately owned (Neyland 1998, Neyland and Meyer 1997).

**Sicily Island Hills Wildlife Management Area**, north-central Louisiana (Catahoula

Parish)

Possible old growth within a management area of 7505 acres. “The terrain is extremely rugged with high ridges dropping sharply into the creek bottoms” (LDWF 2003). The soil is loess (Faulkner 2003). The predominant tree species on ridges are Loblolly Pine, Shortleaf Pine, and a mixture of hardwoods including White Oak. At the lower elevations trees include beech, magnolia, hickory, Sweetgum, Black Gum, and Water Oak (LDWF 2003). Smith reports that the Wildlife Management Area may support more than 1000 acres of mesic old growth. The area may have had selective logging to remove big pines; but human disturbance has been minimal (Smith 2000). Faulkner thinks that the old growth is less extensive (2003). The Louisiana Department of Wildlife and Fisheries owns and manages the area.

**\*\*White Kitchen Preserve**, in eastern Louisiana (Saint Tammany Parish)

Five hundred and eighty six acres of high quality, mature cypress-tupelo swamp [as of 2000, but see below] and freshwater marsh, including possible old growth, within the Pearl River basin. Bald Eagles are among the preserve's wildlife. White Kitchen is The Nature Conservancy's first Louisiana preserve. The property links the Bogue Chitto National Wildlife Refuge and the Pearl River Wildlife Management Area. The Pearl, which has no levees, is one of the least disturbed rivers in the South (TNC 1989, Pashley 1989, R. Martin 2000).

In 2005 Hurricanes Katrina and Rita heavily impacted the preserve. An initial assessment by The Nature Conservancy indicated that much of the marsh was ripped out and piled against trees and roadsides. Open water and debris replaced the marsh. The Conservancy is considering the possibility of restoring natural processes to the marsh system (Sightings 2006, TNC Web 2006). [*Updated April 2, 2006*]

**Bayou Bodcau**, northwestern Louisiana (Bossier Parish)

Approximately 400 acres, including a large area of apparently undisturbed Baldcypress and Planertree. The Nature Conservancy owned the tract, but sold it to the US Army Corps of Engineers under an agreement requiring the Corps to protect it (Pashley 1991, R. Martin 2000).

**Louisiana State Arboretum**, south-central Louisiana (Evangeline Parish)

A 300-acre climax upland hardwood forest, which “escaped logging for the most part,” because of the steepness of the terrain (Robinson 2000). An analysis of the vegetation in 1994 found that Ironwood (locally known as Blue Beech), Flowering Dogwood, and American Beech were the dominant trees over six feet tall. Giant Cane, Paw Paw, Pignut Hickory, and American Beech were dominant among the shrubs and saplings (Allen 94). American Beech are the most important large trees with individuals as much as 250 years in age and 11.5 to 12.5 feet in circumference (Robinson 2000).

The forest, which is crossed by trails, occupies the entire arboretum, but two buildings have been constructed near the entrance. The arboretum is a part of the 6400-acre Chicot State Park, composed of woods and a 2000-acre man-made lake. Two sides of the arboretum are adjacent to other wooded portions of the park. The two sides away from the park are bordered by a hunting club and a logged area. In the late 1990s a straightline wind tore through the arboretum, felling trees and opening the way for the

incursion of pine and Chinese Tallow. Jim Robinson, park spokesperson, notes that the wind came from the northwest, across open land, and believes that the lack of a buffer made possible the heavy damage in the arboretum. The park outside the arboretum was salvage logged. The arboretum is protected, and no salvage logging took place (Robinson 2000). In 2002 the arboretum again was heavily damaged by wind, this time by Hurricane Lillie. Again no salvage logging has taken place in the protected area (Robinson 2003).

### **Bogue Chitto National Wildlife Refuge (TAMMANY PARISH)**

A 40,000-acre Refuge on the Bogue Chitto River, supporting forest with old-growth characteristics, if not actual old growth. The Refuge is almost completely surrounded by rivers, bayous, and lakes, so timber companies had difficulty in logging. They tended to high grade, cutting out a lot of the big trees. A large part of the refuge was logged in the 1920s but not everything was cut down. Today the Refuge has big cypress, oaks, Sweetgum and ash, apparently spared logging because they were small or oddly shaped. Probably the area looks much as it did 80 years ago. The same complex of species is there although perhaps not in the same percentages, Daniel Breaux, administrative forester says. Today it is “somewhat of a pristine environment” (2003). David White suggested that we contact the Refuge for examples of old-growth bottomlands, as he had heard reports that the Refuge has areas that were spared clearcutting and now are considered to be old growth (2003). However, Breaux did not name any specific sites.

To the north of the Bogue Chitto Refuge is the state’s 15,000-acre Old River Wildlife Management Area. To the south is its 20,000-acre Pearl River Wildlife Management Area. The forest is similar to that in the Bogue Chitto Refuge, but the state does more timber management than does the USFWS (Breaux 2003).

### **Atchafalaya Swamp (SAINT MARTIN PARISH)**

Areas of virgin cypress swamp within 700,000 contiguous acres of wetland. In 2000, The Nature Conservancy negotiated a purchase of 3500 acres of wetland reportedly in “great condition,” with at least five cypress over five feet in diameter per acre and no stumps. Undoubtedly, the wetland contains a few more such blocks, Rick Martin of The Conservancy reported (Martin 2000). P. Faulkner of Louisiana Natural Heritage is more cautious. The area surely has some small unlogged stands, she says (Faulkner 2003). The land is privately owned and can be reached only by boat (Martin 2000). Through its Atchafalaya Basin Floodway Project, the US Army Corps of Engineers is purchasing 50,000 acres of land in-fee and buying easements on 338,000 additional acres (USACE 1997).

### **Cat Island, southern Louisiana, north of Baton Rouge (WEST FELICIANA PARISH)**

Possible old-growth cypress-tupelo of undetermined extent within nearly 30,000 acres of forested wetland. The 30,000 acres are dominated by cypress, oaks, ash, and elm, and interspersed with several areas of farmland. According to The Nature Conservancy, Cat Island, actually a peninsula and known also as Tunica Swamp, “supports one of the highest known densities of ancient bald cypress in Louisiana” (TNC 2000, Martin 2000). Margaret Devall has cored a number of trees. The longest core that

she obtained represented 400 years. The big cypress trees are much older than that, she points out, but are hollow. The rotting may be caused by intermittent wetting and drying, as the land is dry for months at a time and then may be covered with 15-20 feet of water t (Devall 2003).

Cat Island National Wildlife Refuge was established in 2000 with an acquisition boundary of 36,500 acres. The USFWS already owns 6534 acres. The Nature Conservancy owns an additional 3000 acres that USFWS will eventually purchase. Most of the land is still in private hands.

The Refuge is along the Mississippi River and is completely inundated each year when the Mississippi is at flood stage, generally from January to June (USFWS 2003).

**\*\*Abita Creek Flatwoods Preserve**, southeastern Louisiana, across Lake Pontchartrain from New Orleans (Saint Tammany Parish)

Within an 834-acre preserve, about 300 acres of bayhead swamp, in very good condition in very good condition. [This paragraph describes the preserve before Hurricane Katrina, see below.]. The bayhead swamp, which has suffered only minimal logging, includes trees three or four feet in diameter. The Preserve also has approximately 100 acres of Slash Pine/ Pond Cypress wetland in fair condition. Some large trees were apparently removed from the pine/cypress area, and it has become overgrown with hardwoods due to fire suppression. However, it includes pockets of Pond Cypress trees more than 300 years old. The balance of the preserve, which hosts at least 25 endangered, threatened, or rare plant species, is Longleaf Pine savanna and Longleaf flatwood forest. The preserve is surrounded by heavily managed forest on which suburbs are encroaching. The Nature Conservancy owns and is restoring Abita Creek (Martin 1998).

In 2005 up to 50% of the trees in the bayhead forest at the preserve were either uprooted or snapped off by Hurricane Katrina, the eye-wall of which passed some 20 miles to the east of the preserve. Laurel, Water Oak, and Loblolly Pine were especially hard hit. The Pond Cypress trees survived largely intact. In the Longleaf Pine savanna and flatwood forest, approximately 5-10% of the trees are down (Sightings 2006, TNC Web 2006). [*Updated April 2, 2006*]

**\*\*Persimmon Gulley Preserve**, in southwestern Louisiana (Calcasieu Parish)

A preserve of nearly 800 acres with wet Longleaf Pine savanna. Because the wetland is highly saline, the Longleaf have an average dbh (diameter at breast height) of only 16 inches, but the savanna exhibits old-growth characteristics, with mixed age classes and some trees over 200 years in age. The site shows no cut stumps and apparently has experienced little logging. Certainly it was never cleared. The Nature Conservancy owns the area. Pine plantations occupy most of the surrounding land (Martin 1998).

An eye-wall of Hurricane Rita passed some 40 miles west of the preserve. The Nature Conservancy estimates that no more than 5% of the Longleaf Pine in the savanna were felled, and the herbaceous plant communities were damaged little or not at all. In contrast, in the hardwood bottomland along the gulley some 50% of the trees in the canopy were broken or pushed over. This thinning of the hardwoods may actually be of service, since it will allow the Conservancy's prescribed burns to penetrate more deeply

into the hardwoods than they did in the past and will further the restoration of savanna. The hardwood stands are wider today than they were historically (TNC Web 2006).  
[Updated April 2, 2006]

**Old-Growth Loblolly Stand**, central Louisiana (La Salle County)

A 200-acre old-growth Loblolly Pine stand set aside many years ago. It has only had salvage logging. A timber company owns the land (Smith 2000).

**Charter Oak Preserve**, southeastern Louisiana (Saint Tammany Parish)

A 160-acre bayhead swamp along the slopes of the Pearl River. [The description in the remainder of this paragraph is pre-Katrina, see below.] The preserve has no visible signs of disruption. Dominant tree species are Swamp Black Gum up to 35.4 inches (90 cm) dbh, Sweetbay up to 29.9-35.4 inches (76-90 cm) dbh, and Red Maple. In the understory are Redbay, *Cyrilla*, and *Cliftonia*. This preserve is “one of the best representatives of the bay forest type in Louisiana” but the age of the below ground components, a key element in determining whether a forest of this type is old growth, has not been determined (McKevlin 1996). Faulkner, like some other researchers, does not think that bay can ever be considered to be old growth (2003). The Nature Conservancy owns and manages the Preserve.

The Nature Conservancy reports on its web site in early 2006 that it has not directly observed the preserve since the western eye-wall of Hurricane Katrina passed approximately 5 miles to the east of it in 2005. However, based on what the conservancy has seen of other hardwood-dominated forests, it estimates that most trees with DBHs of greater than 15 to 20 inches were felled by the storm (TNC Web 2006).

**Transitional Wetland**, southeastern Louisiana (Saint Tammany Parish)

An old-growth forest of unknown extent, possibly around 100 acres, in the Pearl River basin. The site encompasses a transition between cypress-tupelo swamp and bottomland hardwoods. Trees include Bald Cypress, Water Tupelo, Overcup Oak, Water Hickory, and Sweetgum. From visiting the area, David White is “almost certain” that it has never been logged. Access is by boat only (White 2003).

**Zemurray's**, southeastern Louisiana (Tangipahoa Parish)

An unlogged forest of 40 to 80 (LNHP 1989) or 86 acres (White 1987). American Beech, Spruce Pine, Southern Magnolia, and Sweetgum dominate. Many trees are more than three feet in diameter, about 150 feet tall, and more than 150 years old. The forest is privately owned (LNHP 1989, White 1987, Martin 2000).

**Big Cypress**, northwestern Louisiana (Bienville Parish)

A virgin cypress stand within a 326-acre tract. The tract modulates from upland pine forest to cypress swamp in the floodplain of a small creek. Within the swamp are 50 to 100 cypress trees, each from 18 feet to 26 feet around. Individual trees are as old as 1500 years; and the larger trees, hollow. The Office of State Parks owns the stand (LNHP 1989).

**Jim Reed Bayou Swamp and Black Bayou Swamp** (Ponchatoula Old-Growth)

Cypress), southeastern Louisiana (Tangipahoa Parish)

Reported to be very old stands of cypress of undetermined acreage. The area is in private hands (LNHP 1989, R. Martin 2000).

### **Manchac Swamp** (Tangipahoa Parish)

Patches of virgin Baldcypress. The biggest is 5-10 acres in extent. Most of the area is privately owned; but the Joyce Wildlife Management Area owns a corner (Smith 2000).

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