36. Western Longleaf Pine Savannah

Rarity Rank: Acidic - S1S2/G2G3; Saline - S1/G1; Flatwoods Pond - S1/G2Q
Synonyms: Open Savannah, Pine Flatwoods, Coastal Meadow, Pine Meadow, Pine Barren
Ecological Systems: CES203.547 West Gulf Coastal Plain Flatwoods Pond
CES203.191 West Gulf Coastal Plain Wet Longleaf Pine Savannah and Flatwoods

***General Description*:**

(Note: Western Longleaf Pine Savannah includes both the Acidic savannah type (S1S2), and Saline savannah type (S1), and are combined due to similarities in management strategies. The Flatwoods Pond (S1) natural community type occurs as small inclusions within the Western Longleaf Pine Savannahs, and therefore is combined with the savannahs.)

Pine savannahs are floristically rich, herb-dominated wetlands, that are naturally sparsely stocked with *Pinus palustris* (longleaf pine). They historically dominated the Gulf Coastal Plain flatwood regions of southeast and southwest Louisiana. The term "savannah" is classically used to describe expansive herb-dominated areas with scattered trees. Wet savannahs occupy the poorly drained and seasonally saturated/flooded depressional areas and low flats, while the non-wetland flatwoods occupy the better drained slight rises, low ridges and "pimple mounds" (only WGCP). Pine savannahs are subject to a highly fluctuating water table, from surface saturation/shallow flooding in late fall/winter/early spring to growing-season droughtiness. Soils are hydric, very strongly acidic, nutrient poor, fine sandy loams and silt loams, low in organic matter. There is a western Louisiana variant on saline soil (Brimstone silt loam). The soils for both eastern and western types may be underlain by an impeding layer so that they are only slowly permeable and water runs off the surface gradually.

Common woody species include *Pinus palustris* (usually predominant tree species), *Magnolia virginiana* (sweet bay), *Nyssa sylvatica* (black gum), *Quercus virginiana* (live oak), *Q. marilandica* (blackjack oak), *Q. laurifolia* (laurel oak), *Cyrilla racemiflora* (swamp cyrilla), *Morella* spp. (wax myrtles), *Hypericum* spp. (St. John's worts), and *Styrax americana* (littleleaf snowbell). Although past logging has altered the arboreal characteristics of most occurrences of the community (primarily by reducing coverage of longleaf pine), the herbaceous complement is thought to differ little from that present

prior to timbering and stumping activities. Herbaceous vegetation of pine savannahs is very diverse, dominated by graminoids, and similar to that occurring in hillside bogs. Graminoids present include *Andropogon* spp. (broomsedges), *Schizachyrium scoparium* and *S. tenerum* (little and slender bluestem), *Panicum* spp. (panic grasses), *Aristida* spp. (three-awn grasses), *Ctenium aromaticum* (toothache grass), *Muhlenbergia expansa* (hairawn muhly), *Erianthus* spp. (plume-grasses), *Coelorachis* spp. (jointgrasses), *Rhynchospora* spp. (beak-rushes), *Xyris* spp. (yellow-eyed grasses), *Fuirena* spp. (umbrella grasses), *Scleria* spp. (nut-rushes), *Dichromena latifolia* (giant white top sedge), *Eriocaulon* spp. (pipeworts), *Lachnocaulon* spp. (bog buttons), and *Fimbristylis* spp. (fimbry-sedge). Some forbs common in the community include *Agalinis* spp. (gerardias), *Lobelia* spp. (lobelias), *Rhexia* spp. (meadow beauties), *Eryngium integrifolium* (bog thistle), *Oxypolis filiformis* (narrow-leaved hog-fennel), *Polygala* spp. (milkworts), *Liatris* spp. (blazing-stars), *Sabatia* spp. (rose-gentians), *Drosera* spp. (sundews), *Pinguicula* spp. (butterworts), *Marshallia tenuifolia* (thin-leaved barbara's-buttons, southwestern Louisiana), *Utricularia* spp. (bladderworts), and *Platanthera* spp. (fringed-orchids). The only known extant occurrence of *Schwalbea americana* (American chaffseed), which is federally-listed as endangered, is found on pimple mounds in a longleaf pine savannah in Allen Parish. This species is known historically from Calcasieu and Rapides Parishes. Various additional species belonging to the lily family (Liliaceae), sunflower family (Asteraceae), and orchid family (Orchidaceae) are prominent. *Lycopodium* spp. (club-mosses) and sphagnum moss are often abundant. Fire frequency is a major factor controlling species occurrence and community structure. Without frequent fire (preferably growing season burns which mimic historic fire regimes), shrubs, and eventually trees, especially hardwoods, would gain dominance and eliminate most of the herbaceous flora.

Schwalbea americana

Flatwoods Ponds are relatively small, natural depressional wetlands embedded within current or historic longleaf pine flatwoods/savannahs of western Louisiana. They are believed to occupy swales and depressions remaining from ancient Pleistocene stream channels, and are often linear in shape, although circular and elliptic ponds are common. Their size ranges from less than 1 acre up to about 30 or 40 acres, but average 1 to 5 acres. In general, small ponds are relatively shallow, while larger ponds are deeper. They may range from just a few inches deep relative to surrounding pine flats, to approximately 5 feet deep in deeper, larger ponds. Generally treeless, these ponds are vegetated by a variety of obligate and facultative wetland

herbaceous species, mainly tall sedges and grasses. Native herbaceous species that usually characterize shallow ponds or edges of deeper ponds include: *Andropogon glomeratus* var. *glaucopsis* (bushy beardgrass), *Aristida palustris* (= *A. affinis*) (longleaf three-awn grass), *Coreopsis linifolia* (tickseed), *Eleocharis tuberculosa* (spikerush), *Eriocaulon decangulare* (pipewort), the beakrushes - *Rhynchospora filifolia*, *R. gracilenta*, *R. rariflora*, and *Dichromena latifolia*, *Gratiola brevifolia* (hyssop), *Hypericum galioides* (St. John's wort), *Hyptis alata* (bitter mint), *Panicum virgatum* (switchgrass), *Pluchea rosea* (stinkweed), *Polygala ramosa* (candyroot), *Proserpinaca pectinata* (mermaid-weed), *Hibiscus aculeatus* (comfort-root), and *Rhexia lutea* (meadow beauty). Deep ponds are characterized by a variable mix of herbs, including: *Amsonia glaberrima* (bluestar), *Bacopa caroliniana* (blue-hyssop), *Carex verrucosa*, *Dichanthelium* spp., *Hibiscus moscheutos* ssp. *lasiocarpus*, *Juncus effuses* (soft rush), *Ludwigia pilosa* (evening primrose), *Lycopus rubellus* (bugleweed), *Oxypolis filiformis* (hog-fennel), *Panicum hemitomon* (maidencane), *Panicum virgatum* (switchgrass), beakrushes – *Rhynchospora cephalantha* and *R. corniculata*, and *Sagittaria graminea* (arrowhead). Trees, often appearing stunted, may be present in deeper, more frequently flooded, and therefore less fire-exposed parts of ponds. Tree and woody species may include: *Nyssa biflora* (swamp blackgum), *Acer rubrum* (red maple), *Cephalanthus occidentalis* (buttonbush), *Styrax americanus* (small snowbell), *Crataegus opaca* (mayhaw), and *Morella cerifera* (waxmyrtle). The hydrologic regime of these ponds is characterized by a seasonally fluctuating water level – dry in summer and flooded the other 3 seasons. This water level fluctuation causes distinct vegetation zones with species sorting out according to their relative tolerance or competitive adaptations to flooding and saturated soil conditions. Flatwood ponds were historically maintained by frequent lightening generated fires that, every few years, swept the longleaf pine flats in which flatwoods ponds are embedded. Such fires burned the ponds during the late spring/summer dry season, killing back encroaching shrubs and trees and rejuvenating the herbaceous ground cover.

Current Extent and Status:

Western longleaf flatwoods savannahs and imbedded communities are highly threatened and much reduced from their original extent. This habitat is estimated to have occupied 1,000,000 to 2,000,000 acres in presettlement times with and estimated 1 to 5 percent remaining (Smith 1993). Threats include conversion to slash or loblolly pine plantations, residential/commercial development, fire exclusion/inappropriate fire regime, hydrological alterations (to include adjacent areas), contamination by chemicals (herbicides, fertilizers), and physical damage from timber harvesting/planting activities (Smith 1996).

There are very few high quality examples of longleaf pine savannahs and they tend to be isolated on the landscape. Protected examples occur on KNF and there are several on private land. A high quality acidic savannah is being protected by TNC on their CC Road Savannah Preserve in Allen Parish, which totals 468 acres. TNC is also protecting a saline variant on their Persimmon Gully Preserve in Calcasieu Parish. Persimmon Gully is a 255-acre preserve. An additional 40 acres of saline longleaf pine savannah in Calcasieu Parish are being protected by a forest products company. Several longleaf savannahs on private tracts are registered as Natural Areas. Barnes Creek Savannah Natural Area, in Allen Parish, totals 680 acres and supports a good quality acidic savannah with several flatwoods ponds. In the same part of Allen Parish, Parkers Longleaf Natural Area supports a savannah and totals 160 acres. There are several more sites in southwest Louisiana, some of which being as large as several hundred acres, that support high quality longleaf pine savannah habitat. These sites should be considered a conservation priority.

WESTERN LONGLEAF PINE SAVANNAH SPECIES OF CONSERVATION CONCERN (23)		
AMPHIBIANS	Red-cockaded Woodpecker	**BUTTERFLIES**
Eastern Tiger Salamander	Scissor-tailed Flycatcher	Reakirt's Blue
Southern Crawfish Frog	Brown-headed Nuthatch	Little Metalmark
	Sedge Wren	
BIRDS	Loggerhead Shrike	**MAMMALS**
Northern Harrier	Bachman's Sparrow	Hispid Pocket Mouse
Northern Bobwhite	Field Sparrow	Eastern Harvest Mouse
Yellow Rail	Henslow's Sparrow	
American Woodcock	Le Conte's Sparrow	**REPTILES**
Yellow-billed Cuckoo		Western Slender Glass Lizard
Chuck-Will's-Widow		Southeastern Scarlet Snake

Priority Species Research and Survey Needs:

Northern Bobwhite: Populations have declined precipitously from 1980-1999, averaging 8.2% per year in BCR 25; 6.0% per year in BCR 26; 5.8% per year in BCR 27; 4.5% per year in BCR 37. Continue to monitor populations thru breeding bird and hunting surveys.

Bachman's Sparrow: Intensive surveys are needed to produce estimates of current population size statewide. Develop projects which determine the relationship between population size and vegetation succession on quality sites. Determine whether management activities can create a mosaic of adjacent sites that together provide continuously occupied habitat. Determine dispersal behavior to maximize the benefits/effects of future habitat management.

Henslow's Sparrow: Obtain more information on winter habitat abundance, distribution, and habitat needs throughout Louisiana.

Eastern Harvest Mouse: Considered vulnerable in Louisiana. Intensive surveys are needed to update occurrence records and abundance for inclusion in the LNHP database.

Hispid Pocket Mouse: Louisiana represents the eastern edge of its range. Intensive surveys are needed to update occurrence records and abundance for inclusion in the LNHP database.

Determine the microhabitat preferences and requirements of species occuring in western longleaf pine savannahs to understand how these species are utilizing the habitat to develop management recommendations for these species.

Species Conservation Strategies:

1. Southern Crawfish Frog: Difficult to detect, with very few recent records. Breeds in fishless, vernal ponds/gum ponds. Locate and buffer potential breeding sites.

2. Red-cockaded Woodpecker:
   - Continue to support the implementation of the Louisiana Statewide RCW Safe Harbor Program.
   - Support USFWS recovery efforts outlined in the RCW recovery plan, 2nd Revision.
   - Encourage the establishment of new RCW populations.
   - Investigate potential land acquisition of this habitat type to increase and support new RCW populations

3. Henslow's Sparrow, Bachman's Sparrow:
   - Implement conservation and management recommendations of SWG projects T22 and T32 upon completion.
   - Monitor reproductive success of Bachman's sparrows to determine limiting factors.
   - Work with landowners to encourage the use of BMPs for prescribed fire management and timber harvesting techniques to improve habitat quality.

4. Northern Bobwhite and Grassland Birds: Support implementation of recommended habitat restoration actions specified in NBCI and by LDWF Quail and Grassland Bird Task Force.

Threats Affecting Habitat:

The following table illustrates the threats identified for this habitat type and the sources of these threats. This represents all threats and sources of threats identified across all ecoregions of the state where this habitat occurs.

	Threat				
Source of Threat	Altered Composition/ Structure	Habitat Destruction or Conversion	Habitat Disturbance	Habitat Fragmentation	Modification of Water Levels; Changes in Natural Flow Patterns
Commercial/industrial development		XXX		XXX	
Conversion to agriculture or other forest types		XXX		XXX	
Development/maintenance of pipelines, roads or utilities		XXX	XXX	XXX	XXX
Fire suppression	XXX			XXX	
Incompatible forestry practices	XXX		XXX		XXX
Invasive/alien species	XXX				
Residential development		XXX	XXX	XXX	

Habitat Conservation Strategies:

1. Conduct surveys to determine the extent and condition of this habitat type with a focus on identifying the surrounding landscape context (i.e., residential developments, etc.) that might be affected by prescribed burning.
2. Educate landowners, adjacent residents, developers, and the general public about the crucial role of prescribed burning in the management of longleaf pine ecosystems (multi-agency, multi-group effort).
3. Provide additional cost share funds through programs such as FLEP in order to drastically reduce or eliminate landowners' costs associated with conducting prescribed burns their property.
4. Develop educational information regarding the importance of ephemeral ponds for species of concern, and make this info available to landowners/land managers through technical pamplets and the LDWF website.
5. Once savannahs are identified conduct landowner surveys to aid in the development of management strategies for these sites.
6. Encourage longer longleaf pine rotation ages when compatible with the landowner's management objectives.
7. Investigate the availability of additional cost-share funding opportunities, through FLEP, Forest Productivity Program (FPP) or other programs, for landowners to reduce the cost of longleaf pine management.
8. Promote advantages of growing longleaf pine and associated herbaceous ground cover.

9. Work with land managers/hunting clubs/extension agents, etc. to discourage the placement of food plots in this habitat type.
10. Promote utilization of state and federal cost share programs (FLEP and NRCS programs) to address invasive species problems.
11. Work with the Longleaf Alliance to incorporate their strategies for longleaf pine management and restoration into current restoration efforts.
12. Work with appropriate planning commissions to provide them with LNHP data that illustrates locations of this habitat type.
13. Encourage a university curriculum that incorporates the identification of sensitive natural areas into student studies (especially landscape architecture and courses for planners).

References:

BRIDGES, E. L. 1988. A preliminary survey for potential natural areas in the pine flatwoods region of southwestern Louisiana. Louisiana Natural Heritage Program, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA.

———, AND S. L. ORZELL. 1989. Longleaf pine communities of the West Gulf Coastal Plain. Natural Areas Journal 9(4):247-263.

LNHP. 1986-2004. The natural communities of Louisiana. Louisiana Natural Heritage Program, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA.

SMITH, L. M. 1993. Estimated presettlement and current acres of natural plant communities in Louisiana currently recognized by the Louisiana Natural Heritage Program. Louisiana Natural Heritage Program, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA.

———. 1996. The rare and sensitive natural wetland communities of interior Louisiana. Louisiana Natural Heritage Program, Louisiana Department of Wildlife and Fisheries, Baton Rouge, LA.