Ecological site F131AY407LA
Tensas Basin - Pointbars, Sandbars, and Splays

Last updated: 6/10/2025
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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 131A–Southern Mississippi River Alluvium

The Southern Mississippi River Alluvium (MLRA 131A) is the largest of 4 MLRAs within Land Resource Region O, the Mississippi Delta Cotton and Feed Grains Region. It occurs in portions of 7 states including Louisiana (32 percent), Arkansas (26 percent), Mississippi (26 percent), Missouri (12 percent), Tennessee (3 percent), Kentucky (1 percent), and Illinois (less than 1 percent). The MLRA is comprised of 29,555 square miles and extends roughly 650 miles from an area near Cape Girardeau, Missouri in the north to the MLRA’s transition to the Gulf Coast Marsh (MLRA 151) in the south. Average elevations range from 330 feet in the north to sea level in the southern part of the area. For much of the north-south distance, the MLRA is bounded to the east by an abrupt rise in elevation of loess-capped bluffs and hills, the Southern Mississippi Valley Loess (MLRA 134). West of the Mississippi River, the boundary is less distinct except to the northwest where the MLRA abuts the Ozark Plateaus and Ouachita province (MLRAs 116A, 117, and 118A). South of the Ozark and Ouachita escarpment, the MLRA adjoins the Southern Mississippi River Terraces (MLRA 131D), which includes the fabled Grand Prairie and merges with the valleys of the Arkansas and Ouachita rivers (MLRA 131B) and the Red River (MLRA 131C). Occurring within or bordering the Southern Mississippi River Alluvium are three separate loess-capped, upland remnants: Crowley’s Ridge, Macon Ridge, and Lafayette Loess Plain, which are western units of MLRA 134 (USDA-NRCS, 2006). MLRA 131A is characterized by landscapes that were created and influenced by the current and earlier paths of the Mississippi River and its tributaries. Waters transporting the materials that formed the area originate from as far west as the east slope of the Continental Divide to the western edge of the Appalachian Divide in the east. This comprises a drainage basin of roughly 1,245,000 square miles and includes all or parts of thirty-one U.S. states and two Canadian provinces (Elliott, 1932). The drainage basin of the Mississippi River roughly resembles a funnel which has its spout at the Gulf of America. Waters from as far east as New York and as far west as Montana contribute to flows in the lower extent of the river (USACE, 2017). The soils of these alluvial landscapes are very deep, dominantly poorly and somewhat poorly drained, and have textures that are mostly loamy or clayey. Principal soil orders are Alfisols, Vertisols, Inceptisols, and Entisols (USDA-NRCS, 2006). The fluvial processes that shaped the area were highly dynamic, diverse, and complex. During the Pleistocene epoch, multiple continental glacial-interglacial cycles resulted in extreme fluctuations in river discharge and sediment loads. A braided river regime characterized the fluvial dynamics of the Mississippi River through much of the last glacial cycle (Autin et al., 1991; Rittenhour et al., 2007). Rapid aggradation of glacial outwash led to the development of prominent valley train features over a large portion of the area (Autin et al., 1991; Saucier, 1994; Aslan and Autin, 1999; Blum et al., 2000; Rittenour et al., 2007). A changing climate, meltwater withdrawal, and sea-level change induced a transition from a braided river regime to a predominantly single-channeled, laterally migrating river system during the Holocene epoch (Rittenhour et al., 2007; Shen et al., 2012) – characteristics that continue today. Fluvial dynamics of the migrating river resulted in the development of broad meander belts, backswamp environments, and extensive deltaic complexes (Saucier, 1994; Klimas et al., 2011). Tremendous expanses of bottomland hardwood forests once covered much of the area. Today, the land base is largely in agriculture production, and soybeans, cotton, corn, and rice are the principal crops with sugarcane rising in importance in the southernmost portion of the MLRA (USDA-NRCS, 2022). Due to its size and biophysical variability, the technical team advised subdividing the MLRA into six subregions: Western Lowlands, St. Francis Basin, Yazoo Basin, Tensas Basin, Delta Plain, and Batture.

LRU notes

The Tensas Basin subregion of the MLRA, which this site is delineated within, is in the southern portion of MLRA 131A west of the Mississippi River in Louisiana and Arkansas. The Arkansas River provides the northern boundary, the Red River and the Delta Basin provide the southern boundary, the Mississippi River main line levee is the eastern boundary and the west is bounded by the Western Gulf Coastal Plain (MLRA 133B) and the Macon Ridge Loess (MLRA 134). It is in the Mississippi Alluvial Plain Section of the EPA Level IV Ecoregions in sub-sections 73a - Northern Holocene Meander Belts, portions of 73d - Northern Backswamps, portions of 73k - Southern Holocene Meander Belts, portions of 73l - Southern Pleistocene Valley Trains and portions of 73m - Southern Backswamps. The dissected plains in this portion of the MLRA have mixed soil mineralogy having influences from much of the drainage area of the Mississippi River, including the Arkansas River drainage area. As mentioned previously, this subregion’s southern extent is found at the Red River where the Old River Control Structures regulate the flows of the Mississippi, Red, and Atchafalaya Rivers. Additional components include the river levee systems which further regulate the flows and flooding of these rivers and their tributaries. These man-made constraints to the system have substantially altered the hydrologic functions of the sites found within the whole of MLRA 131A. Areas within the confines of the levee systems, the unprotected areas, have increased frequency, duration, depth, and force of flooding. The areas outside of the levee systems, the protected areas, have reduced total flooding other than catastrophic events. These hydrologic alterations have changed ecological sites within the MLRA to where attempts at describing historic communities are at best scientific concepts, so most sites are described based on current regimes. This area once consisted entirely of bottomland hardwood deciduous forests, mixed hardwood and cypress swamps. The major tree species in the native plant communities in the areas of bottomland hardwoods formerly were and currently are water oak, Nuttall oak, cherrybark oak, native pecan, red maple, sweetgum, eastern cottonwood, and hickory. The major tree species in the native plant communities in the swamps formerly were and currently are bald cypress, water tupelo, water oak, green ash, red maple, and black willow. The important native understory species are palmetto, greenbrier, wild grape, and poison ivy in the areas of bottomland hardwoods and buttonbush, lizardtail, waterlily, water hyacinth, sedges, and rushes in the swamps. Some of the major wildlife species in this area are white-tailed deer, feral hogs, red fox, coyote, rabbit, gray squirrel, American alligator, water turtles, water snakes, frogs, otters, beavers, armadillo, crawfish, wild turkey, mourning doves, ducks, and geese. Fishing is mainly in oxbow lakes, rivers, and bayous. The species of fish in the area include largemouth bass, smallmouth bass, catfish, drum, bluegill, gar, and yellow perch.

Classification relationships

Major Land Resource Area (MLRA) and Land Resource Unit (LRU) (USDA-NRCS, 2006) MLRA 131A Southern Mississippi River Alluvium EPA Level IV Ecoregion (portions of 73a - Northern Holocene Meander Belts, 73d - Northern Backswamps, 73i - Arkansas/Ouachita River Backswamps, 73m - Southern Backswamps and 73K - Southern Holocene Meander Belts, of the Southern Mississippi River Alluvium Major Land Resource Area.) The Natural Communities of Louisiana - (Louisiana Natural Heritage Program - Louisiana Department of Wildlife and Fisheries) - Most similar to the Batture description. Foti et al. 2011. Potential Natural Vegetation of the Mississippi Alluvial Valley Tensas Basin - Not a direct one to one relationship between concepts and PNV Classification, however PNV concepts are very useful in informing the site concepts. This site does not directly fit described as part of active floodplain development and PNV designations are based on current situation.

Ecological site concept

Pointbars, sandbars, and splays are often found along active streams as well as away from channels where a former flood deposited large amounts of coarse-grained sediment. These sites may resemble "dunes" and when dry, could have sediment reworked by wind action. This site can often become droughty due to the excessively drained nature of the soils and the absence of organic matter, which increases soil water holding capacity. Over time, this site may transition to the Natural Levees and Ridge Hardwoods ecological site provided that the combined processes of soil weathering, development, and increases in organic matter from vegetative production are not disrupted. Hydrology is a major driver of this ecological site. Although disconnected from the Mississippi River via flood control structures, significant inflow into this site may occur from local waterways in addition to backwater flooding from tributaries to the Mississippi River. In the event of a catastrophic failure of the levee system, this area would be impacted by direct flows from the Mississippi River. This site is often found where evidence of a major flood from the Mississippi River occurred prior to the construction of the current levee system. As a result, sandy soil material was deposited over the previous soil surface. The flood protection levee system in place will no longer let this site receive direct inflows from the Mississippi River. In the event of a catastrophic failure of the levee system, this area would be impacted by direct inflows from the Mississippi River. From a catastrophic levee failure or high water overflow event, this site will develop from the coarse sediment that is deposited on the existing soil surface. Areas are on flood plains in portions of level IV EPA Ecoregions 73a - Northern Holocene Meander Belts, 73d - Northern Backswamps, 73i - Arkansas/Ouachita River Backswamps, 73m - Southern Backswamps and 73K - Southern Holocene Meander Belts, of the Southern Mississippi River Alluvium Major Land Resource Area. Located within the central western portion of the MLRA is the Tensas Basin which extends from approximately where the Arkansas River influence begins within the MLRA to the Red River to the south. Of note, this site occurs on the “protected” side of the extensive Mississippi River levee system and is distinguished from similar landforms within the unprotected “batture lands” (i.e., the alluvial land between the river channel and the constructed levee system).

Associated sites

F131AY406LA	**Tensas Basin - Natural Levees and Ridge Hardwoods** The Tensas - Natural Levees and Ridge Hardwood ecological site is located at a higher elevation than this site, but will regularly occur within close proximity.

Similar sites

F131AY208AR	**St. Francis - Sandy Natural Levee and Meander Scroll Forest** The St. Francis - Sandy Natural Levee and Meander Scroll Forest will be found further north within the MLRA.

F131AY305MS	**Yazoo - Old Sandy Natural Levee and Meander Scroll Ridge Forest** The Yazoo - Old Sandy Natural Levee and Meander Scroll Ridge Forest site will be found East of the Mississippi River in the MLRA.
F131AY309MS	**Yazoo - Recent Sandy Natural Levee and Meander Scroll Ridge Forest** The Yazoo - Recent Sandy Natural Levee and Meander Scroll Ridge Forest site will be found East of the Mississippi River in the MLRA.
F131AY606MS	**Batture - Frequently Flooded Pointbars, Sandbars, and Splays** The Batture - Frequently Flooded Pointbars Sandbars And Splays Ecological site is in a similar site position in relation to channels and processes, however, it is located within the active flooding of the Mississippi River Flood Plain.

Figure 1. 131AY407_ES_extent_map

Table 2. Dominant plant species

Tree	(1) *Salix nigra* (2) *Populus deltoides*
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

The Tensas Basin is located in Mississippi River Alluvial Plain south of the Arkansas River and North of the Red River in Northeast Louisiana and Southeast Arkansas; it is about 180 miles in length. The basin is bounded by Macon Ridge and uplands south of Sicily Island on the west, and the present Mississippi River meander belt on the east. The Tensas Basin is quite narrow but widens steadily to the latitude of Vicksburg, and then varies in width between 25 and 45 miles. This portion of the MLRA is greatly affected by changes in hydrology over time, both natural and anthropogenic forces. The landscape was built by the flooding of the Mississippi River with influences of its drainage basin and is characterized entirely by Holocene meander belt and backswamp deposits. This site occurs on splays and point bars formed by floodwaters breaching natural levees along the Mississippi River.

Table 3. Representative physiographic features

Landforms	(1) Point bar (2) Crevasse filling
Runoff class	Low
Flooding duration	Extremely brief (0.1 to 4 hours) to very brief (4 to 48 hours)
Flooding frequency	Rare

Ponding frequency	None
Elevation	10 – 40 m
Slope	0 %
Ponding depth	0 cm
Water table depth	150 cm
Aspect	Aspect is not a significant factor

Climatic features

Northeast Louisiana and southeast Arkansas have a warm, humid climate, with fairly long summers and relatively short winters. The result is a long growing season and abundant plant growth. Water is a definitive part of the landscape, largely due to the combination of low elevation and fairly abundant rainfall in most years. Annual precipitation is fairly well distributed throughout the year, however there is a typical pattern of dryer weather during the summer, typically July through mid September with scattered rainfall events.

In the warmer season (and throughout much of the year), winds from the south convey moisture from the gulf leading to humid, semitropical conditions that are favorable for afternoon thunderstorms. These storms produce an average of about 25 percent of the area's annual precipitation and are at times accompanied by locally destructive winds. An additional hazard of concern during late summer through early fall are tropical cyclones. While most impacts from hurricanes and tropical storms are confined along the coastal zone, heavy rainfall, severe flooding, and high winds can occur well into the Tensas Basin when such systems pass through the area. To the extreme, the region is susceptible to the effects of a strong Bermuda High during the summer, which can cause devastating drought conditions for weeks and even months in some years.

The following climatic data are averages from the weather stations listed below. Temperature and precipitation may vary considerably from that listed for each month. Site specific weather data should be used for land management decisions. For site specific weather conditions, obtain data from a weather station close to the site.

Information can be accessed from specific weather stations at http://www.wrcc.dri.edu/coopmap/ or http://www.wrcc.dri.edu/summary/climsmla.html.

Table 4 Representative climatic features

Frost-free period (characteristic range)	220-230 days
Freeze-free period (characteristic range)	250-260 days
Precipitation total (characteristic range)	1,420-1,470 mm
Frost-free period (actual range)	220-230 days
Freeze-free period (actual range)	250-270 days
Precipitation total (actual range)	1,420-1,470 mm

Frost-free period (average)	230 days
Freeze-free period (average)	260 days
Precipitation total (average)	1,450 mm

- (1) JONESVILLE LOCKS [USC00164739], Jonesville, LA
- (2) LAKE PROVIDENCE [USC00165090], Lake Providence, LA
- (3) ST JOSEPH 3 N [USC00168163], Newellton, LA
- (4) TALLULAH [USC00168923], Tallulah, LA

Influencing water features

This site is dry, however it was developed from alluvial plain flooding.

Soil features

Please note that the soils listed in this section of the description may not be all-inclusive. There may be additional soils that fit the site's concepts. Additionally, the soils that provisionally form the concepts of this site may occur elsewhere, either within or outside of the MLRA and "may" or "may not" have the same geomorphic characteristics or support similar vegetation. Some soil map units and soil series included in this "provisional" ecological site were used as a "best fit" for a particular soil – landform catena during a specific era of soil mapping, regardless of the origin of parent material or the location of MLRA boundaries. Therefore, the listed soils may not be typical for MLRA 131A or a specific location, and the associated soil map units may warrant further investigation in a joint ecological site inventory – soil survey project. When utilizing this provisional description, the user is encouraged to verify that the area of interest meets the appropriate ecological site concepts by reviewing the soils, landform, vegetation, and physical location. If the site concepts do not match the attributes of the area of interest, please review the Similar or Associated Sites listed in the Supporting Information section of this description to determine if another site may be a better fit for your area of interest.

Crevasse is the modal soil series for this site. This nearly level, excessively drained, rapidly permeable soil is mainly on splays and point bars formed in sandy alluvium by floodwater from a former breach on natural levees along the Mississippi River.

Crevasse (mixed, thermic Typic Udipsamments) soil series occur on splays, mainly along natural levee breaks, and recently deposited sediment on point bars along the main channel of the Mississippi River and its tributaries. Slopes range from 0 to 2 percent. Crevasse soil has low fertility and low surface organic matter. Water and air move through this soil at a rapid rate. Water runs off the surface slowly. This soil dries quickly after rains. A seasonal high water table is at a depth of about 3.5 to 6.0 feet during November through March however, it is strongly influenced by river levels and will be higher when the river level is up. This soil has low shrink-swell potential. Adequate water is not available to plants during dry periods in summer and in the fall of most years. The surface layer is very strongly acid, the upper part of the underlying material is slightly acid, and the middle and lower parts of the underlying material are mildly alkaline. These soils can be flooded when in the point bar positions and protected in the levee breech positions.

Table 5. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Loamy fine sand
Family particle size	(1) Loamy (2) Sandy
Drainage class	Excessively drained

Permeability class	Rapid
Soil depth	200 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	4.57 cm
Calcium carbonate equivalent (0-101.6cm)	Not specified
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	10
Subsurface fragment volume <=3" (0-101.6cm)	Not specified
Subsurface fragment volume >3" (0-101.6cm)	Not specified

Ecological dynamics

Pointbars, sandbars, and splays are often found along active streams as well as away from channels where a former flood deposited large amounts of coarse-grained sediment. These sites may resemble "dunes" and when dry, could have sediment reworked by wind action. This site can often become droughty due to the excessively drained nature of the soils and the absence of organic matter, which increases soil water holding capacity. Over time, this site may transition to the Natural Levees and Ridge Hardwoods ecological site provided that the combined processes of soil weathering, development, and increases in organic matter from vegetative production are not disrupted.

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Areas are on flood plains in portions of level IV EPA Ecoregions 73a - Northern Holocene Meander Belts, 73d - Northern Backswamps, 73i - Arkansas/Ouachita River Backswamps, 73m - Southern Backswamps and 73K - Southern Holocene Meander Belts, of the Southern Mississippi River Alluvium Major Land Resource Area. Located within the central western portion of the MLRA in the Tensas Basin which extends from approximately where the Arkansas River influence begins within the MLRA and extends to the Red River to the south.

Of note, this site occurs on the “protected” side of the extensive Mississippi River levee system and is distinguished from similar landforms within the unprotected “batture lands” (i.e., the alluvial land between the river channel and the constructed levee system).

State and transition model

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 7. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 8. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 9. Community 5.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	**Warm Season Grasses**			2242-6725	

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Contributors

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Approval

Charles Stemmans, 6/10/2025

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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	09/16/2026
Approved by	

Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant:

Sub-dominant:

Other:

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**
