

Ecological site F131DY001AR

Loamy Flood Plain

Last updated: 9/22/2023

Accessed: 09/21/2026

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): 131D–Southern Mississippi River Terraces

Major Land Resource Area (MLRA) 131D, Southern Mississippi River Terraces, is located in Arkansas (88 percent) and Louisiana (12 percent). It is in two separate areas that together make up about 2,945 square miles. The towns of Lonoke and Stuttgart, Arkansas, are in the northeastern part of the MLRA, which is called the Grand Prairie. Bastrop, Louisiana, is in the southwestern part of the MLRA.

Classification relationships

USDA-Natural Resources Conservation Service, 2006. -Major Land Resource Area (MLRA) 131D

Ecological site concept

The Loamy Floodplain ecological site has loamy-textured, very deep, somewhat poorly to well drained soils that are prone to flooding. Sites can flood for prolonged periods, especially during the winter and early spring.

Associated sites

F131DY002AR	Clayey Flood Plain Landforms are similar, but have clayey-textured soils.
F131DY005AR	Loamy Prairie Terrace Sites have similar textures, but are found on a higher terrace landform.

Similar sites

F131CY002LA	Loamy Flood Plain Sites are similar, but in a different MLRA.
F131BY003AR	Loamy Flood Plain Sites are similar, but in a different MLRA.

Table 1. Dominant plant species

Tree	(1) <i>Quercus nigra</i> (2) <i>Quercus phellos</i>
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

These soils are on nearly level to gently sloping natural levees on floodplains. Slope is dominantly 0 to 3, but is typically less than 1 percent.

Table 2. Representative physiographic features

Landforms	(1) Alluvial plain > Flood plain (2) Alluvial plain > Natural levee
Runoff class	Negligible to low
Flooding duration	Brief (2 to 7 days)
Flooding frequency	None to frequent
Ponding frequency	None
Elevation	40 – 80 m
Slope	0 %
Water table depth	0 – 200 cm
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation is 53 inches, which increases from north to south. Most of the rainfall occurs as frontal storms in spring and early summer. Some high-intensity, convective thunderstorms occur in summer. The average seasonal snowfall is five inches. Temperatures range from highs in the low 90's during the summer to lows in the low 30's during the winter. The frost-free period averages 221 days, while the freeze-free period averages 246 days.

Table 3 Representative climatic features

Frost-free period (average)	220 days
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Freeze-free period (average)	250 days
Precipitation total (average)	1,350 mm

- (1) ARKANSAS POST [USC00030240], Gillett, AR
- (2) DES ARC [USC00031968], Des Arc, AR
- (3) CROSSETT 2 SSE [USC00031730], Crossett, AR
- (4) SAINT CHARLES [USC00036376], Clarendon, AR
- (5) STUTTGART 9 ESE [USC00036920], Stuttgart, AR

Influencing water features

The ecological site is on floodplains and is prone to annual flooding.

Wetland description

Most of the soils correlated to this site are considered hydric, but onsite delineations are needed to confirm wetland status according to the United State Army Corps of Engineers.

Soil features

The soils consist of very deep, well drained, moderately permeable soils that formed in loamy alluvial sediments or mixed alluvial and loess deposits over loamy Arkansas River alluvium. The Goodwill, Idee and Tichnor series are correlated to this site. The taxonomic classification for the Goodwill series is fine-silty, mixed, active, thermic Ultic Hapludalfs and the taxonomic classification for the Idee and Tichnor series is fine-silty, mixed, active, thermic Typic Endoaqualfs.

Table 4. Representative soil features

Parent material	(1) Alluvium – igneous and sedimentary rock
Surface texture	(1) Silt loam
Family particle size	(1) Loamy
Drainage class	Very poorly drained to well drained
Permeability class	Slow to very slow
Soil depth	200 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified

Available water capacity (0-101.6cm)	12.7 – 17.78 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)	4.5 – 6.5
Subsurface fragment volume <=3" (Depth not specified)	Not specified
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

The information in this ecological site description (ESD), including the state-and-transition model (STM), was developed using archeological and historical data, professional experience, and scientific studies. The information is representative of a complex set of plant communities. Not all scenarios or plants are included. Key indicator plants, animals, and ecological processes are described to inform land management decisions.

Introduction - The Southern Mississippi River Terrace (MLRA 131D) region is on smooth terraces and floodplains along the Mississippi River and its major tributaries south of its confluence with the Ohio River. The geologic material in the region consists of very thick deposits of sandy to clayey alluvium of Pleistocene to Holocene age. This material was deposited by the rivers with local relief is typically less than 15 feet and elevation ranging from 50 to 250 feet.

Geology - Bedrock in this area consists of Tertiary and Cretaceous sands formed as beach deposits during the retreat of the Cretaceous ocean from the midsection of the United States. Alluvial deposits from flooding and lateral migration of the rivers crossing this area typically lie above the bedrock. These sediments form Pleistocene-age alluvial terraces. Silty alluvium underlies most of the area. Clayey sediments are in old channel scars. The Pleistocene terraces are part of the Prairie Terrace complex. A minor portion of the area is in the Deweyville and Montgomery terrace formation. These terraces have a base of red alluvium capped by one to several feet of brownish alluvium.

Biological Resources - This area as a whole, supports hardwoods and pines. The Grand Prairie originally supported tall prairie grasses interlaced with hardwood timber. Cherrybark oak (*Quercus pagoda*) and Shumard oak (*Quercus shumardii*) are widely distributed. Tuliptree (*Liriodendron tulipifera*), white ash (*Fraxinus americana*), eastern cottonwood (*Populus deltoides*), and black walnut (*Juglans nigra*) are important species on the flood plains. Loblolly pine (*Pinus taeda*) and shortleaf pine (*Pinus echinata*) are on a wide variety of sites, mainly the eroded soils on uplands and ridges. Other hardwood species that commonly grow in this area are white oak (*Quercus alba*), basswood (*Tilia* sp.), sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), American elm (*Ulmus americana*), blackgum (*Nyssa sylvatica*), sycamore (*Plantanus occidentalis*), sassafras (*Sassafras albidum*), southern red oak (*Quercus falcata*), chinkapin oak

(*Quercus muehlenbergii*), American beech (*Fagus grandifolia*), and hickory (*Carya* sp.).

Land Use - Land use varies throughout the MLRA consisting of 42 percent cropland, 4 percent grassland, 47 percent forest, 3 percent urban development, 3 percent water, and 1 percent other. Scattered tracts of forests and farms make up nearly all of this area. Rice, soybeans, and wheat are the main crops. In most areas furrow or flood irrigation is used throughout the growing season. Hardwood timber is harvested on some forested wetlands, and most forested areas are managed for wildlife. Bait fish are produced commercially in ponds that are contained by levees. The area is in a major migratory flight path and hunting waterfowl is a popular recreation activity.

Conservation - The major soil resource concerns are management of soil moisture, erosion control, and maintenance of the content of organic matter and productivity of the soils. Depletion of ground water through excessive pumping is a major concern in the Grand Prairie area. Conservation practices on cropland generally include nutrient management, crop residue management, and alternative tillage systems, especially no-till systems that reduce the need for tillage. In many areas land leveling or shaping optimizes the control of surface water. Other major cropland management practices are control of competing vegetation and insects through aerial or ground spraying of herbicides and insecticides and fertility management programs that make use of chemical fertilizers.

State and transition model

Figure 5. STM

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 3.1 plant community composition

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

This site description was developed as part of the provisional ecological site initiative using historic soil survey manuscripts, available range site descriptions, and low intensity field sampling.

Other references

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Contributors

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Approval

Bryan Christensen, 9/22/2023

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	11/15/2021
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:

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

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

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

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:

17. Perennial plant reproductive capability:
