

Ecological site F135AY390MS

Deep Somewhat Poorly Drained Fine Silty Acid Flatwood Floodplains

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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): 135A–Alabama and Mississippi Blackland Prairie

This MLRA has two narrow (less than 40 miles wide), long, arching bands known as the Blackland Prairie and the Jackson Prairie, which are characterized by clayey, soils with a high shrink-swell potential. Several major drainageways bisect this region on their way to larger tributaries. Very little native prairie vegetation remains due to agriculture and forestry activities. This area is in eastern Mississippi (57 percent) and central and western Alabama (43 percent). It makes up about 10,165 square miles(26,328 square kilometers). Most of this region is surrounded by the distinctly different MLRA 133C, which has sandy soils and stratified, coastal sediment mineralogy. A very small section of MLRA 135A has a diffuse boundary with MLRA 134 that occurs as a loess cap that gradually thins from west to east. (USDA, NRCS, 2022)

LRU notes

The Interior Flatwoods: This Physiographic Region consists of a narrow band, of soils which were formed out of an acid gray clay. This band of similar soils is situated directly west of the Blackland Prairie. These acid and clayey soils are flat, low lying, mostly saturated ,hardwood forests with some areas in heavy cultivation.

Classification relationships

This area is in the East Gulf Coastal Plain section of the Coastal Plain province of the Atlantic Plain. The northern part of the area is a slightly elevated, hilly plain. The separate southwestern part is locally known as the Jackson Prairie portion of the East Gulf Coastal Plain section in Mississippi. (USDA, NRCS, 2022) National Vegetation Classification System Vegetation Association (NatureServe, 2010): The reference state for this system is comparable to *Platanus occidentalis* - *Celtis laevigata* - *Liriodendron tulipifera* / *Lindera benzoin* - *Arundinaria gigantea* / *Amphicarpaea bracteata* Floodplain Forest (CEGL008429).

Ecological site concept

These sites are found on the floodplains of the flatwoods with deep, somewhat poorly drained, fine silty soils. Historically this environment would have been a mixture of hardwood stands interspersed with cane thickets. Today, these sites are used predominantly for cotton, corn, soybeans, pasture, and hay. Some areas remain in mixed hardwood and loblolly pine.

Associated sites

F135AY210MS	Deep Somewhat Poorly Drained Fine Silty Nonacid Floodplains These sites are located on the floodplains adjacent to F135AY390MS.
F135AY240MS	Deep Poorly Drained To Somewhat Poorly Drained Clay Acid Floodplains These sites are located on the floodplains adjacent to F135AY390MS.

Similar sites

F135AY210MS	Deep Somewhat Poorly Drained Fine Silty Nonacid Floodplains F135AY210MS and F135AY390MS have the same soils located in different LRU's. F135AY210MS is located in the Blackland and Jackson Prairies. F135AY390MS is located in the Flatwoods.
F135AY220MS	Deep Poorly Drained Clay Nonacid Floodplains Drainage class is the primary difference between these ecological sites. F135AY220MS is poorly drained. F135AY390MS is somewhat poorly drained.
F135AY230MS	Deep Somewhat Poorly Drained To Moderately Well Drained Clay Alkaline Floodplains Soil pH is the primary difference between these ecological sites. F135AY230MS is alkaline. F135AY390MS is classified as nonacid or very slightly acidic.
F135AY240MS	Deep Poorly Drained To Somewhat Poorly Drained Clay Acid Floodplains Soil pH is the primary difference between these ecological sites. F135AY240MS is acidic. F135AY390MS is classified as nonacid or very slightly acidic.
F135AY250MS	Deep Moderately Well Drained Fine Loamy Acid Floodplains Soil texture is the primary difference between these ecological sites. F135AY250MS has fine loamy soil texture. F135AY390MS has fine silty soil texture.
F135AY380MS	Deep Somewhat Poorly Drained Clay Acid Flatwoods Floodplains Soil texture is the primary difference between these ecological sites. F135AY380MS has clayey soil texture. F135AY390MS has fine silty soil texture.

Table 1. Dominant plant species

Tree	(1) <i>Celtis laevigata</i> (2) <i>Fraxinus pennsylvanica</i>
Shrub	(1) <i>Arundinaria gigantea</i> (2) <i>Lindera benzoin</i>
Herbaceous	(1) <i>Toxicodendron radicans</i> (2) <i>Smilax</i>

Physiographic features

Most of this area is underlain by Cretaceous-age clay, marl, soft limestone, or chalk of the Selma Group. The Jackson Prairie part, in southern Mississippi, and parts of the MLRA in southwest Alabama are underlain by Tertiary-age clay, marl, soft limestone, or chalk of the Vicksburg and Jackson Groups. (USDA, NRCS, 2022)

Table 2. Representative physiographic features

Landforms	(1) Flood-plain step
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Runoff class	Low
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Occasional
Ponding frequency	None
Elevation	60 – 140 m
Slope	0 %
Water table depth	50 – 80 cm
Aspect	Aspect is not a significant factor

Table 3. Representative physiographic features (actual ranges)

Runoff class	Low
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Occasional
Ponding frequency	None
Elevation	60 – 140 m
Slope	0 %
Water table depth	30 – 80 cm

Climatic features

This ecological site occurs in the thermic temperature regime for MLRA 135A. The thermic soil temperature regime has mean annual soil temperatures of 15 °C or more, but less than 22 °C; and a difference between mean summer and mean winter soil temperatures of greater than 6 °C at 50 cm below the surface.

The average annual precipitation is sampled from areas running the length of MLRA 135A. Rainfall is common throughout the year; with the maximum precipitation occurring in early winter, spring, and midsummer. The lowest rainfall occurs in autumn. The rainfall typically occurs during high intensity, convective thunderstorms in summer, but some heavy rains occur during tropical storms in winter.

Table 4 Representative climatic features

Frost-free period (characteristic range)	180-200 days
Freeze-free period (characteristic range)	220-240 days
Precipitation total (characteristic range)	1,370-1,470 mm
Frost-free period (actual range)	170-210 days
Freeze-free period (actual range)	200-240 days
Precipitation total (actual range)	1,350-1,500 mm
Frost-free period (average)	190 days
Freeze-free period (average)	230 days
Precipitation total (average)	1,420 mm

- (1) CORINTH 7 SW [USC00221962], Corinth, MS
- (2) RIPLEY [USC00227467], Ripley, MS
- (3) BOONEVILLE [USC00220955], Booneville, MS
- (4) TUPELO RGNL AP [USW00093862], Tupelo, MS
- (5) VERONA EXP STN [USC00229173], Tupelo, MS
- (6) FULTON 3 W [USC00223208], Fulton, MS
- (7) HOUSTON [USC00224265], Houston, MS
- (8) ABERDEEN [USC00220021], Amory, MS
- (9) STATE UNIV [USC00228374], Starkville, MS
- (10) COLUMBUS [USC00221880], Columbus, MS
- (11) BROOKSVILLE EXP STN [USC00221111], Brooksville, MS
- (12) MACON 3N [USC00225361], Macon, MS
- (13) LIVINGSTON [USC00014798], Livingston, AL
- (14) MARION JUNCTION 2 NE [USC00015121], Marion Junction, AL
- (15) MONTGOMERY AP [USW00013895], Hope Hull, AL
- (16) MONTGOMERY 6SW [USC00015553], Montgomery, AL
- (17) FOREST [USC00223107], Forest, MS
- (18) PELAHATCHIE [USC00226811], Pelahatchie, MS

Influencing water features

These sites are found adjacent to streams and other waterways.

Wetland description

There is a chance some areas within this ecological site will be classified as a wetland.

Soil features

Soils associated with this site fall within the thermic temperature regime of MLRA 135A. The thermic soil temperature regime is defined as having a difference in soil temperature of 6 degrees C or more between mean summer (June, July, and August) and mean winter

(December, January, and February) and a mean annual soil temperature of: 15 degrees C (59 degrees F) to 22 degrees C (72 degrees F). Soils in this ecological site are deep, somewhat poorly drained, and have a fine silty texture. This ecological site is comprised of the Mathiston soil series.

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 135A 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 General Information section of this description to determine if another site may be a better fit for your area of interest.

Table 5. Representative soil features

Parent material	(1) Alluvium – sedimentary rock
Surface texture	(1) Silt loam
Drainage class	Somewhat poorly drained
Permeability class	Moderately rapid
Soil depth	120 – 200 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	20.83 – 23.88 cm
Soil reaction (1:1 water) (0-25.4cm)	4.5
Subsurface fragment volume <=3" (0-152.4cm)	Not specified
Subsurface fragment volume >3" (0-152.4cm)	Not specified

Table 6. Representative soil features (actual values)

Drainage class	Poorly drained to somewhat poorly drained
Permeability class	Moderately rapid
Soil depth	120 – 210 cm
Surface fragment cover <=3"	0 %
Surface fragment cover >3"	0 %
Available water capacity (0-101.6cm)	19.05 – 23.88 cm
Soil reaction (1:1 water) (0-25.4cm)	4.5 – 5.5
Subsurface fragment volume <=3" (0-152.4cm)	0 %
Subsurface fragment volume >3" (0-152.4cm)	0 %

Ecological dynamics

This Ecological site has three states; Lowland Hardwood Forest and Canebrake, Cropland, and Pasture/ Mixed Species Grassland. This ecological site does have the potential to contain wetlands. It is important to have a wetland determination before making alterations to the landscape.

The reference state is the Lowland Hardwood Forest and Canebrake. This state is maintained by having little natural or anthropogenic disturbance. These forests are comprised of a variety of hardwood species with the potential for near monoculture stands of giant cane. The presence of giant cane thickets has declined to increased agricultural production on this ecological site.

Cropland occurs as a result of heavy land management changes (clearcutting, herbicide, tilling, etc.) in order to produce crops. Common crops for this ecological site are cotton, corn, and soybeans.

Pasture is a grassland that occurs as a result of heavy land management changes (clearcutting, herbicide, grazing, planting etc.) in order to produce livestock forage or hay. Pasture differs from native grassland as the plant species in the pasture are typically selected and planted specifically for forage quality.

State and transition model

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 3.1 plant community composition

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

Approval

Charles Stemmans, 5/29/2025

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.

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Date	09/19/2026
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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:
