

Ecological site F135AY380MS

Deep Somewhat Poorly Drained Clay Acid Flatwoods Floodplains

Last updated: 5/29/2025
Accessed: 03/30/2026

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): 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 *Fraxinus pennsylvanica* - *Ulmus americana* - *Celtis laevigata* / *Ilex decidua* Floodplain Forest (CEGL002427).

Ecological site concept

These sites are found on the floodplains of the flatwoods with deep, poorly to somewhat poorly drained, acidic, clay soil. Historically these sites were hardwood forest. Today, most land is used for pasture, cotton, corn, soybeans, and small grains. Some areas are still hardwood forests with common trees being sweetgum, eastern cottonwood, green ash, cherrybark oak, Nuttall oak, willow oak, water oak and water tupelo.

Associated sites

R135AY140MS	Deep Somewhat Poorly Drained Clay Alkaline Broad Flats These sites are located on the uplands above F135AY380MS.
F135AY160MS	Deep Somewhat Poorly Drained Clay Acid Broad Flats These sites are located on the uplands above F135AY380MS.
F135AY390MS	Deep Somewhat Poorly Drained Fine Silty Acid Flatwood Floodplains These sites are located on the floodplains adjacent to F135AY380MS.

Similar sites

F135AY210MS	Deep Somewhat Poorly Drained Fine Silty Nonacid Floodplains Soil texture is the primary difference between these ecological sites. F135AY210MS has a fine silty soil texture. F135AY380MS has a clayey soil texture. Additionally, these sites are geographically separated into different LRU's.
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. F135AY380MS is acidic. Additionally, these sites are geographically separated into different LRU's.
F135AY240MS	Deep Poorly Drained To Somewhat Poorly Drained Clay Acid Floodplains F135AY240MS and F135AY380MS have the same soils located in different LRU's. F135AY240MS is located in the Blackland and Jackson Prairies. F135AY380MS is located in the Flatwoods.

F135AY250MS	Deep Moderately Well Drained Fine Loamy Acid Floodplains Soil texture is the primary difference between these ecological sites. F135AY250MS has a fine loamy soil texture. F135AY380MS has a clayey soil texture. Additionally, these sites are geographically separated into different LRU's.
F135AY390MS	Deep Somewhat Poorly Drained Fine Silty Acid Flatwood Floodplains Soil texture is the primary difference between these ecological sites. F135AY390MS has a fine loamy soil texture. F135AY240MS has a clayey soil texture.

Table 1. Dominant plant species

Tree	(1) <i>Fraxinus pennsylvanica</i> (2) <i>Celtis laevigata</i>
Shrub	(1) <i>Cornus drummondii</i> (2) <i>Ilex decidua</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
Runoff class	Low
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Occasional
Ponding duration	Not specified
Ponding frequency	None
Elevation	46–128 m
Slope	0–2%
Water table depth	30–61 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	None to occasional
Ponding duration	Long (7 to 30 days)
Ponding frequency	None to frequent
Elevation	30–140 m
Slope	0–3%
Water table depth	30–61 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)	177-199 days
Freeze-free period (characteristic range)	217-239 days
Precipitation total (characteristic range)	1,372-1,473 mm
Frost-free period (actual range)	168-210 days
Freeze-free period (actual range)	203-241 days
Precipitation total (actual range)	1,346-1,499 mm
Frost-free period (average)	191 days
Freeze-free period (average)	228 days
Precipitation total (average)	1,422 mm

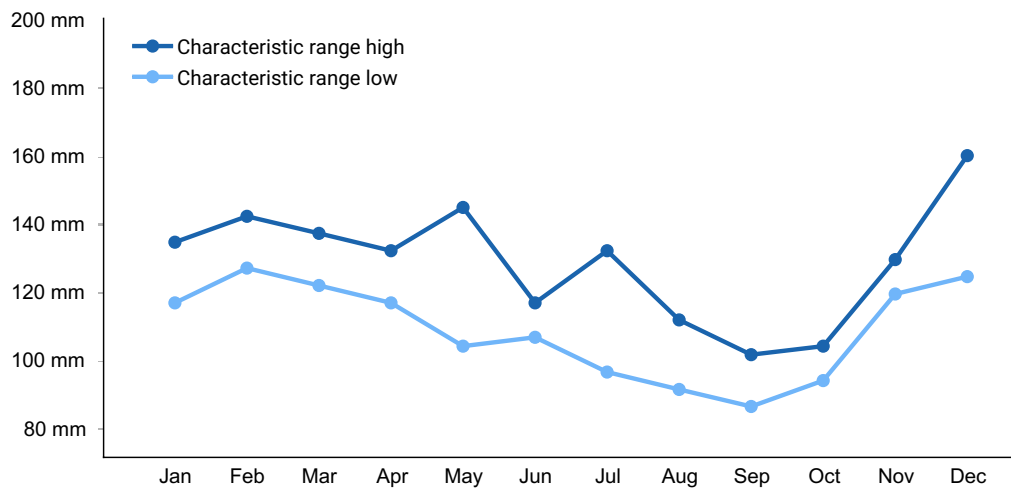


Figure 1. Monthly precipitation range

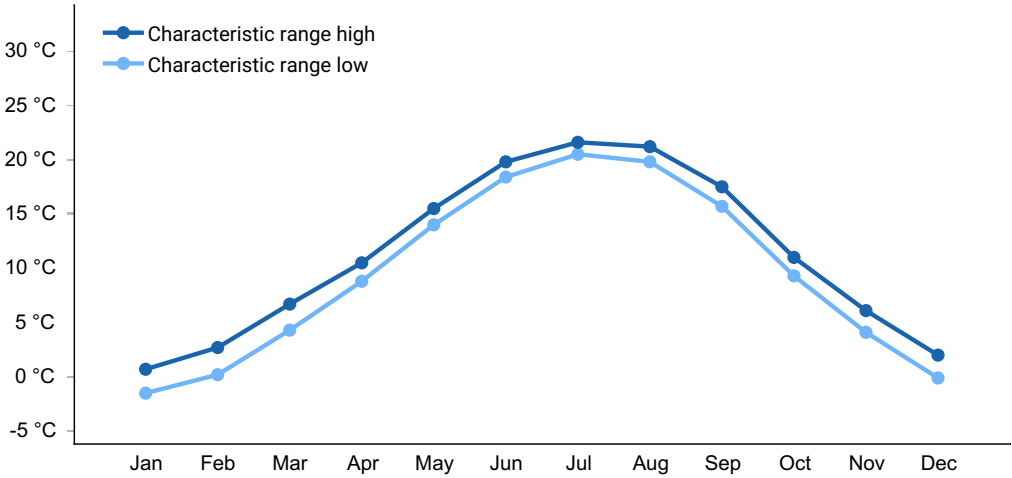


Figure 2. Monthly minimum temperature range

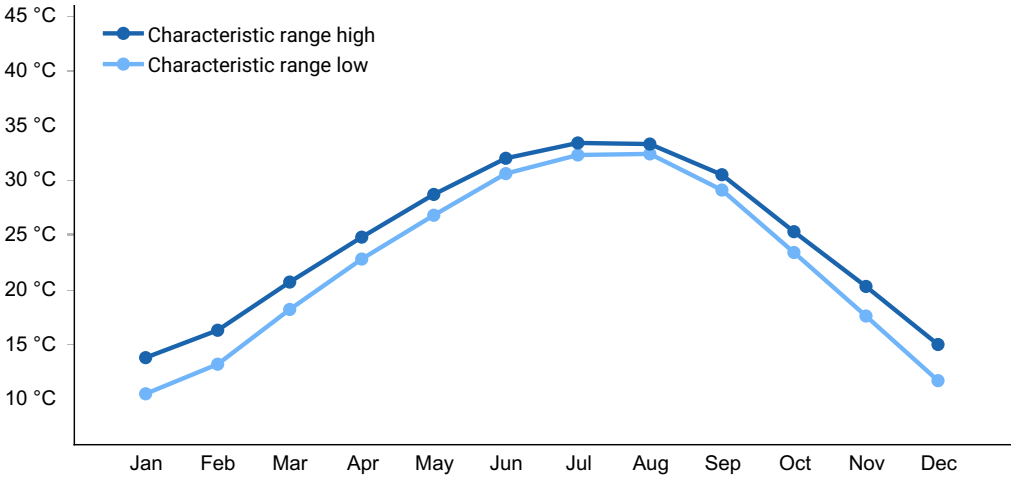


Figure 3. Monthly maximum temperature range

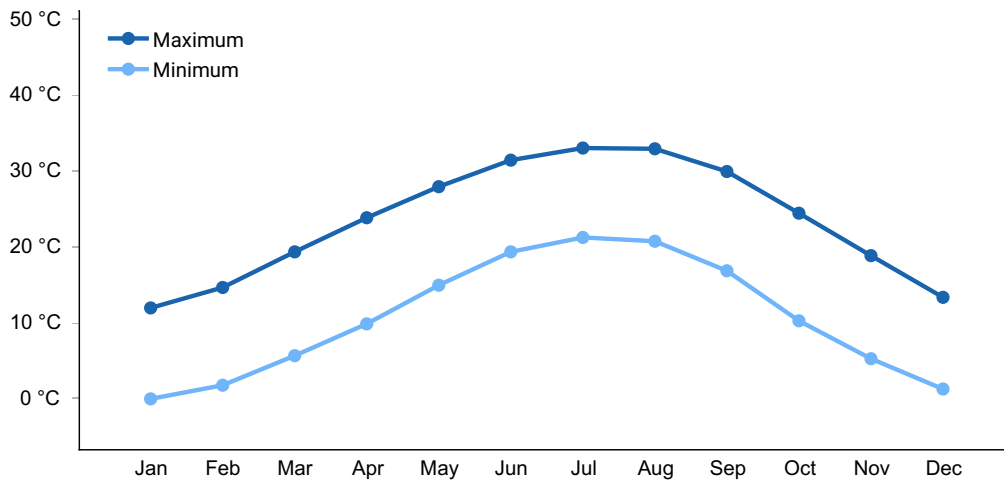


Figure 4. Monthly average minimum and maximum temperature

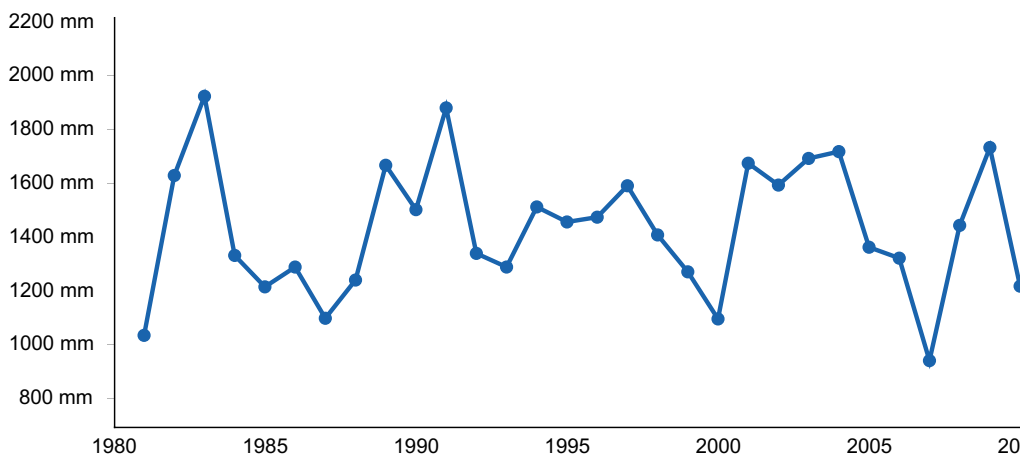


Figure 5. Annual precipitation pattern

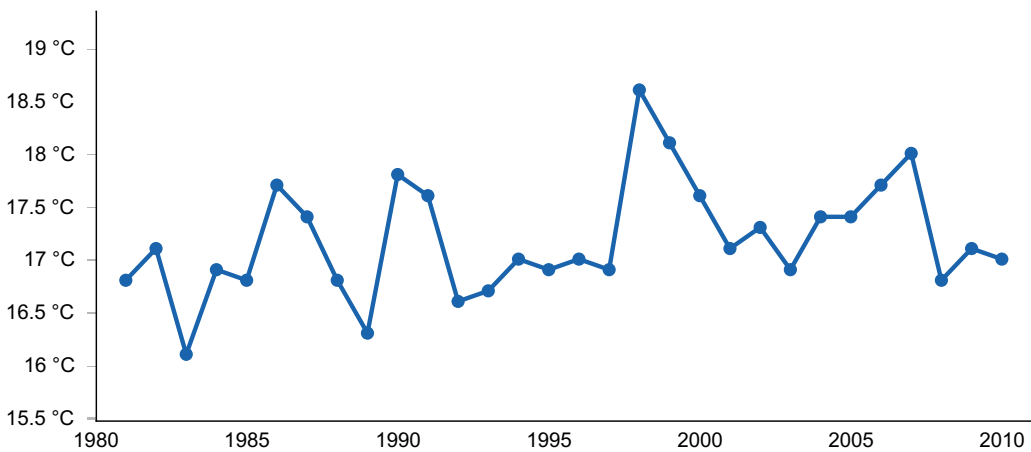


Figure 6. Annual average temperature pattern

Climate stations used

- (1) TUPELO RGNL AP [USW00093862], Tupelo, MS
- (2) VERONA EXP STN [USC00229173], Tupelo, MS
- (3) FULTON 3 W [USC00223208], Fulton, MS
- (4) HOUSTON [USC00224265], Houston, MS

- (5) ABERDEEN [USC00220021], Amory, MS
- (6) STATE UNIV [USC00228374], Starkville, MS
- (7) COLUMBUS [USC00221880], Columbus, MS
- (8) BROOKSVILLE EXP STN [USC00221111], Brooksville, MS
- (9) MACON 3N [USC00225361], Macon, MS
- (10) LIVINGSTON [USC00014798], Livingston, AL
- (11) MARION JUNCTION 2 NE [USC00015121], Marion Junction, AL
- (12) MONTGOMERY AP [USW00013895], Hope Hull, AL
- (13) MONTGOMERY 6SW [USC00015553], Montgomery, AL
- (14) PELAHATCHIE [USC00226811], Pelahatchie, MS
- (15) FOREST [USC00223107], Forest, MS
- (16) CORINTH 7 SW [USC00221962], Corinth, MS
- (17) RIPLEY [USC00227467], Ripley, MS
- (18) BOONEVILLE [USC00220955], Booneville, 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, have acidic soil chemistry, and a fine soil texture. Urbo is the soil series included in this ecological site.

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) Silty clay loam
Drainage class	Somewhat poorly drained
Permeability class	Moderately slow
Soil depth	140–203 cm
Surface fragment cover ≤3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	11.68–18.29 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%

Table 6. Representative soil features (actual values)

Drainage class	Somewhat poorly drained
Permeability class	Very slow to moderately slow
Soil depth	140–203 cm
Surface fragment cover ≤3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	7.11–20.32 cm
Soil reaction (1:1 water) (0-25.4cm)	3.6–5.5
Subsurface fragment volume ≤3" (0-152.4cm)	0%
Subsurface fragment volume >3" (0-152.4cm)	0%

Ecological dynamics

This Ecological site has three states; Riparian Wood, 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.

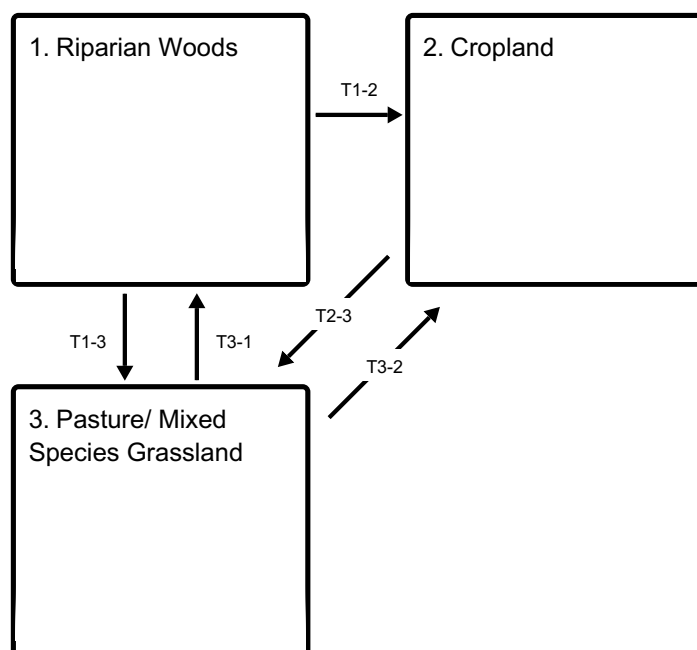
The reference state is Riparian Wood. This state is maintained by having semiregular periods of flooding and having little anthropogenic disturbance. These forests are comprised of a variety of hardwood species with varied understories.

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, grain sorghum 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

Ecosystem states



T1-2 - Manage for cropland

T1-3 - Manage for pasture

T2-3 - Manage for pasture

T3-1 - Leave undisturbed

State 1 submodel, plant communities

1.1. Riparian Wood

State 2 submodel, plant communities

2.1. Cropland

State 3 submodel, plant communities

3.1. Pasture/ Mixed
Species Grassland

State 1 Riparian Woods

This ecological state occurs along the banks of rivers and streams. These forests typically contain a variety of hardwoods including maple, ash, oaks, hickories, sweetgum, and others. There is also a possibility of local canebrake thickets.

Resilience management. This state will occur if the landscape is left unmanaged with little natural disturbance.

Dominant plant species

- maple (*Acer*), tree
- buckeye (*Aesculus*), tree
- river birch (*Betula nigra*), tree
- hybrid hickory (*Carya*), tree
- sugarberry (*Celtis laevigata*), tree
- ash (*Fraxinus*), tree
- honeylocust (*Gleditsia triacanthos*), tree
- black walnut (*Juglans nigra*), tree
- sweetgum (*Liquidambar styraciflua*), tree

- red mulberry (*Morus rubra*), tree
- tupelo (*Nyssa*), tree
- American sycamore (*Platanus occidentalis*), tree
- cottonwood (*Populus*), tree
- black cherry (*Prunus serotina*), tree
- oak (*Quercus*), tree
- black willow (*Salix nigra*), tree
- elm (*Ulmus*), tree
- giant cane (*Arundinaria gigantea*), shrub

Community 1.1

Riparian Wood

These forests are typically dominated by sugarberry, maple, and green ash with a varied understory.

Resilience management. This state will occur if the landscape is left unmanaged and with little natural disturbance.

State 2

Cropland

Cropland occur 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. There are different management styles used for cropland communities including conventional till, no till, cover crop, double crop, and others. Some of these practices are mutually exclusive, but others can be combined.

Resilience management. Plant and manage for desired crops.

Community 2.1

Cropland

State 3

Pasture/ Mixed Species Grassland

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. Livestock grazing can greatly alter the plant community.

Resilience management. Plant and manage for desired species.

Community 3.1

Pasture/ Mixed Species Grassland

This community is characterized as being dominated by grasses introduced as forage and other opportunistic grasses and sedges. This community depends upon disturbance, and thus, can be susceptible to invasive species that similarly thrive with regular disturbance.

Resilience management. In general, invasive species thrive off of ecosystem disturbance. As regular disturbance is an important aspect of maintaining a pasture, it is logical to conclude that invasive species will be highly successful in this environment. If there is no disturbance this ecological site will trend towards redcedar forest. Targeted use of herbicides can be used to control the spread of invasive species.

Dominant plant species

- Bermudagrass (*Cynodon dactylon*), grass
- Johnsongrass (*Sorghum halepense*), grass
- fescue (*Festuca*), grass
- sweetclover (*Melilotus officinalis*), other herbaceous

Transition T1-2

State 1 to 2

Remove trees and plant desired crops. It is important to ensure the desired area has a wetland determination before clearing any trees.

Transition T1-3

State 1 to 3

Clearcut or burn trees and plant it to pasture. It is important to ensure the desired area has a wetland determination before clearing any trees.

Transition T2-3

State 2 to 3

Plant desired forage species

Transition T3-1

State 3 to 1

This is the natural progression for this ecological site if it is left undisturbed.

Transition T3-2

State 3 to 2

Manage for crop production

Additional community tables

Other references

Barone John A. 2005. The Historical Presence and Distribution of Prairies in the Black Belt of Mississippi and Alabama. *Castanea* Vol.70 No.3 (2005): 170-183.
<http://www.bioone.org/doi/full/10.2179/04-25.1>

Barone John A. and Jovonn G. Hill. 2007. Herbaceous Flora of Blackland Prairie Remnants in Mississippi and Western Alabama. *Castanea* Vol.72 No.4 (2007): 226-234.
<http://www.bioone.org/doi/full/10.2179/06-34.1>

Campbell, J.J.N and W.R. Seymour Jr. 2011. A Review of Native Vegetation Types in the Black Belt of Mississippi and Alabama, with Suggested Relationships to the Catenas of Soil Series. *Journal of the Mississippi Academy of Sciences* Vol. 56 No.2 (2011).
<http://www.thefreelibrary.com/A+review+of+native+vegetation+types+in+the+Black+Belt+of+Mississippi...-a0266845301>

Campbell, J.J.N and W.R. Seymour Jr. 2012. The Flora of Pulliam Prairie, Chickasaw County, Mississippi: a Significant Remnant of Native Vegetation in the Black Belt Region. *Journal of the Mississippi Academy of Sciences* Vol. 57.
<https://www.semanticscholar.org/paper/The-Flora-of-Pulliam-Prairie%2CChickasawCounty%2CaCampbelSeymour/3e143794339468a405d660d1b2575e6bff0e4755>

Guetersloh, M, M. Pyne and D. Faber-Langendoen. 2000. *Fraxinus pennsylvanica* - *Ulmus americana* - *Celtis laevigata* / *Ilex decidua* Floodplain Forest. NatureServe.
https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.684378/Fraxinus_pennsylvanica_-_Ulmus_america_-_Celtis_laevigata_-_Ilex_decidua_Floodplain_Forest

Guetersloh, M., S. Landaal and D. Faber-Langendoen. 2000. *Quercus lyrata* - *Liquidambar styraciflua* / *Forestiera acuminata* Floodplain Forest. NatureServe.
https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.687255/Quercus_lyrata_-_Liquidambar_styraciflua_-_Forestiera_acuminata_Floodplain_Forest

Gruchy, John. Restoring Native Grasslands and Bobwhite Quail In The Black Belt Prairie. Mississippi Wildlife, Fisheries, and Parks.
https://www.mdwfp.com/media/4199/bbp_restoration_for_onm.pdf

Leidolf, Andreas and Sidney McDaniel. 1998. A Floristic Study of Black Prairie Plant Communities at Sixteen Section Prairie, Oktibbeha County, Mississippi. *Castanea* 63,

no.1 (1998): 51-62. <https://www.jstor.org/stable/4034055>

McDearman, Will and Malcolm Hodges. Southeast Gulf Coastal Plain Blackland Prairie and Woodland Rapid Assessment Reference Condition Model. US Forest Service. <https://www.fs.usda.gov/database/feis/pdfs/PNVGs/Southeast/R9BKBE.pdf>

Patterson, K.D., D. Faber-Langendoen and J. Teague. 2018. *Arundinaria gigantea* ssp. *gigantea* Wet Canebrake. NatureServe. https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.687779/Arundinaria_gigantea_ssp_gigantea_Wet_Canebrake

Schotz, Al and Michael Barbour. 2009. Ecological Assessment and Terrestrial Vertebrate Surveys for Black Belt Prairies in Alabama. Auburn University. https://www.outdooralabama.com/sites/default/files/Research/SWG%20Reports/Prairie_SWG_Final_Report.compressed.pdf

Teague, J., E.L. Jones and M. Pyne. *Platanus occidentalis* - *Celtis laevigata* - *Liriodendron tulipifera* / *Lindera benzoin* - *Arundinaria gigantea* / *Amphicarpaea bracteata* Floodplain Forest. NatureServe. https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.683393/Platanus_occidentalis_-_Celtis_laevigata_-_Liriodendron_tulipifera_-_Lindera_benzoin_-_Arundinaria_gigantea_-_Amphicarpaea_bracteata_Floodplain_Forest

U.S. Department of Agriculture, Natural Resources Conservation Service. 2022. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. Agriculture Handbook 296.

U.S. Department of Agriculture, Natural Resources Conservation Service. The PLANTS database. National Plant Data Team, Greensboro, NC. <http://plants.usda.gov> (accessed 7 August 2023).

Weakly, A.S. 2016. *Acer floridanum* - *Quercus shumardii* - *Quercus muehlenbergii* - (*Aesculus glabra*, *Carya myristiciformis*) Forest. NatureServe. [_Forest](#)

Contributors

Peyton Fralick

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)	Peyton Fralick
Contact for lead author	Peyton Fralick Peyton.Fralick@usda.gov 662-205-3404
Date	03/30/2026
Approved by	Charles Stemmans
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:**
-