USDA Natural Resources
Conservation Service

Ecological site F135AY230MS
Deep Somewhat Poorly Drained To Moderately Well Drained Clay Alkaline Floodplains

Last updated: 5/29/2025
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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): 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

This ecological site can be seen in the Blackland Prairie and Jackson Prairie of MLRA 135A.

Blackland Prairie: This Physiographic Region is a long Crescent shaped land use area that starts in northeastern Mississippi and ends in central Alabama. The Blackland Prairie soils are formed from mostly calcareous coastal plains. These soils occur on low lying, flat, broad
landscapes; they are mostly alkaline, heavy clays, with some weathered acid areas. The

Blackand Prairie is Interspersed native prairie and hardwood forests; this area is 90% cultivated.

The Jackson Prairie: This physiographic Region consists of a narrow band of soils that occurs in central Mississippi. These soils are gently sloping and formed from a heavy clay parent material. The Jackson Prairie is mostly acid and weathered. This Region is mostly a mixed conifer forest but does have some local pasture and 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 Blackland and Jackson Prairie with deep, somewhat poorly to moderately well drained, alkaline, clay soil. Historically these sites were hardwood forest. Today, the land is mostly used for pasture, cotton, corn, grain sorghum and soybeans. Some areas remain in mixed hardwoods.

Associated sites

R135AY110MS	**Shallow to Moderately Deep Well Drained Silty Clay to Clay Alkaline Broad Flats** These sites are located on the uplands above F135AY230MS.
F135AY160MS	**Deep Somewhat Poorly Drained Clay Acid Broad Flats** These sites are located on the uplands above F135AY230MS.
F135AY210MS	**Deep Somewhat Poorly Drained Fine Silty Nonacid Floodplains** These sites are located on the floodplains adjacent to F135AY230MS.
F135AY220MS	**Deep Poorly Drained Clay Nonacid Floodplains** These sites are located on the floodplains adjacent to F135AY230MS.
F135AY240MS	**Deep Poorly Drained To Somewhat Poorly Drained Clay Acid Floodplains** These sites are located on the floodplains adjacent to F135AY230MS.
F135AY250MS	**Deep Moderately Well Drained Fine Loamy Acid Floodplains** These sites are located on the floodplains adjacent to F135AY230MS.

Similar sites

F135AY220MS	**Deep Poorly Drained Clay Nonacid Floodplains** Soil pH is the primary difference between these ecological sites. F135AY220MS is classified non-acid to slightly alkaline. F135AY230MS is alkaline.
F135AY240MS	**Deep Poorly Drained To Somewhat Poorly Drained Clay Acid Floodplains** Soil pH is the primary difference between these ecological sites. F135AY240MS is acidic. F135AY230MS is alkaline.
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. F135AY230MS has a clayey soil texture.
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. F135AY230MS has a clayey soil texture.

Table 1. Dominant plant species

Tree	(1) *Fraxinus pennsylvanica* (2) *Celtis laevigata*
Shrub	(1) *Cornus drummondii* (2) *Ilex decidua*
Herbaceous	(1) *Toxicodendron radicans* (2) *Smilax*

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) Lowland > Flood plain
Runoff class	Low
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Occasional to frequent
Ponding frequency	None
Elevation	30–91 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) to long (7 to 30 days)
Flooding frequency	Occasional to frequent
Ponding frequency	None
Elevation	15–158 m
Slope	0–2%
Water table depth	15–152 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 ^{0}C or more, but less than 22 ^{0}C; and a difference between mean summer and mean winter soil temperatures of greater than 6 ^{0}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

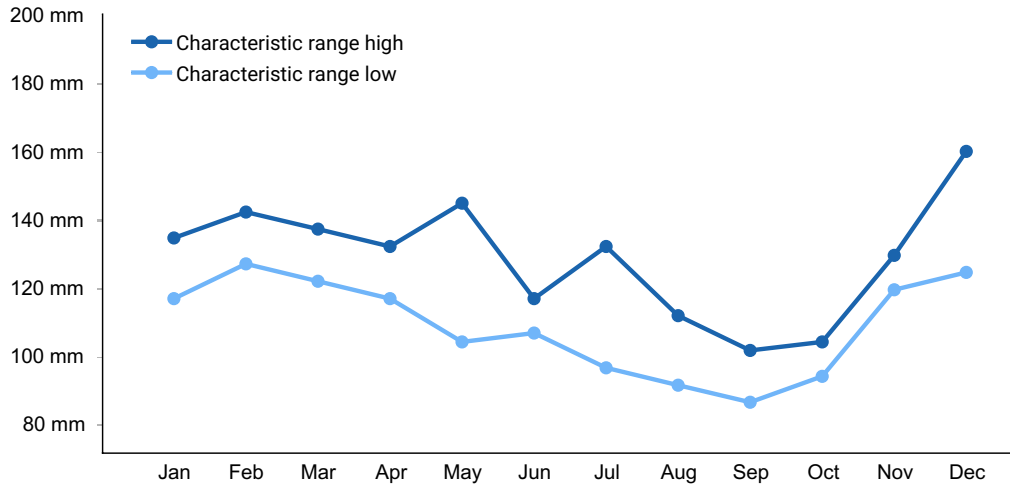


Figure 1. Monthly precipitation range

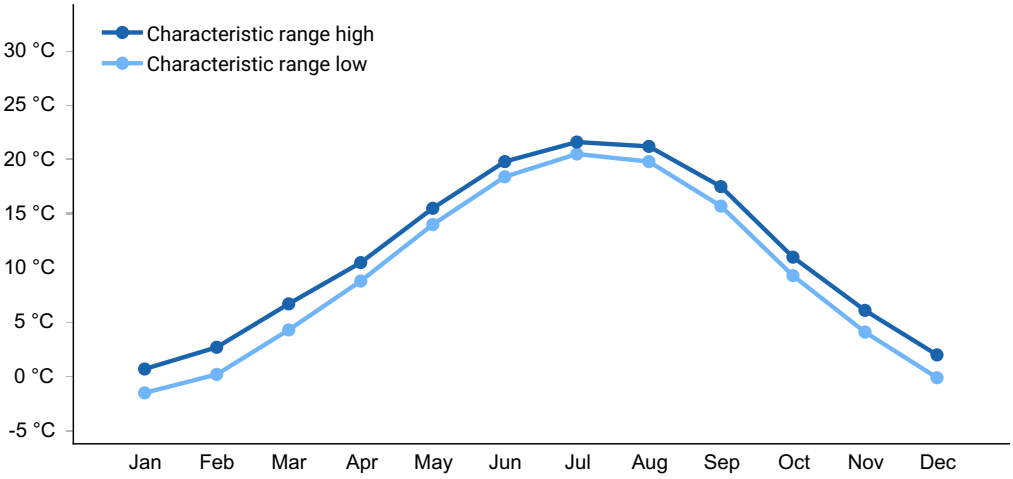


Figure 2. Monthly minimum temperature range

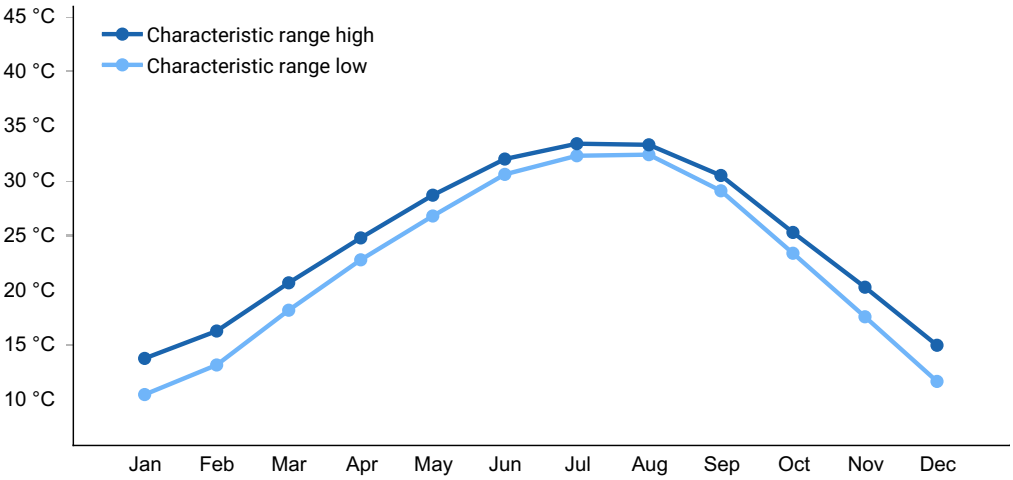


Figure 3. Monthly maximum temperature range

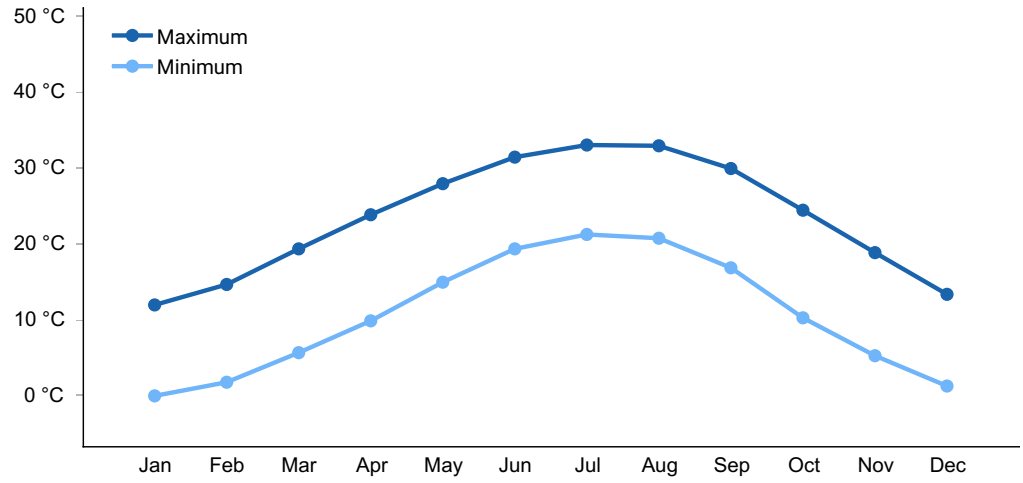


Figure 4. Monthly average minimum and maximum temperature

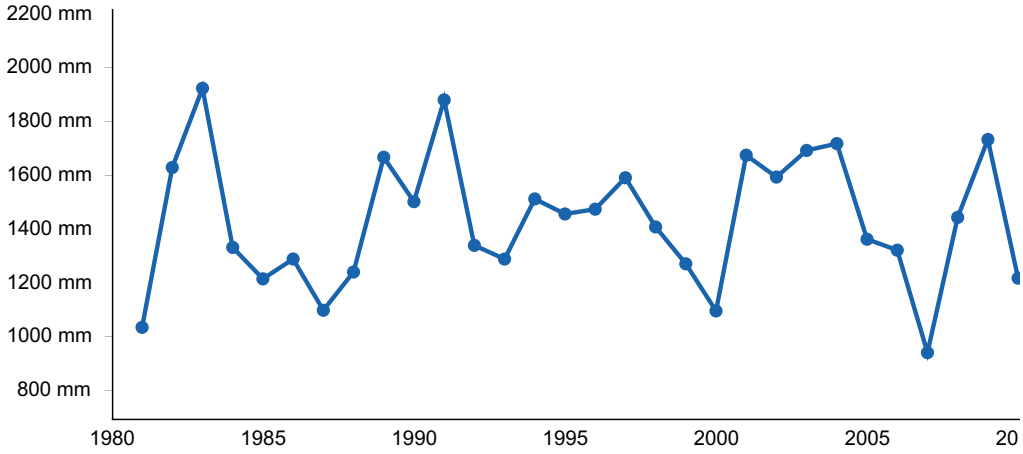


Figure 5. Annual precipitation pattern

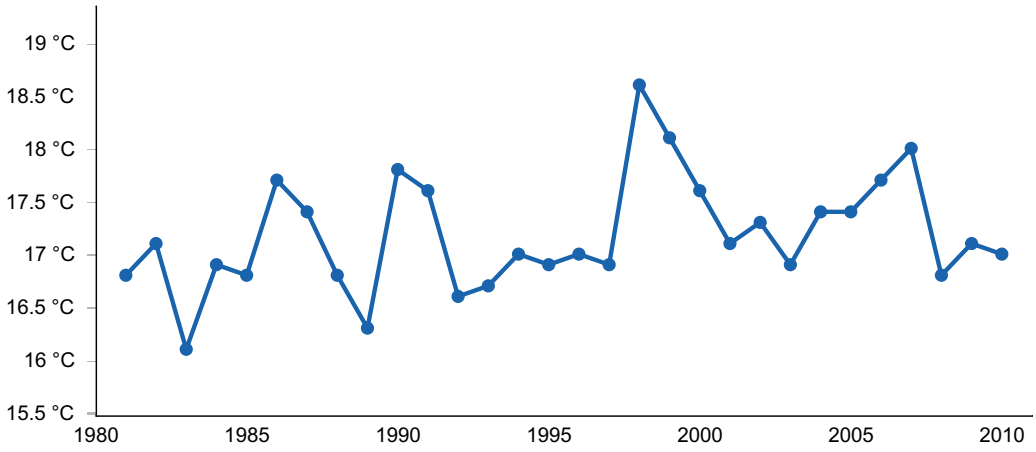


Figure 6. Annual average temperature pattern

Climate stations used

- (1) 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) PELAHATCHIE [USC00226811], Pelahatchie, MS
- (18) FOREST [USC00223107], Forest, 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 to moderately well drained, have alkaline soil chemistry, and a fine soil texture. Soils included in this ecological site are Leeper, Sucarnoochee, Catalpa and Griffith with the Leeper series being the modal concept for this 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–chalk
Surface texture	(1) Silty clay (2) Silty clay loam
Drainage class	Somewhat poorly drained to moderately well drained
Permeability class	Very slow to moderately slow
Soil depth	152–203 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	16.51–20.32 cm
Soil reaction (1:1 water) (0-25.4cm)	6.1–8.4
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 to moderately well drained
Permeability class	Very slow to moderately slow
Soil depth	152–203 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	12.7–20.57 cm
Soil reaction (1:1 water) (0-25.4cm)	5.6–8.4
Subsurface fragment volume <=3" (0-152.4cm)	0–2%
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.

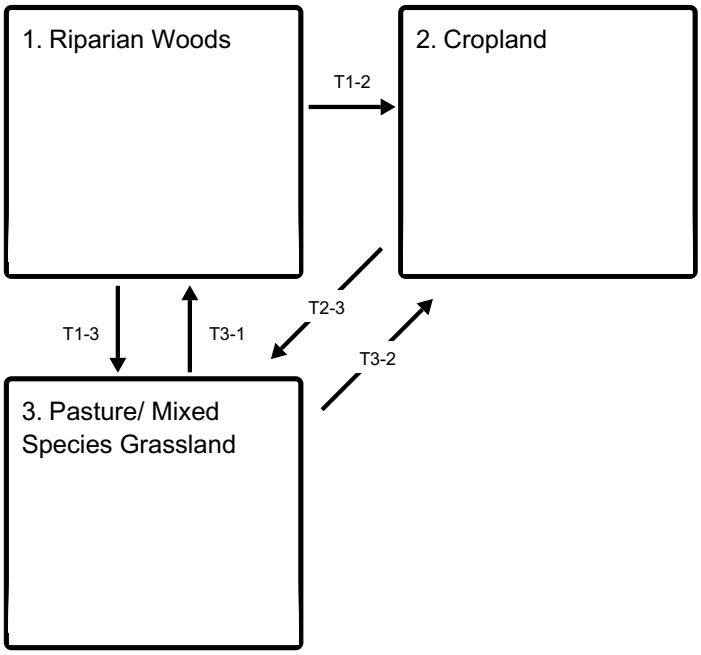
The reference state is Riparian Wood. This state is maintained by having semiregular periods of flooding and having little anthropogenic disturbance. These forests are comprised of a variety of hardwood species with varied understories.

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 cropland

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
- roughleaf dogwood (*Cornus drummondii*), shrub
- possumhaw (*Ilex decidua*), shrub
- hawthorn (*Crataegus*), shrub
- eastern poison ivy (*Toxicodendron radicans*), other herbaceous
- greenbrier (*Smilax*), other herbaceous
- violet (*Viola*), other herbaceous

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 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. 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

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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.

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Date	03/18/2026
Approved by	Charles Stemmans
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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

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

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

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

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

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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:**