

## Ecological site F119XY016AR Loamy Wet Drainageway

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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.



Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

### MLRA notes

Major Land Resource Area (MLRA): 119X–Ouachita Mountains

This ecological site is found in MLRA 119: Ouachita Mountains.

This area is in the Ouachita Mountains Section of the Ouachita Province of the Interior Highlands. The steep mountains are underlain by folded and faulted sedimentary and metamorphic rocks. Most of the stream valleys are narrow and have steep gradients, but wide terraces and flood plains border the Ouachita River in western Arkansas. Elevation ranges from 330 feet (100 meters) on the lowest valley floors to 2,625 feet (800 meters) on the highest mountain peaks. Local relief is generally 100 to 200 feet (30 to 60 meters), but it can exceed 980 feet (300 meters).

### Classification relationships

Ozark-Ouachita Dry-Mesic Oak Forest

Summary: This system is found throughout the Ozark and Ouachita Highlands ranging to the western edge of the Interior Low Plateau. It is the matrix system of this region and occurs on dry-mesic to mesic, gentle to moderately steep slopes. Soils are typically moderately to well-drained and more fertile than those associated with oak woodlands. A closed canopy of oak species (*Quercus rubra* and *Quercus alba*) often associated with hickory species (*Carya* spp.) typifies this system. *Acer saccharum* (or *Acer barbatum* to the south) may occur on more mesic examples of this system. Wind, drought, lightning, and occasional fires can influence this system.

## Ecological site concept

This site is occasionally flooded in drainageways with an aquatic moisture and thermic temperature regimes. It has very deep loamy soils.

**Table 1. Dominant plant species**

Tree	(1) <i>Quercus alba</i>
Shrub	Not specified
Herbaceous	(1) <i>Desmodium</i>

## Physiographic features

This site is on slopes 0 to 3 on flood-plain steps and drainage ways.

**Table 2. Representative physiographic features**

Landforms	(1) Flood-plain step
Flooding duration	Brief (2 to 7 days)
Flooding frequency	None to occasional
Ponding frequency	None
Elevation	600–1,200 ft
Slope	0–3%
Ponding depth	0 in
Water table depth	18 in
Aspect	SE

## Climatic features

**Table 3. Representative climatic features**

Frost-free period (average)	206 days
Freeze-free period (average)	238 days
Precipitation total (average)	59 in

## Climate stations used

- (1) HOT SPRINGS ASOS [USW00003962], Donaldson, AR
- (2) HOT SPRINGS 1 NNE [USC00033466], Hot Springs National Park, AR
- (3) MT IDA 3 SE [USC00034988], Mount Ida, AR

## Influencing water features

This site is influenced by occasional flooding.

## Soil features

The soil series associated with this site is: Mazarn. They are Moderately deep, Somewhat poorly drained, and Moderately slow to Moderate permeable soils, with very acidic to strongly acidic soil reaction, that formed in Alluvium, and slope alluvium from Sandstone and shale.

**Table 4. Representative soil features**

Parent material	(1) Alluvium–sandstone and shale
Surface texture	(1) Silt loam
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained
Permeability class	Moderately slow to moderate
Soil depth	28–36 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	5.1–6.4 in
Calcium carbonate equivalent (0-40in)	0%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	5–5.3
Subsurface fragment volume <=3" (Depth not specified)	0–10%
Subsurface fragment volume >3" (Depth not specified)	5%

## Ecological dynamics

Information contained in this section was adapted from Missouri ESD. The information presented is representative of very complex vegetation communities. Key indicator plants, animals and ecological processes are described to help inform land management decisions. Plant communities will differ across the MLRA because of the naturally occurring variability in weather, soils, and aspect. The Reference Plant Community is not necessarily the management goal. The species lists are representative and are not botanical descriptions of all species occurring, or potentially occurring, on this site. They are not intended to cover every situation or the full range of conditions, species, and responses for the site.

Wet Drainageways in the Ouachita Mountains are on low foot-slopes and relatively stable former floodplain positions that rarely flood. Woodlands are distinguished from forest, by their relatively open understory, and the presence of sun-loving ground flora species. Characteristic plants in the ground flora can be used to gauge the restoration potential of a stand along with remnant open-grown old-age trees, and tree height growth.

The reference plant community is dominated by a wide variety of deciduous hardwood tree species, tolerant of seasonally wet conditions. Trees are generally large and tall forming an open canopy.

Both historically and today, these woodlands are structurally and compositionally diverse, with occasional tree fall gaps and natural mortality providing opportunities for regeneration of over story species. Periodic disturbances from flooding, fire, wind or ice as well as grazing by native large herbivores maintained the woodland structure and diverse ground flora species. Long disturbance-free periods allowed an increase in both the density of trees and the abundance of shade tolerant species.

Today, the Loamy Wet Drainageways are largely converted to pasture and cropland. Where they do still occur, they often occur as a rather narrow band of forest traversing the riverfront forest or stream edge. They are regularly denser in the absence of fire, and their composition is usually altered. These bands of remaining forest play an important role as a source of food and shelter for migrating birds. In addition, they are very important in stream bank

stabilization.

Re-establishment of these woodlands is important for stream quality and stream health, and as critical habitat for migratory birds. Planting of later successional species on the appropriate landscape position and soils and introducing prescribed fire has proven to be an effective means for restoration.

A State and Transition Diagram is depicted in Figure 1. Detailed descriptions of each state, transition, plant community, and pathway follow the model. This model is based on available experimental research, field observations, professional consensus, and interpretations. It is likely to change as knowledge increases.

## State and transition model

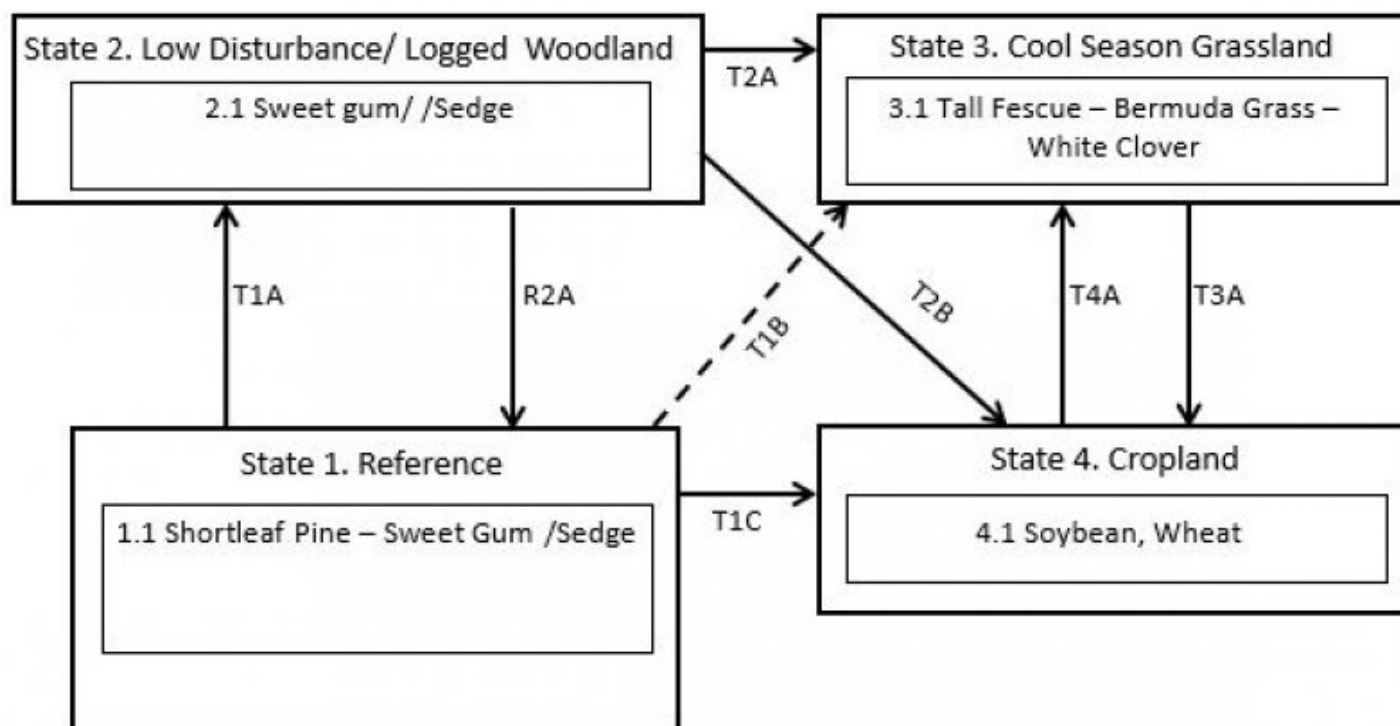


Figure 6. F119XY016AR, Loamy Wet Drainageway

Code	Event/Activity/Process
T1A	Lack of disturbance events > 20 years; repeated timber harvests
T3A	Tillage; conservation cropping system
T1B,T2A	Woody removal; tillage; vegetative seeding; grassland management
T1C, T2B	Woody removal; tillage; conservation cropping system
T4A	Vegetative seeding ; grassland management
R2A	Forest stand improvement; prescribed fire 3-10 years

Figure 7. F119XY016AR, Loamy Wet Drainageway

## State 1 Reference

The historical reference state for this ecological site was old growth oak woodland. The woodland was dominated by shortleaf pine and sweet gum. Periodic disturbances from flooding, fire, wind or ice as well as grazing by native

large herbivores maintained the woodland structure and diverse ground flora species. Long disturbance-free periods allowed an increase in both the density of trees and the abundance of shade tolerant species.

## Other references

NatureServe. 2015. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia.  
Available <http://explorer.natureserve.org>. (Accessed: October 27, 2015).

Official Soil Survey, USDA-NRCS: <https://soilseries.sc.egov.usda.gov/osdname.asp>

Landfire: <http://www.landfire.gov> 2015 data

United States Department of Agriculture Handbook 296: Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin

NASIS database 2016 NASIS Client Version Number 6.4.1 and database model 7.2.5

## Contributors

Kevin Godsey

## Acknowledgments

Doug Wallace and Fred Young at Missouri NRCS State office, personal communication and sharing of state and transition models.

## 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	
Approved by	
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):**
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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):**
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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:**
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