

## Ecological site F119XY004AR Loamy Wet Depression

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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

Nature Serve area Ozark-Ouachita Shortleaf Pine-Bluestem Woodland.

**Summary:** This system represents woodlands of the Ouachita and Ozark mountains region of Arkansas, adjacent Oklahoma, and southern Missouri in which *Pinus echinata* is the canopy dominant, and the understory is characterized by *Andropogon gerardii*, *Schizachyrium scoparium*, and other prairie plants. Although examples of this system occur throughout this region, there is local variation in the extent to which they were present. The center of distribution is the northern and western Ouachita Mountains, and it is best developed in large, dry, and flat to gently undulating portions of the landscape which carry fire well, creating extensive natural fire compartments. In the Ouachitas, the system occurs on the northern Hogback Ridges excluding the Novaculite areas to the south.

These are large, gently sloping, east/west-trending ridges of sandstone and shale, the south-facing slopes of which constitute large fire compartments. In nearly all examples, *Pinus echinata* occurs with a variable mixture of hardwood species. The exact composition of the hardwoods is much more closely related to aspect and topographic factors than is the pine component. In the Ozark Highlands this system is less extensive but was historically prominent where sandstone-derived soils are common. In Missouri and Oklahoma, this system occurs on gently dissected upland cherty plains (in addition to sandstone ridges).

Notes: LandFire is a complex, model-based system of estimating current and potential vegetation on a national basis. The LandFire system contains a peer-reviewed and spatially-oriented vegetation database that can be compared to NRCS SSURGO soil data and used in the development of provisional ecological sites (PES).

LandFire vegetation coverages have been developed under a partnership of multiple federal agencies and non-profit ecological groups including NatureServe. The entire United States has been mapped using predictive landscape models based on field-referenced data, satellite imagery, and biophysical gradient layers.

LandFire uses computer modeling to estimate vegetation reference conditions. Within the LandFire system, the Biophysical Settings (BpS) layer represents the vegetation that was likely dominant prior to European settlement. The BpS layer is based on the current environment and an approximation of the historical disturbance regime. The vegetation community descriptions derived from this computer modeling scenario may be in actuality be very rare or in some cases, non-existent, in the current environment.

Most LandFire vegetation coverages incorporate NatureServe's "Ecological Systems" classification thereby allowing users to access detailed descriptions of various ecological communities through the on-line NatureServe Explorer. Although these Ecological Systems are usually a larger scale than most PES groupings, the detailed plant community information found in these System descriptions can still augment PES narratives and provide assistance in state and transition model development.

## Ecological site concept

This site is a wet depressional woodland on slopes less three percent with udic moisture and thermic temperature regimes. It has poorly and very poorly drained loamy soils.

**Table 1. Dominant plant species**

Tree	(1) <i>Pinus echinata</i>
Shrub	Not specified
Herbaceous	(1) <i>Andropogon</i>

## Physiographic features

These sites are on 0 to 3 percent slopes in open depressions.

**Table 2. Representative physiographic features**

Landforms	(1) Depression
Flooding frequency	None
Ponding frequency	None
Elevation	183–366 m
Slope	0–3%
Water table depth	46 cm
Aspect	SE

## Climatic features

**Table 3. Representative climatic features**

Frost-free period (average)	195 days
Freeze-free period (average)	220 days

Precipitation total (average)	1,549 mm
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## Climate stations used

- (1) BLAKELY MTN DAM [USC00030764], Mountain Pine, AR
- (2) BIG FORK 1 SSE [USC00030664], Mena, AR
- (3) MT IDA 3 SE [USC00034988], Mount Ida, AR
- (4) MENA [USC00034756], Mena, AR

## Influencing water features

## 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 soil reaction, that formed in Residuum, and Slope alluvium from Sandstone and shale.

**Table 4. Representative soil features**

Parent material	(1) Residuum–sandstone and shale
Surface texture	(1) Silt loam (2) Silty clay loam
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained
Permeability class	Moderately slow to moderate
Soil depth	71–97 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	12.95–17.02 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	5
Subsurface fragment volume <=3" (Depth not specified)	0–10%
Subsurface fragment volume >3" (Depth not specified)	5%

## Ecological dynamics

These open woodland communities were strongly influenced by fire and seasonal wetness. Herbivory by native (now expatriated) ungulates also played a role. Consequently, drought and fire-tolerant post over a ground flora of tallgrass prairie grasses, sedges and wildflowers made up this community.

## State and transition model

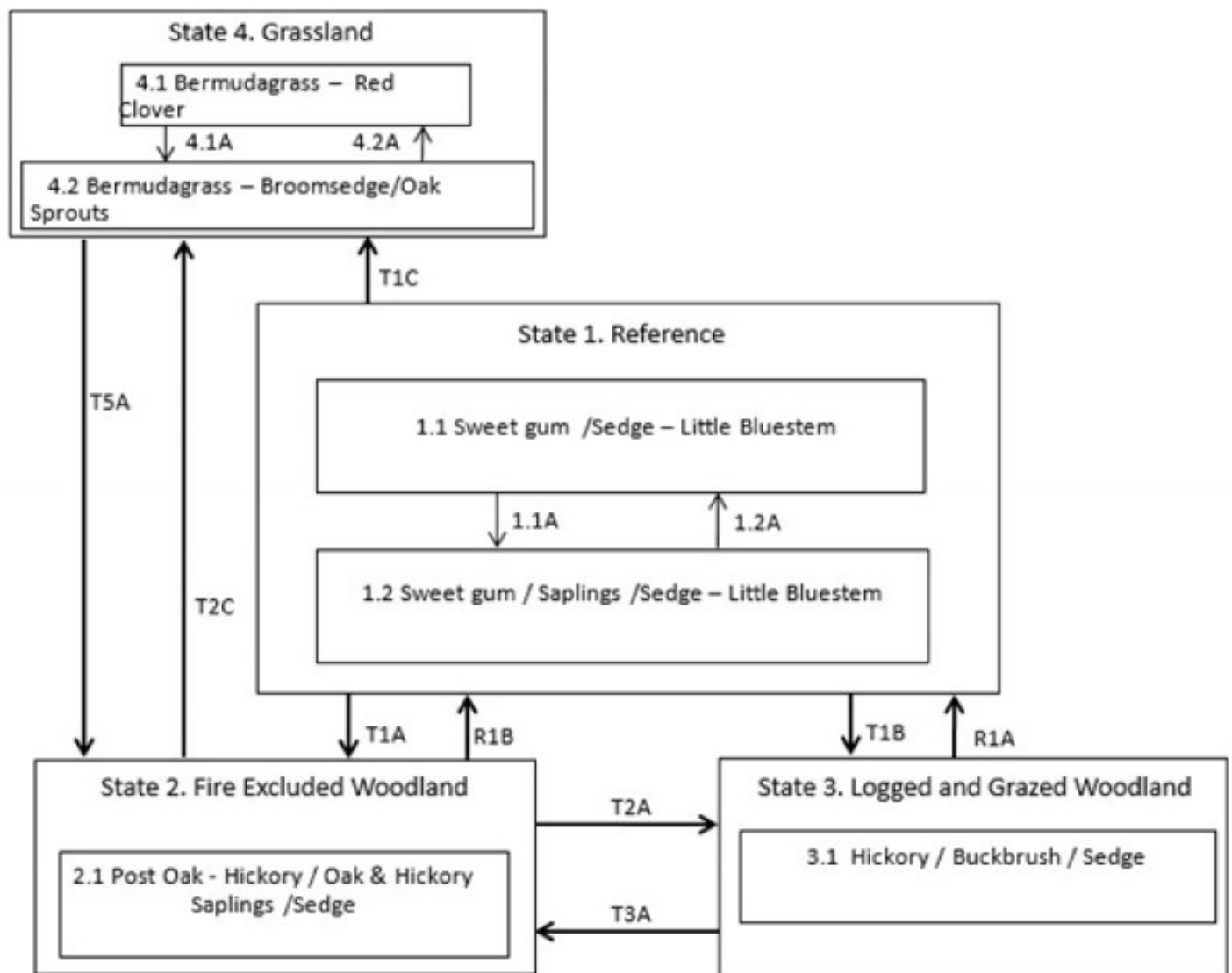


Figure 6. F119XY004AR, Loamy Wet Depression

Code	Event/Activity/Process
T1A	Fire suppression; managed timber harvest
T1B	Fire suppression; high grading timber harvest; uncontrolled domestic grazing
T1C, T2C	Clearing; grassland planting; grassland management
T2A	Uncontrolled domestic grazing; high grading harvests
T3A	Exclude domestic grazing

Code	Event/Activity/Process
1.1A	Fire-free interval, 5-10 years
1.2A	Fire 1-3 years
4.1A	Over grazing; no fertilization
4.2A	Brush management; prescribed grazing

Code	Event/Activity/Process
R1A	Exclude domestic grazing; thinning; prescribed fire - 1-3 years; forest stand improvement
R1B	Thinning; prescribed fire - 1-3 years

Figure 7. F119XY004AR, Loamy Wet Depression

## State 1 Reference

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## 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:**
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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:

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17. Perennial plant reproductive capability:

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