USDA Natural Resources
Conservation Service

Ecological site F119XY024AR
Loamy Backslope

Accessed: 05/21/2025

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.

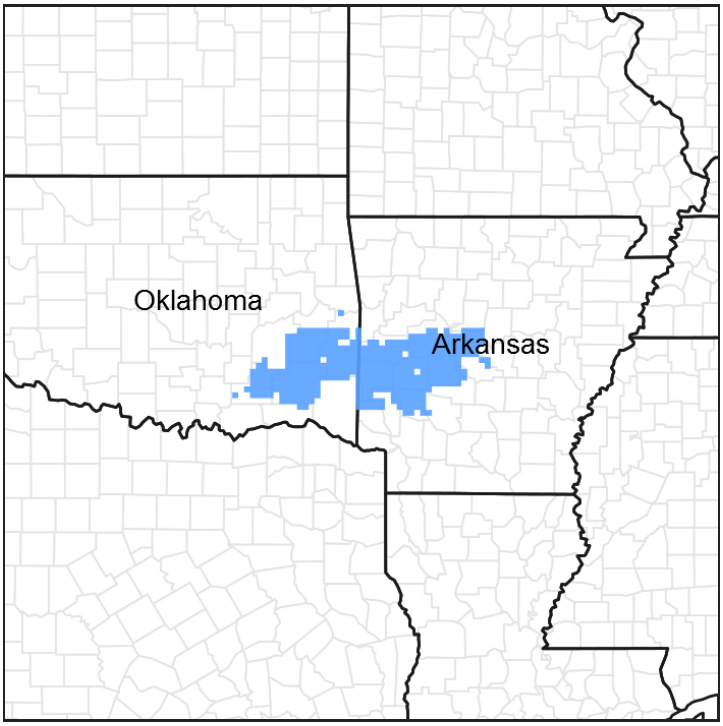

Figure 1. Mapped extent

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 on greater than 15 percent backslopes with udic moisture and thermic temperature regimes. It has loamy soils with high available water.

Table 1. Dominant plant species

Tree	(1) *Quercus alba*
Shrub	Not specified
Herbaceous	(1) *Desmodium*

Physiographic features

This site is on 8 to 60 percent back slopes of hill and mountain sides.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Mountain slope
Flooding frequency	None
Ponding frequency	None
Elevation	91–823 m
Slope	8–60%
Ponding depth	0 cm

Water table depth	130 cm
Aspect	SE

Climatic features

Table 3. Representative climatic features

Frost-free period (average)	198 days
Freeze-free period (average)	222 days
Precipitation total (average)	1,397 mm

Climate stations used

- (1) HOT SPRINGS 1 NNE [USC00033466], Hot Springs National Park, AR
- (2) MCGEE CREEK DAM [USC00345713], Atoka, OK
- (3) WILBURTON 9 ENE [USC00349634], Red Oak, OK
- (4) ALUM FORK [USC00030130], Paron, AR
- (5) MT IDA 3 SE [USC00034988], Mount Ida, AR
- (6) TUSKAHOMA [USC00349023], Tuskahoma, OK

Influencing water features

This ecological site is not influenced by wetland or riparian water features.

Soil features

The soil series associated with this site are: Yanush, Sherwood, Sherless, Pirum, Octavia, Carnasaw. They are Moderately deep to very deep, Well drained, and Slow to Moderately rapid permeable soils, with very acidic to moderately acidic soil reaction, that formed in Colluvium and Residuum from Acid shale, Chert, Novaculite, Sandstone and siltstone.

Table 4. Representative soil features

Parent material	(1) Colluvium–acid shale (2) Residuum–sandstone and shale
Surface texture	(1) Very gravelly fine sandy loam (2) Stony loam (3) Bouldery silt loam
Drainage class	Well drained
Permeability class	Slow to moderately rapid

Soil depth	61–165 cm
Surface fragment cover <=3"	0–10%
Surface fragment cover >3"	2–10%
Available water capacity (0-101.6cm)	8.38–14.48 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)	5–5.9
Subsurface fragment volume <=3" (Depth not specified)	2–60%
Subsurface fragment volume >3" (Depth not specified)	0–40%

Ecological dynamics

Information contained in this section was adapted from Missouri ESD. The information presented is representative of very complex vegetational 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.

Today, these communities have been cleared and converted to pasture, or have undergone repeated timber harvest and domestic livestock grazing. Most existing occurrences have a younger (50 to 80 years) canopy layer whose composition has been altered by timber harvesting practices. An increase in hickories over historic conditions is common. In addition, in the absence of fire, the canopy, sub-canopy and woody understory layers are better developed. The absence of periodic fire has allowed more shade-tolerant tree species, such as sugar maple, white ash, and hickories to increase in abundance.
Uncontrolled domestic grazing has diminished the diversity and cover of woodland ground flora species, and has introduced weedy species such as gooseberry, buck brush, poison

ivy and Virginia creeper created a more open understory and increased soil compaction.
Loamy Back slope Forests are moderately productive timber sites. Carefully planned small group openings can help regenerate more desirable oak species and increase vigor on the residual trees. Clear-cutting does occur and results in dense, even-aged stands of primarily oak. This may be most beneficial regeneration method for existing stands whose composition has been highly altered by past management practices. However, without some thinning of the dense stands, the ground flora diversity can be shaded out and productivity of the stand may suffer.
Prescribed fire can play a beneficial but limited role in the management of this ecological site. The higher productivity of these sites makes it more challenging than on other woodland sites in the region. Control of woody species will be more difficult. Protected aspect woodlands did evolve with some fire, and their composition and structure often reflects more open, woodland conditions than adjacent forest sites, with more woodland ground flora species that can respond to fire.
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

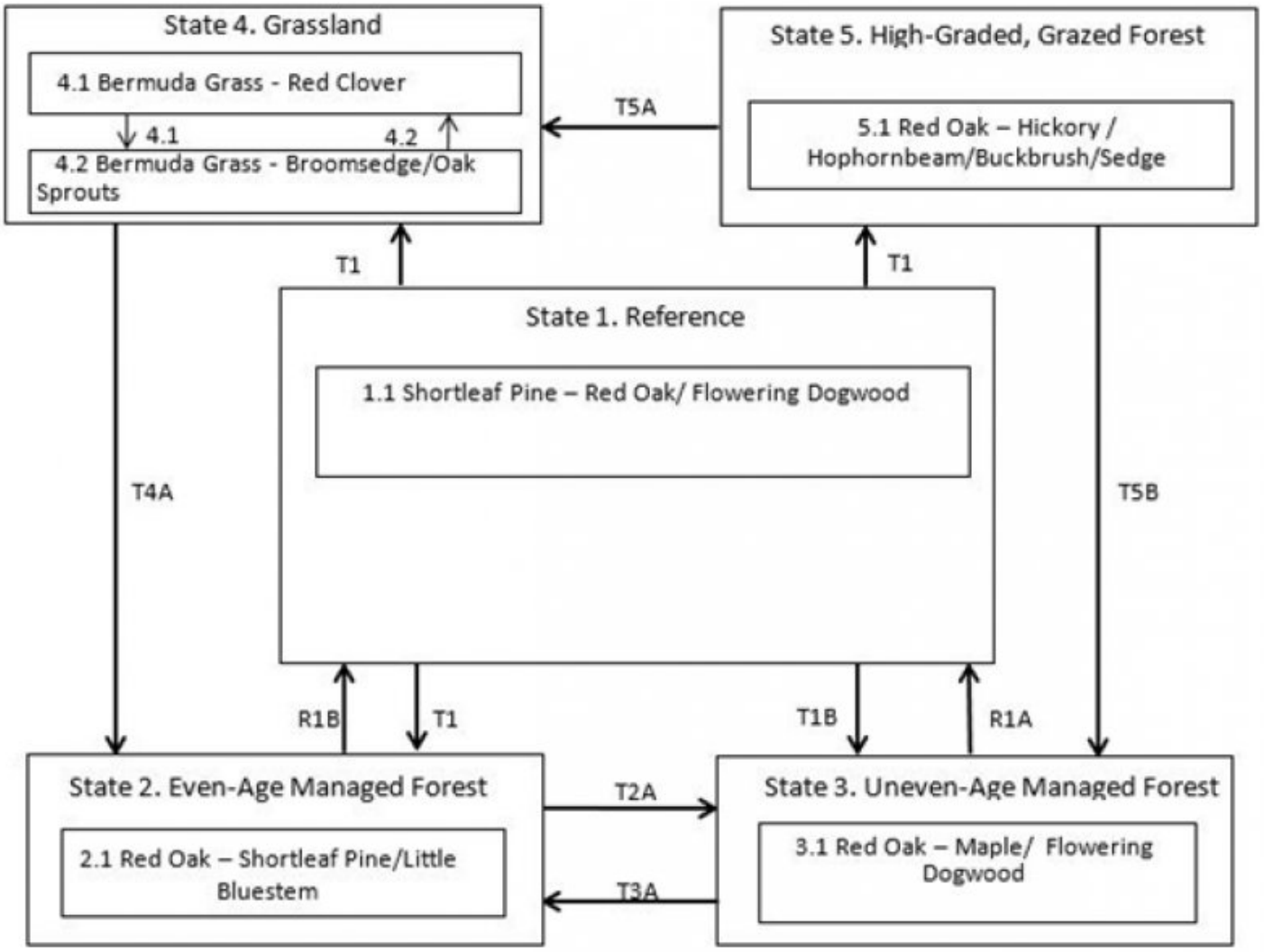

Figure 6. F119XY024AR, Loamy Backslope

Code	Event/Process
T1A	Harvesting; even-aged management
T1B	Harvesting; uneven-age management
T1C, T5A	Clearing; pasture planting
T1D	High-grade harvesting; uncontrolled grazing
T2A	Uneven-age management
T3A	Even-age management
T4A, T5A	Tree planting; long-term succession; no grazing
T5B	Uneven-age management; tree planting; no grazing
4.1A	Over grazing; no fertilization
4.2A	Brush management; grassland seeding; grassland management
R1A	Extended rotations
R1B	Uneven-age mgt, extended rotations

Figure 7. F119XY024AR, Loamy Backslope

State 1
Reference

The Reference State was dominated by white oak and Shortleaf Pine. Periodic disturbances from fire, wind or ice maintained the dominance of oaks by opening up the canopy and allowing more light for oak reproduction. Long disturbance-free periods allowed an increase in more shade tolerant species such as hickory and sugar maple. Two community phases are recognized in this state, with shifts between phases based on disturbance frequency. The reference state is rare today. Some sites have been converted to grassland (State 4). Others have been subject to repeated, high-graded timber harvest coupled with domestic livestock grazing (State 5). Fire suppression has resulted in increased canopy density, which has affected the abundance and diversity of ground flora. Many Reference sites have been managed for timber harvest, resulting in either even-age (State 2) or uneven-age (State 3) forests.

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:**

   _____

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:**