

Ecological site F119XY031AR Rubby High Ridge

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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

Ouachita Montane Oak Forest

Summary: This system represents hardwood forests of the highest elevations of the Ouachita, Rich, and Black Fork mountains of Arkansas and Oklahoma (about 790-850 m [2600-2800 feet]). Vegetation consists of either forests or open woodlands dominated by *Quercus alba* or *Quercus stellata*. Canopy trees are often stunted due to the effects of ice, wind and cold conditions, in combination with fog, shallow soils over rock, and periodic severe drought. Some stands form almost impenetrable thickets.

Ecological site concept

This site is on greater ridge tops of mountains with udic moisture regime. It has loamy soils with low available water. It is subject to high winds and frequent ice storms.

Table 1. Dominant plant species

Tree	(1) <i>Quercus stellata</i>
Shrub	Not specified
Herbaceous	(1) <i>Pteridium</i>

Physiographic features

This site is on 3 to 35 percent rubbly high mountain ridges.

Table 2. Representative physiographic features

Landforms	(1) Mountain
Flooding frequency	None
Ponding frequency	None
Elevation	610–823 m
Slope	3–35%
Ponding depth	0 cm
Aspect	SE

Climatic features

Table 3. Representative climatic features

Frost-free period (average)	197 days
Freeze-free period (average)	224 days
Precipitation total (average)	1,626 mm

Climate stations used

- (1) BIG FORK 1 SSE [USC00030664], Mena, AR
- (2) MENA [USC00034756], Mena, AR

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: Pirum, Clebit, Carnasaw. They are shallow to Deep, Well drained, and Slow to Moderately rapid permeable soils, with very acidic to strongly acidic soil reaction, that formed in Residuum from Sandstone, Shale and siltstone.

Table 4. Representative soil features

Parent material	(1) Residuum–sandstone and shale
Surface texture	(1) Stony fine sandy loam (2) Very stony loam (3) Extremely stony silt loam

Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Slow to moderately rapid
Soil depth	43–135 cm
Surface fragment cover <=3"	0–60%
Surface fragment cover >3"	0–60%
Available water capacity (0-101.6cm)	3.05–12.7 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)	5–5.5
Subsurface fragment volume <=3" (Depth not specified)	1–22%
Subsurface fragment volume >3" (Depth not specified)	1–50%

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.

The reference community Rubbly high ridge is an open woodland.

Historically, Rubbly high ridge Woodlands are subjected to disturbances from wind and ice, as well as grazing by native large herbivores, such as deer. Wind and ice would have periodically opened the canopy up by knocking over trees or breaking substantial branches off canopy trees. Grazing by native herbivores would have effectively kept understory conditions more open, creating conditions more favorable to oak reproduction and ground flora species.

State and transition model

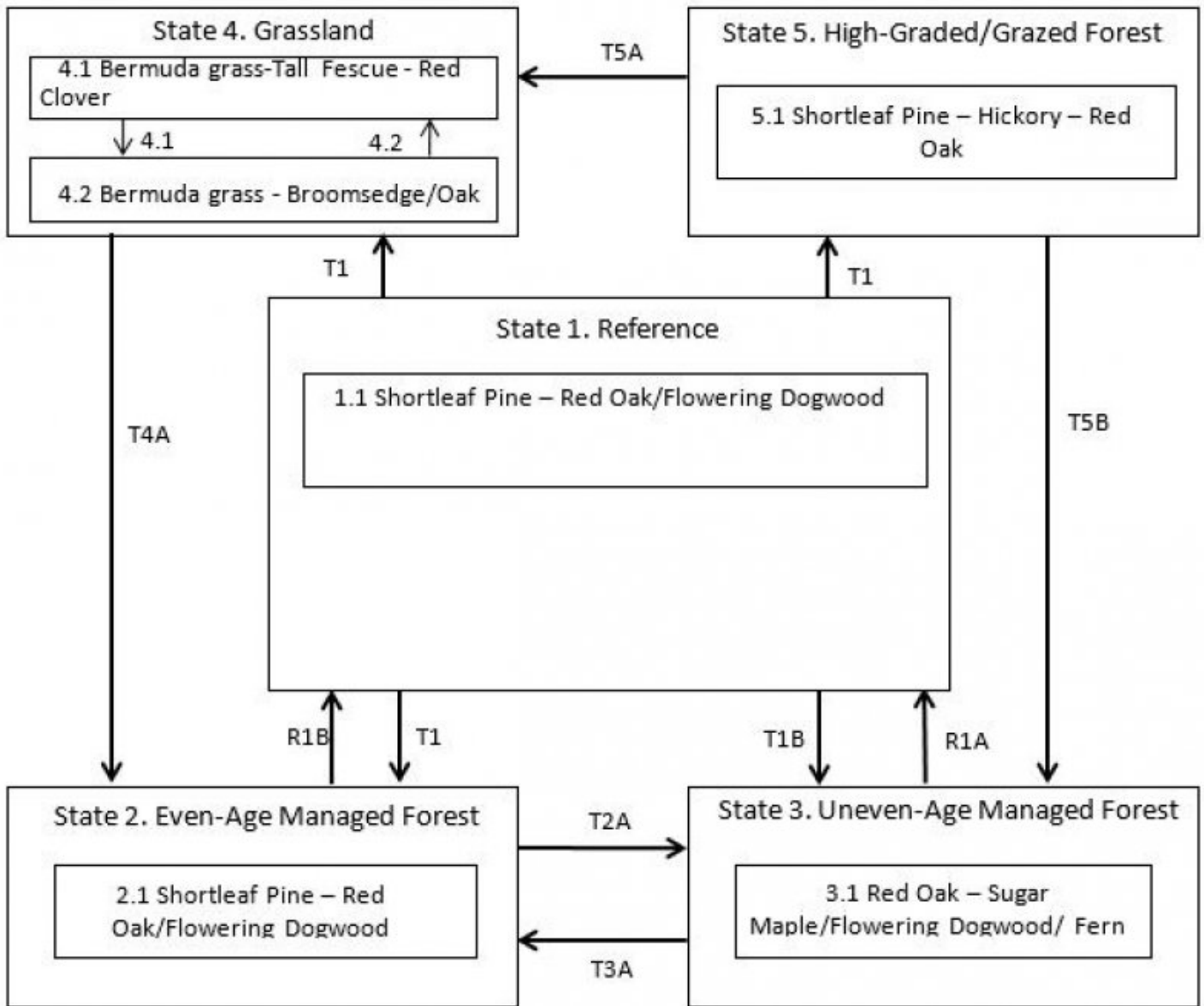


Figure 6. F119XY031AR, Rubbly High Ridge

Code	Activity/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
Code	Activity/Event/Process
R1A	Extended rotations; prescribed fire
R1B	Uneven-age mgt, extended rotations; prescribed fire

Figure 7. F119XY031AR, Rubbly High Ridge

State 1 Reference

The reference state was dominated by Shortleaf Pine and post oak. Periodic disturbances from fire, wind or ice maintained the dominance of oaks by opening up the canopy and allowing more light for oak reproduction. Fire suppression has resulted in increased canopy density, which has affected the abundance and diversity of ground flora.

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

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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:**
