

Ecological site F19XY032AR Igneous Backslope

Accessed: 05/19/2024

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 an Oak-Hickory forest on slopes greater than 20 percent in the udic moisture and thermic temperature regimes. It has loamy soils formed from an igneous dike.

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 15 to 40 percent back slopes on an igneous dike.

Table 2. Representative physiographic features

Landforms	(1) Dike
Flooding frequency	None
Ponding frequency	None
Elevation	183–366 m
Slope	15–40%
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 is: Magnet. They are Moderately deep, Well drained, and Moderately slow to Moderately rapid permeable soils, with strongly acidic to slightly acidic soil reaction, that formed in Residuum from Igneous rock.

Table 4. Representative soil features

Parent material	(1) Residuum–granite
Surface texture	(1) Stony loam

Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow to moderately rapid
Soil depth	76–79 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	11.94–12.19 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)	5.5–6.1
Subsurface fragment volume <=3" (Depth not specified)	4–10%
Subsurface fragment volume >3" (Depth not specified)	1–15%

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.

Igneous Backslopes, have a well-developed canopy (60 to 80 feet tall and 70 to 90 percent closure) dominated by white oak, Red oak, and shortleaf pine.

State and transition model

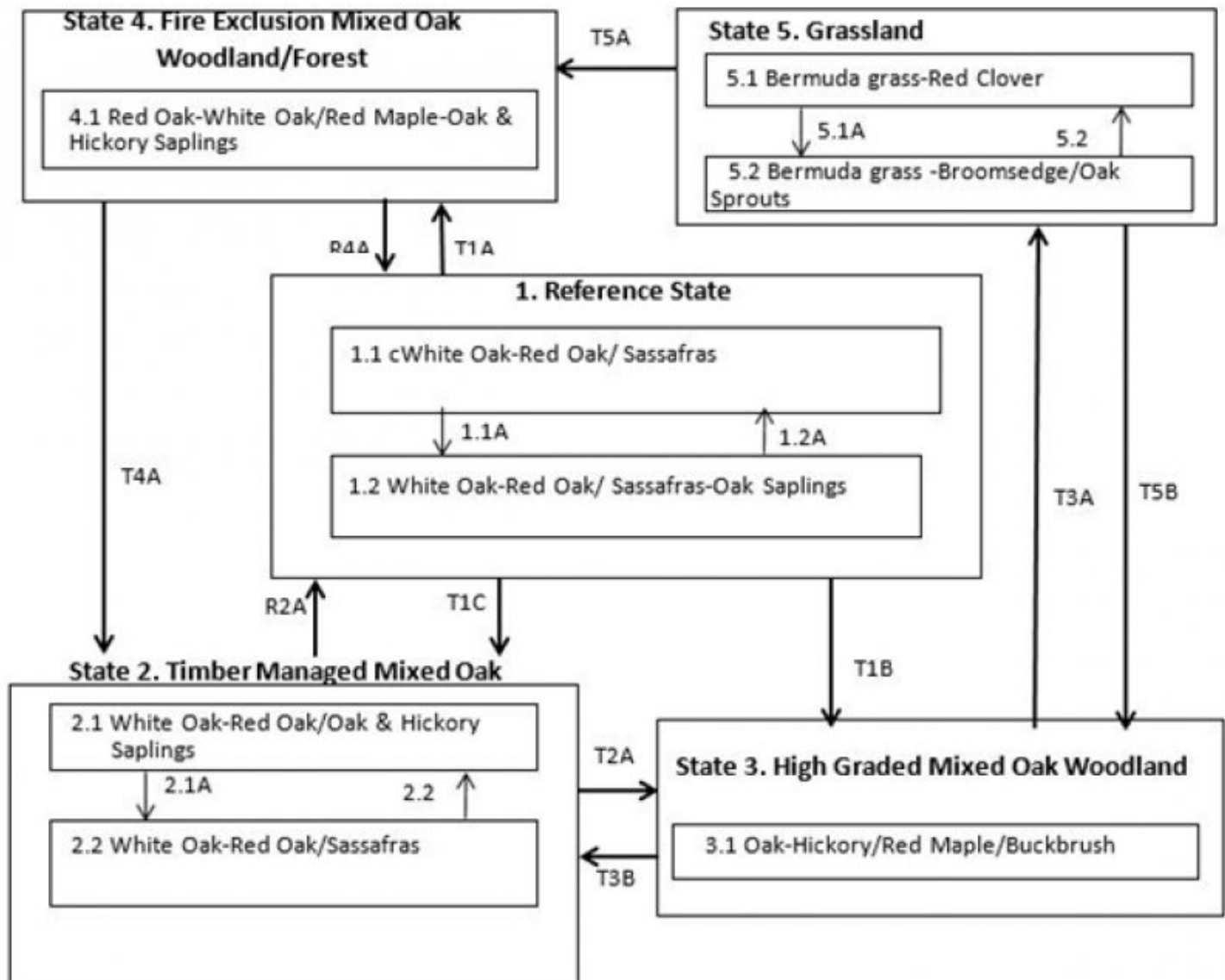


Figure 6. F119XY032AR, Igneous Backslope

Code	Event/Process
T1A	Fire suppression; some logging
T1B, T2A, T5B	Logging – high grading; periodic grazing
T3A	Clearing; grassland seeding; grassland management
T1C, T4A, 2.2A	Managed for est harvesting; fire suppression
1.1A	Fire-free interval 10+ years
1.2A	Fire interval 5-10 years
2.1A	20-30 years of limited logging disturbance
5.1A	Over grazing; no fertilization
5.2A	Brush management; grassland seeding; grassland management
R2A, R4A	Selective thinning and prescribed fire interval 5-10 years
T3B	Logging cessation; selective thinning
T5A	Cessation of grazing & haying; long term succession

State 1 Reference

The historical reference state for this ecological site was old growth oak Forest. This state was dominated by white oak and Red oak, and shortleaf pine. Maximum tree age was likely 150 to 300 years. Periodic disturbances from fire, wind and ice maintained the reference 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. Two community phases are recognized in the reference state, with shifts between phases based on disturbance frequency. Reference sites are rare today. Most of these sites have been subject to repeated, high-graded timber harvest (State 3). Fire suppression has resulted in increased canopy density, which has affected the abundance and diversity of ground flora (State 4). Relatively few igneous woodlands have been managed effectively for timber harvest (State 2), resulting in either even-age or uneven-age woodlands.

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:**
