

Ecological site F119XY002AR

Loamy Hard Sandstone Upland

Accessed: 09/17/2026

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.

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

NatureServe area: Ozark-Ouachita Shortleaf Pine-Oak Forest and Woodland. Summary: This system represents forests and woodlands of the Ouachita and Ozark mountains region of Arkansas, adjacent Oklahoma, and southern Missouri in which *Pinus echinata* is an important or dominant component. Although examples of this system occur throughout this region, there is local variation in the extent to which they were present. For example, in the Ozark Highlands, this system was historically prominent only in the southeastern part where sandstone-derived soils were common, and in the southern part on soils derived from chert, being excluded from or diminished in other areas by non-conductive soils. In contrast, pine was virtually ubiquitous in the historical forests of the Ouachitas. In nearly all cases (at least in the Ouachitas), *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 some examples of this system, the aggregate importance of hardwoods may be greater than pine, especially on subxeric and mesic sites

Ecological site concept

This site is a Shortleaf Pine and Oak woodland on slopes less than 20 percent with udic moisture and thermic temperature regimes. It has loamy soils over sandstone bedrock greater than 20 inches deep with greater than 3 inches of Available water.

Table 1. Dominant plant species

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

Physiographic features

Geology: Sandstone

Landform/Landscape Position: Upland hills with slopes less than 20 percent

Edaphic: Loamy moderately deep acidic soils

Vegetation Dynamics: Shortleaf Pine and Oak woodland

Table 2. Representative physiographic features

Landforms	(1) Hill
Flooding frequency	None
Ponding frequency	None to rare
Elevation	180 – 820 m
Slope	0 – 20 %
Aspect	SE

Climatic features

Table 3 Representative climatic features

Frost-free period (average)	200 days
Freeze-free period (average)	220 days
Precipitation total (average)	1,420 mm

- (1) NIMROD DAM [USC00035200], Perryville, AR
- (2) TUSKAHOMA [USC00349023], Tuskahoma, OK
- (3) MC CURTAIN 1 SE [USC00345693], McCurtain, OK
- (4) WILBURTON 9 ENE [USC00349634], Red Oak, OK
- (5) BIG FORK 1 SSE [USC00030664], Mena, AR
- (6) MT IDA 3 SE [USC00034988], Mount Ida, AR
- (7) ALUM FORK [USC00030130], Paron, AR
- (8) HOT SPRINGS ASOS [USW00003962], Donaldson, AR

Influencing water features

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

Soil features

These soils have acidic. The soils were formed under woodland vegetation, and have thin, light-colored surface horizons. Parent material is residuum weathered from sandstone. These soils are not affected by seasonal wetness. Soil series associated with this site include Pirum.

Table 4. Representative soil features

Parent material	(1) Residuum – sandstone
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Surface texture	(1) Cobbly fine sandy loam (2) Gravelly loam (3) Stony
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow to moderately rapid
Soil depth	60 – 110 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	9.65 – 14.48 cm
Calcium carbonate equivalent (0-101.6cm)	Not specified
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	10
Subsurface fragment volume <=3" (Depth not specified)	0 – 20 %

Subsurface fragment volume >3" (Depth not specified)	0 – 20 %
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Ecological dynamics

State and transition model

Figure 5. F119XY002AR, Loamy Hard Sandstone Upland

Figure 6. F119XY002AR, Loamy Hard Sandstone Upland

Additional community tables

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
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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):
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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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