

Ecological site R119XY056OK Loamy Prairie

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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.

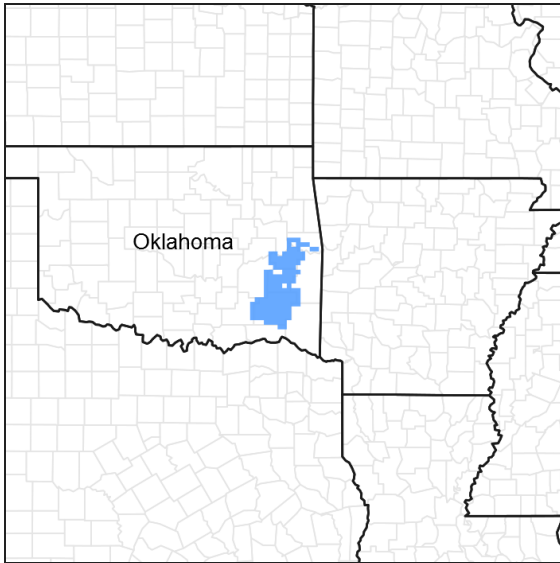


Figure 1. Mapped extent

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

Ozark-Ouachita Dry Oak Woodland

Summary: This system occurs in the Ozark and Ouachita Highlands and far western portions of the Interior Low Plateau regions along gentle to steep slopes and over bluff escarpments with southerly to westerly aspects. Parent material can range from calcareous to acidic with very shallow, well- to excessively well-drained soils, sometimes with a fragipan that causes "xero-hydric" moisture conditions. Historically, this system primarily exhibited a woodland structure with related composition and processes, but now most stands have a more closed canopy. Oak species such as *Quercus stellata*, *Quercus marilandica*, and *Quercus coccinea* dominate this system with an understory of grassland species such as *Schizachyrium scoparium* and shrub species such as *Vaccinium arboreum*. Drought stress is the major dynamic influencing and maintaining this system. Some examples are

flatwoods with fragipans; in these examples *Quercus stellata* is the major dominant. In addition, *Quercus alba*, *Quercus falcata*, and/or *Carya texana* may be present in some stands.

Ecological site concept

This site is on slopes less than 15 percent in the uplands. with udic moisture and thermic temperature regimes. It has loamy soils.

Table 1. Dominant plant species

| | |
|------------|---------------|
| Tree | Not specified |
| Shrub | Not specified |
| Herbaceous | Not specified |

Physiographic features

This site is on 3 to 20 percent back slopes of hills.

Table 2. Representative physiographic features

| | |
|--------------------|----------|
| Landforms | (1) Hill |
| Flooding frequency | None |
| Ponding frequency | None |
| Elevation | 91–610 m |
| Slope | 3–20% |
| Ponding depth | 0 cm |
| Water table depth | 30 cm |
| Aspect | SE |

Climatic features

Table 3. Representative climatic features

| | |
|-------------------------------|----------|
| Frost-free period (average) | 195 days |
| Freeze-free period (average) | 218 days |
| Precipitation total (average) | 1,295 mm |

Climate stations used

- (1) MCGEE CREEK DAM [USC00345713], Atoka, OK
- (2) TUSKAHOMA [USC00349023], Tuskahoma, OK

Influencing water features

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

Soil features

The soil series associated with this site is: Sobol. They are Moderately deep, Moderately well drained, and Slow to Moderate permeable soils, with strongly acidic to neutral soil reaction, that formed in Residuum from Shale.

Table 4. Representative soil features

| | |
|--|--|
| Parent material | (1) Residuum–shale |
| Surface texture | (1) Stony clay loam (2) Loam (3) Silt loam |
| Family particle size | (1) Loamy |
| Drainage class | Moderately well drained |
| Permeability class | Slow to moderate |
| Soil depth | 61–99 cm |
| Surface fragment cover <=3" | 0% |
| Surface fragment cover >3" | 0% |
| Available water capacity (0-101.6cm) | 9.91–15.49 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) | 5.5–7 |
| Subsurface fragment volume <=3" (Depth not specified) | 4–8% |
| Subsurface fragment volume >3" (Depth not specified) | 3–11% |

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.

Chert Upland Prairies are scattered on broad, flat uplands and often grade into loess, limestone, shale or sandstone prairies in the north half of the area, and loess upland flatwoods in the south half.

The reference plant community is only moderately productive and is characterized as open prairie with occasional widely scattered trees such as post oak. This site was dominated by warm-season grasses including little bluestem, big bluestem, and Indian grass. Combined, these grasses typically accounted for much of the vegetation production. Other occurring grasses were sideoats grama, prairie dropseed, and Canada wildrye. Scattered throughout were minor amounts of short-grasses consisting of Scribner's panicum and sedges. Leadplant and New Jersey tea were typical low growing shrubs that occurred over the site. Unlike most shrubs, these plants are both tolerant to fire. Islands of other shrubs such as dogwood, redroot, coral berry and prairie rose were also found on the site.

This vast expanse of grass frequently stretched for miles and was only interrupted by shallow drainages whose wetness lessened the influence of frequent, intense fires. With little to interrupt fire, this ecological site burned every 1 to 3 years. Fire removed dead plant litter and provided room for a lush growth of prairie vegetation. Fire also kept woody species at bay. The partially wooded draws would have burned less intensely and less frequently. During fire free intervals woody species would have increased in abundance, spread out onto the prairie and expanded the savanna component.

Grazing by native large herbivores, such as bison, elk, and deer, also impacted these sites. Their activities would have altered composition and structure of the vegetation. Fuel loads would have been altered by heavy grazing and fire behavior affected, providing for a diversity of structure and composition.

Today, reference Chert Upland Prairie is rare and scattered in the region, as the former prairies have been converted to pasture and cropland. The known remnants are mostly degraded by fire suppression and unmanaged grazing by domestic livestock. However, when managed properly, existing remnants will respond to restoration efforts. A few isolated remnants still exist and reflect original reference state composition and structure.

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

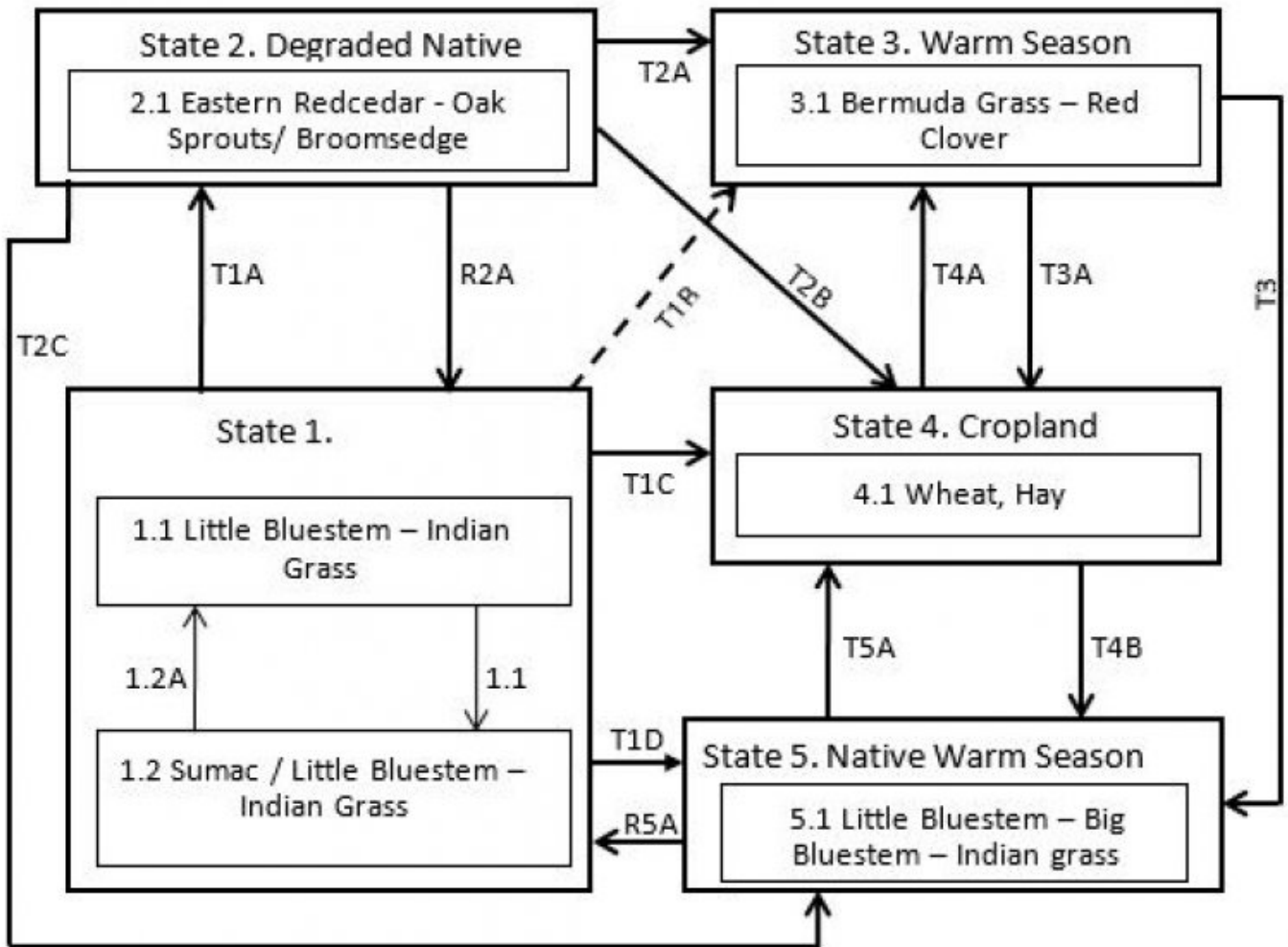


Figure 6. R119XY056OK, Loamy Prairie

| Code | Event/Activity/Process |
|------------------|--|
| T1A | Fire suppression > 10 years; woody invasion; domestic grazing |
| T1B | Tillage; vegetative seeding; grassland management |
| T1C, T3A, T5A | Tillage; conservation cropping system |
| T1D | Prescribed grazing; prescribed fire |
| T2A | Woody removal; tillage; vegetative seeding; grassland management |
| T2B | Woody removal; tillage; conservation cropping system |
| T2C | Woody removal; grassland management; prescribed fire |
| T4A | Vegetative seeding ; grassland management |
| T3B, T4B | Vegetative seeding; prescribed fire; grassland management |
| 1.1A | Fire-free interval 5-10 years |
| 1.2A | Fire interval 1-3 years |
| R2A | Woody removal; prescribed fire 1-3 years |
| R5A | Vegetative seeding; prescribed fire 1-3 years |

Figure 7. R119XY056OK, Loamy Prairie

State 1 Reference

This State is native prairie dominated by little bluestem, big bluestem, and forbs, along with numerous shrubs and occasional, widely scattered, stunted trees such as post oak and blackjack oak. Two phases can occur that will transition back and forth depending on fire frequencies. Longer fire free intervals will allow woody species to increase such as post oak and eastern red cedar. When fire intervals shorten these woody species will decrease. This undisturbed State is uncommon but some excellent examples still exist. Most sites, however, have been converted to cool season grasslands, cropland, or degraded by domestic grazing.

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

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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:**
