

Ecological site F129XY007WV

Sandstone Ridge

Last updated: 5/13/2025
Accessed: 09/11/2026

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): 129X–Sand Mountain

Major Land Resource Area (MLRA) 129 is in Alabama (96 percent), Georgia (3 percent), and Tennessee (1 percent). It makes up about 8,030 square miles (20,805 square kilometers). The towns of Jasper, Cullman, and Fort Payne, Alabama, are in this MLRA. Interstate 65 crosses this area from north to south, and Interstates 24 and 59 join in the area just west of Chattanooga, Tennessee, which is just outside the northeast tip of the MLRA. Areas of the Redstone Arsenal Military Reservation are in the northern part of the MLRA. The William B. Bankhead National Forest and the Sipsey National Forest Wilderness are in the western part. Most of this area is in the Cumberland Plateau Section of the Appalachian Plateaus Province of the Appalachian Highlands. This MLRA is deeply dissected and consists mainly of a series of rather narrow valleys, steep escarpments, and broad plateaus that are underlain by consolidated bedrock. Elevation ranges from 245 to 2,200 feet (75 to 670 meters). Valley floors are commonly about 100 to 400 feet (30 to 120 meters) below the adjacent plateau summits, but local relief may be as much as 1,200 feet (365 meters). The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Mobile-Tombigbee (0316), 50 percent; Middle Tennessee-Elk (0603), 25 percent; Alabama (0315), 21 percent; and Middle Tennessee-Hiwassee (0602), 4 percent. The Sipsey Fork, Locust Fork, and Mulberry Fork Rivers, headwaters of the Black Warrior River, are in this area. The Tennessee River forms part of the northern boundary of the area.

Classification relationships

231C-Southern Cumberland Plateau Section The terrain is gently sloping tablelands of level-bedded sandstone formations and hilly to mountainous terrain consisting of shale and sandstone slopes forming deep canyons with steep connecting escarpment. Forests are largely oak-pine, loblolly-shortleaf pine, or oak-hickory cover types (McNab et al. 2005).

Ecological site concept

This Provisional Ecological Site (PES) occurs in uplands with underlying acidic sandstone, sometimes containing thin strata of shale or siltstone. This site is used for farming and important crops include soybeans and corn, although other crops are also grown. Pasture and hay are common on this site. The areas on this site that occur as forests are primarily second growth. Important species include white oak, post oak, black oak, chestnut oak, tulip poplar, blackgum and hickory. Some pines occur on areas that have remained continuously in forest, but loblolly and shortleaf pines are the principal cover in abandoned cropland and pasture. Pine plantations do occur. In the past they have been planted to loblolly pine but the shift now is to encourage planting shortleaf pine. Virginia pine also occurs across this site. It is unclear what the reference condition is for this site. This site is of large extent.

Associated sites

F129XY002WV	Sandstone Steep Sandstone Steep can occur in proximity to ridges.
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Similar sites

F125XY001WV	Sandstone Residuum This PES is very similar to the Sandstone Residuum found in MLRA 125 on the Cumberland Plateau, especially in the southern extent of MLRA 125.
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Table 1. Dominant plant species

Tree	(1) <i>Quercus alba</i> (2) <i>Pinus echinata</i>
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs primarily in uplands underlain by sandstone, a mixture of sandstone and shale or a mixture of siltstone and shale. Soils are typically well drained and acidic.

Table 2. Representative physiographic features

Landforms	(1) Hills > Upland slope (2) Ridge
Flooding frequency	None
Ponding frequency	None
Elevation	80 – 670 m
Slope	0 – 20 %
Water table depth	50 – 150 cm

Climatic features

Table 3 Representative climatic features

Frost-free period (characteristic range)	180-190 days
Freeze-free period (characteristic range)	210-220 days
Precipitation total (characteristic range)	1,400-1,520 mm

Frost-free period (actual range)	180-190 days
Freeze-free period (actual range)	200-230 days
Precipitation total (actual range)	1,370-1,520 mm
Frost-free period (average)	190 days
Freeze-free period (average)	210 days
Precipitation total (average)	1,450 mm

- (1) LOOKOUT MTN-POINT PARK [USC00405431], Lookout Mountain, TN
- (2) SAND MT SUBSTN [USC00017207], Crossville, AL
- (3) BANKHEAD LOCK & DAM [USC00010505], Northport, AL
- (4) JASPER [USC00014226], Jasper, AL
- (5) WEST POINT [USC00018812], Cullman, AL

Influencing water features

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

Soil features

The soil series included in this site include: Wynnville, Townley, Tilsit, Sipsey, Ramsey, Nectar, Nauvoo, Muskingum, Linker, Lily, Leadvale, Hector, Hartsells, Hanceville, Gorgas, Crossville, Apison. They have very acidic to strongly acidic soil reaction, and formed in Alluvium, Residuum from Sandstone, Sandstone and shale, Sandstone and siltstone, Shale, Shale and siltstone.

Figure 7. Road cut on a sandstone ridge site

Table 4. Representative soil features

Parent material	(1) Residuum – sandstone (2) Alluvium – sandstone and shale
Surface texture	(1) Clay loam (2) Fine sandy loam (3) Loam
Drainage class	Moderately well drained to somewhat excessively drained
Permeability class	Rapid

Soil depth	40 – 180 cm
Available water capacity (Depth not specified)	4.06 – 20.07 cm
Soil reaction (1:1 water) (Depth not specified)	4.6 – 5.5

Ecological dynamics

This PES is utilized for agriculture. Cropland is important. Soybeans and corn are among the most frequently grown crops. Pasture is also a land-use on this site. Most forests are second-growth and are predominated by the upland oak species. However, where cropland or pastureland has been abandoned, shortleaf and loblolly pine often colonize.

It is impossible to determine reference conditions for this provisional ecological site and very little data exist on vegetation communities. However, it is likely that the most fitting NatureServe description is "Allegheny-Cumberland Dry Oak Forest and Woodland - Hardwood" (CES202.359). This system encompasses dry hardwood forests on predominately acidic substrates. These forests are typically dominated by *Quercus alba*, *Quercus falcata*, *Quercus prinus*, *Quercus coccinea*, with lesser amounts of *Acer rubrum*, *Carya glabra*, and *Carya alba*. (NatureServe, 2017).*

Further field investigation is needed to determine the true nature of ecological communities and dynamics associated with this site. Likely, pine species are more important on this site than the NatureServe description indicates because of the farther south location of this site.

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State and transition model

Additional community tables

Other references

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Contributors

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Approval

Matthew Duvall, 5/13/2025

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	09/11/2026
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:
