

Ecological site F125XY003WV

Interbedded Sedimentary Uplands

Last updated: 9/27/2024
Accessed: 09/23/2026

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): 125X–Cumberland Plateau and Mountains

This area is in Kentucky (43 percent), Tennessee (25 percent), West Virginia (20 percent), Virginia (9 percent), and Alabama (3 percent). It makes up about 20,330 square miles (52,685 square kilometers). The towns of Logan, Madison, Welch, and Williamson, West Virginia, and Norton and Wise, Virginia, are in the northeastern part of this area. The towns of Middlesboro, Williamsburg, Corbin, London, Hazard, and Pikeville, Kentucky, and La Follette and Crossville, Tennessee, are in the area. Chattanooga, Tennessee, and Huntsville, Alabama, are just outside the southeast and southwest corners, respectively. Interstates 24, 64/77, 75, and 40/75 cross this area. The Cumberland Gap National Historic Park is in the part of this area along the Virginia and Kentucky border. The Daniel Boone and Jefferson National Forests occur in this area. Numerous State forests and parks are throughout the area (USDA-NRCS, 2006).

Classification relationships

This MLRA falls into the following Forest Service Sections: Northern Cumberland Mountains, Northern Cumberland Plateau. It falls into the following EPA Level III Ecoregions: Central Appalachians, Southwestern Appalachians, Central Appalachians (USDA-NRCS, 2006).

Ecological site concept

These are mixed upland oak sites where pines, hickories and eastern hemlock are also important. Dogwood, blackgum and red maple are commonly noted in the tree regeneration. *Amphicarpaea bracteata*, asters, panicums and violets are most commonly noted understory species. There may be potential habitat in this PES for the golden-winged warbler, listed as a high conservation concern and prioritized by NRCS, among other agencies and organizations.

Associated sites

F125XY001WV	Sandstone Residuum
F125XY002WV	Interbedded Sedimentary Colluvium
F125XY004WV	Floodplain Alluvium
F125XY005WV	Low Stream Terrace Alluvium

Similar sites

F125XY001WV	Sandstone Residuum
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Table 1. Dominant plant species

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

Physiographic features

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Mountain (3) Plateau
Elevation	170 – 1,050 m
Slope	0 – 80 %
Water table depth	50 – 110 cm

Climatic features

The average annual precipitation is mostly 37 to 45 inches (940 to 1,145 millimeters) in the northern third of this area and 45 to 60 inches (1,145 to 1,525 millimeters) in the southern two-thirds. It is almost 60 inches (1,525 millimeters) at the higher elevations in the northern third of the area and is as much as 75 inches (1,905 millimeters) in the mountains in the southern two-thirds. Almost half of the annual precipitation falls during the growing season. Rainfall typically occurs during high-intensity, convective thunderstorms in summer. Snow may occur during winter in the northern part of the area and at the higher elevations. The average annual temperature is 50 to 60 degrees F (10 to 15 degrees C). The freeze-free period averages 200 days and ranges from 170 to 225 days. The shorter freeze-free periods are at the higher elevations and in the more northerly parts of the area (USDA-NRCS, 2006).

Table 3 Representative climatic features

Frost-free period (average)	160 days
Freeze-free period (average)	190 days
Precipitation total (average)	1,300 mm

- (1) SODDY DAISY-MOWBRAY [USC00408445], Soddy Daisy, TN
- (2) GRUNDY [USC00443640], Grundy, VA
- (3) BARBOURVILLE [USC00150381], Corbin, KY
- (4) LONDON LOCKS [USC00465365], Cedar Grove, WV

Influencing water features

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

Soil features

These are deep and very deep, well drained, moderately permeable soils. They formed in a silty mantle 1 to 3 feet thick and the underlying residuum of weathered shale and sandstone. These soils are on broad undulating and rolling plateaus of the Cumberland Mountains. Soil series included in this PES are as follows: Alticrest, Berks, Blairton, Bledsoe, Bouldin, Calvin, Caneyville, Clarkrange, Clifftop, Cruze, Cynthiana, Dekalb, Dormont, Faywood, Fedscreek, Gilpin, Guyandotte, Hendon, Highsplint, Kimper, Latham, Lehew, Lily, Lonewood, Marrowbone, Matewan, Monteagle, Muskingum, Nallen, Petros, Pineville, Ramsey, Rarden, Rayne, Renox, Rough, Sequoia, Sharondale, Shelocta, Standingstone, Tilsit, Upshur, Weikert, Wellston, Wernock, Westbend, and Wharton.

Table 4. Representative soil features

Parent material	(1) Colluvium – acid shale (2) Residuum – sandstone and shale
Surface texture	(1) Channery clay (2) Cobbly clay loam (3) Extremely channery fine sandy loam
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained to excessively drained
Permeability class	Rapid
Soil depth	30 – 220 cm
Surface fragment cover <=3"	0 – 10 %
Surface fragment cover >3"	0 – 10 %
Available water capacity (0-101.6cm)	2.03 – 19.3 cm
Soil reaction (1:1 water) (0-101.6cm)	4.5 – 5.9

Subsurface fragment volume <=3" (Depth not specified)	0 – 50 %
Subsurface fragment volume >3" (Depth not specified)	0 – 80 %

Ecological dynamics

This PES is can include the NatureServe Association "Allegheny-Cumberland Dry Oak Forest and Woodland" classification. Pasture and Hay may be more important on this site than on others. Row crops can be important but mostly consist of small individual acreages and so are not being covered in the State and Transition Model. Some areas have been converted to pine plantations and that is an important land use. The most common species planted is loblolly pine, although this PES occurs north of it's native range. In the northern extent of this PES (largely in Kentucky) white pine plantations have been historically common. Interest in shortleaf pine restoration has become a conservation concern recently and this site would be conducive to that land-use. Evergreen pine plantations or managed pine can include dense successional regrowth. In places, the southern pine beetle may have extensive effects on the pine forests of this site. Clear-cuts are a part of the dynamics of this site, especially in pine plantations. Fire can be an important natural disturbance and will influence vegetation composition.

DeSelm classified the overstory as scarlett oak-white oak, mixed oak-white oak, white oak-mixed oak and white oak-pine. He noted that the ground cover was tree regeneration, smilax, vaccinium and ericads were present.

This PES can be loosely correlated with Smalley's (1982) landtype classification 1: Broad, Undulating Sandstone Uplands, which covers Linker and Lonewood soil series. Vegetation: white oak, scarlet oak, SRO, CO, Hic, BO, blackgum, red maple, SLP, VP, and LP. Shrub and small trees include dogwood, sassafras, sourwood, serviceberry, persimmon, sumac, hawthorns, viburnums, vacciniums, azaleas, American holly, and smilax (understory). Landtype 2 (Broad Sandstone Ridges - north) and Landtype 3 (Broad SSR - south) might also have some overlap with this PES. However, the species composition does not change.

State and transition model

Figure 5. State and Transition Model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Other references

<http://www.tnbirds.org/MigrantOnline/V074/V074p061-082.pdf>

<http://www.tnwatchablewildlife.org/details.cfm?displayhabitat=grassland&sort=aounumber&typename=GRASSLAND%20AND%20SHRUB&uid=09041619331163947&commonname=Golden-winged%20Warbler>

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1303489.pdf

Hal DeSelm papers: <http://treeimprovement.utk.edu/DeSelmData/DataDSC.htm>

Smalley, Glendon W. 1982. United States Department of Agriculture, General Technical Report SO-38.

USNVC [United States National Vegetation Classification]. 2016. United States National Vegetation Classification Database, V2.0. Federal Geographic Data Committee, Vegetation Subcommittee, Washington DC. [usnvc.org] (accessed [18] [November] [2016])

Contributors

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Approval

Greg Schmidt, 9/27/2024

Acknowledgments

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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	09/23/2026
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:
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17. Perennial plant reproductive capability:
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