

Ecological site F125XY002WV Interbedded Sedimentary Colluvium

Last updated: 9/27/2024
Accessed: 11/09/2024

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): 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).

Ecological site concept

Soils included in this PES occur primarily in uplands (upper slopes of mountains, plateaus, side slopes, etc.) and formed in residuum or colluvium of mixed geology including acid sandstone, shale, siltstone, and quartzite. Outcrops of bedrock are common.

This PES is chiefly in forest, dominated by a mix of tulip poplar, upland oaks, Virginia and shortleaf pine. Mountain

laurel is common in the shrub layer. Eastern hemlock may be an important tree, since it is now threatened by the hemlock woolly adelgid. Red maple, redbud and sassafras commonly occur as regeneration. *Dichanthelium boscii* and the violets are 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.

<https://www.sciencebase.gov/catalog/item/55e36f1fe4b05561fa208207> accessed 1/3/2017

Associated sites

F125XY001WV	Sandstone Residuum
F125XY003WV	Interbedded Sedimentary Uplands
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>Liriodendron tulipifera</i> (2) <i>Quercus</i>
Shrub	(1) <i>Kalmia latifolia</i> (2) <i>Rhododendron maximum</i>
Herbaceous	(1) <i>Dichanthelium boscii</i>

Physiographic features

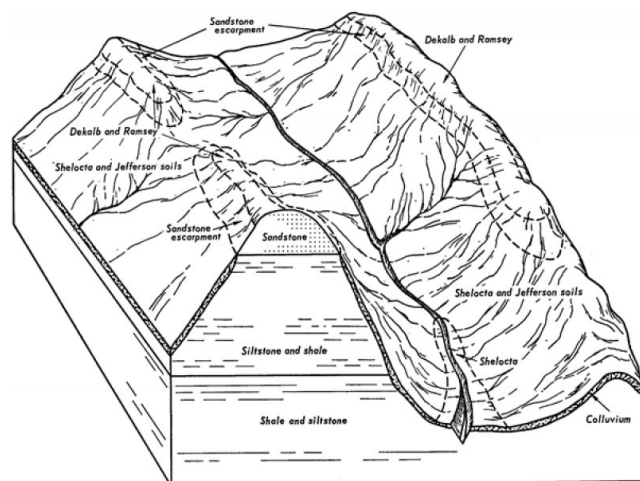


Figure 2. Shelocta-Jefferson-Dekalb association

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Mountain (3) Plateau
Flooding frequency	None
Elevation	551–3,592 ft
Slope	5–80%
Water table depth	9–60 in

Aspect	N, S
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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)	162 days
Freeze-free period (average)	189 days
Precipitation total (average)	51 in

Climate stations used

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

Influencing water features

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

Soil features

The soil series associated with this site are: Zenith, Varilla, Vandalia, Stokly, Shelocta, Sharondale, Sequoia, Rigley, Renox, Ramsey, Potomac, Pineville, Petros, Orrville, Oriskany, Muskingum, Muse, Matewan, Marrowbone, Lily, Layland, Latham, Laidig, Kimper, Kaymine, Jefferson, Highsplint, Helechawa, Hayter, Hartsells, Handshoe, Guyandotte, Guernsey, Grimsley, Grigsby, Gilpin, Fedscreek, Faywood, Donahue, Cutshin, Cloverlick, Cedarcreek, Caneyville, Buchanan, Bouldin, Bledsoe, Berks, Beetree, Beech, Alticrest, Allen. They are shallow to very deep, Somewhat poorly drained to Excessively drained, and Slow to Rapid permeable soils, with very acidic to slightly acidic soil reaction.

Table 4. Representative soil features

Parent material	(1) Colluvium–acid shale (2) Creep deposits–sandstone (3) Residuum–siltstone
Surface texture	(1) Channery clay (2) Cobbly clay loam (3) Extremely stony fine sandy loam
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained to excessively drained
Permeability class	Slow to rapid
Soil depth	18–86 in
Surface fragment cover <=3"	0–70%

Surface fragment cover >3"	0–70%
Available water capacity (0-40in)	0.3–8.1 in
Soil reaction (1:1 water) (0-40in)	4.5–6.4
Subsurface fragment volume <=3" (Depth not specified)	0–46%
Subsurface fragment volume >3" (Depth not specified)	0–65%

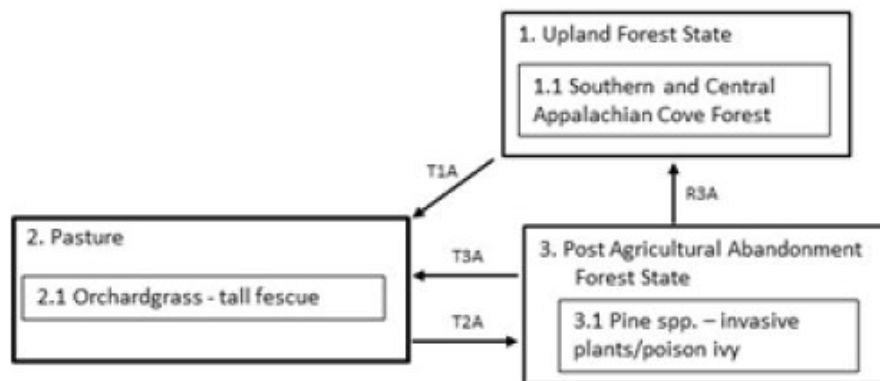
Ecological dynamics

Information contained in this section was adapted from several sources. 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.

Most areas are in forest but less steep areas are used mainly for pasture and small field crops. The forest vegetation is chiefly yellow-poplar, upland oaks, Virginia and shortleaf pine and hickory. The dominance of one species over another depends on local soil properties that can vary across the extent of this site. On shallow, sandy acidic soils pine will be more important. Historical disturbances including logging, fire, and the southern pine beetle are important drivers in these areas. Pine species may require management, such as prescribed burning, to maintain dominance. In areas where soils are deeper and more productive, hardwoods will become more important. Regardless, forestry is the most important land-use. Site indices for timber species are higher on north-facing aspects, which are more productive. This site also has considerable wildlife value and watershed conservation value.

State and transition model

Mesic Interbedded Sedimentary Colluvium F125XY002WV



T1A Forest clearing, herbicide application where needed and establishment of pasture plants
 T2A Abandonment
 T3A Land clearing, seeding, fertilizing, herbicide where needed
 R3A Invasive plant control if needed, natural succession, tree planting if desired

Figure 7. State and Transition Model

State 1 Upland Forest State

Depending on local conditions, forest composition can vary but in general will consist of closed-canopy hardwoods. These forest sites are typically more productive than some other PESs in this MLRA.

Community 1.1 Southern and Central Appalachian Cove Forest

If the NatureServe classification for Southern and Central Appalachian Cove Forest applies to most of this PES, it can be described as follows: "This system consists of mesophytic hardwood or hemlock-hardwood forests of sheltered topographic positions in the Southern Blue Ridge and central Appalachian Mountains. Examples are generally found on concave slopes that promote moist conditions. The system includes a mosaic of acidic and "rich" coves that may be distinguished by individual plant communities based on perceived differences in soil fertility and species richness (rich examples have higher diversity and density in the herbaceous layer). Both acidic and rich coves may occur in the same site, with the acidic coves potentially creeping out of the draw-up to at least midslope on well-protected north-facing slopes. Characteristic species in the canopy include *Aesculus flava*, *Acer saccharum*, *Fraxinus americana*, *Tilia americana*, *Carya cordiformis*, *Liriodendron tulipifera*, *Halesia tetraptera*, *Tsuga canadensis*, *Fagus grandifolia*, *Magnolia acuminata*, and *Magnolia fraseri*."

State 2 Pasture

Managed pasture for a variety of livestock is a typical land-use on this site. Species composition and productivity are largely dependent on local conditions and management strategies.

Community 2.1

Orchardgrass - tall fescue

Under ideal circumstances these grass species will dominate. Without proper management such as rotational grazing, fertilizing and weed control, less desirable grass species and weeds will invade.

State 3

Post Agricultural Abandonment Forest State

This state results when land has been put in crops or pasture and abandoned. Pine and weedy species usually colonize. Depending on the rate and intensity of invasion, it may naturally return to an upland forest or it might need management.

Community 3.1

Pine species/invasive plants/poison ivy

Depending on the severity of past land use and the availability of seed sources locally, this site will most likely require some management to return to the reference state, including invasive plant control. If desirable to re-establish pasture, herbicide use and re-seeding will be required.

Transition A

State 1 to 2

Forest clearing, herbicide application for woody or invasive species as needed, seeding, fertilizing

Transition A

State 2 to 3

Abandonment

Restoration pathway 3

State 3 to 1

Natural succession, management (invasive plant control, tree planting in some cases)

Transition 3

State 3 to 2

Weed control, seeding, fertilization

Additional community tables

Other references

Golden-winged warbler references (Accessed March 2017):

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

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

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

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National Park Service. Geology and History of the Cumberland Plateau [web application]. Available <https://www.nps.gov/biso/planyourvisit/upload/webgeo.pdf> (Accessed: April 11, 2017).

NatureServe. 2017. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://explorer.natureserve.org>. (Accessed: April 11, 2017).

Smalley, Glendon W. 1982. Classification and evaluation of forest sites on the Mid-Cumberland Plateau. USDA-USFS., Gen. Tech. Rep. SO-38. Southern Forestry Experiment Station., New Orleans, LA. 58 p.

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296.

Welton, M. 2003. Status and distribution of the Golden-winged Warbler in Tennessee. Migrant 74:61–82.

Contributors

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Approval

Greg Schmidt, 9/27/2024

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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	11/09/2024
Approved by	Greg Schmidt
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:**
