

# Ecological site F127XY013WV Divergent Uplands

Accessed: 04/24/2024

## 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): 127X–Eastern Allegheny Plateau and Mountains

This ecosite is found in mountains, plateau in MLRA 127: Eastern Allegheny Plateau and Mountains. This site occupies the Allegheny Mountain Section of the Appalachian Highlands of the Appalachian Plateau Province. The deeply dissected plateau in this area terminates in a high escarpment, the Allegheny Front, in the eastern part of the area. Steep slopes are dominant, but level to gently rolling plateau remnants are conspicuous in the northern part of the area. The area is dominantly forest, containing large blocks of state forest, game lands, and national forest. Less than one-tenth of the MLRA consists of urban areas.

## Classification relationships

This site crosswalks to Landfire biophysical setting (BpS) Northeastern Interior Dry-Mesic Oak Forest

NatureServe's description (2007) for the equivalent ecological system CES202.592 -- Northeastern Interior Dry-Mesic Oak Forest notes this system is found from central New England west through OH and PA and south to VA.

Component Associations

Association Unique ID Association Name

CEGL002059 *Quercus alba* - *Quercus rubra* - *Quercus prinus* - *Acer saccharum* / *Lindera benzoin* Forest

CEGL002067 *Quercus alba* - *Quercus rubra* - *Carya (alba, ovata)* / *Cornus florida* Acidic Forest

CEGL002068 *Quercus alba* - *Quercus rubra* - *Carya ovata* Glaciated Forest

CEGL004793 *Quercus muehlenbergii* - *Quercus* (alba, rubra) - *Carya cordiformis* / *Viburnum prunifolium* Forest  
 CEGLO06057 *Quercus prinus* - *Quercus rubra* / *Hamamelis virginiana* Forest  
 CEGLO06216 *Quercus alba* - *Carya glabra* - *Fraxinus americana* / *Cercis canadensis* / *Muhlenbergia sobolifera* - *Elymus hystrix* Forest  
 CEGLO06241 *Quercus bicolor* / *Vaccinium corymbosum* / *Carex stipata* Forest  
 CEGLO06293 *Pinus strobus* - *Quercus* (rubra, velutina) - *Fagus grandifolia* Forest  
 CEGLO06301 *Quercus rubra* - *Carya* (glabra, ovata) / *Ostrya virginiana* / *Carex lucorum* Forest  
 CEGLO06304 *Liriodendron tulipifera* - *Pinus strobus* - *Tsuga canadensis* - *Quercus* (rubra, alba) / *Polystichum acrostichoides* Forest  
 CEGLO06336 *Quercus* (alba, rubra, velutina) - *Carya* spp. / *Viburnum acerifolium* Forest  
 CEGLO06454 *Quercus* (rubra, velutina, alba) - *Betula lenta* - (*Pinus strobus*) Forest  
 CEGLO06921 *Fagus grandifolia* - *Betula lenta* - *Quercus* (alba, rubra) / *Carpinus caroliniana* Forest  
 CEGLO08475 *Quercus alba* - *Quercus rubra* - *Carya alba* / *Cornus florida* / *Vaccinium stamineum* / *Desmodium nudiflorum* Piedmont Forest  
 CEGLO08514 *Quercus rubra* - *Quercus prinus* - *Carya ovalis* / (*Cercis canadensis*) / *Solidago* (caesia, curtisii) Forest  
 CEGLO08516 *Quercus prinus* - *Quercus rubra* - *Carya ovalis* / *Carex pensylvanica* - (*Calamagrostis porteri*) Forest  
 CEGLO08517 *Quercus rubra* - *Acer saccharum* / *Ostrya virginiana* / *Cardamine concatenata* Forest  
 CEGLO08518 *Quercus rubra* - *Carya* (ovata, ovalis) - *Fraxinus americana* / *Actaea racemosa* - *Hydrophyllum virginianum* Forest  
 CEGLO08528 *Tilia americana* - *Fraxinus americana* / *Acer pensylvanicum* - *Ostrya virginiana* / *Parthenocissus quinquefolia* - *Impatiens pallida* Woodland

See also NatureServe's description (2007):

Allegheny-Cumberland Dry Oak Forest and Woodland CES202.359

Component Associations

Association Unique ID Association Name

CEGL004761 *Pinus echinata* - *Quercus prinus* - *Quercus* (coccinea, velutina) Forest  
 CEGLO04786 *Quercus prinus* - *Carya* (alba, glabra, ovata) / *Juniperus virginiana* var. *virginiana* Forest  
 CEGLO05023 *Quercus prinus* - *Quercus* (alba, coccinea, velutina) / *Viburnum acerifolium* - (*Kalmia latifolia*) Forest  
 CEGLO06557 *Pinus rigida* - *Quercus coccinea* / *Vaccinium angustifolium* Woodland  
 CEGLO07119 *Pinus virginiana* - *Pinus* (rigida, echinata) - (*Quercus prinus*) / *Vaccinium pallidum* Forest  
 CEGLO07231 *Quercus alba* - *Quercus velutina* - *Carya* (ovata, alba, glabra) - *Pinus* sp. Forest  
 CEGLO07240 *Quercus alba* - *Quercus rubra* - *Carya ovata* / *Cercis canadensis* - *Juniperus virginiana* var. *virginiana* Forest  
 CEGLO07244 *Quercus falcata* - *Quercus alba* - *Carya alba* / *Oxydendrum arboreum* / *Vaccinium stamineum* Forest  
 CEGLO07247 *Quercus falcata* - *Quercus* (coccinea, stellata) / *Vaccinium* (pallidum, stamineum) Forest  
 CEGLO07261 *Quercus prinus* - *Carya* spp. - *Quercus velutina* / *Vaccinium arboreum* / *Iris verna* var. *smalliana* Forest  
 CEGLO07269 *Quercus prinus* - *Quercus rubra* - *Carya* (ovata, glabra) - *Pinus virginiana* Forest  
 CEGLO07517 *Pinus strobus* - *Quercus alba* - (*Carya alba*) / *Gaylussacia ursina* Forest  
 CEGLO07519 *Pinus strobus* - *Quercus* (coccinea, prinus) / (*Gaylussacia ursina*, *Vaccinium stamineum*) Forest  
 CEGLO07700 *Quercus prinus* - *Quercus* spp. / *Vaccinium arboreum* - (*Kalmia latifolia*, *Styrax grandifolius*) Forest  
 CEGLO07795 *Quercus alba* - *Carya alba* - (*Quercus velutina*) / *Desmodium nudiflorum* - (*Carex picta*) Forest  
 CEGLO08406 *Quercus stellata* - *Pinus virginiana* / (*Schizachyrium scoparium*, *Piptochaetium avenaceum*) Woodland  
 CEGLO08430 *Quercus alba* - (*Quercus prinus*) / (*Hydrangea quercifolia*) - *Viburnum acerifolium* / *Carex picta* - *Piptochaetium avenaceum* Forest  
 CEGLO08431 *Quercus prinus* - (*Quercus coccinea*) / *Carya pallida* / *Vaccinium arboreum* - *Vaccinium pallidum* Forest  
 CEGLO08443 *Quercus alba* - *Quercus stellata* / *Ostrya virginiana* - *Acer barbatum* / *Chasmanthium sessiliflorum* Forest  
 CEGLO08521 *Quercus alba* - *Quercus* (coccinea, velutina, prinus) / *Gaylussacia baccata* Forest  
 CEGLO08567 *Quercus alba* - *Quercus falcata* / *Vaccinium* (arboreum, hirsutum, pallidum) Forest

## Ecological site concept

From Landfire <http://www.landfire.gov/index.php>:

This ecological section comprises part of the Appalachian Plateaus geomorphic province (USDA Forest Service 1995). It is a maturely dissected plateau characterized by high hills, sharp ridges, and narrow valleys. Bedrock is overlain by Quaternary residuum on the ridges and hilltops, colluvium on the slopes, and either or both alluvium and Pleistocene lacustrine materials in the valleys. Udalfs, Udufts, and Ochrepts dominate, in combination with mesic soil temperature regime, an udic soil moisture regime, and mixed or illitic mineralogy. Soils formed in parent materials are divided into five groups: residual material, which developed in place by the weathering of underlying bedrock; colluvial material which weathered from bedrock strata transported by water and gravity to the lower slopes; alluvium, lacustrine sediments and outwash deposited by water; and loess deposited by wind. Precipitation averages 35 to 45in (900 to 1,150mm); it occurs mainly during summer, winter, and spring. Rain on snow is common during winter and early spring. Summers are dry with low humidity. Temperature averages 52 degrees F (11 degrees C). The growing season is 120 to 180 days. This ecological section is characterized by a relatively high density of streams, with gradients ranging from high, steep headwaters streams to low gradient rivers that flow into the OH River.

These sites generally occur on uplands with MAAT > 45 degree F and median elevation <= 1042m. These lands are typically convex.

NatureServe (2007) provides the following description pertaining to this system type. These oak-dominated forests are one of the matrix forest systems in the northeastern and north-central US. Occurring in dry-mesic settings, they are typically closed-canopy forests, though there may be areas of patchy-canopy woodlands. They cover large expanses at low to mid elevations, where the topography is flat to gently rolling, occasionally steep. Soils are acidic and relatively infertile but not strongly xeric.

## Similar sites

F127XY003WV	<b>Acidic Shale Upland Oak/Heath</b> F127XY003WV Acidic Shale Upland Oak/Heath is an associated site
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Table 1. Dominant plant species

Tree	(1) <i>Quercus montana</i> (2) <i>Quercus alba</i>
Shrub	(1) <i>Vaccinium</i> (2) <i>Viburnum</i>
Herbaceous	Not specified

## Physiographic features

## Climatic features

## Influencing water features

## Soil features

## 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.

From Landfire <http://www.landfire.gov/index.php>:

This ecological section comprises part of the Appalachian Plateaus geomorphic province. It is a maturely dissected plateau characterized by high hills, sharp ridges, and narrow valleys. Bedrock is overlain by Quaternary residuum on the ridges and hilltops, colluvium on the slopes, and either or both alluvium and Pleistocene lacustrine materials in the valleys. Udalfs, Udults, and Ochrepts dominate, in combination with mesic soil temperature regime, an udic soil moisture regime, and mixed or illitic mineralogy. Soils formed in parent materials are divided into five groups: residual material, which developed in place by the weathering of underlying bedrock; colluvial material which weathered from bedrock strata transported by water and gravity to the lower slopes; alluvium, lacustrine sediments and outwash deposited by water; and loess deposited by wind. Precipitation averages 35 to 45in (900 to 1,150mm); it occurs mainly during summer, winter, and spring. Rain on snow is common during winter and early spring. Summers are dry with low humidity. Temperature averages 52 degrees F (11 degrees C). The growing season is 120 to 180 days. This ecological section is characterized by a relatively high density of streams, with gradients ranging from high, steep headwaters streams to low gradient rivers that flow into the OH River.

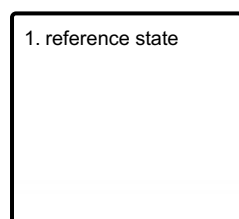
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#### Vegetation Description

The vegetation consisted of forests dominated by oaks of dry-mesic conditions, especially white oak (*Quercus alba*) and red oak (*Quercus rubra*), and, on drier sites, chestnut oak (*Quercus prinus*), black oak (*Quercus velutina*), and scarlet oak (*Quercus coccinea*). Scarlet oak is absent at the northern edge of the system range. Along with oaks are varying amounts of hickory (*Carya* spp.), red maple (*Acer rubrum*), and other species such as white pine (*Pinus strobus*) and white ash (*Fraxinus americana*). American chestnut (*Castanea dentata*) was a prominent tree in these forests before chestnut blight eradicated it as a canopy constituent (NatureServe 2007). Common shrubs include mountain laurel (*Kalmia* spp.), greenbriar (*Smilax* spp.), blueberries (*Vaccinium* spp.), and huckleberries (*Gaylussacia* spp.). In the Ridge and Valley region, bear oak is an important shrub component. Herbs, forbs, and ferns are usually sparse to moderate in density. Areas experiencing frequent fire had a greater abundance of grasses and sedges.

### State and transition model

#### Ecosystem states



#### State 1 reference state

BpS Dominant and Indicator Species Symbol Scientific Name Common Name QVAL *Quercus alba* White oak  
QUVE *Quercus velutina* Black oak QUPR2 *Quercus prinus* Chestnut oak QURU *Quercus rubra* Northern red oak  
QUCO2 *Quercus coccinea* Scarlet oak ACRU *Acer rubrum* Red maple PIST *Pinus strobus* Eastern white pine  
CARYA *Carya* Hickory  
Disturbance Description This system is naturally dominated by stable, uneven-aged forests, with canopy dynamics dominated by gap-phase regeneration. Most oaks are long-lived with typical age of mortality ranging from 200 to 400yrs. Scarlet and black oaks are shorter-lived with typical ages being approximately 50 to 100yrs, while white oaks can live as long as 600yrs. Extreme wind or ice storms occasionally create larger canopy openings. The dry-mesic oak forest is predominantly Fire Regime I, characterized by low-severity surface fires. Historically, indigenous fires accounted for over 95% of the ignitions over these landscapes. Vegetation types varied based on fire frequency and intensity. Grassland prairies burned often (annually, biennially) and were probably associated with flat-to-slightly rolling terrain that effectively carried fire. These grasslands, deliberately maintained

by Native Americans for hunting purposes, were probably scattered throughout the forest matrix. Oak-hickory tree-sprout and shrub thickets occurred where fire frequency was a bit less, probably 3-9yrs. Also, sprout conditions would arise immediately after catastrophic burns that would top-kill tree-dominated communities. Savannas and woodlands developed within a moderate burning regime, with fire return intervals averaging every 5 to 15yrs. Closed-canopy oak-hickory forests would develop where fire return intervals stretched beyond 15yrs. Shade-tolerant, fire-sensitive maples (and associated late-successional trees) would regenerate and form understories beneath oak-hickory canopies when fire was excluded over several decades. With continued fire exclusion, maple and other late successional species would gradually replace overstory oaks and hickories through gap capture (Sutherland and Hutchinson 2003). A mosaic of vegetation types comprised oak-hickory landscapes contingent on fire history (Cutter and Guyette 1994). In a recent study on fire history of a red oak stand in West VA it was found that fire intervals ranged from 7 to 32yrs from 1846 to 2002 with a median of approximately 16yrs, and prior to the fire control era ranged from 7 to 15yrs (Schuler and McClain, 2003). Schuler and McClain stated that these observations did not deviate significantly from previous research in the oak forests of OH, MD, and Missouri. -- the above description was taken from RA model R6OAH1 -- Oak Hickory.

## Other references

Landfire <http://www.landfire.gov/index.php>

Braun, E.L. 1950. Deciduous forests of eastern North America. Hafner Publishing Company, New York, NY. 596 pp.

Cutter, B.E. and R.P. Guyette. 1994. Fire history of an oak-hickory ridge top in the Missouri Ozarks. *American Midland Naturalist* 132: 393-398.

Greller, A. M. 1988. Deciduous forest. In: M.G. Barbour and W. D. Billings, eds. *North American terrestrial vegetation*. Cambridge University Press, NY. 287-326.

NatureServe. 2007. International Ecological classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA, USA. Data current as of 08 June 2007.

Schuler, T.M. and W.R. McClain. 2003. Fire history of a ridge and valley oak forest. Newtown Square, PA. USDA Forest Service, Northeastern Forest Service.

Sutherland, E.K., T.F. Hutchinson and D.A. Yaussy. 2003. Introduction, study area description, and experimental design (Chapter 1). Newtown Square, PA. USDA Forest Service, Northeastern Research Station.

## Contributors

Jason Teets

## 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:**  

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2. **Presence of water flow patterns:**  

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3. **Number and height of erosional pedestals or terracettes:**  

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**  

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5. **Number of gullies and erosion associated with gullies:**  

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6. **Extent of wind scoured, blowouts and/or depositional areas:**  

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7. **Amount of litter movement (describe size and distance expected to travel):**  

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**  

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**  

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**  

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**  

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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:

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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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