

Ecological site F126XY001OH Dry Ridge

Last updated: 9/27/2024
Accessed: 05/14/2025

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): 126X—Central Allegheny Plateau

This ecosite is found in Alleghany plateau in MLRA 126. Steep slopes are dominant, but level to gently rolling plateau remnants exist. 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. These sites occur on summits and are well drained.

Classification relationships

USDA-NRCS (USDA 2006):

Land Resource Region (LRR): N—East and Central Farming and Forest Region

Major Land Resource Area (MLRA): 126—Central Allegheny Plateau

USDA-FS (Cleland et al. 2007)

Province: 221 - Eastern Broadleaf Province

Section: 221E - Southern Unglaciaded Allegheny Plateau

Subsection: 221Ea - Pittsburgh Low Plateau

221Eb - Teays Plateau

221Ec - Ohio Valley Lowland

221Ed - East Hocking Plateau

This site crosswalks to Landfire biophysical setting (BpS) Allegheny-Cumberland Dry Oak Forest and 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

CEGL004786 *Quercus prinus* - *Carya* (alba, glabra, ovata) / *Juniperus virginiana* var. *virginiana* Forest

CEGL005023 *Quercus prinus* - *Quercus* (alba, coccinea, velutina) / *Viburnum acerifolium* - (*Kalmia latifolia*) Forest

CEGL006557 *Pinus rigida* - *Quercus coccinea* / *Vaccinium angustifolium* Woodland

CEGL007119 *Pinus virginiana* - *Pinus* (rigida, echinata) - (*Quercus prinus*) / *Vaccinium pallidum* Forest

CEGL007231 *Quercus alba* - *Quercus velutina* - *Carya* (ovata, alba, glabra) - *Pinus* sp. Forest

CEGL007240 *Quercus alba* - *Quercus rubra* - *Carya ovata* / *Cercis canadensis* - *Juniperus virginiana* var. *virginiana* Forest

CEGL007244 *Quercus falcata* - *Quercus alba* - *Carya alba* / *Oxydendrum arboreum* / *Vaccinium stamineum* Forest

CEGL007247 *Quercus falcata* - *Quercus* (coccinea, stellata) / *Vaccinium* (pallidum, stamineum) Forest

CEGL007261 *Quercus prinus* - *Carya* spp. - *Quercus velutina* / *Vaccinium arboreum* / *Iris verna* var. *smalliana* Forest

CEGL007269 *Quercus prinus* - *Quercus rubra* - *Carya* (ovata, glabra) - *Pinus virginiana* Forest

CEGL007517 *Pinus strobus* - *Quercus alba* - (*Carya alba*) / *Gaylussacia ursina* Forest

CEGL007519 *Pinus strobus* - *Quercus* (*coccinea*, *prinus*) / (*Gaylussacia ursina*, *Vaccinium stamineum*) Forest

CEGL007700 *Quercus prinus* - *Quercus* spp. / *Vaccinium arboreum* - (*Kalmia latifolia*, *Styrax grandifolius*) Forest

CEGL007795 *Quercus alba* - *Carya alba* - (*Quercus velutina*) / *Desmodium nudiflorum* - (*Carex picta*) Forest

CEGL008406 *Quercus stellata* - *Pinus virginiana* / (*Schizachyrium scoparium*, *Piptochaetium avenaceum*) Woodland

CEGL008430 *Quercus alba* - (*Quercus prinus*) / (*Hydrangea quercifolia*) - *Viburnum acerifolium* / *Carex picta* - *Piptochaetium avenaceum* Forest

CEGL008431 *Quercus prinus* - (*Quercus coccinea*) / *Carya pallida* / *Vaccinium arboreum* - *Vaccinium pallidum* Forest

CEGL008443 *Quercus alba* - *Quercus stellata* / *Ostrya virginiana* - *Acer barbatum* / *Chasmanthium sessiliflorum* Forest

CEGL008521 *Quercus alba* - *Quercus* (*coccinea*, *velutina*, *prinus*) / *Gaylussacia baccata* Forest

CEGL008567 *Quercus alba* - *Quercus falcata* / *Vaccinium* (*arboreum*, *hirsutum*, *pallidum*) Forest

Ecological site concept

These sites generally occur on sumits with well drained soils and MAAT > 45 degree F.

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, 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 1,150mm0150mm); 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.

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.

Associated sites

F126XY003OH	Moist Ridge Moist Ridge
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Table 1. Dominant plant species

Tree	(1) <i>Quercus prinus</i> (2) <i>Quercus Alba</i>
Shrub	(1) <i>Kalmia latifolia</i>
Herbaceous	Not specified

Physiographic features

This site occurs on dry ridges and summits.

Table 2. Representative physiographic features

Landforms	(1) Plateau > Ridge
Runoff class	Very low to high
Elevation	244–457 m
Slope	0–25%
Water table depth	183 cm
Aspect	Aspect is not a significant factor

Climatic features

The regional climate of the unglaciated Central Allegheny Plateau is predominately a humid continental climate grading at the extreme southwestern corner a to humid temperate climate with hot summers and cool winters (Beck et al., 2018; Bailey, 2014). However, the local climate is highly influenced by the dissected terrain, where climatic variations may be greater at the local scale, e.g., cooler temperatures and shorter growing season at higher elevations and more northerly latitudes. High-intensity, convective thunderstorms are common in summer. Winter precipitation is mostly snow.

Climate change is occurring, and the resiliency of any ecological site will depend upon the direct and indirect effects upon component species and shifting atmospheric and soil conditions.

Table 3. Representative climatic features

Frost-free period (characteristic range)	139-168 days
Freeze-free period (characteristic range)	167-198 days
Precipitation total (characteristic range)	1,016-1,092 mm
Frost-free period (actual range)	131-171 days
Freeze-free period (actual range)	156-201 days
Precipitation total (actual range)	991-1,143 mm
Frost-free period (average)	151 days
Freeze-free period (average)	184 days
Precipitation total (average)	1,067 mm

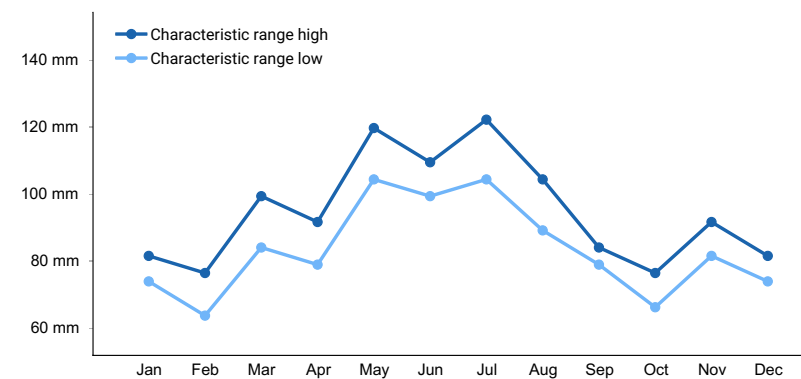


Figure 1. Monthly precipitation range

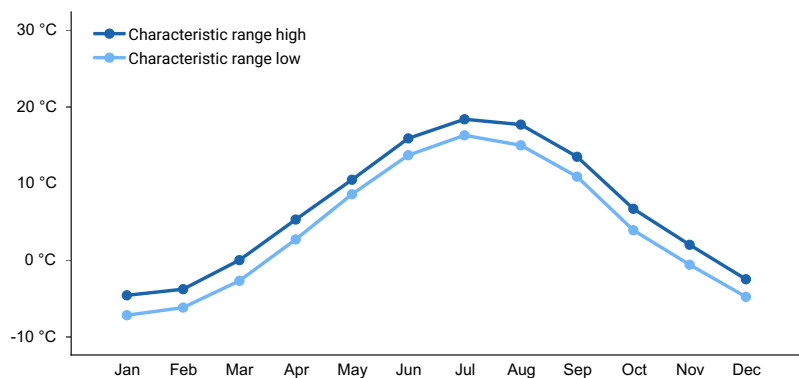


Figure 2. Monthly minimum temperature range

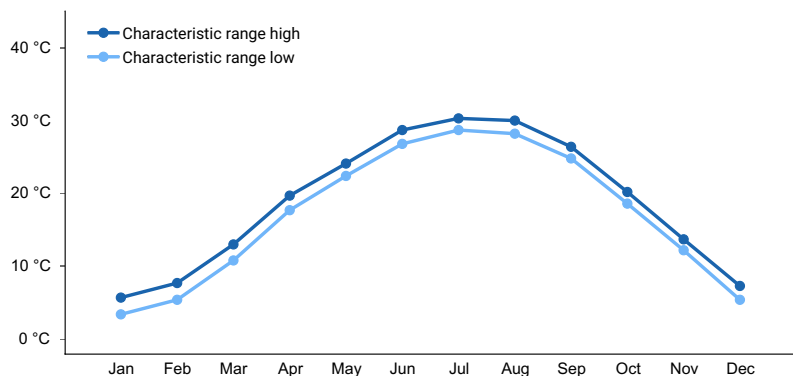


Figure 3. Monthly maximum temperature range

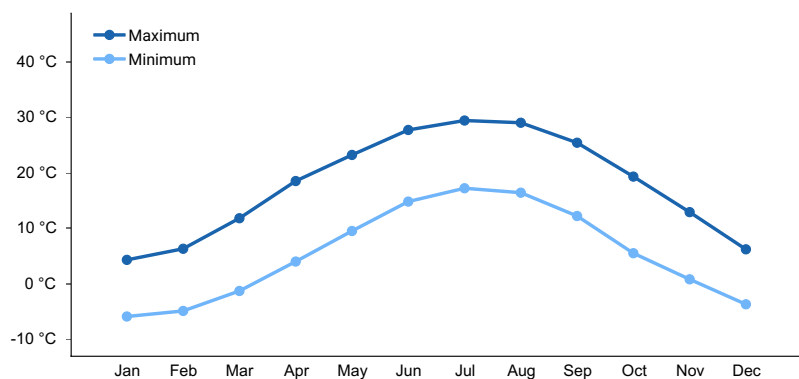


Figure 4. Monthly average minimum and maximum temperature

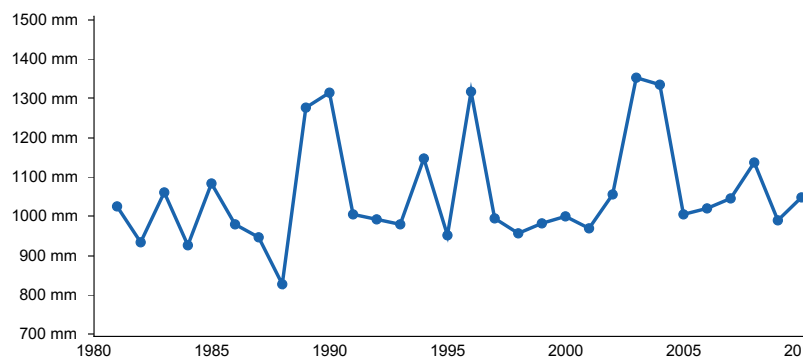


Figure 5. Annual precipitation pattern

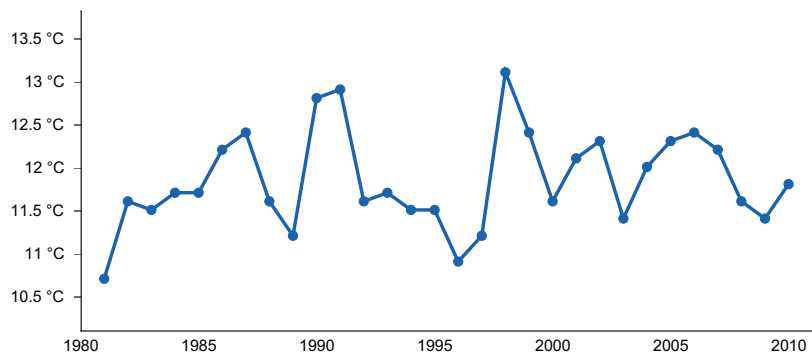


Figure 6. Annual average temperature pattern

Climate stations used

- (1) WHEELING [USC00469482], Wheeling, WV
- (2) SENECAVILLE LAKE [USC00337559], Senecaville, OH
- (3) CALDWELL 3 SE [USC00331175], Caldwell, OH
- (4) HANNIBAL L&D [USC00333500], New Martinsville, OH
- (5) WAYNESBURG 1 E [USC00369367], Waynesburg, PA
- (6) WEST UNION 2 [USC00469458], West Union, WV
- (7) PARKERSBURG [USW00013867], Parkersburg, WV
- (8) WINFIELD LOCKS [USC00469683], Red House, WV
- (9) PEA RIDGE PSD [USC00466912], Huntington, WV
- (10) HUNTINGTON SEWAGE PLT [USC00464397], Kenova, WV
- (11) LOYALHANNA LAKE [USC00365212], New Alexandria, PA
- (12) PITTSBURGH INTL AP [USW00094823], Coraopolis, PA

Influencing water features

Water features are not typically associated with this ecological site, but can be incidental.

Wetland description

N/A

Soil features

Coarse-loamy and skeletal soils that occur on summits and shoulders.

Table 4. Representative soil features

Parent material	(1) Residuum
Surface texture	(1) Sandy loam (2) Loam
Drainage class	Well drained to excessively drained
Permeability class	Slow to moderate
Depth to restrictive layer	33–183 cm
Surface fragment cover ≤3"	0%
Surface fragment cover >3"	2–9%
Available water capacity (Depth not specified)	2.54–12.7 cm
Soil reaction (1:1 water) (Depth not specified)	3.3–7.3

Subsurface fragment volume <=3" (Depth not specified)	5–40%
Subsurface fragment volume >3" (Depth not specified)	2–80%

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, 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 1,150mm0150mm); 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

State and Transition Diagram

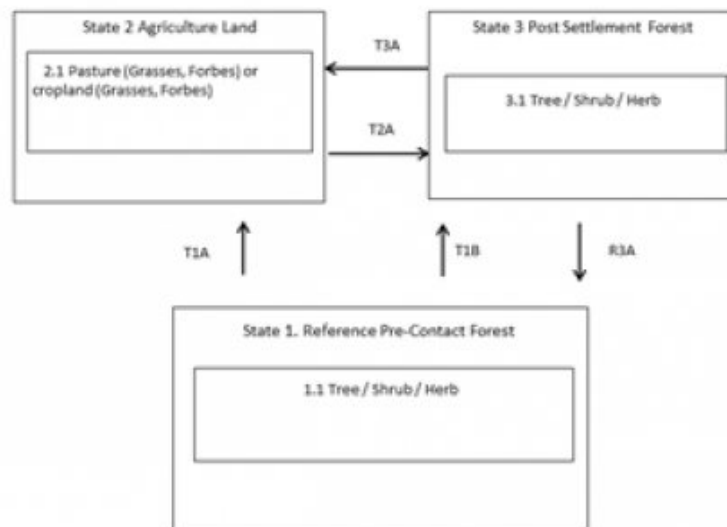


Figure 7. State and Transition Diagram

Legend

- T1A, T3A Clearcutting to convert to agricultural land.
- T1B Logging and fire suppression.
- T2A Agriculture abandonment and regrowth of forest
- R3A Eliminate undesirable species with herbicides, cutting or prescribed fire

Figure 8. Legend

State 1 Reference Pre-Contact Forest

The reference state can be represented by several communities within the Allegheny-Cumberland Dry Oak Forest and Woodland(Natureserve, 2007). Forest overstory canopies are oak dominated and generally closed canopy.

Community 1.1 Tree/Shrub/Herb

Chestnut Oak-White Oak/Mountain Laurel Forest best captures the nature of this vegetation state. The dominate overstory canopy consist of Oaks with minor canopy coverage of Hickory. The shrub layer contains mountain laurel, greenbrier and ericads. The herb layer will contain flowering forbes (asters and goldenrod), ferns (woodferns) and grasses (native fescue, povertygrass).

State 2

Agricultural Land

Land managed for agricultural production of crops and livestock.

Community 2.1

Pasture (Grasses, Forbes) or Cropland (Grasses, Forbes)

This community phase may contain a wide variety of plants depending on the level of management. In pasture circumstances that are managed tall fescue, bluegrass and white clover will dominate the vegetation canopy. Without management such as prescribed grazing, nutrient management and weed control, less desirable forage species and weeds will invade.

State 3

Post Settlement Forest

This forest vegetation community is the result of removing fire from the landscape, and poor logging techniques (high grading). Following European settlement fire as a management tool was abandoned and mesophication of the vegetation took place.

Community 3.1

Tree/Shrub/Herb

Maple (Red and Sugar)/Striped Maple Forest best captures the nature of this vegetation state. The dominate overstory canopy consist of Maples with minor canopy coverage of Tulip tree. The shrub layer contains Stripped maple, greenbrier and blackberry. The herb layer will contain flowering forbes (asters and goldenrod), ferns (woodferns) and grasses (native fescue, povertygrass).

Transition T1A

State 1 to 2

The site is logged and managed for agricultural land.

Transition T1B

State 1 to 3

The site is logged and fire is suppressed allowing mesophication to occur.

Transition T2A

State 2 to 3

The site agricultural management is abandoned and forest regrowth occurs through natural succession or tree planting.

Restoration pathway R3A

State 3 to 1

Remove undesirable species using herbicides, cutting or prescribed fire. Plant desired species if absent from the site.

Transition T3A

State 3 to 2

The site is logged and managed for agricultural land.

Additional community tables

Inventory data references

Site Development and Testing Plan

Future work is needed, as described in a future project plan, to validate the information presented in this provisional ecological site description. Future work includes field sampling, data collection and analysis by qualified vegetation ecologists and soil scientists. As warranted, annual reviews of the project plan can be conducted by the Ecological Site Technical Team. A final field review, peer review, quality control, and quality assurance reviews of the ESD are necessary to approve a final document.

Other references

Anderson, D. M. 1982. Plant Communities of Ohio: A Preliminary Classification. Division of Natural Areas and Preserves, Ohio Department of Natural Resources, Columbus, OH.
(https://www.lm.doe.gov/cercla/documents/ferald_docs/cat/112509.pdf).

Apsley, D., and B.C. McCarthy. 2004. White-tailed deer herbivory on forest regeneration following fire and thinning treatments in southern Ohio mixed oak forests. P. 461–471. In: Yaussy, D.A., D.M. Hix, R.P. Long, and P.C. Goebel (eds.) Proceedings, 14th Central Hardwood Forest Conference, Wooster, OH. 16-19 March 2004. Gen. Tech. Rep. NE-316. USDA Forest Service, Northeastern Research Station, Newtown Square, PA.

Bailey, R. 2014. Ecoregions: the ecosystem geography of the oceans and continents. 2nd ed. New York, NY: Springer-Verlag.

Beck, H.E., N.E. Zimmermann, T.R. McVicar, N. Vergopolan, A. Berg, E.F. Wood. 2018. Present and future Köppen-Geiger climate classification maps at 1-km resolution. *Scientific Data* 5(1):1-12.

Butler, P.R., L. Iverson, F.R. Thompson, L. Brandt, S. Handler, M. Janowiak, P.D. Shannon, C. Swanston, K. Karriker, J. Bartig, and S. Connolly. 2015. Central Appalachians Forest Ecosystem Vulnerability Assessment and Synthesis: a Report From The Central Appalachians Climate Change Response Framework Project. Gen. Tech. Rep. NRS-146, US Department of Agriculture, Forest Service, Northern Research Station, Newtown Square, PA.

Cleland, D.T., J.A. Freeouf, J.E. Keys, G.J. Nowacki, C.A. Carpenter, and W.H. McNab. 2007. Ecological Subregions: Sections and Subsections for the conterminous United States. [Map. presentation scale 1:3,500,000, colored; A.M. Sloan, cartographer] Gen. Tech. Report WO-76D. U.S. Department of Agriculture, Forest Service, Washington, DC. (<https://www.fs.fed.us/research/publications/misc/73326-wo-gtr-76d-cleland2007.pdf>)

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, and K. Snow. 2003. Ecological Systems of the United States: A Working Classification of US Terrestrial Systems. NatureServe, Arlington, VA.
(https://www.natureserve.org/sites/default/files/pcom_2003_ecol_systems_us.pdf).

FGDC (Federal Geographic Data Committee). 2008. National Vegetation Classification Standard, Version 2. VGDC-STD-005-2008 (Version 2). FGDC Vegetation Subcommittee, Reston, Virginia.
(https://www.fgdc.gov/standards/projects/vegetation/NVCS_V2_FINAL_2008-02.pdf).

Lafon, C.W., A.T. Naito, H.D. Grissino-Mayer, S.P. Horn, and T.A. Waldrop. 2017. Fire History of the Appalachian Region: a Review and Synthesis. Gen. Tech. Rep. SRS-219., U.S. Department of Agriculture, Forest Service, Southern Research Station, Asheville, NC.

NatureServe 2007. NatureServe Explorer: An Online Encyclopedia of Life [web application]. NatureServe, Arlington, VA. Available: <http://explorer.natureserve.org> (Accessed: April 2020).

Nowacki, G.J. and M.D. Abrams. 2008. The demise of fire and “mesophication” of forests in the eastern United

States. Bioscience 58(2):123–138.

Ohio Division of Wildlife. 2015. Ohio's State Wildlife Action Plan. Columbus, Ohio, USA.
(https://ohiodnr.gov/static/documents/wildlife/wildlife-management/OH_SWAP_2015.pdf).

Soil Survey Staff-USDA-NRCS [United States Department of Agriculture, Natural Resources Conservation Service] 2016. National Soils Information Service (NASIS Data Model Version 7.3.4) Lincoln, NE. Available description: https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/soils/survey/tools/?cid=nrcs142p2_053552 (Accessed January 2020).

USDA-NRCS [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.
(https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051845.pdf).

USNVC [United States National Vegetation Classification]. 2019. United States National Vegetation Classification Database, V2.03. Federal Geographic Data Committee, Vegetation Subcommittee, Washington DC. <http://usnvc.org> (accessed April 2020).

Zimmerman, E., T. Davis, G. Podniesinski, M. Furedi, J. McPherson, S. Seymour, B. Eichelberger, N. Dewar, J. Wagner, and J. Fike (editors). 2012. Terrestrial and Palustrine Plant Communities of Pennsylvania, 2nd Edition. Pennsylvania Natural Heritage Program, Pennsylvania Department of Conservation and Natural Resources, Harrisburg, PA.

Contributors

Jason Teets

Approval

Greg Schmidt, 9/27/2024

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	05/14/2025
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:**
