USDA Natural Resources Conservation Service

Ecological site F126XY007OH
Wet Tread

Last updated: 9/27/2024
Accessed: 05/13/2025

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

These sites generally occur on terraces with MAAT > 45 degree F and soil drainage class of poorly drained or wetter. These lands are typically linear surface morphomentry.

This ecosite is found on hills and plateau in MLRA 126. Steep slopes are dominant, but level to gently rolling plateau remnants are conspicuous in throughout 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.

This narrative was created from the Landfire Biophical Setiing (BpS) description

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 Unglaciated 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) South-Central Interior Mesophytic Forest

NatureServe's description (2007) for the equivalent ecological system CES 202.887 South-Central Interior Mesophytic Forest & CES 202.373 Southern and Central Appalachian Cove Forest

South-Central Interior Mesophytic Forest
Component Associations
Association Unique ID Association Name
CEGL002411 *Fagus grandifolia* - *Acer saccharum* - *Liriodendron tulipifera* Unglaciated Forest
CEGL004741 *Acer saccharum* - Carya ovata - *Juglans nigra* / Symphoricarpos orbiculatus / Galium circaezans Forest
CEGL004767 *Tsuga canadensis* - (*Liriodendron tulipifera*, *Fagus grandifolia*) / (Magnolia macrophylla, Ilex opaca) / Polystichum acrostichoides Forest
CEGL005043 *Tsuga canadensis* - *Fagus grandifolia* - *Acer saccharum* / (Hamamelis virginiana, Kalmia latifolia) Forest

CEGL005222 *Liriodendron tulipifera* - *Tilia americana* var. heterophylla - *Aesculus flava* - *Acer saccharum* / (Magnolia tripetala) Forest
CEGL006144 *Quercus alba* - *Fagus grandifolia* Western Allegheny Plateau Forest
CEGL006201 *Acer saccharum* - *Liriodendron tulipifera* - *Fraxinus americana* / Staphylea trifolia Forest
CEGL006237 *Acer saccharum* - *Fraxinus americana* - *Tilia americana* - *Liriodendron tulipifera* / Actaea racemosa Forest
CEGL007200 *Fagus grandifolia* Ridge and Valley Forest
CEGL007201 *Fagus grandifolia* - *Liriodendron tulipifera* / Euonymus americanus / Athyrium filix-femina ssp. asplenioides Forest
CEGL007213 *Quercus alba* - *Fagus grandifolia* / Hydrangea quercifolia - Viburnum acerifolium / Carex picta - Polystichum acrostichoides Forest
CEGL007220 *Liriodendron tulipifera* / (Cercis canadensis) / (Lindera benzoin) Ruderal Forest
CEGL007233 *Quercus alba* - *Quercus rubra* - Carya ovalis / *Acer saccharum* / Polystichum acrostichoides Forest
CEGL007698 *Quercus rubra* - *Acer saccharum* - *Tilia americana* var. heterophylla - *Aesculus flava* - (Cladrastis kentukea) Forest
CEGL007879 *Juglans nigra* / Verbesina alternifolia Ruderal Forest
CEGL007881 *Fagus grandifolia* - *Quercus alba* / Cornus florida Forest
CEGL008428 *Quercus alba* - (*Liriodendron tulipifera*, Liquidambar styraciflua) / Calycanthus floridus / Athyrium filix-femina Forest
CEGL008488 *Quercus rubra* - *Tilia americana* var. heterophylla - Carya carolinae-septentrionalis / Acer (barbatum, leucoderme) / Hydrangea quercifolia Forest

Southern and Central Appalachian Cove Forest
Component Associations
Association Unique ID Association Name
CEGL004293 Impatiens (capensis, pallida) - Monarda didyma - Rudbeckia laciniata var. humilis Herbaceous Vegetation
CEGL004296 Diphylleia cymosa - Saxifraga micranthidifolia - Laportea canadensis Herbaceous Vegetation
CEGL004982 Betula alleghaniensis - *Tilia americana* var. heterophylla / Acer spicatum / Ribes cynosbati / Dryopteris marginalis Forest
CEGL006186 *Liriodendron tulipifera* - *Quercus rubra* - *Fraxinus americana* / Asimina triloba / Actaea racemosa - Uvularia perfoliata Forest
CEGL006237 *Acer saccharum* - *Fraxinus americana* - *Tilia americana* - *Liriodendron tulipifera* / Actaea racemosa Forest
CEGL006304 *Liriodendron tulipifera* - Pinus strobus - *Tsuga canadensis* - Quercus (rubra, alba) / Polystichum acrostichoides Forest
CEGL006472 *Tilia americana* var. heterophylla - *Aesculus flava* - *Acer saccharum* / Cystopteris bulbifera - Asarum canadense Forest
CEGL007102 Pinus strobus - *Tsuga canadensis* / Rhododendron maximum - (Leucothoe fontanesiana) Forest
CEGL007136 *Tsuga canadensis* / Rhododendron maximum - (Clethra acuminata, Leucothoe fontanesiana) Forest
CEGL007220 *Liriodendron tulipifera* / (Cercis canadensis) / (Lindera benzoin) Ruderal Forest
CEGL007233 *Quercus alba* - *Quercus rubra* - Carya ovalis / *Acer saccharum* / Polystichum acrostichoides Forest
CEGL007291 *Liriodendron tulipifera* - *Tilia americana* var. heterophylla - (*Aesculus flava*) / Actaea racemosa Forest
CEGL007543 *Liriodendron tulipifera* - Betula lenta - *Tsuga canadensis* / Rhododendron maximum Forest
CEGL007693 *Tsuga canadensis* - Halesia tetraptera - (*Fagus grandifolia*, Magnolia fraseri) / Rhododendron maximum / Dryopteris intermedia Forest
CEGL007695 *Aesculus flava* - *Acer saccharum* - (*Fraxinus americana*, *Tilia americana* var. heterophylla) / Hydrophyllum canadense - Solidago flexicaulis Forest
CEGL007710 *Liriodendron tulipifera* - *Fraxinus americana* - (*Tilia americana*, *Aesculus flava*) / Actaea racemosa - Laportea canadensis Forest
CEGL007711 *Tilia americana* var. heterophylla - *Fraxinus americana* - (Ulmus rubra) / Sanguinaria canadensis - (Aquilegia canadensis, Asplenium rhizophyllum) Forest
CEGL007878 *Quercus rubra* - *Tilia americana* var. heterophylla - (Halesia tetraptera var. monticola) / Collinsonia canadensis - Prosartes lanuginosa Forest
CEGL008407 *Tsuga canadensis* - (*Fagus grandifolia*, *Tilia americana* var. heterophylla) / Magnolia tripetala Forest
CEGL008412 Acer (nigrum, saccharum) - *Tilia americana* / Asimina triloba / Jeffersonia diphylla - Caulophyllum thalictroides Forest
CEGL008510 *Liriodendron tulipifera* - *Quercus rubra* - *Magnolia acuminata* / Cornus florida Forest

CEGL008512 *Tsuga canadensis* - Quercus prinus - *Liriodendron tulipifera* / Kalmia latifolia - (Rhododendron catawbiense) Forest

Ecological site concept

These sites generally occur on terrace treads with soils that are poorly drained or wetter. The MAAT > 45 degree F.

This ecosite is found on hills and plateau in MLRA 126. Steep slopes are dominant, but level to gently rolling plateau remnants are conspicuous in throughout 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.

This narrative was created from the Landfire Biophical Setiing (BpS) description

Associated sites

F126XY008OH	**Tread** Tread

Table 1. Dominant plant species

Tree	(1) *Acer saccharum* (2) *Quercus Rubra*
Shrub	(1) *Rubus*
Herbaceous	(1) *Carex*

Physiographic features

These sites generally occur on terraces with MAAT > 45 degree F and soil drainage class of poorly drained or wetter. These lands are typically linear surface morphomentry.

Table 2. Representative physiographic features

Landforms	(1) Terrace
Runoff class	Low to very high
Elevation	32–515 m
Slope	2–8%
Water table depth	15–53 cm

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

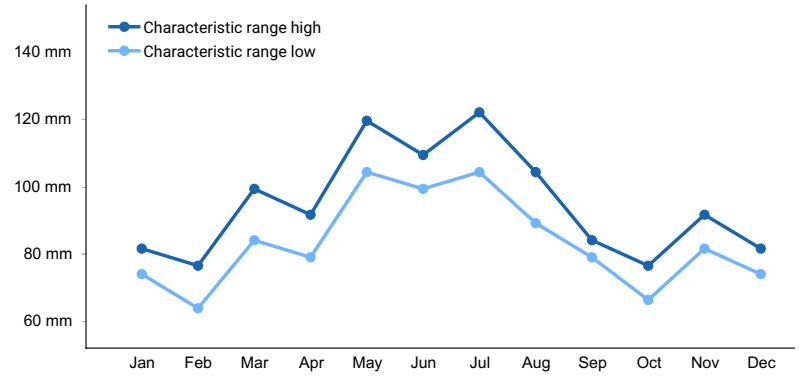

Figure 1. Monthly precipitation range

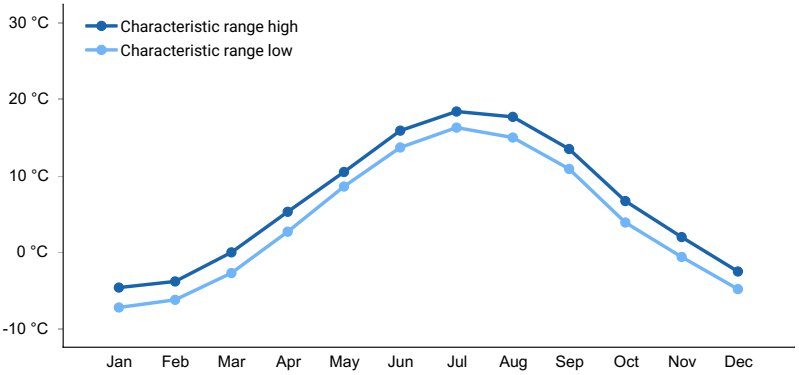

Figure 2. Monthly minimum temperature range

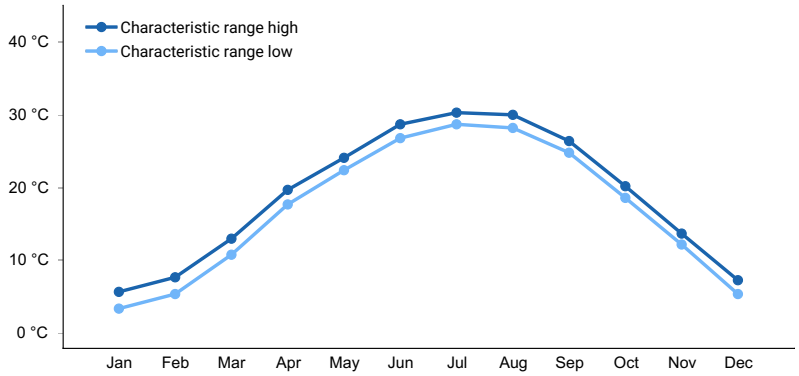

Figure 3. Monthly maximum temperature range

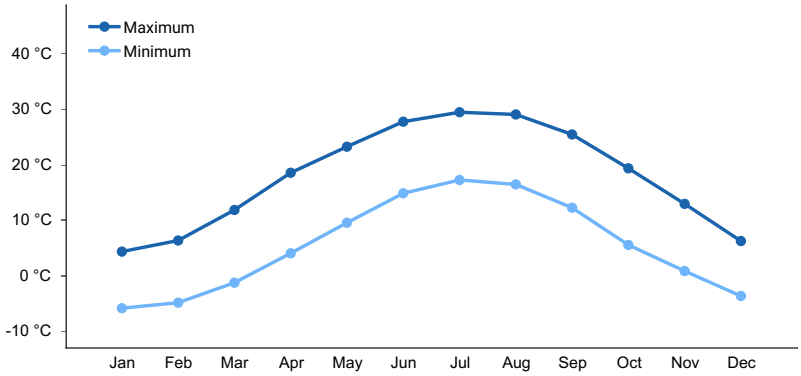

Figure 4. Monthly average minimum and maximum temperature

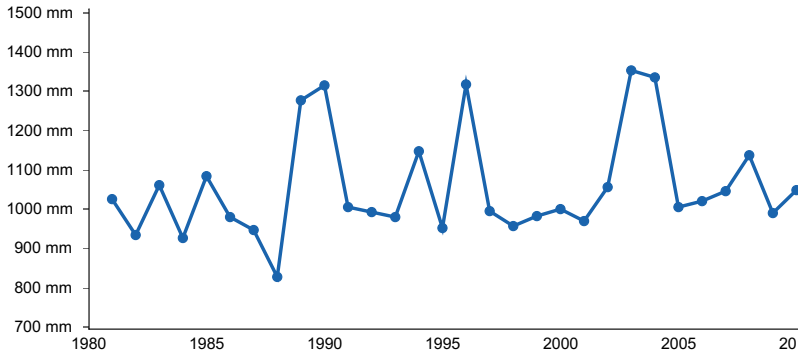

Figure 5. Annual precipitation pattern

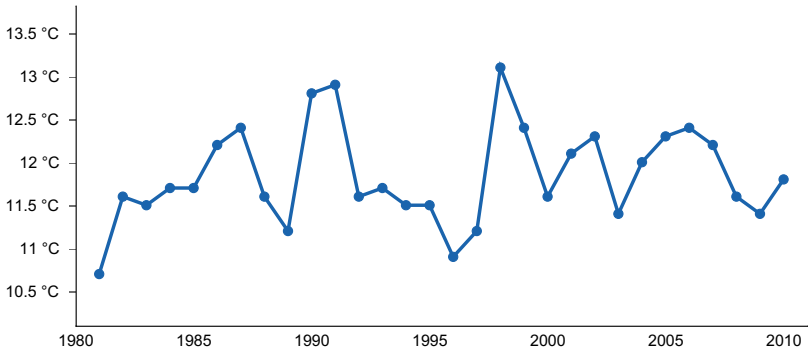

Figure 6. Annual average temperature pattern

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

Poorly Drained Tread ecological site is found on hydric soils in terraces, valley basins, and depressions which can be associated with waterbodies such as lakes and river systems.

Wetland description

In the National Wetland Classification System (Cowardin et al., 1979), the Poorly Drained Tread ecological site may be considered in the palustrine system and less commonly in the riverine, and lacustrine systems. In the palustrine system, this ecological site would have a persistent vegetated class, such as emergent, scrub-shrub, or forested, and modified by any non-tidal water regime. Less commonly, in the riverine/lower perennial subclass and the lacustrine/littoral subclass this ecological site would range from unconsolidated vegetated shores, to non-persistent emergent vegetation with a variety of non-tidal flooding regimes.

Soil features

Soils are located on terraces and are poorly drained or wetter.

Table 4. Representative soil features

Parent material	(1) Alluvium (2) Lacustrine deposits
Surface texture	(1) Silt loam (2) Loam
Drainage class	Poorly drained to somewhat poorly drained
Permeability class	Very slow to very rapid
Depth to restrictive layer	51–183 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (Depth not specified)	10.16–20.32 cm
Soil reaction (1:1 water) (Depth not specified)	4.5–7.8
Subsurface fragment volume <=3" (Depth not specified)	2–7%
Subsurface fragment volume >3" (Depth not specified)	0%

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:Vegetation Description
A diverse closed-canopy forest with dominant species including:beech (*Fagus grandifolia*), tulip-poplar (*Liriodendron tulipifera*), American basswood (*Tilia americana* var. heterophylla), sugar maple (*Acer saccharum*), yellow buckeye (*Aesculus flava*), *Magnolia acuminata*, and *Juglans nigra*, red oak (*Quercus rubra*), white oak (*Q. alba*) and formerly American chestnut (*Castanea dentata*) (Braun 1950, Muller 1982). The oak component tends to grade from white oaks in the southern areas to red and black oaks in the northern geographic range of this forest type. *Tsuga canadensis* may be a minor component of some stands. Trees may grow very large in undisturbed areas. In the northern areas, both white (*Fraxinus americana*) and green ash (*Fraxinus pennsylvanica*) can be up to 10-15% of forest type (C. Emanuel, personal communication). This forest type developed primarily on mesic, sheltered landscapes positions (e.g., lower slopes, coves, ravines) but also occurred on some dry-mesic slopes, where presumably fire was infrequent (Wade et al. 2000).

Adjacency or Identification Concerns
Mapping mixed mesophytic forests would likely focus on specific topographic positions, such as coves, valley bottoms typically v-shaped (excluding broad u-shaped floodplains), lower north and east facing slopes; sometimes west and south facing lower slopes where moisture permits; wet-mesic to mesic conditions on the landscape; rich fertile conditions/sites; shaded topographic positions (Nowacki personal communication). On side slopes, mixed mesophytic forest interbraid with oak-hickory forests, with mixed-mesophytic occurring in v-notches and coves (drainages) and oak-hickory on interfluves.

Uncharacteristic types (structure/composition/etc.) that may frequently occur today in this BpS include:non-native invasive species (plants, animals, insects, pathogens, etc.), deer herbivory (limiting species composition and structure), and historical fire suppression.

This forest type grades into Northeastern Interior Dry-Mesic Oak Forest (1303) - where this forest type grades into northern sites when soils are drier (shallower soils, sandier parent material), and as elevation is increased. In contrast the South-Central Interior Mesophytic Forest (1320) has gentler slopes with soils featuring a higher water holding capacity.
Issues or Problems
Though Küchler (1964) mapped and described this region as mixed-mesophytic, witness tree data (from early land surveys) and studies of old-growth forests suggest that mixed-oak forests were more abundant than mixed-mesophytic forests in many areas prior to European settlement (Beatley 1959, McCarthy et al. 1987, Abrams et al. 1995, Dyer 2001, McCarthy et al. 2001, Rentch et al. 2003). Delineating the potential boundaries of 'mixed-mesophytic' forest type today should recognize that this boundary is influenced by human management interactions:historic logging and high-grading, the absence of fire, deer populations (herbivory), and non-native invasive species (plants, animals, insects and disease).
Native Uncharacteristic Conditions
Tree of Heaven (*Ailanthus altissima*) is a significant invader in these sites, due to its ability to persist in fairly intact canopy as well as its high water demand (K. Brown, personal communication).

State and transition model

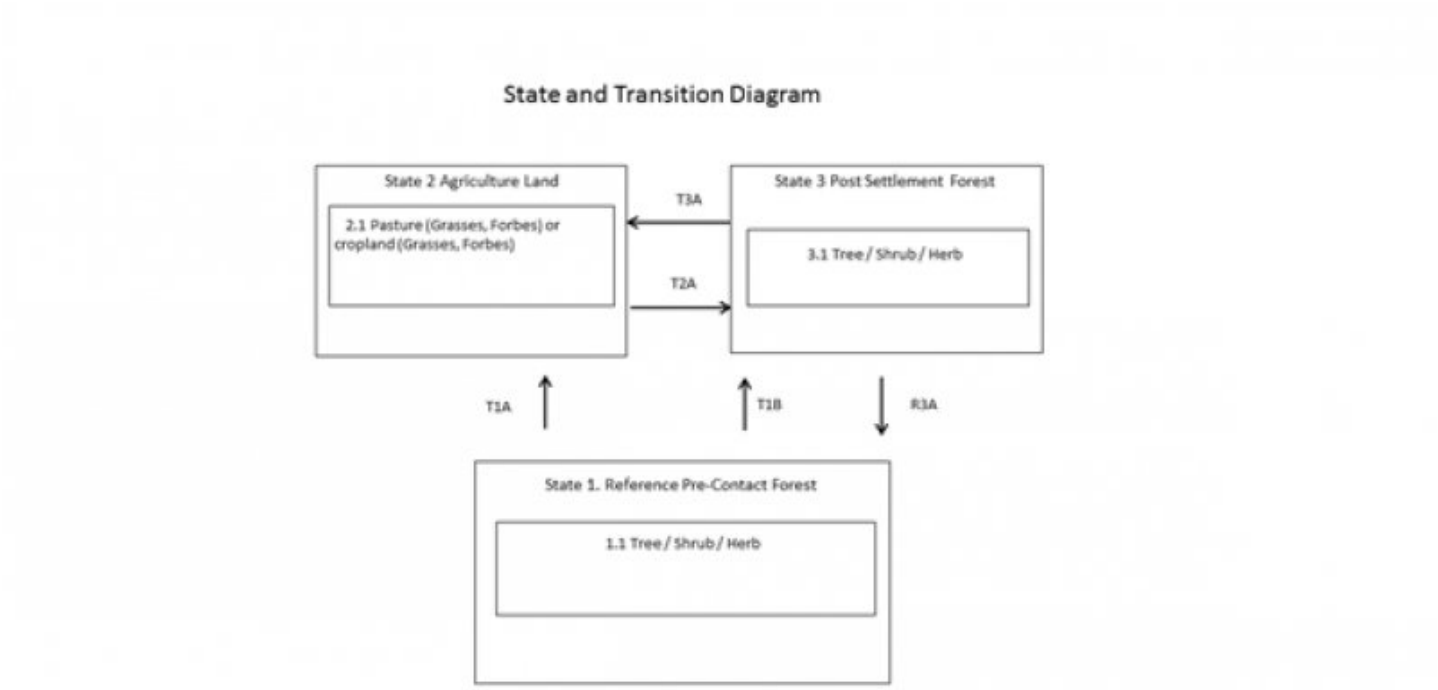

Figure 7. State and Transition

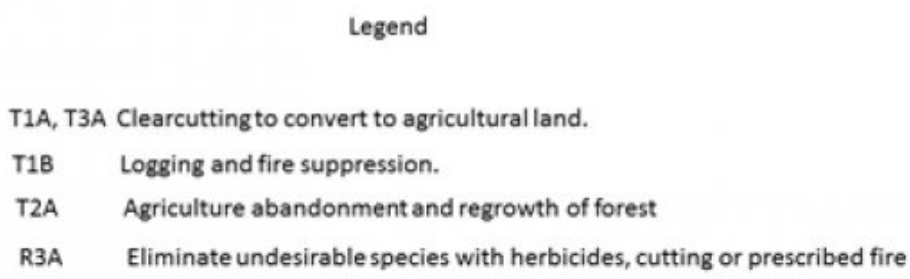

Figure 8. Legend

State 1
Reference Pre-Contact Forest

The reference state can be represented by several communities within the CES 202.887 South-Central Interior Mesophytic Forest & CES 202.373 Southern and Central Appalachian Cove Forest Natureserve, 2007). Forest overstory canopies are oak dominated and generally closed canopy.

Community 1.1
Tree/Shrub/Herb

Maple and Red Oak Forest best captures the nature of this vegetation state. The dominate overstory canopy consist of Maple and Oak with minor canopy coverage of Basswood. The shrub layer contains Maple leafed viburnum, rubus and black baneberyy. The herb layer will contain flowering forbes (asters and goldenrod), ferns (woodferns), grasses (native fescue, povertygrass)and sedges.

State 2
Post Settlemet Forest

This forest vegetation community is the result poor logging techniques (high grading).

Community 2.1
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).

State 3
Agricultural Land

Land managed for agricultural production of crops and livestock.

Community 3.1
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.

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 high graded, lees desirable species dominate succession.

Restoration pathway R3A
State 2 to 1

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

Transition T3A
State 2 to 2

The site is logged and managed for agricultural land.

Transition T2A
State 3 to 3

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

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/fernald_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	05/13/2025
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:**