

# Ecological site F126XY007OH

## Poorly Drained Tread

Accessed: 04/25/2024

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### 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 morphometry.

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 Biophysical Setting (BpS) description

### Classification relationships

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 Biophysical Setting (BpS) description

**Table 1. Dominant plant species**

Tree	(1) <i>Acer saccharum</i> (2) <i>Quercus Rubra</i>
Shrub	(1) <i>Rubus</i>
Herbaceous	(1) <i>Carex</i>

## **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:Vegetation Description](http://www.landfire.gov/index.php:Vegetation%20Description)

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

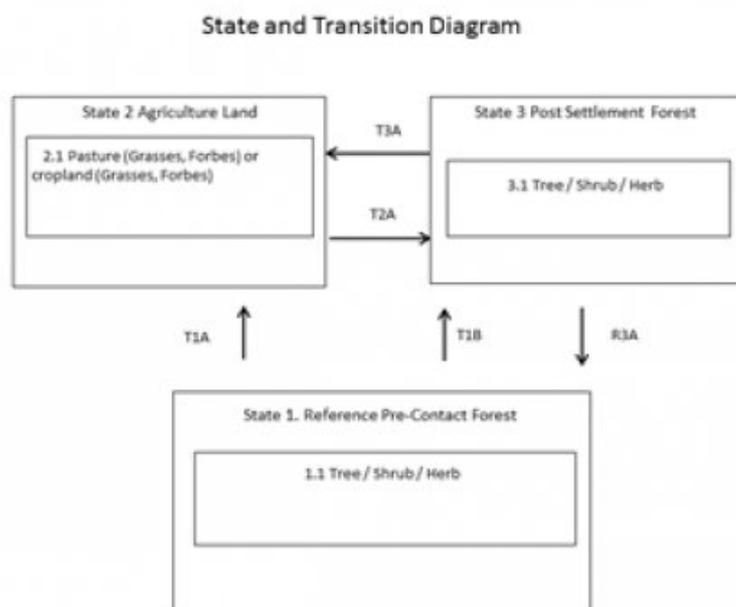


Figure 1. State and Transition

## 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 2. 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 banebery. 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, less 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**

#### **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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