

Ecological site F140XY016NY

Mineral Wetlands

Last updated: 5/20/2020
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.

MLRA notes

Major Land Resource Area (MLRA): 140X–Glaciated Allegheny Plateau and Catskill Mountains

This area is primarily in the Southern New York Section of the Appalachian Plateaus Province of the Appalachian Highlands. The top of the dissected plateau in this MLRA is broad and is nearly level to moderately sloping. The narrow valleys have steep walls and smooth floors. The Catskills in the east have steep slopes. Elevation is typically 650 to 1,000 feet on valley floors; 1,650 to 2,000 feet on the plateau surface; and 3,600 feet or more in parts of the Catskills.

The average annual precipitation in most of this area is 30 to 45 inches. Rainfall occurs as high-intensity, convective thunderstorms during the summer, but most of the precipitation in this area occurs as snow. The average annual temperature is 40 to 50 degrees F.

The dominant soil order in this MLRA is Inceptisols. The soils in the area dominantly have a mesic soil temperature regime, an aquic or udic soil moisture regime, and mixed mineralogy. Frigid soils are found within the higher elevations.

This area supports forest vegetation, particularly hardwood species. Beech-birch-maple and elm-ash-red maple are the potential forest types. The extent of oak species increases from east to west, particularly in areas of shallow and dry soils. In some areas conifers, such as white pine, are important. Aspen, hemlock, northern white-cedar, and black ash grow on the wetter soils. In some parts of the area, sugar maple has potential economic significance. Some of the major wildlife species in this area are white-tailed deer, cottontail, turkey, pheasant, and grouse.

Classification relationships

USDA NRCS:

LRR: R - Northeastern Forage and Forest Region

MLRA 140 - Glaciated Allegheny Plateau and Catskills Mountains

NY Natural Heritage Program Plant Community Classification:

Red Maple-Hardwood Swamp

Red Maple-Blackgum Swamp

PA Natural Heritage Program Plant Community Classification:

Red Maple – Black-gum Palustrine Forest

International Vegetation Classification Associations:

Red Maple - Blackgum Basin Swamp Forest (CEGL006014)

Red Maple / Upright Sedge - Sensitive Fern Wet Woodland (CEGL006119)

Red Maple - (Green Ash, White Ash) / Northern Spicebush / Skunk-cabbage Swamp Forest (CEGL006406)

Red Maple / Catberry - Highbush Blueberry Swamp Forest (CEGL006220)

Ecological site concept

Landform/Landscape Position:

The site occurs in depressions within till or outwash plains. Slopes range from 0 to 8 percent.

Soils:

The soils consists of very deep, poorly to very poorly drained, fine-loamy soils formed in till or outwash deposits derived mostly from from sandstone, siltstone, and shale. Mesic soil temperature regime.

Vegetation:

The reference community is characterized by red maple, black gum, yellow birch, American elm, swamp white oak, high bush blueberry, winterberry, dogwoods, alders, skunk cabbage, sensitive fern, and tussock sedge.

Table 1. Dominant plant species

Tree	(1) <i>Acer rubrum</i> (2) <i>Nyssa sylvatica</i>
Shrub	(1) <i>Vaccinium corymbosum</i> (2) <i>Ilex verticillata</i>
Herbaceous	(1) <i>Osmunda cinnamomea</i> (2) <i>Symplocarpus foetidus</i>

Physiographic features

The site occurs in depressions within till or outwash plains. Slopes range from 0 to 8 percent.

Table 2. Representative physiographic features

Landforms	(1) Till plain > Depression (2) Outwash plain > Depression
Flooding frequency	None
Ponding frequency	None to frequent
Slope	0–8%

Climatic features

Mean annual precipitation is 43 inches and evenly distributed throughout the year. Most of the rainfall occurs as high intensity, convective thunderstorms during the summer. Snowfall is common from late in autumn to early spring. Average frost-free and freeze-free days are 122 and 153, respectively.

Table 3. Representative climatic features

Frost-free period (characteristic range)	110-134 days
Freeze-free period (characteristic range)	136-168 days
Precipitation total (characteristic range)	38-49 in
Frost-free period (actual range)	101-136 days
Freeze-free period (actual range)	136-168 days
Precipitation total (actual range)	36-51 in
Frost-free period (average)	122 days
Freeze-free period (average)	154 days

Precipitation total (average)

43 in

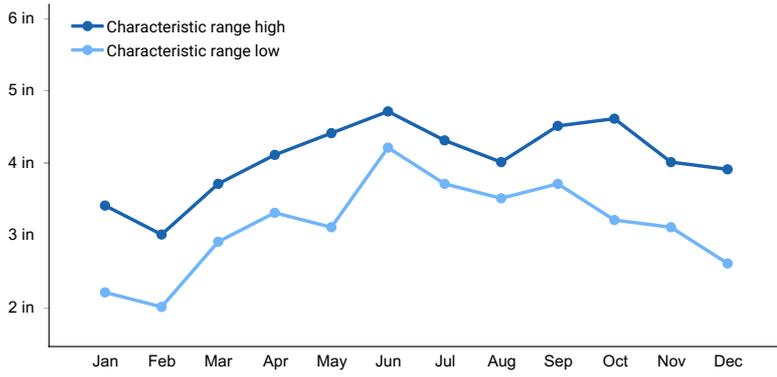


Figure 1. Monthly precipitation range

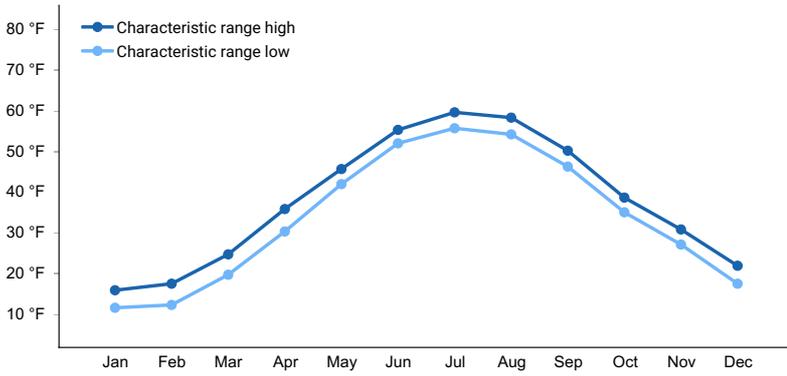


Figure 2. Monthly minimum temperature range

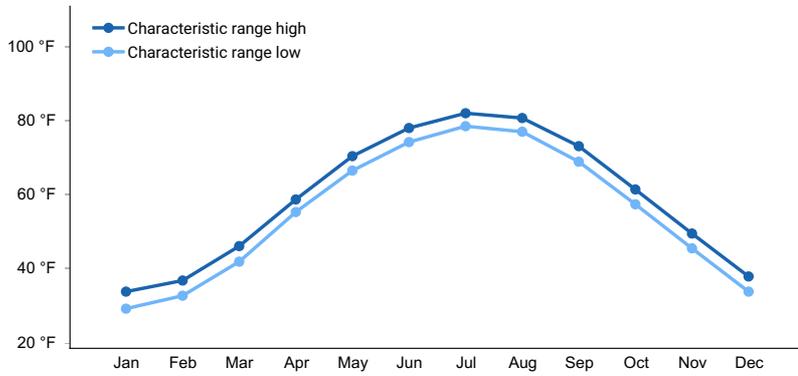


Figure 3. Monthly maximum temperature range

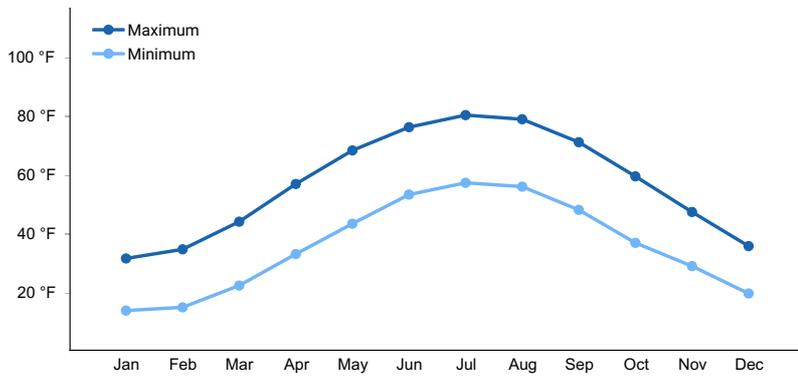


Figure 4. Monthly average minimum and maximum temperature

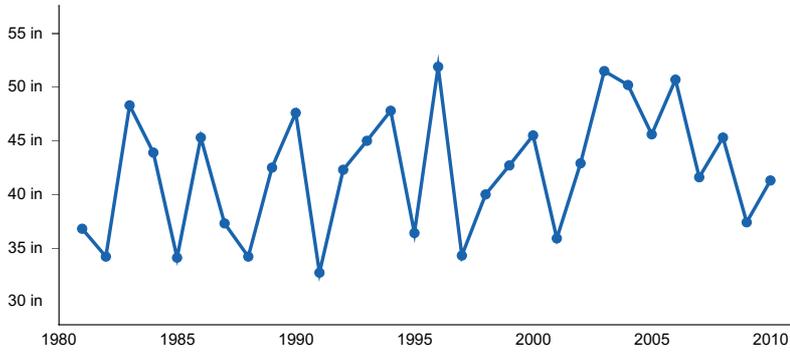


Figure 5. Annual precipitation pattern

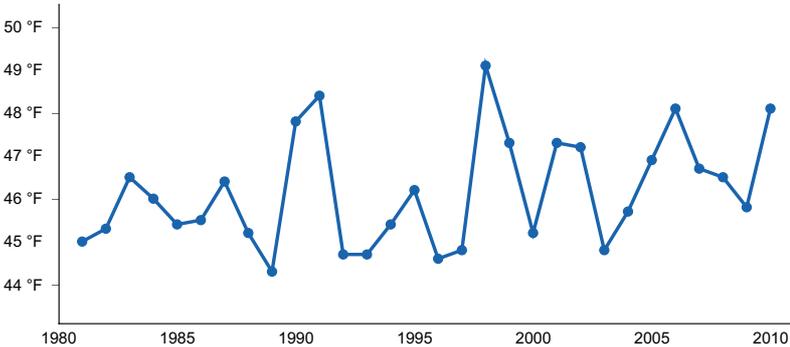


Figure 6. Annual average temperature pattern

Climate stations used

- (1) BINGHAMTON [USW00004725], Johnson City, NY
- (2) STROUDSBURG [USC00368596], East Stroudsburg, PA
- (3) TOWANDA 1 S [USC00368905], Towanda, PA
- (4) MONTROSE [USC00365915], Montrose, PA
- (5) CORNING [USC00301787], Corning, NY
- (6) ROCK HILL 3 SW [USC00307210], Rock Hill, NY
- (7) CANTON [USC00361212], Canton, PA

Influencing water features

Poorly drained

Water is removed so slowly that the soil is wet at shallow depths periodically during the growing season or remains wet for long periods. Internal free water occurrence is shallow or very shallow and common or persistent. Free water is commonly at or near the surface long enough during the growing season that most mesophytic crops cannot be grown, unless the soil is artificially drained. The soil, however, is not continuously wet directly below plow depth. Free water at shallow depth is common. The water table is commonly the result of low or very low saturated hydraulic conductivity, nearly continuous rainfall, or a combination of these.

Very poorly drained

Water is removed from the soil so slowly that free water remains at or very near the surface during much of the growing season. Internal free water occurrence is very shallow and persistent or permanent. Unless the soil is artificially drained, most mesophytic crops cannot be grown. The soils are commonly level or depressed and frequently ponded. In areas where rainfall is high or nearly continuous, slope gradients may be greater.

Wetland description

Forested Wetland

Soil features

The soils consists of very deep, poorly to very poorly drained, fine-loamy soils formed in till or outwash deposits derived mostly from from sandstone, siltstone, and shale. Mesic soil temperature regime.

Table 4. Representative soil features

Parent material	(1) Till–sandstone and shale (2) Glaciofluvial deposits–sandstone and siltstone
Surface texture	(1) Silt loam
Drainage class	Poorly drained to very poorly drained

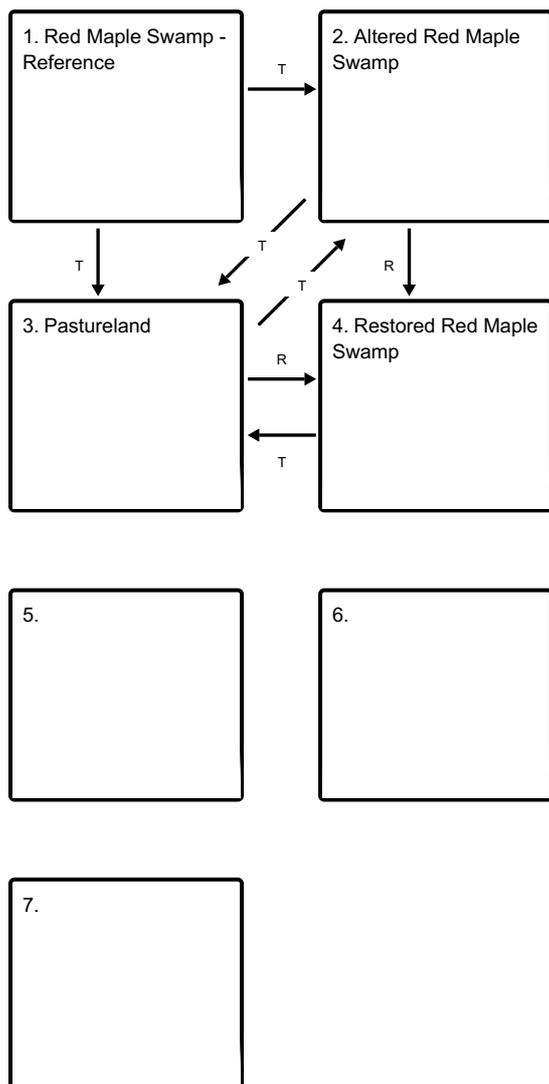
Ecological dynamics

The reference community is characterized by red maple, black gum, yellow birch, American elm, swamp white oak, high bush blueberry, winterberry, dogwoods, alders, skunk cabbage, sensitive fern, and tussock sedge.

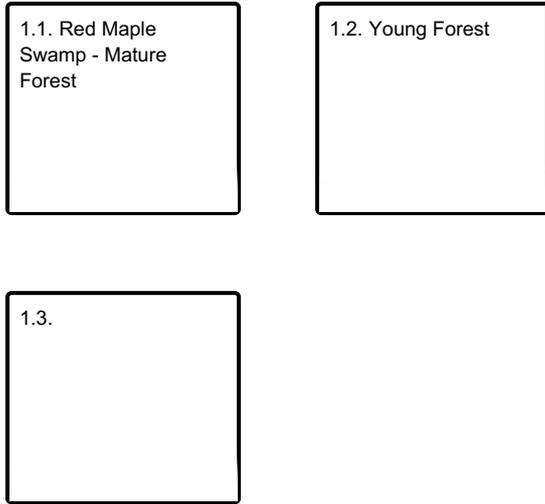
Red maple-hardwood swamps are threatened by development (e.g., agriculture, residential, commercial, roads), habitat alteration (e.g., excessive logging, pollution), and recreational overuse (e.g., hiking trails, ATVs). Alteration to the natural hydrological regime is also a threat to this community (e.g., impoundments, blocked culverts, beaver). Several red maple-hardwood swamps are threatened by invasive species, such as common buckthorn (*Rhamnus cathartica*), glossy buckthorn (*Frangula alnus*), shrubby honeysuckle (*Lonicera morrowii*), multiflora rose (*Rosa multiflora*), and barberry (*Berberis thunbergii*) (New York Natural Heritage Program, 2019).

State and transition model

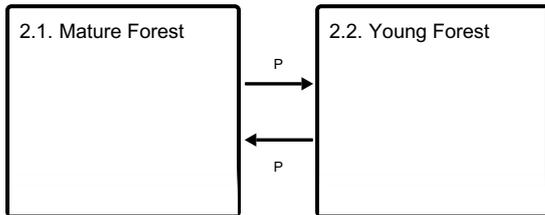
Ecosystem states



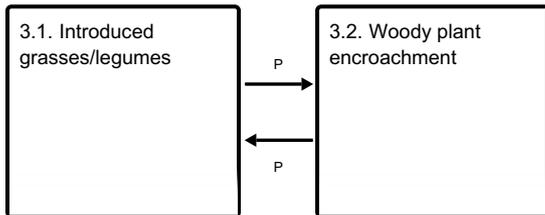
State 1 submodel, plant communities



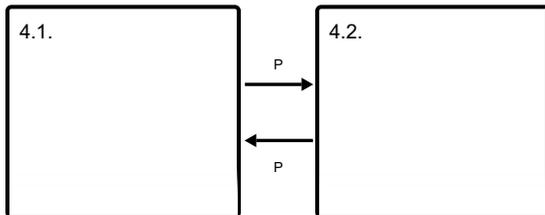
State 2 submodel, plant communities



State 3 submodel, plant communities



State 4 submodel, plant communities



**State 1
Red Maple Swamp - Reference**

Undisturbed hydrology, minimal to no invasive species, no evidence of clearing or past cultivation.

Resilience management. Following from Eichelberger, B. 2011, Pennsylvania Natural Heritage Program: "A natural buffer around the wetland should be maintained in order to minimize nutrient runoff, pollution, and sedimentation. The potential for soil erosion based on soil texture, condition of the adjacent vegetation (mature forests vs. clearcuts), and the topography of the surrounding area (i.e., degree of slope) should be considered when establishing buffers. The buffer size should be increased if soils are erodible, adjacent vegetation has been logged, and the topography is steep as such factors could contribute to increased sedimentation and nutrient pollution. Direct impacts and habitat alteration should be avoided (e.g., roads, trails, filling of wetlands) and low impact alternatives (e.g., elevated footpaths, boardwalks, bridges) should be utilized in situations where accessing the wetland can not be avoided. Care should also be taken to control and prevent the spread of invasive species within the wetland. Alterations to groundwater sources should be minimized."

Dominant plant species

- red maple (*Acer rubrum*), tree
- green ash (*Fraxinus pennsylvanica*), tree
- blackgum (*Nyssa sylvatica*), tree
- swamp white oak (*Quercus bicolor*), tree
- highbush blueberry (*Vaccinium corymbosum*), shrub
- common winterberry (*Ilex verticillata*), shrub
- northern spicebush (*Lindera benzoin*), shrub
- alder (*Alnus*), shrub
- upright sedge (*Carex stricta*), grass
- skunk cabbage (*Symplocarpus foetidus*), other herbaceous
- cinnamon fern (*Osmunda cinnamomea*), other herbaceous

Community 1.1

Red Maple Swamp - Mature Forest

Community 1.2

Young Forest

Community 1.3

State 2

Altered Red Maple Swamp

Hydrology changes (drained, diversions, dams, roads, etc.) may be impacting site. Invasive species may be common. Indication of historic cultivation may be evident.

Community 2.1

Mature Forest

Community 2.2

Young Forest

Pathway P

Community 2.1 to 2.2

Wind; insect damage; ice storm create forest openings.

Pathway P

Community 2.2 to 2.1

Time; Succession

State 3

Pastureland

Community 3.1

Introduced grasses/legumes

Introduced forage plants for livestock grazing or hay production.

Dominant plant species

- orchardgrass (*Dactylis glomerata*), grass
- timothy (*Phleum pratense*), grass
- clover (*Trifolium*), other herbaceous

Community 3.2
Woody plant encroachment

Pathway P
Community 3.1 to 3.2

No mowing or fire; abandonment

Pathway P
Community 3.2 to 3.1

Brush management; mowing.

Conservation practices

Brush Management

State 4
Restored Red Maple Swamp

Community 4.1

Community 4.2

Pathway P
Community 4.1 to 4.2

Wind, insect damage, and/or ice storm cause small forest openings.

Pathway P
Community 4.2 to 4.1

Time; succession

State 5

State 6

State 7

Transition T
State 1 to 2

Transition T
State 1 to 3

Transition T
State 2 to 3

Restoration pathway R
State 2 to 4

Wetland restoration

Conservation practices

Wetland Restoration

**Transition T
State 3 to 2**

Abandonment

**Restoration pathway R
State 3 to 4**

Wetland restoration. Restoring ecological function and structure.

Conservation practices

Wetland Restoration

**Transition T
State 4 to 3**

Additional community tables

Inventory data references

Site Development and Testing Plan:
Future work to validate the vegetation information in this provisional ecological site description is needed. This will include field activities to collect low and medium intensity sampling and analysis of that data. Field reviews should be done by soil scientists and vegetation specialists. A final field review, peer review, quality control, and quality assurance reviews of the ESD will be needed to produce the final approved level document. Reviews of the project plan are to be conducted by the Ecological Site Technical Team.

Other references

New York Natural Heritage Program. 2019. Online Conservation Guide for Red maple-hardwood swamp. Available from: <https://guides.nynhp.org/red-maple-hardwood-swamp/>. Accessed December 2, 2019.

Eichelberger, B. 2011. Pennsylvania Natural Heritage Program. Red Maple – Black-gum Palustrine Forest Factsheet. Available from: <http://www.naturalheritage.state.pa.us/Community.aspx?=16023> Date Accessed: December 05, 2019

Approval

Nels Barrett, 5/20/2020

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	04/24/2024

Approved by	Nels Barrett
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:**
-