Ecological site F140XY024NY
Moist Dense Till

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

Ecological site concept

Landform/Landscape Position:
The site occurs on till plains, drumlinoid ridges, hills, benches Slopes are mostly less than 25 percent but can range up to 50 percent.

Soils:
The soils consists of very deep, somewhat poorly drained to moderately well drained soils that formed in glacial till derived mostly from sandstone, shale, and siltstone. Soils are shallow to moderately deep to a fragipan (root restricting layer). Representative soils are Caneseraga, Dalton, Erie, Langford, Mardin, Morris, Rushford, Scriba, Shohola, Swartswood, Wellsboro, and Wurtsboro.

Vegetation:
The reference community is considered to be an oak-hickory forest characterized by red oak, white oak, mockernut hickory, red maple, American beech, tuliptree, maple-leaved viburnum, shadbush, witch-hazel, spicebush false Solomon's-seal, and wood ferns.

Table 1. Dominant plant species

Tree	(1) *Quercus rubra* (2) *Carya tomentosa*
Shrub	(1) *Viburnum acerifolium* (2) *Lindera benzoin*
Herbaceous	(1) *Uvularia sessilifolia*

Physiographic features

The site occurs on till plains, drumlinoid ridges, hills, benches Slopes are mostly less than 25 percent but can range up to 50 percent.

Table 2. Representative physiographic features

Landforms	(1) Till plain (2) Drumlinoid ridge (3) Hill (4) Bench
Slope	0–25%

Table 3. Representative physiographic features (actual ranges)

Slope	0–50%

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 4. 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

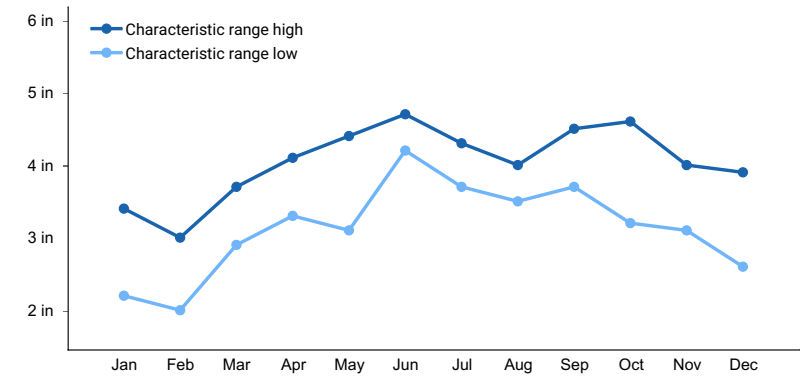


Figure 1. Monthly precipitation range

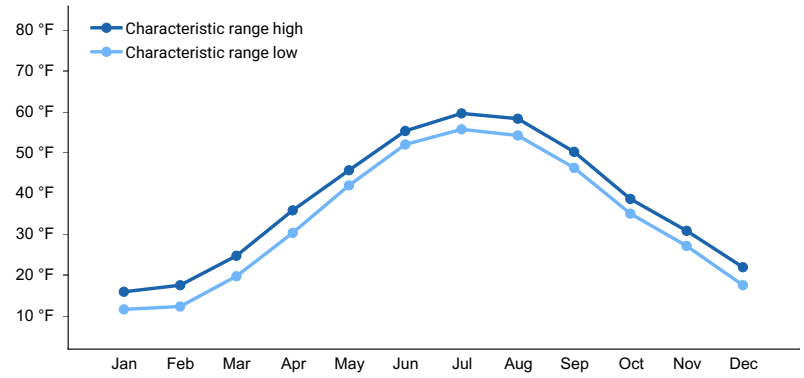


Figure 2. Monthly minimum temperature range

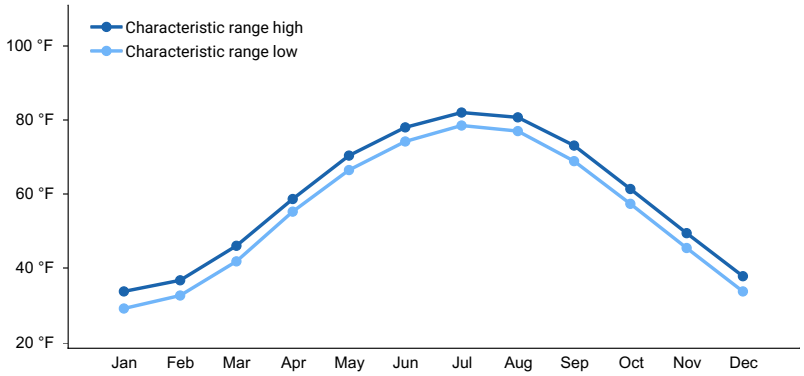


Figure 3. Monthly maximum temperature range

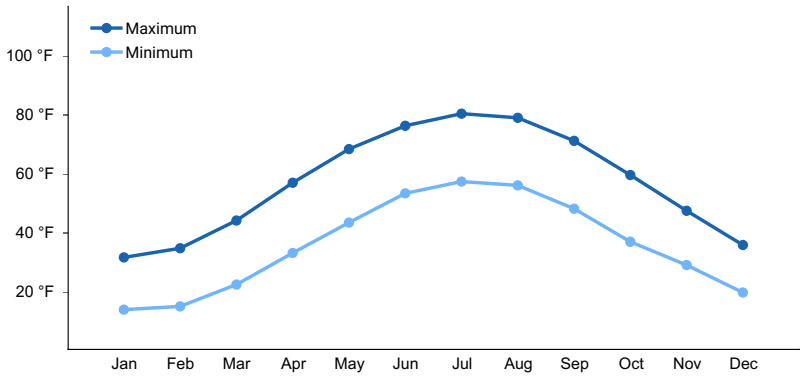


Figure 4. Monthly average minimum and maximum temperature

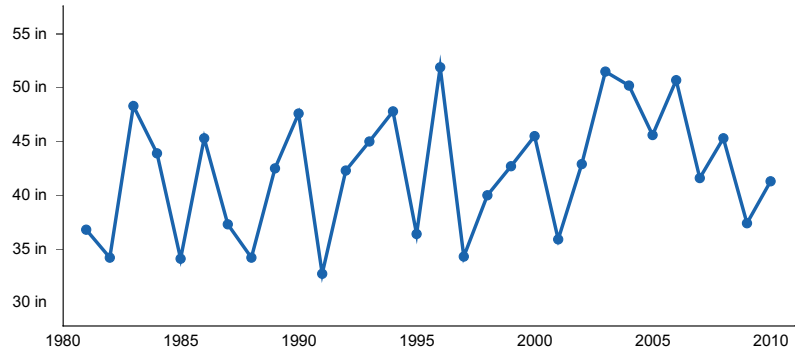


Figure 5. Annual precipitation pattern

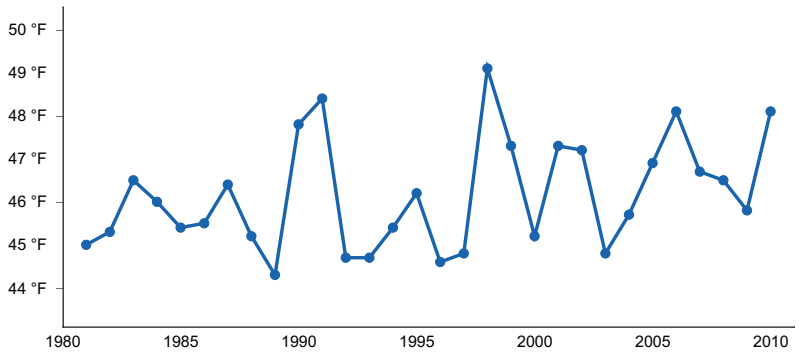


Figure 6. Annual average temperature pattern

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

Soil features

The soils consists of very deep, somewhat poorly drained to moderately well drained soils that formed in glacial till derived mostly from sandstone, shale, and siltstone. Soils are shallow to moderately deep to a fragipan (root restricting layer). Representative soils are Caneseraga, Dalton, Erie, Langford, Mardin, Morris, Rushford, Scriba, Shohola, Swartswood, Wellsboro, and Wurtsboro.

Table 5. Representative soil features

Parent material	(1) Till–shale and siltstone (2) Till–sandstone
Family particle size	(1) Coarse-loamy
Drainage class	Somewhat poorly drained to moderately well drained
Depth to restrictive layer	19–28 in

Ecological dynamics

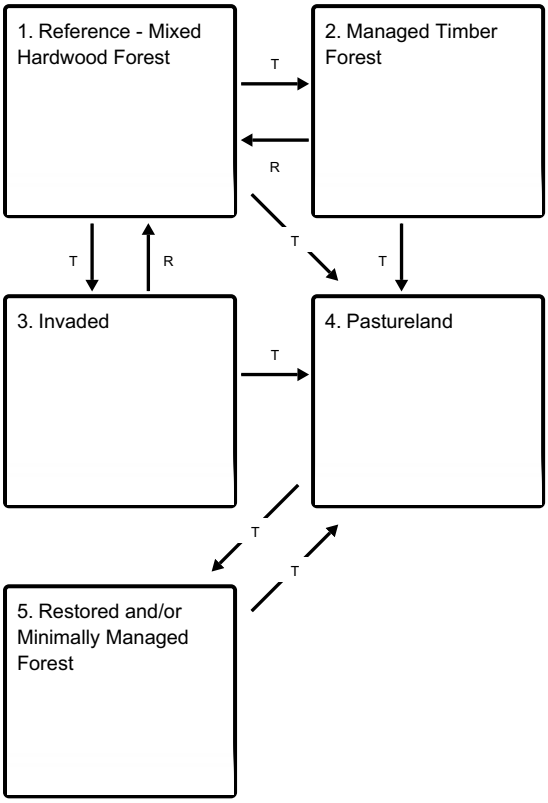
The reference community is considered to be an oak-hickory forest characterized by red oak, white oak, mockernut hickory, red maple, American beech, tuliptree, maple-leaved viburnum, shadbush, witch-hazel, spicebush false

Solomon's-seal, and wood ferns.

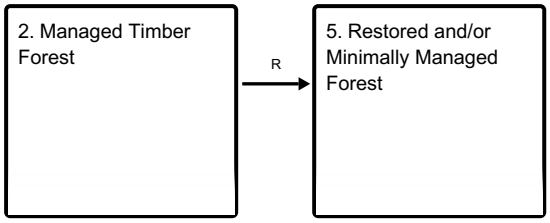
Dynamics includes an invasive species state , managed timber state, and conversion of site into agricultural production (pasture/hayland or cropland). Disturbances include wind, ice, insects, and land clearing or timber harvest.

State and transition model

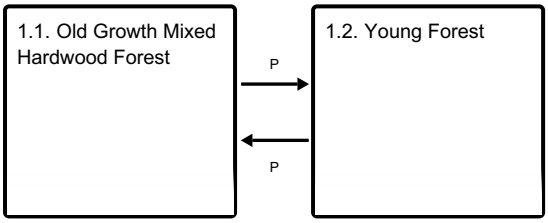
Ecosystem states



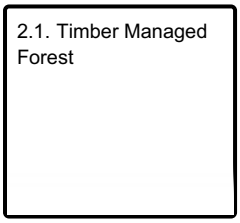
States 2 and 5 (additional transitions)



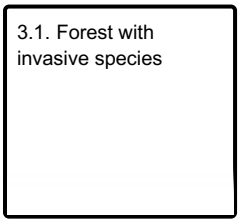
State 1 submodel, plant communities



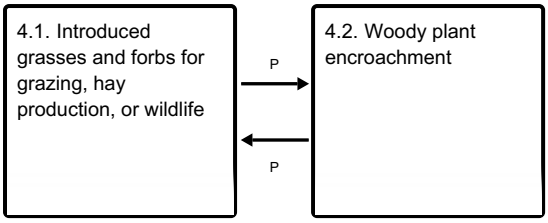
State 2 submodel, plant communities



State 3 submodel, plant communities



State 4 submodel, plant communities



State 1
Reference - Mixed Hardwood Forest

Characteristics and indicators. Site was not cleared or cultivated historically.

Community 1.1
Old Growth Mixed Hardwood Forest

Mature closed canopy forest.

Dominant plant species

- northern red oak (*Quercus rubra*), tree
- white oak (*Quercus alba*), tree
- American beech (*Fagus grandifolia*), tree
- sugar maple (*Acer saccharum*), tree
- mockernut hickory (*Carya tomentosa*), tree

Community 1.2
Young Forest

Pathway P
Community 1.1 to 1.2

Wind, ice storm,, insect damage.

Pathway P
Community 1.2 to 1.1

Time; succession

State 2
Managed Timber Forest

Removal of trees of commercial value. Invasive species may be present.

Community 2.1
Timber Managed Forest

Forest managed for timber, primarily oak species. Depending on type of management birch, beech, and maple may dominate following commercial timber harvest.

State 3
Invaded

Invasive species abundant. Minimally managed forest.

Community 3.1

Forest with invasive species

Non-native and invasive species present (Japanese barberry, multiflora rose, bush honeysuckle, stiltgrass.

State 4
Pastureland

Site converted to pasture for livestock grazing or hay production.

Resilience management. Must be managed (grazed, mowed, etc.) to maintain pastureland.

Community 4.1
Introduced grasses and forbs for grazing, hay production, or wildlife

Community 4.2
Woody plant encroachment

Pathway P
Community 4.1 to 4.2

Lack of management (mowing, grazing, prescribed fire)

Pathway P
Community 4.2 to 4.1

Mowing, brush management, prescribed fire.

Conservation practices

Brush Management
Prescribed Burning

State 5
Restored and/or Minimally Managed Forest

Restored forest or second-growth forest.

Characteristics and indicators. Site was cleared and/or cultivated historically.

Transition T
State 1 to 2

Timber harvest.

Transition T
State 1 to 3

Establishment of invasive species.

Transition T
State 1 to 4

Land use conversion.

Conservation practices

Land Clearing

Restoration pathway R
State 2 to 1

Conservation practices

Forest Stand Improvement
Forest Land Management
Prescribed Forestry
Forest Management Plan - Written
Forest Management Plan - Applied
Forest stand improvement for habitat and soil quality

Transition T
State 2 to 4

Land use conversion

Conservation practices

Land Clearing

Restoration pathway R
State 2 to 5

Restoration pathway R
State 3 to 1

Invasive species management/removal.

Conservation practices

Invasive Plant Species Control
Invasive Species Pest Management
Biological suppression and other non-chemical techniques to manage brush, weeds and invasive species
Biological suppression and other non-chemical techniques to manage herbaceous weeds invasive species

Transition T
State 3 to 4

Restoration pathway T
State 4 to 5

Transition T
State 5 to 4

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

Edinger, G.J., Evans, D.J., Gebauer, S., Howard, T.G., Hunt, D.M., and A.M. Olivero, A.M. (eds.). 2014. Ecological Communities of New York State, Second Edition: A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

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):**

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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:**
