USDA Natural Resources
Conservation Service

Ecological site F101XY013NY
Moist Till

Last updated: 5/21/2020
Accessed: 05/03/2024

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): 101X–Ontario-Erie Plain and Finger Lakes Region

Most of the MLRA is a nearly level to rolling plain. Low remnant beach ridges are commonly interspersed with a relatively level lake plain in the northern part of the area. Drumlins (long, narrow, steep-sided, cigar shaped hills) are prominent in an east-west belt in the center of the area. The Finger Lakes Region consists of a gently sloping to rolling till plain. Elevation is 330 to 1,310 feet increasing gradually from the shores of Lake Ontario and Lake Oneida to the Allegheny Plateau, the southern border of the area. Local relief is mostly 10 feet, but the larger drumlins and many valley sides rise 80 to 330 feet above the adjacent lowlands or valley floors.

The bedrock underlying this area consists of alternating beds of limestone, dolomite, sandstone, and shale of Ordovician to Devonian age. Most of the surface of the area is covered with glacial till or lake sediments. The texture of the lake sediments is silt, loam, or sand. Ancient beaches, formed at different lake levels, form ridges along the shoreline of Lake Erie and Lake Ontario. Stratified drift (eskers and kames) and glacial outwash deposits are in many of the valleys. A large drumlin field occurs in the Finger Lakes Region.

Classification relationships

NRCS:
Land Resource Region: L - Lake States Fruit, Truck Crop, and Dairy Region
MLRA: 101 - Ontario-Erie Plain and Finger Lakes Region

Ecological site concept

Landform/Landscape Position:
The site occurs on broad plains, hills, ridges, and knolls. Slopes range from 0 to 45 percent.

Soils:
The site consists of moderately deep to very deep, moderately well drained soils formed in loamy till. Representative soils are *Lairdsville, *Riga, Bombay, Ira, Lima, Conesus, Hilton, Nunda, Danley, Cazenovia, Aurora, Yunenyeti, Appleton, Kendaia, Manheim, Burdett, Darien, Ovid, Newstead, Angola, Nuhi, Lockport, Brockport mapped within MLRA 101.

*Lairdsville and Riga have dual drainage classes (well drained and moderately well drained). Grouped these soils with the MWD site.

Vegetation
The reference community coincides with NY natural heritage community: Maple-basswood rich mesic forest.

Table 1. Dominant plant species

Tree	(1) *Acer saccharum* (2) *Tilia americana*
Shrub	(1) *Cornus alternifolia* (2) *Acer spicatum*
Herbaceous	(1) *Dryopteris marginalis* (2) *Caulophyllum thalictroides*

Physiographic features

The site occurs on broad plains, hills, ridges, and knolls. Slopes range from 0 to 45 percent.

Table 2. Representative physiographic features

Landforms	(1) Till plain (2) Hill (3) Ridge (4) Knoll
Slope	0–45%

Climatic features

Table 3. Representative climatic features

Frost-free period (characteristic range)	136-140 days
Freeze-free period (characteristic range)	173-186 days
Precipitation total (characteristic range)	940-1,067 mm
Frost-free period (actual range)	135-140 days
Freeze-free period (actual range)	167-187 days
Precipitation total (actual range)	889-1,067 mm
Frost-free period (average)	138 days
Freeze-free period (average)	179 days
Precipitation total (average)	991 mm

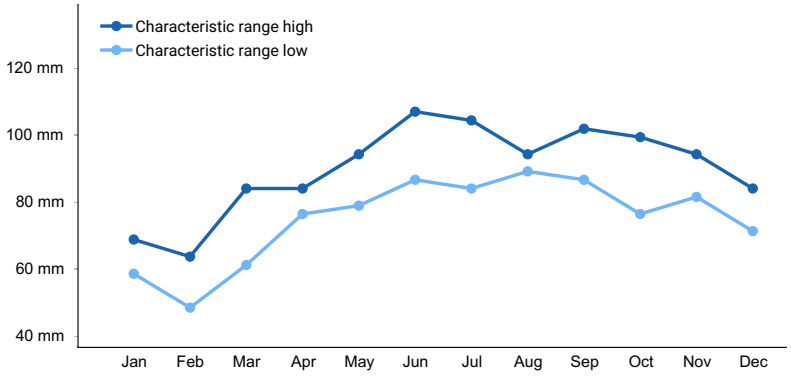


Figure 1. Monthly precipitation range

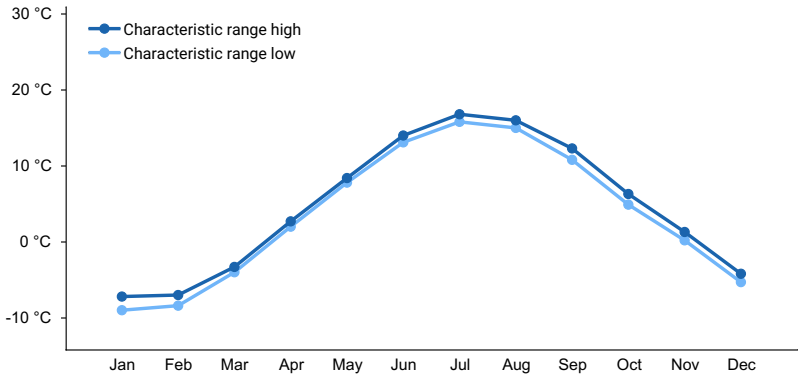


Figure 2. Monthly minimum temperature range

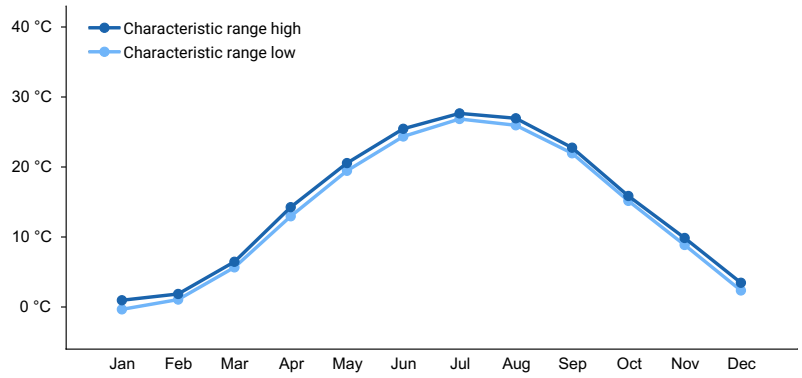


Figure 3. Monthly maximum temperature range

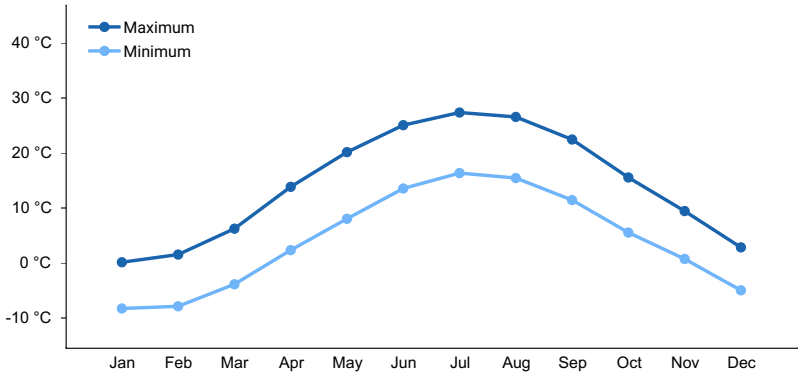


Figure 4. Monthly average minimum and maximum temperature

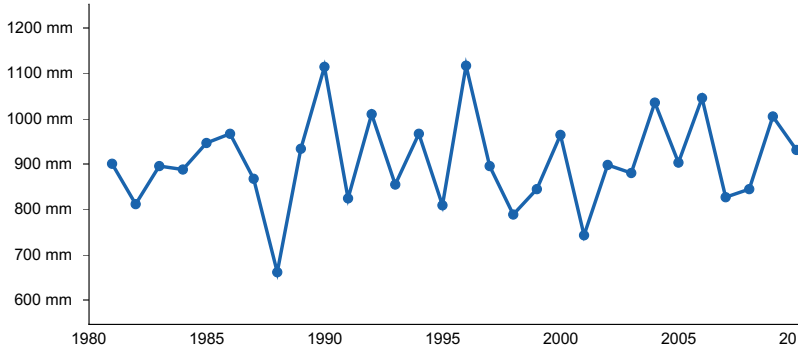


Figure 5. Annual precipitation pattern

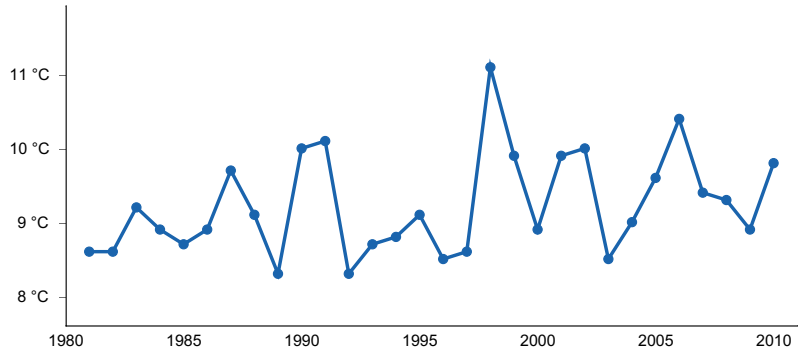


Figure 6. Annual average temperature pattern

Climate stations used

- (1) SUNY ESF SYRACUSE [USC00308386], Syracuse, NY
- (2) DELANSON 2NE [USC00302031], Delanson, NY
- (3) ROCHESTER GTR INTL AP [USW00014768], Rochester, NY
- (4) DUNKIRK CHAUTAUQUA AP [USW00014747], Dunkirk, NY
- (5) LOCKPORT 3 S [USC00304844], Lockport, NY

Influencing water features

Soil features

The site consists of moderately deep to very deep, moderately well drained soils formed in loamy till. Representative soils are *Lairdsville, *Riga, Bombay, Ira, Lima, Conesus, Hilton, Nunda, Danley, Cazenovia, Aurora, Yunenyeti, Appleton, Kendaia, Manheim, Burdett, Darien, Ovid, Newstead, Angola, Nuhi, Lockport, Brockport mapped within MLRA 101.

*Lairdsville and Riga have dual drainage classes (well drained and moderately well drained). Grouped these soils with the MWD site.

Table 4. Representative soil features

Parent material	(1) Till–limestone, sandstone, and shale
Surface texture	(1) Silt loam (2) Gravelly loam
Drainage class	Somewhat poorly drained to moderately well drained

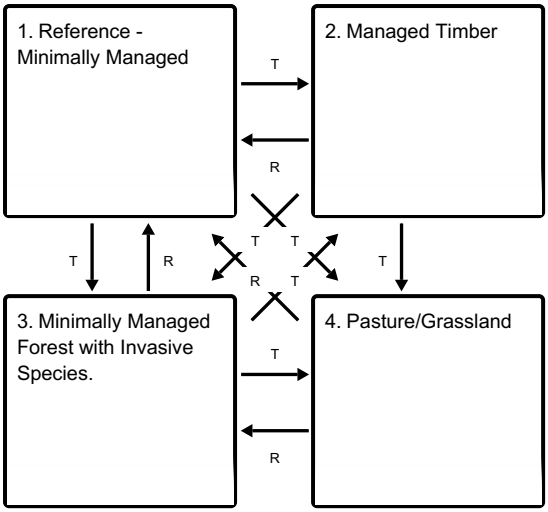
Ecological dynamics

The reference coincides with Maple-Basswood Rich Mesic Forest (NY Natural Heritage Program) and International Vegetation Classification Sugar Maple – American Basswood / Blue Cohosh Forest
Acer saccharum – *Tilia americana* / *Caulophyllum thalictroides* Forest (CEGL006637)

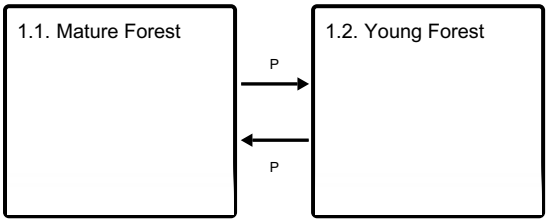
Common trees are sugar maple, northern red oak, basswood, yellow birch, white ash, and hop hornbeam. Shrubs include witch-hazel and dogwood. Dynamics includes conversion of site into agricultural production and invasive species establishment. Disturbances include wind, ice, insects, and land clearing or timber harvest.

State and transition model

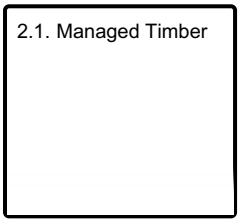
Ecosystem states



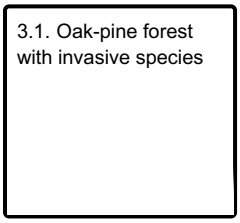
State 1 submodel, plant communities



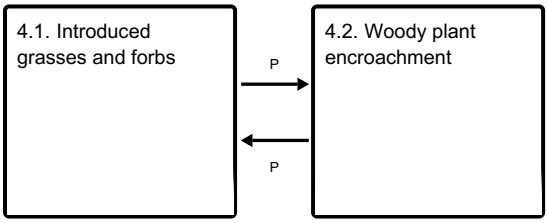
State 2 submodel, plant communities



State 3 submodel, plant communities



State 4 submodel, plant communities



State 1
Reference - Minimally Managed

Reference is Maple-basswood rich mesic forest. Natural disturbances such and wind and ice storms, tree fall, insect damage will create openings for an early successional plant community or young forest. This forest may have at one time been cleared or plowed during colonial times.

Characteristics and indicators. Soil may have evidence of an historic plow layer (Ap horizon).

Resilience management. Ensure that regenerating trees and shrubs are not heavily browsed by deer that they cannot replace overstory trees. Deer have been shown to have negative effects on forest understories (New York Natural Heritage Program, 2020). Avoid cutting old-growth forests.

Community 1.1
Mature Forest

Mature, late successional closed canopy forest. The reference community coincides with NY natural heritage community: Rich mesophytic forest.

Community 1.2
Young Forest

Open canopy, early successional, young forest.

Pathway P
Community 1.1 to 1.2

Natural disturbances - wind/ice storm, tree fall, and insect damage.

Conservation practices

Early Successional Habitat Development/Management

Pathway P
Community 1.2 to 1.1

Time (succession).

State 2
Managed Timber

The state is characterized by active logging. Composition of forest stands will vary based on management objectives.

Community 2.1
Managed Timber

State 3
Minimally Managed Forest with Invasive Species.

Invasive species such as Japanese barberry, bush honeysuckle, multiflora rose, garlic mustard, and stiltgrass are common in the understory.

Community 3.1
Oak-pine forest with invasive species

State 4
Pasture/Grassland

Forest has been cleared and grasses and forbs have been introduced for livestock grazing, hay production, and/or wildlife.

Community 4.1
Introduced grasses and forbs

Community 4.2
Woody plant encroachment

Pathway P
Community 4.1 to 4.2

Abandonment (lack of mowing or fire suppression)

Pathway P
Community 4.2 to 4.1

Mowing, prescribed fire, and/or brush management.

Conservation practices

Brush Management

Transition T
State 1 to 2

Timber harvest; logging.

Transition T
State 1 to 3

Introduction of invasive species usually after disturbance.

Transition T
State 1 to 4

Land use conversion.

Restoration pathway R
State 2 to 1

Time (succession). Forest stand improvement, restoration.

Transition T
State 2 to 3

Introduction of invasive species. Lack of timber management.

Transition T
State 2 to 4

Land use conversion

Restoration pathway R
State 3 to 1

Brush management, invasive species management.

Transition T
State 3 to 2

Timber management/harvest, logging.

Transition T
State 3 to 4

Land use conversion.

Restoration pathway R
State 4 to 1

Abandonment, Time (succession), forest restoration.

Restoration pathway R
State 4 to 3

Abandonment, time (sucession) and introduction of invasive species.

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

NatureServe. 2019. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org.

New York Natural Heritage Program. 2020. Online Conservation Guide for Maple-basswood rich mesic forest. Available from: https://guides.nynhp.org/maple-basswood-rich-mesic-forest/. Accessed March 5, 2020.

Approval

Nels Barrett, 5/21/2020

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	05/03/2024
Approved by	Nels Barrett
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:**
