

Ecological site F101XY012NY Till Upland

Last updated: 10/03/2024
Accessed: 02/16/2025

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): 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 increases gradually from the shores of Lake Ontario and Lake Oneida to the Allegheny Plateau, the southern border of the area. 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

USDA-NRCS (USDA, 2006):

Land Resource Region (LRR): L — Lake States Fruit, Truck Crop, and Dairy Region

Major Land Resource Area (MLRA): 101— Ontario-Erie Plain and Finger Lakes Region

USDA-FS (Cleland et al., 2007)

Province: 211 — Northeastern Mixed Forest Province (in part)

Section: 211J — Mohawk Valley (in part)

Subsection: 211Jd — Mohawk Valley

Province: 222 — Midwest Broadleaf Forest Province (in part)

Section: 222I — Erie and Ontario Lake Plain

Subsection: 222Ia — Lake Erie Plain

222Ib — Erie-Ontario Lake Plain

222Ic — Eastern Ontario Till Plain

222Id — Cattaraugus Finger Lakes Moraine and Hills

222Ie — Eastern Ontario Lake Plain

Ecological site concept

Landform/Landscape Position:

The site occurs on broad plains, hills, ridges, and knolls. Slopes range from 0 to 70 percent.

Soils:

The site consists of moderately deep to very deep, well drained to excessively drained soils formed in loamy till.

Representative soils are Camillus, Galway, Honeoye, Lansing, Madrid, Mohawk, Ontario, Palatine, Pittsfield, Sodus, Stockbridge, Valois, and Wassaic mapped within MLRA 101.

Vegetation:

The reference community is characterized by northern red oak, black oak, American beech, sugar maple, white ash, and black birch and eastern white pine. Shrubs include American hornbeam, witch-hazel, striped maple, witch red elderberry, ironwood, and common blackberry. Wood fern, Pennsylvania sedge, blue cohosh, and sessile-leaved bellwort are characteristic herbs.

Associated sites

F101XY011NY	Shallow Till Upland Shallow Till Upland sites are located in shallow soils.
F101XY009NY	Moist Lake Plain Moist Till sites are lower in the landscape profile.

Similar sites

F101XY008NY	Well Drained Lake Plain Well Drained Lake Plain sites can be more enriched.
F101XY011NY	Shallow Till Upland

Table 1. Dominant plant species

Tree	(1) <i>Quercus rubra</i> (2) <i>Fagus grandifolia</i>
Shrub	(1) <i>Carpinus caroliniana</i> (2) <i>Hamamelis virginiana</i>
Herbaceous	(1) <i>Carex pensylvanica</i> (2) <i>Uvularia sessilifolia</i>

Physiographic features

The site occurs on broad plains, hills, ridges, and knolls. Slopes range from 0 to 70 percent.

Table 2. Representative physiographic features

Landforms	(1) Till plain > Till plain (2) Hill (3) Ridge (4) Knoll (5) Bench (6) Delta (7) Drumlin (8) Outwash plain (9) Terrace (10) Drumlinoid ridge (11) Valley side
Runoff class	Very low to very high
Flooding frequency	None
Ponding frequency	None
Elevation	151–2,460 ft
Slope	0–70%
Water table depth	17–72 in
Aspect	Aspect is not a significant factor

Climatic features

The Koppen-Geiger climate classification of the area in which this MLRA occurs is Dfb, Warm-summer humid continental. Rainfall occurs as high-intensity, convective thunderstorms in the summer. However, snow comprises most of the precipitation in this area. The frost-free-free period in this area averages 165 days and ranges from 130 to 200 days, with the coldest temperatures and the shortest frost-free periods occurring in the high-elevation areas in the eastern part of the MLRA.

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)	37-42 in
Frost-free period (actual range)	135-140 days
Freeze-free period (actual range)	167-187 days
Precipitation total (actual range)	35-42 in
Frost-free period (average)	138 days
Freeze-free period (average)	179 days
Precipitation total (average)	39 in

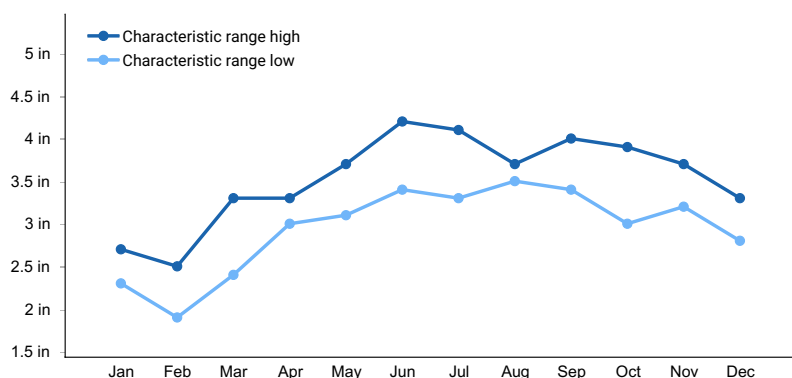


Figure 1. Monthly precipitation range

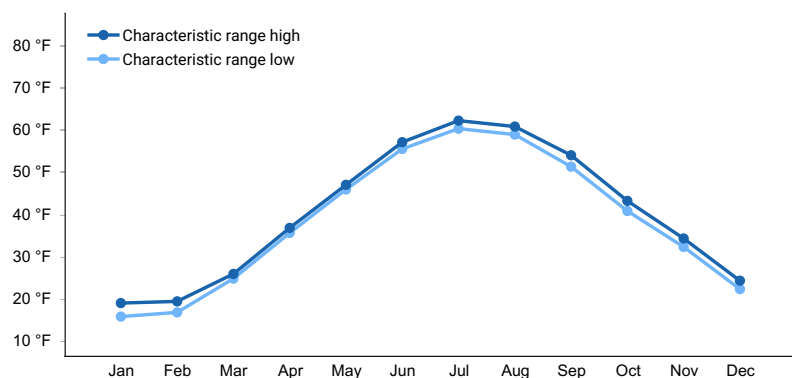


Figure 2. Monthly minimum temperature range

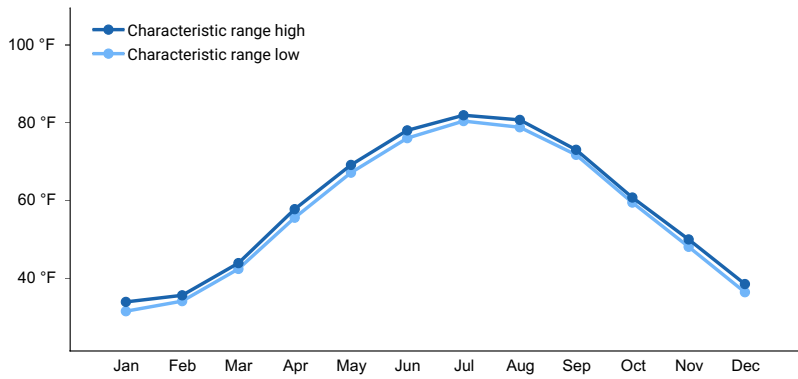


Figure 3. Monthly maximum temperature range

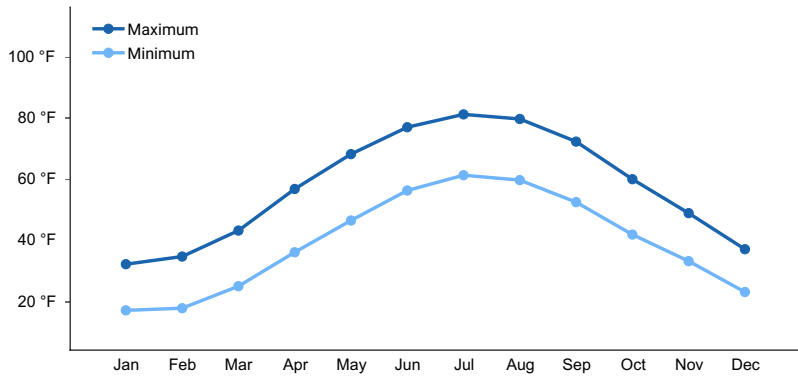


Figure 4. Monthly average minimum and maximum temperature

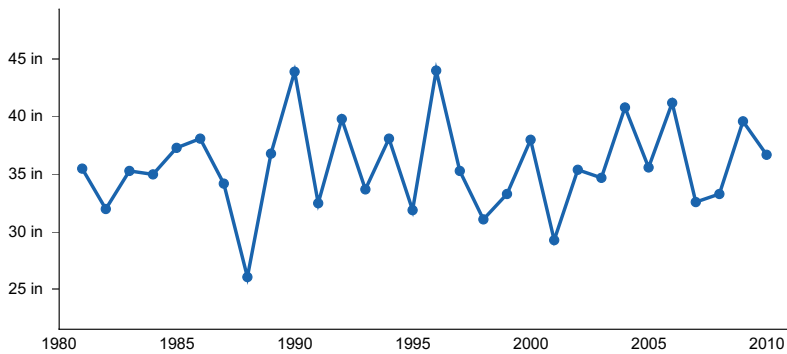


Figure 5. Annual precipitation pattern

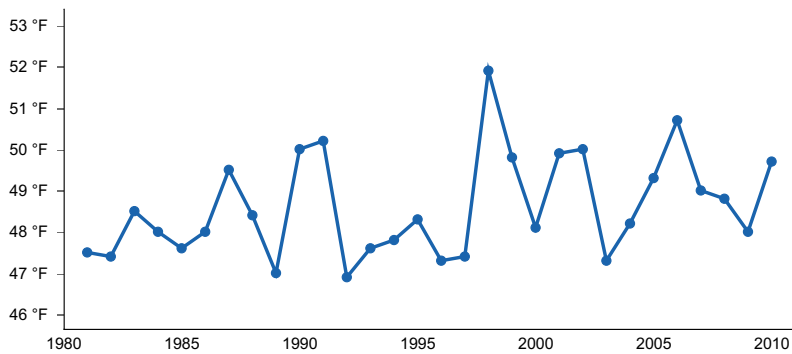


Figure 6. Annual average temperature pattern

Climate stations used

- (1) 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

NONE

Wetland description

NONE

Soil features

The site consists of moderately deep to very deep, well drained to excessively drained soils formed in loamy till. Representative soils are Camillus, Galway, Honeoye, Lansing, Madrid, Mohawk, Ontario, Palatine, Pittsfield, Sodus, Stockbridge, Valois, Palmyra, and Wassaic mapped within MLRA 101.

Table 4. Representative soil features

Parent material	(1) Till–limestone, sandstone, and shale (2) Glaciofluvial deposits–dolomite (3) Residuum–siltstone
Surface texture	(1) Gravelly loam (2) Silt loam (3) Fine sandy loam (4) Very stony silt loam (5) Very stony loam (6) Loam (7) Gravelly fine sandy loam (8) Fine sandy loam (9) Very stony fine sandy loam (10) Gravelly silt loam
Family particle size	(1) Coarse-loamy (2) Fine-loamy (3) Fine-loamy over sandy or sandy-skeletal (4) Loamy-skeletal
Drainage class	Well drained to somewhat excessively drained
Permeability class	Very slow to moderately slow
Depth to restrictive layer	19–72 in
Surface fragment cover ≤3"	0%
Surface fragment cover >3"	0–9%
Available water capacity (Depth not specified)	3–7 in
Soil reaction (1:1 water) (Depth not specified)	3.6–9
Subsurface fragment volume ≤3" (Depth not specified)	1–50%
Subsurface fragment volume >3" (Depth not specified)	0–50%

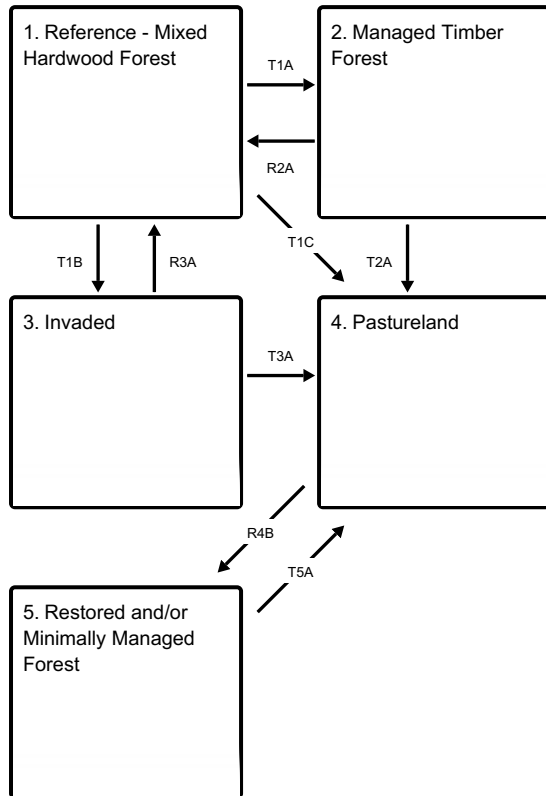
Ecological dynamics

The reference community is characterized by northern red oak, black oak, American beech, sugar maple, white ash, and black birch and eastern white pine. Shrubs include American hornbeam, witch-hazel, striped maple, witch red elderberry, ironwood, and common blackberry. Wood fern, Pennsylvania sedge, blue cohosh, and sessile-leaved bellwort are characteristic herbs.

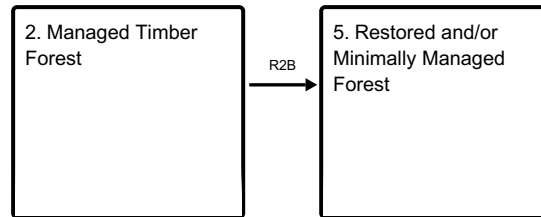
Wind, ice storms, and insects are common natural disturbances. High density of deer can limit oak regeneration. The site is susceptible to establishment of invasive species such as oriental bittersweet, barberry, multi-flora rose, bush honeysuckle, etc. The site is often high-graded for oak timber. In areas less than 20% slope, the site is suitable to conversion to agriculture (pastureland, hayland, cropland).

State and transition model

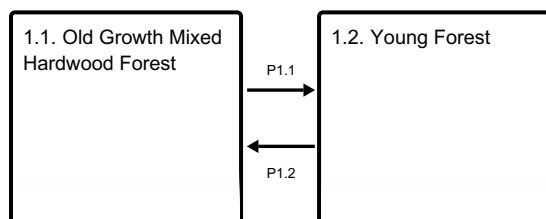
Ecosystem states



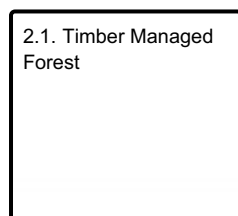
States 2 and 5 (additional transitions)



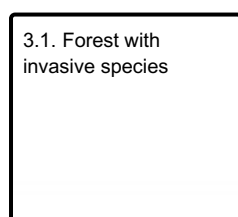
State 1 submodel, plant communities



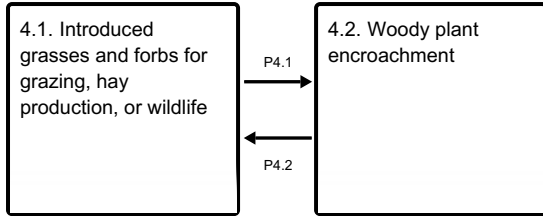
State 2 submodel, plant communities



State 3 submodel, plant communities



State 4 submodel, plant communities



State 1

Reference - Mixed Hardwood Forest

The reference community is characterized by northern red oak, black oak, American beech, sugar maple, white ash, and black birch and eastern white pine. Shrubs include American hornbeam, witch-hazel, striped maple, witch red elderberry, ironwood, and common blackberry. Wood fern, Pennsylvania sedge, blue cohosh, and sessile-leaved bellwort are characteristic herbs.

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

Community 1.1

Old Growth Mixed Hardwood Forest

Mature closed canopy forest.

Community 1.2

Young Forest

Pathway P1.1

Community 1.1 to 1.2

Wind, ice storm,, insect damage.

Pathway P1.2

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 P4.1 Community 4.1 to 4.2

Lack of management (mowing, grazing, prescribed fire)

Pathway P4.2 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 T1A State 1 to 2

Timber harvest.

Transition T1B State 1 to 3

Establishment of invasive species.

Transition T1C State 1 to 4

Land use conversion.

Conservation practices

Land Clearing

Restoration pathway R2A State 2 to 1

Ecological restoration.

Conservation practices

Forest Stand Improvement

Forest Land Management

Transition T2A

State 2 to 4

Land use conversion

Conservation practices

Land Clearing

Restoration pathway R2B

State 2 to 5

Restoration pathway R3A

State 3 to 1

Invasive species management/removal.

Conservation practices

Invasive Plant Species Control

Transition T3A

State 3 to 4

Land use conversion.

Restoration pathway R4B

State 4 to 5

Ecological restoration.

Transition T5A

State 5 to 4

Land use conversion.

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

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USDA-NRCS [United States Department of Agriculture, Natural Resources Conservation Service] 2016. National Soils Information System (NASIS) [Software] Version 7.x. USDA, Kansas City, MO.

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Contributors

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Approval

Greg Schmidt, 10/03/2024

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	05/21/2020
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:**
