

Ecological site F101XY014NY

Wet Till Depression

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 low areas and depressions on till plains. Slopes range from 0 to 8 percent.

Soils:

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

Representative soils are Alden, Ilion, Lyons, Patchin, Romulus, Sun, and Varick mapped within MLRA 101.

Vegetation

The reference community coincides with NatureServe's Black Ash - Red Maple Swamp Forest (CEGL007441).

Associated sites

F101XY013NY	Moist Till Moist Till sites are higher in the landscape profile.
F101XY007NY	Wet Outwash

Similar sites

F101XY004NY	Mucky Depression Mucky Depression sites have greater organic material.
F101XY003NY	Low Floodplain Depression

Table 1. Dominant plant species

Tree	(1) <i>Acer rubrum</i> (2) <i>Fraxinus nigra</i>
Shrub	(1) <i>Alnus incana ssp. rugosa</i> (2) <i>Lindera benzoin</i>
Herbaceous	(1) <i>Carex leptalea</i> (2) <i>Symplocarpus foetidus</i>

Physiographic features

The site occurs on low areas and depressions on till plains. Slopes range from 0 to 8 percent.

Table 2. Representative physiographic features

Landforms	(1) Till plain > Depression (2) Upland > Bog
Runoff class	Negligible to very high
Flooding frequency	None
Ponding frequency	Rare to frequent
Elevation	246–2,460 ft
Slope	0–8%
Water table depth	0–9 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 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

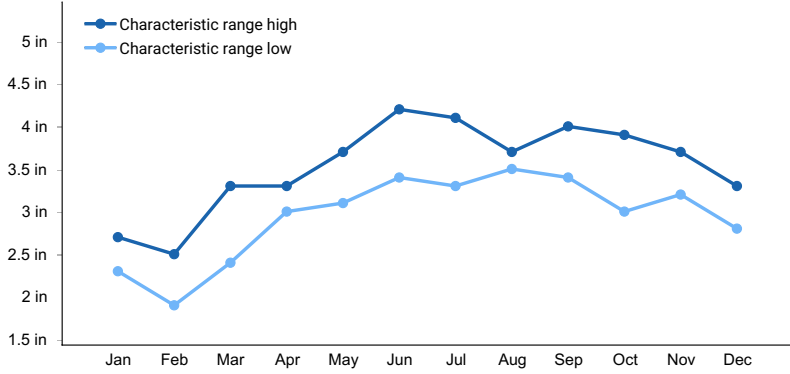


Figure 1. Monthly precipitation range

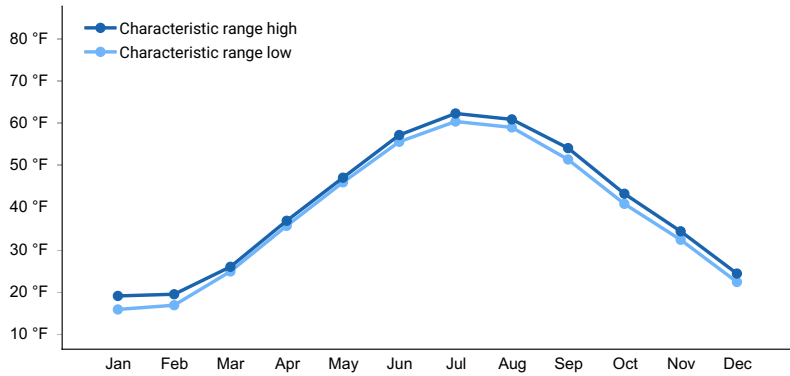


Figure 2. Monthly minimum temperature range

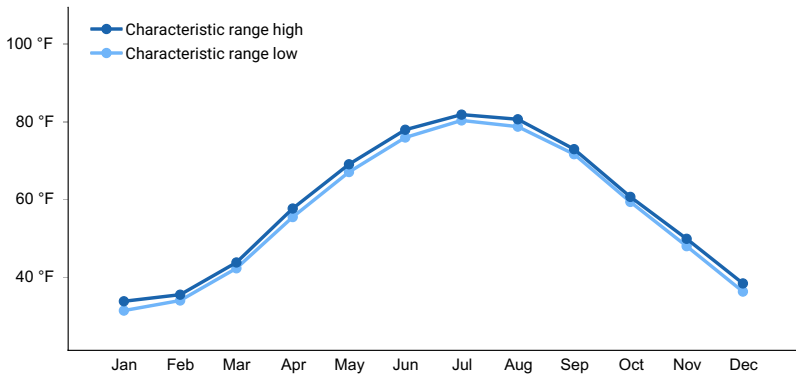


Figure 3. Monthly maximum temperature range

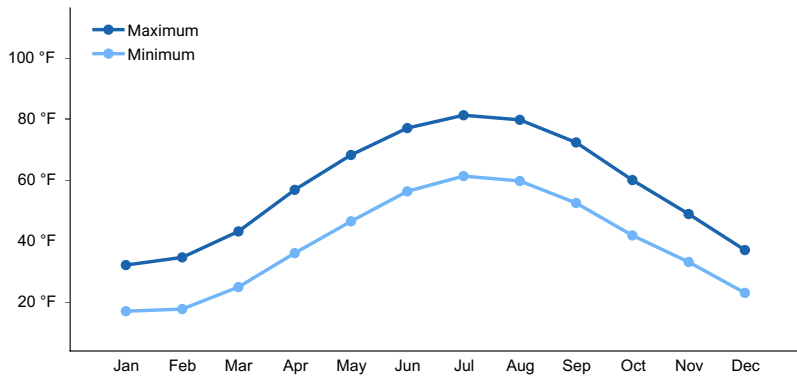


Figure 4. Monthly average minimum and maximum temperature

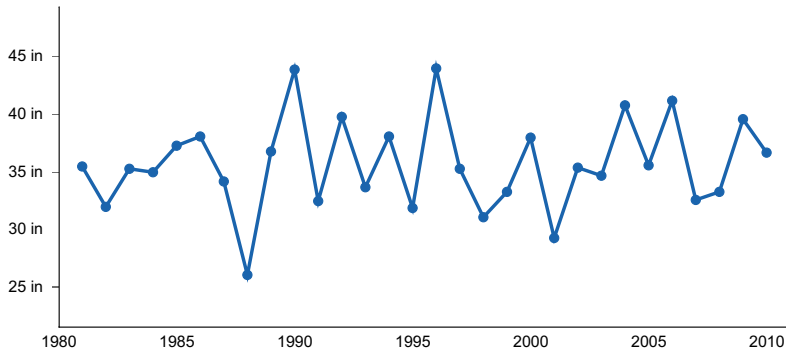


Figure 5. Annual precipitation pattern

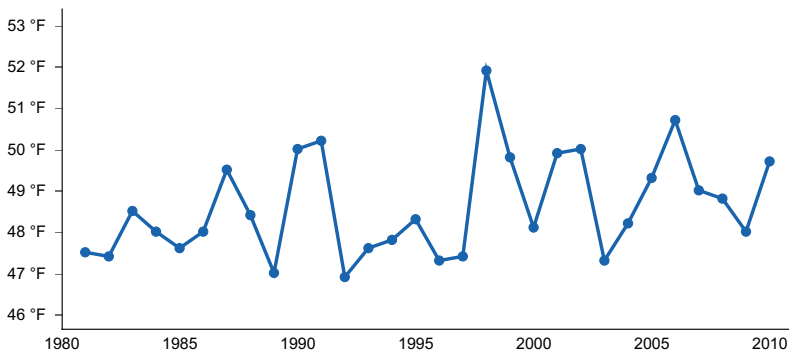


Figure 6. Annual average temperature pattern

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

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

National Wetland Inventory (NWI) Classification (Cowardin et al., 1979):

Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Saturated, Fresh, Circumneutral to Alkaline
or

Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Saturated, Fresh, Circumneutral to Alkaline

Soil features

The site consists of moderately deep to very deep, poorly and very poorly drained soils formed in loamy till. Representative soils are Alden, Ilion, Lyons, Patchin, Romulus, Sun, and Varick mapped within MLRA 101.

Table 4. Representative soil features

Parent material	(1) Till–limestone, sandstone, and shale (2) Glaciolacustrine deposits–schist (3) Granite
Surface texture	(1) Silt loam (2) Mucky silt loam (3) Very stony silt loam (4) Silty clay loam (5) Fine sandy loam
Family particle size	(1) Coarse-loamy (2) Fine-loamy (3) Loamy
Drainage class	Very poorly drained to poorly drained
Permeability class	Slow to very slow
Depth to restrictive layer	20–72 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0–2%
Available water capacity (Depth not specified)	3–7 in
Soil reaction (1:1 water) (Depth not specified)	4.5–9
Subsurface fragment volume <=3" (Depth not specified)	0–26%
Subsurface fragment volume >3" (Depth not specified)	0–10%

Ecological dynamics

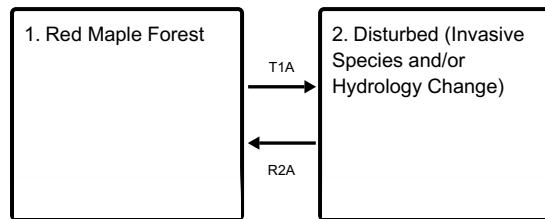
The reference community coincides with NatureServe's Black Ash - Red Maple Swamp Forest (CEGL007441). A similar community from NY Natural Heritage Program is the Red maple-hardwood swamp, however, it is a broader concept and includes some plants typically found on acidic soils. This site is considered semi-rich.

Common trees include red maple, black ash, American elm, yellow birch, and eastern white pine. Shrubs include spicebush, speckled alder, and willows. Herbaceous plants include bristly-stalked sedge, skunkbush, cinnamon fern, and marsh marigold.

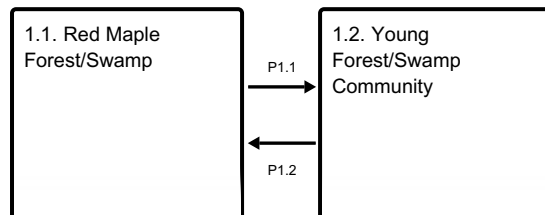
Activities that impact hydrology (roads, dams, diversions, drainage) and introduction of invasive species are some of the primary drivers of ecological change.

State and transition model

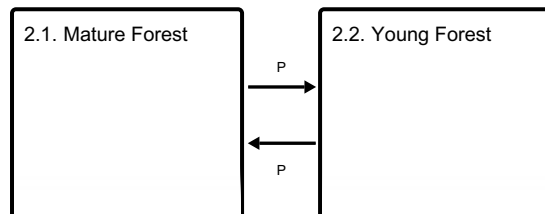
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1 Red Maple Forest

Reference state. Minimally managed.

Dominant plant species

- American elm (*Ulmus americana*), tree
- Freeman maple (*Acer xfreemanii*), tree
- northern red oak (*Quercus rubra*), tree
- swamp white oak (*Quercus bicolor*), tree
- silver maple (*Acer saccharinum*), tree
- upland bentgrass (*Agrostis perennans*), grass
- American milletgrass (*Milium effusum*), grass
- Kentucky bluegrass (*Poa pratensis*), grass
- sedge (*Carex*), other herbaceous

Community 1.1 Red Maple Forest/Swamp

The plant community is characterized as a Red maple-Hardwood Swamp (New York Natural Heritage Program) however, without plants typically found in acidic areas such as highbush blueberry. Another cross reference would be Black Ash - Red Maple / Alderleaf Buckthorn / Bristly-stalked Sedge Swamp Forest (CEGL007441) described by NatureServe.

Community 1.2 Young Forest/Swamp Community

Pathway P1.1
Community 1.1 to 1.2

Natural disturbances such as flooding, wind, ice storm, insects.

Pathway P1.2
Community 1.2 to 1.1

Time/succession

State 2
Disturbed (Invasive Species and/or Hydrology Change)

Highly disturbed forest resulting from changes in hydrology and/or presence of invasive species.

Dominant plant species

- American beech (*Fagus grandifolia*), tree

Community 2.1
Mature Forest

Invasive species present

Community 2.2
Young Forest

Invasive species present

Pathway P
Community 2.1 to 2.2

Disturbance: Flooding, wind, ice storms, insects.

Pathway P
Community 2.2 to 2.1

Time/succession

Transition T1A
State 1 to 2

Establishment of invasive plants. Changes to hydrology (drainage, diversions, roads,) may also been a driver of change.

Restoration pathway R2A
State 2 to 1

Conservation practices

Invasive Plant Species Control

Additional community tables

Table 5. Community 1.1 forest overstory composition

Common Name	Symbol	Scientific Name	Nativity	Height (Ft)	Canopy Cover (%)	Diameter (In)	Basal Area (Square Ft/Acre)
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Table 6. Community 1.1 forest understory composition

Common Name	Symbol	Scientific Name	Nativity	Height (Ft)	Canopy Cover (%)

Table 7. Community 2.1 forest overstory composition

Common Name	Symbol	Scientific Name	Nativity	Height (Ft)	Canopy Cover (%)	Diameter (In)	Basal Area (Square Ft/Acre)

Table 8. Community 2.1 forest understory composition

Common Name	Symbol	Scientific Name	Nativity	Height (Ft)	Canopy Cover (%)

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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Cowardin L. M., Carter V., Golet F. C., and LaRoe E.T. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service. U.S. Government Printing Office, Washington, D.C., 20402.

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NatureServe 2018. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://explorer.natureserve.org>. (Accessed: January 2019).

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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:**
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17. **Perennial plant reproductive capability:**
-