# Ecological site F101XY003NY
# Low Floodplain Depression

Last updated: 10/03/2024
Accessed: 05/11/2025

---

## 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 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. 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 flood plains, depressions, swamps, and marshes adjacent to low gradient streams and rivers. Slopes range from 0 to 3 percent.

Soils:
The site consists of very deep, very poorly drained soils that have formed in recent alluvium derived predominantly from siltstone, shale, and limestone.along streams. Representative soils are Sloan, Wallkill, Warners, and Wayland within MLRA 101.

Vegetation
The reference community coincides with NY natural heritage community: Floodplain forest and NatureServe's Silver Maple / Sensitive Fern - Small-spike False Nettle Floodplain Forest (CEGL006176).

.

## Associated sites

| F101XY002NY | **Low Floodplain**<br>Low Floodplain sites are also flooded but better drained. |
| --- | --- |
| F101XY001NY | **High Floodplain**<br>High Floodplain sites are less flooded in the floodplain landscape profile |

## Similar sites

| F101XY007NY | **Wet Outwash**<br>Wet Outwash sites are also poorly and very poorly drained but less flooded |
| --- | --- |
| F101XY014NY | **Wet Till Depression**<br>Wet Till Depression sites are less flooded. |

**Table 1. Dominant plant species**

| Tree | (1) *Acer saccharinum*<br>(2) *Fraxinus pennsylvanica* |
| --- | --- |
| Shrub | Not specified |
| Herbaceous | (1) *Boehmeria cylindrica*<br>(2) *Onoclea sensibilis* |

## Physiographic features

The site occurs on flood plains, depressions, swamps or marshes. Slopes range from 0 to 3 percent. In natural settings, the site is subject to frequent flooding and ponding.

**Table 2. Representative physiographic features**

| Landforms | (1) Valley > Flood plain<br>(2) Depression<br>(3) Swamp or marsh<br>(4) Alluvial fan |
| --- | --- |
| Runoff class | High |
| Flooding frequency | Occasional to frequent |
| Ponding frequency | Rare to frequent |
| Elevation | 249–2,201 ft |
| Slope | 0–3% |
| 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-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 |
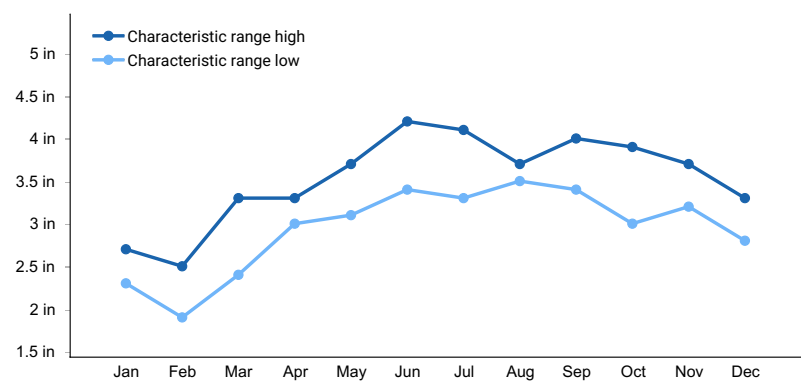


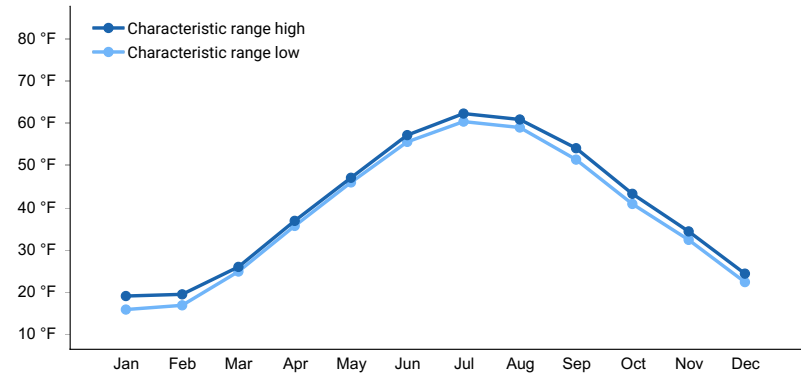**Figure 1. Monthly precipitation range**



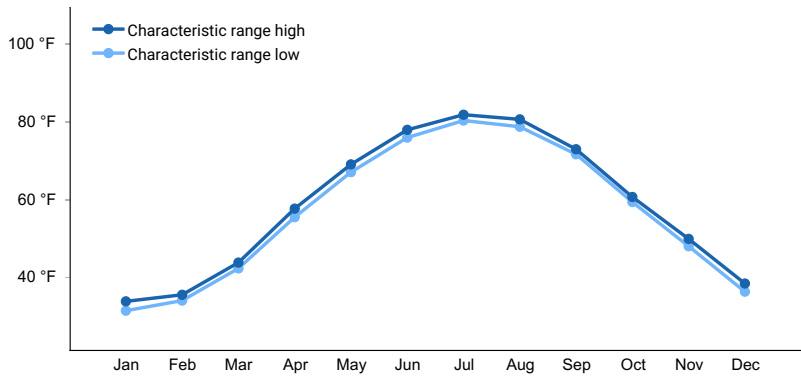**Figure 2. Monthly minimum temperature range**



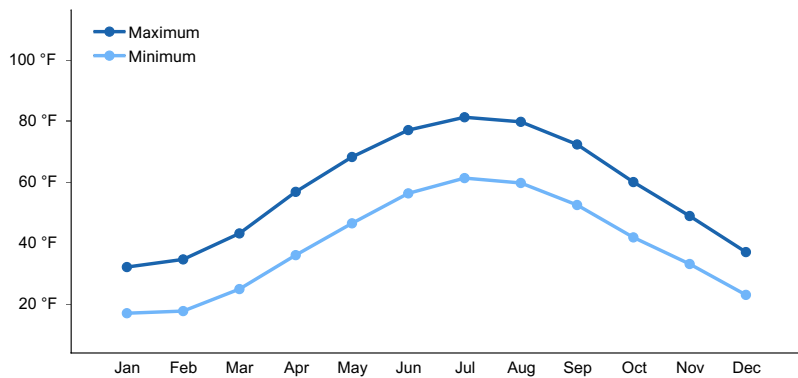**Figure 3. Monthly maximum temperature range**

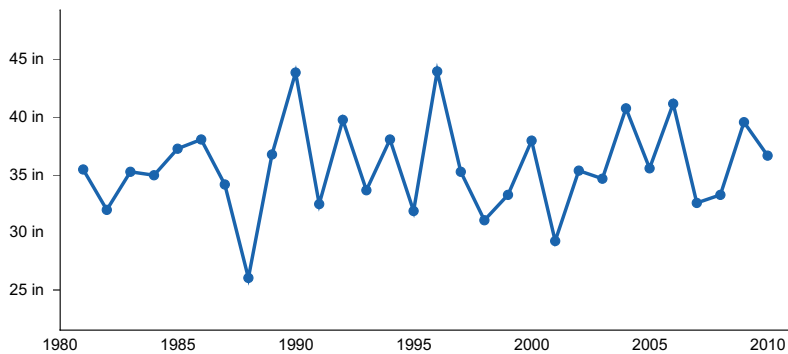**Figure 4. Monthly average minimum and maximum temperature**



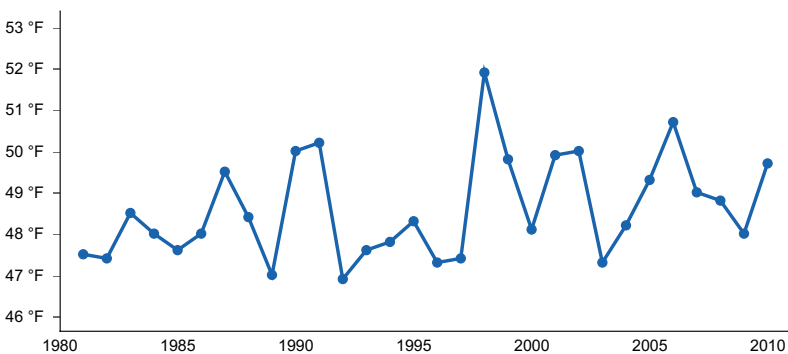**Figure 5. Annual precipitation pattern**



**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

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 flooded, fresh, alkaline

## Soil features

The site consists of very deep, very poorly drained soils that have formed in recent alluvium derived from mostly calcareous sedimentary lithologies, (limestone, shales, and sandstones). Representative soils are Sloan, Wallkill, Warners, and Wayland.

**Table 4. Representative soil features**

| Parent material | (1) Alluvium–limestone, sandstone, and shale |
|---|---|
| Surface texture | (1) Silt loam<br>(2) Loam<br>(3) Mucky very fine sandy loam<br>(4) Mucky loam<br>(5) Mucky silt loam |
| Family particle size | (1) Coarse-loamy<br>(2) Fine-loamy<br>(3) Fine-silty<br>(4) Loamy |
| Drainage class | Very poorly drained to somewhat poorly drained |
| Permeability class | Very slow to moderate |
| Depth to restrictive layer | 72 in |
| Surface fragment cover <=3" | 0% |
| Surface fragment cover >3" | 0% |
| Available water capacity<br>(Depth not specified) | 4–13 in |
| Calcium carbonate equivalent<br>(Depth not specified) | 0–15% |
| Soil reaction (1:1 water)<br>(Depth not specified) | 6.1–8.4 |
| Subsurface fragment volume <=3"<br>(Depth not specified) | 0–35% |
| Subsurface fragment volume >3"<br>(Depth not specified) | 1–20% |

## Ecological dynamics

The reference community is dominated silver maple but other canopy trees that may be present are red maple, black willow, river birch, and American elm. Shrubs and herbs include spicebush, dogwoods, sensitive fern, false nettle, and numerous sedges.

Disturbances are related to flood magnitude, frequency, and seasonal timing. Changes in hydrology (drainage, diversions, dams, etc.) will impact structure and function of the site making the site more susceptible to invasive species establishment.

## State and transition model

**Ecosystem states**

```
┌─────────────────────┐        ┌─────────────────────┐
│ 1. Silver Maple     │  T1A   │ 2. Disturbed        │
│    Forest           │ ─────→ │    (Invasive        │
│                     │        │    Species and/or   │
│                     │ ←───── │    Hydrology        │
│                     │  R2A   │    Change)          │
└─────────────────────┘        └─────────────────────┘
```
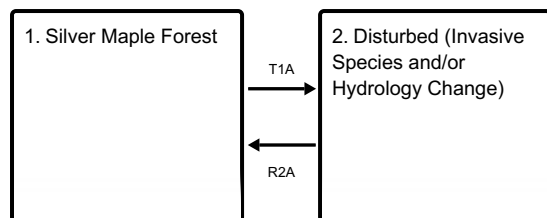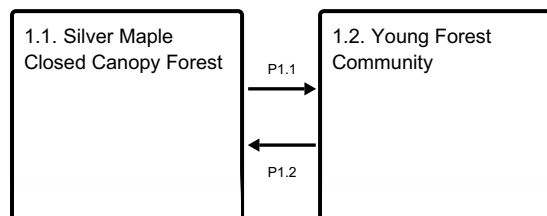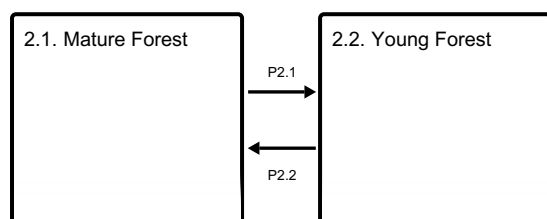
**State 1 submodel, plant communities**

```
┌─────────────────────┐        ┌─────────────────────┐
│ 1.1. Silver Maple   │  P1.1  │ 1.2. Young Forest   │
│ Closed Canopy Forest│ ─────→ │ Community           │
│                     │        │                     │
│                     │ ←───── │                     │
│                     │  P1.2  │                     │
└─────────────────────┘        └─────────────────────┘
```

**State 2 submodel, plant communities**

```
┌─────────────────────┐        ┌─────────────────────┐
│ 2.1. Mature Forest  │  P2.1  │ 2.2. Young Forest   │
│                     │ ─────→ │                     │
│                     │        │                     │
│                     │ ←───── │                     │
│                     │  P2.2  │                     │
└─────────────────────┘        └─────────────────────┘
```

# State 1
# Silver Maple Forest

Reference state. Minimally managed.

## Dominant plant species

- red maple (*Acer rubrum*), tree
- white willow (*Salix alba*), tree
- American witchhazel (*Hamamelis virginiana*), tree
- green ash (*Fraxinus pennsylvanica*), tree
- jewelweed (*Impatiens capensis*), other herbaceous
- sensitive fern (*Onoclea sensibilis*), other herbaceous
- goldenrod (*Solidago*), other herbaceous
- broadleaf cattail (*Typha latifolia*), other herbaceous
- sedge (*Carex*), other herbaceous

# Community 1.1
# Silver Maple Closed Canopy Forest

Other trees present: red maple, American elm, black willow.

# Community 1.2
# Young Forest Community

Black willow, red maple common with a more open canopy. Herbaceous plants more abundant.

# 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.

## Community 2.1
## Mature Forest

Invasive species present

## Community 2.2
## Young Forest

Invasive species present

## Pathway P2.1
## Community 2.1 to 2.2

Disturbance: Flooding, wind, ice storms, insects.

## Pathway P2.2
## 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) |
|---|---|---|---|---|---|---|---|
| Tree | | | | | | | |
| red maple | ACRU | *Acer rubrum* | Native | – | – | – | – |

**Table 6. Community 1.1 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

Cleland, D.T., J.A. Freeouf, J.E. Keys, G.J. Nowacki, C. Carpenter, and W.H. McNab. 2007. Ecological Subregions, Sections, and Subsections of the Coterminous United States. USDA Forest Service, General Technical Report WO-76. Washington, DC.

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.

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.

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).

New York Natural Heritage Program. 2020. Online Conservation Guide for Floodplain forest. Available from: https://guides.nynhp.org/floodplain-forest/. (Accessed: 19 March 2020).

USDA-NRCS [United States Department of Agriculture, Natural Resources Conservation Service] 2006. Land Resource Regions and Major land Resource Areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296.

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.

USNVC [United States National Vegetation Classification]. 2017. United States National Vegetation Classification Database, V2.01. Federal Geographic Data Committee, Vegetation Subcommittee, Washington DC. http://usnvc.org/explore-classification/ (Accessed: 2018).

## Contributors

Joshua Hibit

## 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:**