

Ecological site F142XA010NY Acidic Lacustrine Terraces Frigid

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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): 142X—St. Lawrence-Champlain Plain

This MLRA is a glaciated area of low relief dominated by broad expanses of nearly level, sandy deltas and shallow lacustrine basins or plains punctuated by low hills of glacial till. Rivers and streams have cut relatively deep but narrow valleys across the plain. Elevation ranges from 80 to 1,000 feet, increasing gradually from the St. Lawrence River southward and from Lake Champlain to the east and west. Local relief generally is less than 30 feet, but glacial till ridges, till plains, and some outwash terraces rise 15 to 80 feet above the adjacent plains.

This area has been glaciated, and a thin mantle of till covers most of the bedrock. Extensive areas of sandy glacial outwash and eolian deposits also occur. Some glacial lake sediments have been deposited above glacial moraines. These deposits are thickest in the valleys and thinnest on the ridges and highlands. During the later stages of the Wisconsin glacial period, seawater entered the Champlain Valley and deposited marine sediments that were later covered by freshwater sediments. The marine deposits are unique to the area.

This area supports hardwoods. The beech-birch-sugar maple forest type is the dominant climax forest type on uplands. Associated with this type are basswood, American elm, maple species, white ash, black cherry, and white pine. The aspen-birch type, earlier in succession, is economically important. Such species as eastern hemlock, red maple, American elm, and spruce are on wet soils.

Some of the major wildlife species in this area are white-tailed deer, red fox, raccoon, beaver, woodchuck, muskrat, cottontail, ruffed grouse, and woodcock.

LRU notes

Land Resource Unit (LRU): Frigid Soil Temperature Regime

The upper St. Lawrence and Champlain Valleys are characterized with soils in the frigid soil temperature regime (mean annual soil temperature greater than 32°F but less than 46°F and with a difference between mean summer and mean winter soil temperatures greater than 41°F at 20 inches below the surface or at a densic, lithic, or paralithic contact, whichever is shallower).

The Frigid Soil Temperature Regime (STR) will have shorter growing season than the lower St. Lawrence and Champlain Valleys which are characterized with soils in the mesic STR. Species more tolerant of colder year round temperatures would also be evident in the Frigid LRU.

Classification relationships

NRCS:

Land Resource Region: R - Northeastern Forage and Forest Region

MLRA: 142 - St. Lawrence-Champlain Plain

LRU: A/02 - Frigid Mean Annual Soil Temperature

USFS:
Domain: 200 - Humid Temperate
Division: 210 - Warm Continental
Province: 211 - Northeastern Mixed Forest
Section: 211E - St. Lawrence and Champlain Valley
Subsections: 211Ea - St. Lawrence Glacial Marine Plain
EPA:
Level I: 8 - Eastern Temperate Forests
Level II: 8.1 - Mixed Wood Plains
Level III: 83 - Eastern Great Lakes Lowlands
Level IV: 83d - St. Lawrence Lowlands
83e - Upper St. Lawrence Valley

Ecological site concept

Landform/Landscape Position:
The site occurs on lake plains and terraces. Slopes are mostly less than 15 percent but can range up to 50 percent.

Soils:
The site consists of very deep, well and moderately well drained coarse-silty soils formed in glaciolacustrine or eolian deposits. Representative soils are Nicholville and Salmon.

Vegetation:
The reference community coincides with Red Spruce - Balsam Fir - Paper Birch Forest - CEG006273 (NatureServe Explorer, 2020).

Table 1. Dominant plant species

Tree	(1) <i>Picea rubens</i> (2) <i>Betula papyrifera</i>
Shrub	(1) <i>Viburnum nudum</i> (2) <i>Ilex mucronata</i>
Herbaceous	(1) <i>Oxalis montana</i> (2) <i>Clintonia borealis</i>

Physiographic features

The site occurs on lake plains and terraces. Slopes are mostly less than 15 percent but can range up to 50 percent.

Table 2. Representative physiographic features

Landforms	(1) Lake plain (2) Lake terrace
Slope	0–15%

Table 3. Representative physiographic features (actual ranges)

Slope	0–50%
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Climatic features

Mean annual precipitation is 37 inches and evenly distributed throughout the year. Most of the rainfall occurs as high intensity, convective thunderstorms during the summer. Snowfall is heavy from late in autumn to early spring. The average temperature in winter is 18°F and in summer it is 66°F. Average frost-free and freeze-free days are 126 and 153, respectively.

Table 4. Representative climatic features

Frost-free period (average)	126 days
Freeze-free period (average)	153 days
Precipitation total (average)	940 mm

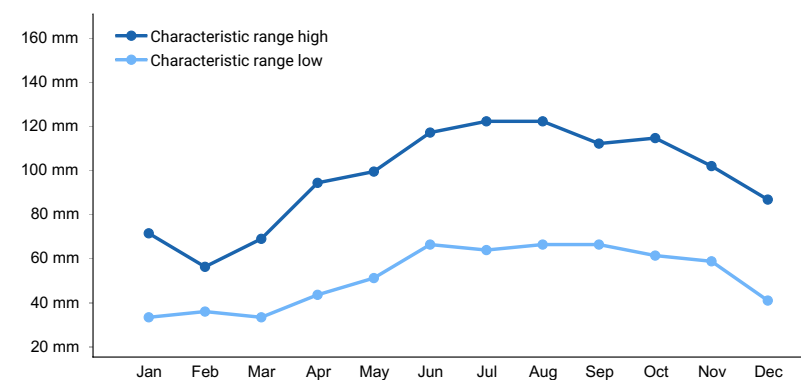


Figure 1. Monthly precipitation range

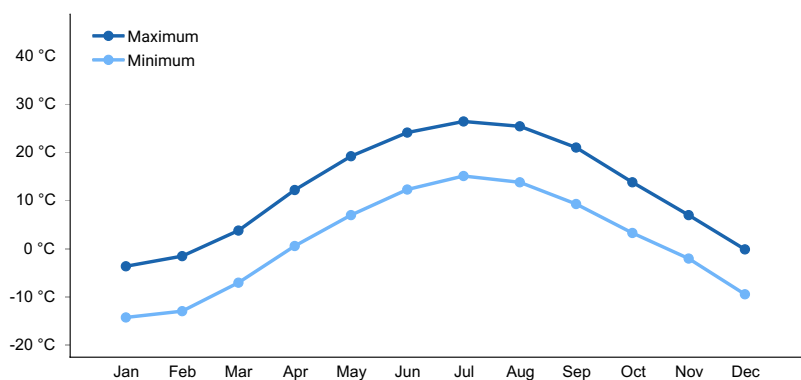


Figure 2. Monthly average minimum and maximum temperature

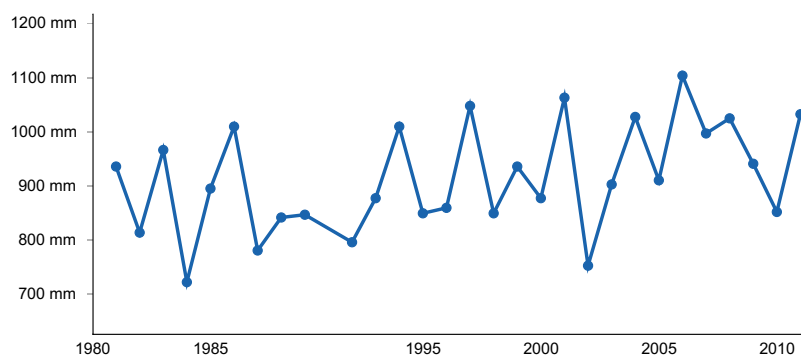


Figure 3. Annual precipitation pattern

Climate stations used

- (1) OGDENSBURG 4 NE [USC00306164], Ogdensburg, NY
- (2) MASSENA INTL AP [USW00094725], Massena, NY
- (3) LAWRENCEVILLE 3 SW [USC00304647], Nicholville, NY
- (4) MALONE [USC00304996], Malone, NY
- (5) PLATTSBURGH AFB [USC00306659], Plattsburgh, NY

Influencing water features

Soil features

The site consists of very deep, well and moderately well drained coarse-silty soils formed in glaciolacustrine or eolian deposits. Representative soils are Nicholville and Salmon.

Table 5. Representative soil features

Parent material	(1) Glaciolacustrine deposits (2) Eolian deposits
Drainage class	Moderately well drained to well drained

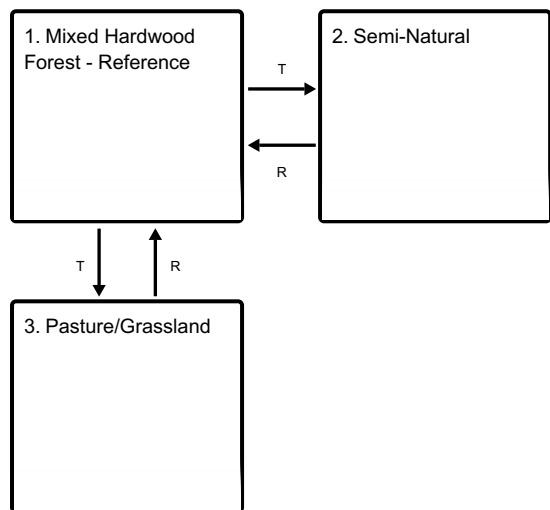
Ecological dynamics

The reference community coincides with Red Spruce - Balsam Fir - Paper Birch Forest - C EGL006273 (NatureServe Explorer, 2020). The site also coincides with NY's Spruce Flats and Balsam Flats communities.

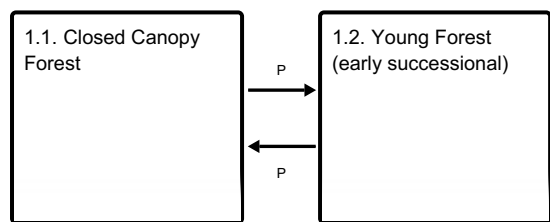
Natural disturbances include wind, ice storms, droughts, and wildlife impacts. Invasive species (insects, diseases, and plants) are a threat especially in disturbed areas.

State and transition model

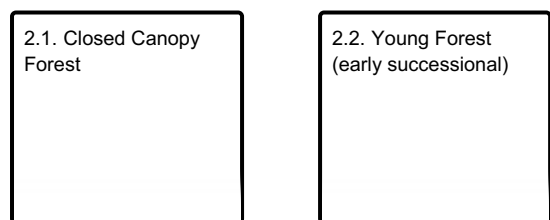
Ecosystem states



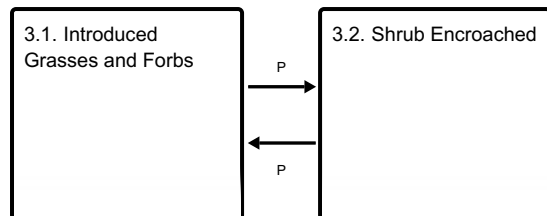
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1

Mixed Hardwood Forest - Reference

Minimally managed hardwood forest. Natural disturbances primarily from weather events, insect damage, tree fall create pockets of young forest communities (early successional).

Community 1.1

Closed Canopy Forest

Community 1.2

Young Forest (early successional)

Pathway P

Community 1.1 to 1.2

Conservation practices

Early Successional Habitat Development/Management

Pathway P

Community 1.2 to 1.1

State 2

Semi-Natural

Timber harvest common, invasive species such as bush honeysuckle, oriental bittersweet, Japanese barberry, and multiflora rose may be common in disturbed areas.

Community 2.1

Closed Canopy Forest

Community 2.2

Young Forest (early successional)

State 3

Pasture/Grassland

Forest has been converted to pastureland/grassland for either livestock grazing, hay production, or wildlife habitat.

Community 3.1

Introduced Grasses and Forbs

Grasses and forbs introduces for livestock grazing, hay production, or wildlife habitat.

Community 3.2

Shrub Encroached

Pathway P

Community 3.1 to 3.2

Lack of mowing, grazing, or fire.

Pathway P

Community 3.2 to 3.1

Brush management and/or fire.

Conservation practices

Brush Management
Prescribed Burning

Transition T

State 1 to 2

Human disturbances (roads, timber harvest,) affect species composition and allow the potential for non-native and invasive species to establish and persist.

Transition T

State 1 to 3

Conservation practices

Land Clearing
Forage and Biomass Planting

Restoration pathway R

State 2 to 1

Conservation practices

Brush Management
Forest Stand Improvement
Forest Management Plan - Written
Forest stand improvement for habitat and soil quality
Herbaceous Weed Control

Restoration pathway R

State 3 to 1

Conservation practices

Native Plant Community Restoration and Management

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.

NatureServe Explorer 2020:

https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.689577/Picea_rubens_-_Abies_balsamea_-_Betula_papyrifera_Forest

Thompson E. H., Sorenson E. R. 2000. Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont. Vermont Department of Fish and Wildlife and The Nature Conservancy. University Press of New England, Hanover and London.

Approval

Nels Barrett, 5/22/2020

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	05/04/2024
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):**
-
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:
