

Ecological site F142XA022NY

Rich Dry Outwash Frigid

Last updated: 10/03/2024
Accessed: 03/22/2025

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): 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 outwash plains, terraces, deltas, and beach ridges. Slopes are mostly less than 25 percent but can range up to 60 percent.

Soils:

The site consists of very deep, excessively drained and somewhat excessively drained soils formed in sandy glacial outwash or sandy glaciolacustrine deposits. Soils are non-acid or have a high base status (calcareous).

Representative soils are Champlain, Colonie, Missisquoi, Raquette, Trout River, and Waddington.

Vegetation:

The reference community coincides with NatureServe's Sugar Maple - Eastern White Pine / Striped Maple Forest - CEGLO05005 and New York's Natural Heritage Community Pine-Northern Hardwood Forest.

Associated sites

F142XA004NY	Acidic Shallow Sandy Outwash
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Similar sites

F142XA006NY	Acidic Moist Outwash Frigid
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Table 1. Dominant plant species

Tree	(1) <i>Pinus strobus</i> (2) <i>Acer saccharum</i>
Shrub	(1) <i>Ostrya virginiana</i>
Herbaceous	(1) <i>Trillium grandiflorum</i>

Physiographic features

The site occurs on outwash plains, terraces, deltas, and beach ridges. Slopes are mostly less than 25 percent but can range up to 60 percent.

Table 2. Representative physiographic features

Landforms	(1) Outwash plain (2) Outwash delta (3) Outwash terrace (4) Beach ridge
Runoff class	Negligible to low

Flooding frequency	None
Ponding frequency	None
Elevation	95–2,017 ft
Slope	0–45%
Water table depth	72 in
Aspect	Aspect is not a significant factor

Table 3. Representative physiographic features (actual ranges)

Runoff class	Not specified
Flooding frequency	Not specified
Ponding frequency	Not specified
Elevation	Not specified
Slope	0–60%
Water table depth	Not specified

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, and snowfall is heavy from late in Autumn to early Spring. The frost-free period in this area is longest in a narrow belt around Lake Champlain.

Table 4. Representative climatic features

Frost-free period (characteristic range)	125-128 days
Freeze-free period (characteristic range)	153-159 days
Precipitation total (characteristic range)	32-36 in
Frost-free period (actual range)	125-129 days
Freeze-free period (actual range)	153-162 days
Precipitation total (actual range)	32-38 in
Frost-free period (average)	127 days
Freeze-free period (average)	156 days
Precipitation total (average)	34 in

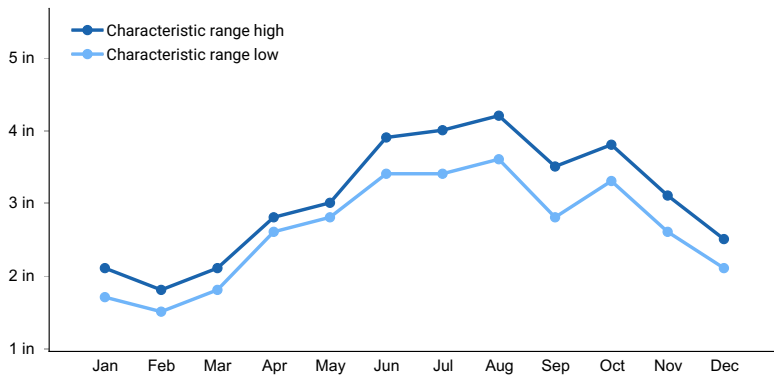


Figure 1. Monthly precipitation range

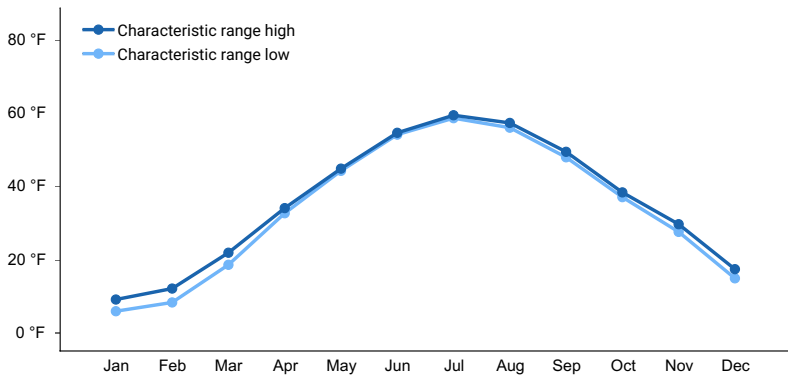


Figure 2. Monthly minimum temperature range

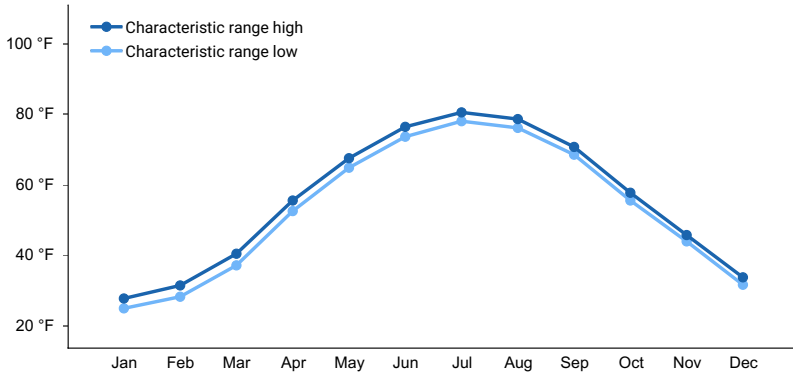


Figure 3. Monthly maximum temperature range

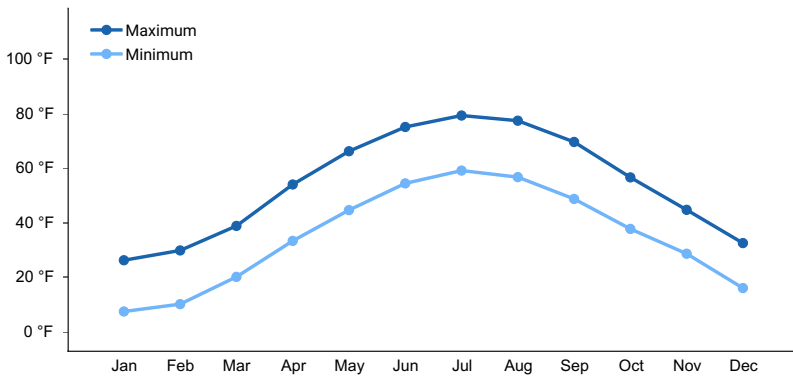


Figure 4. Monthly average minimum and maximum temperature

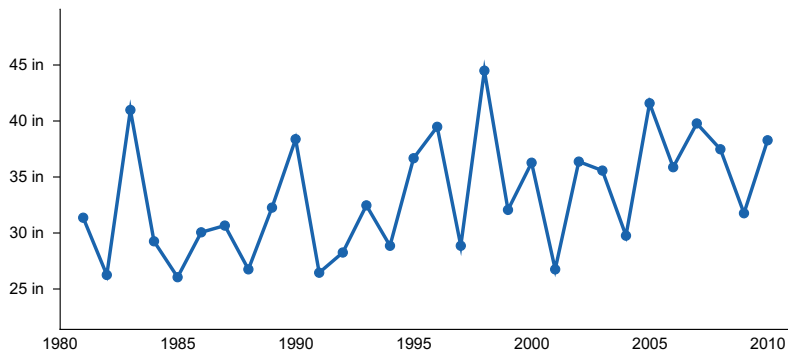


Figure 5. Annual precipitation pattern

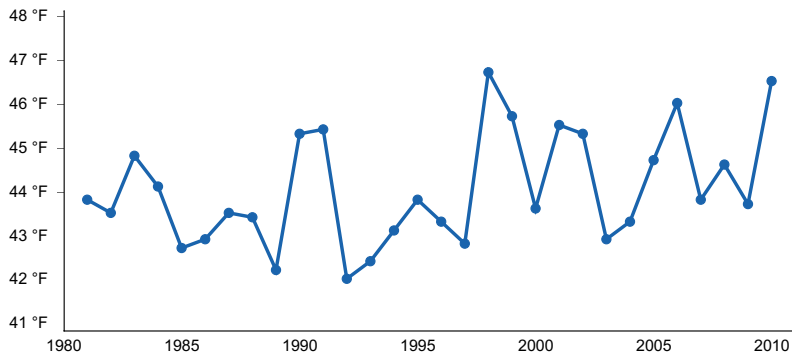


Figure 6. Annual average temperature pattern

Climate stations used

- (1) MALONE [USC00304996], Malone, NY
- (2) PLATTSBURGH AFB [USC00306659], Plattsburgh, NY
- (3) PERU 2 WSW [USC00306538], Peru, NY

Influencing water features

NONE

Wetland description

NONE

Soil features

The site consists of very deep, excessively drained and somewhat excessively drained soils formed in sandy glacial outwash or sandy glaciolacustrine deposits. Soils are non-acid or have a high base status (calcareous). Representative soils are Champlain, Colonie, Missisquoi, Raquette, Trout River, and Waddington.

Table 5. Representative soil features

Parent material	(1) Glaciofluvial deposits–igneous and sedimentary rock (2) Glaciolacustrine deposits (3) Alluvium
Surface texture	(1) Fine sand (2) Loamy sand (3) Sandy loam (4) Cobbly loamy sand (5) Gravelly loamy sand (6) Gravelly loam (7) Gravelly sandy loam (8) Very cobbly sandy loam
Family particle size	(1) Sandy (2) Sandy-skeletal (3) Loamy-skeletal
Drainage class	Somewhat excessively drained to excessively drained
Permeability class	Slow to moderately rapid
Depth to restrictive layer	72 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0–2%
Available water capacity (Depth not specified)	2–4 in

Soil reaction (1:1 water) (Depth not specified)	3.5–8.4
Subsurface fragment volume <=3" (Depth not specified)	3–40%
Subsurface fragment volume >3" (Depth not specified)	2–16%

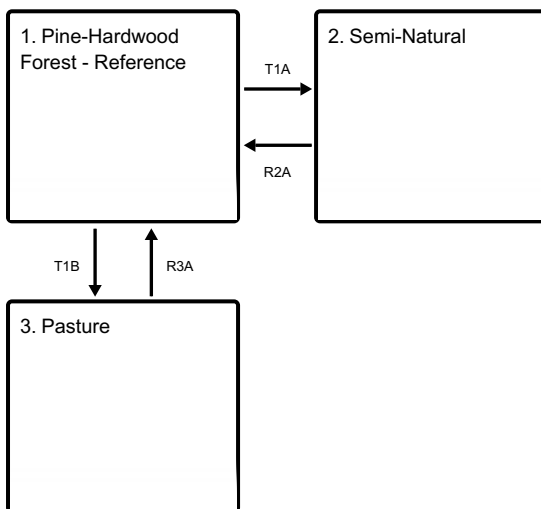
Ecological dynamics

The reference community coincides with NatureServe's Sugar Maple - Eastern White Pine / Striped Maple Forest - CEG005005 and New York's Natural Heritage Community Pine-Northern Hardwood Forest.

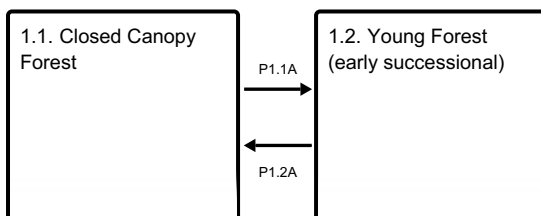
Stands are characterized by a closed canopy, sometimes with supercanopy pine, patchy (but overall fairly sparse) shrubs, and relatively sparse herb and bryoid strata. Canopy dominants are the northern hardwood species *Acer saccharum*, *Betula alleghaniensis*, and in the Northeast *Fagus grandifolia*, with *Pinus strobus*, the pine often occurring as a supercanopy. Minor canopy associates may include *Tsuga canadensis* and *Quercus rubra*. In the Northeast at the northern edge of the range, *Abies balsamea*, *Picea rubens* and *Thuja occidentalis* may also occur sparingly. The subcanopy is dominated by *Acer pensylvanicum*. The herbaceous layer is characterized by *Trientalis borealis*, *Maianthemum canadense*, *Pteridium aquilinum*, *Oryzopsis asperifolia*, intermixed with the dwarf-shrubs *Gaultheria procumbens*, *Vaccinium angustifolium* and *Gaylussacia baccata*. Bryophytes include *Polytrichum commune*, *Pleurozium schreberi*, *Bazzania trilobata*, or *Hypnum imponens*.

State and transition model

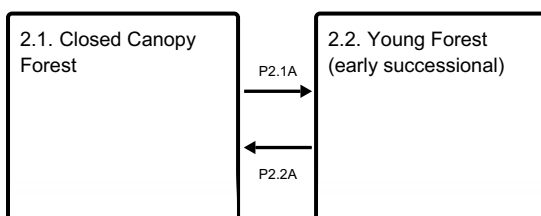
Ecosystem states



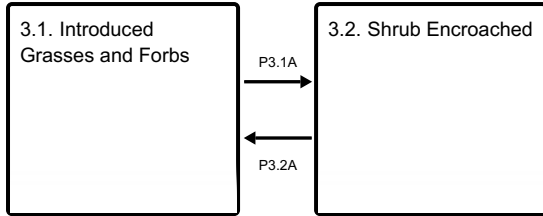
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1

Pine-Hardwood Forest - Reference

Minimally managed pine- northern 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 P1.1A

Community 1.1 to 1.2

Disturbance

Conservation practices

Early Successional Habitat Development/Management

Pathway P1.2A

Community 1.2 to 1.1

Succession

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)

Pathway P2.1A

Community 2.1 to 2.2

Disturbance

Pathway P2.2A

Community 2.2 to 2.1

Succession

State 3 Pasture

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 P3.1A Community 3.1 to 3.2

Lack of mowing, grazing, or fire.

Pathway P3.2A Community 3.2 to 3.1

Brush management and/or fire.

Conservation practices

Brush Management
Prescribed Burning

Transition T1A 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 T1B State 1 to 3

Land clearing, planting of forage grasses and legumes.

Conservation practices

Land Clearing
Forage and Biomass Planting

Restoration pathway R2A State 2 to 1

Removal of invasives, native outplanting.

Conservation practices

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

Herbaceous Weed Control

Restoration pathway R3A State 3 to 1

Succession

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.

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_Great_Lakes_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.

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	03/22/2025

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:**
-