Ecological site F142XB014NY
Rich Wet Till Depression

Last updated: 10/03/2024
Accessed: 10/12/2024

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): Mesic Soil Temperature Regime

The lower St. Lawrence and Champlain Valleys are characterized with soils in the mesic soil temperature regime (mean annual soil temperature between 46°F and 59°F) at 20 inches below the surface or at a densic, lithic, or paralithic contact, whichever is shallower.

The Mesic Soil Temperature Regime (STR) will have a longer growing season than the upper St. Lawrence and Champlain Valleys which are characterized with soils in the frigid STR. Species more tolerant of milder year round temperatures would also be evident in the mesic LRU.

Classification relationships

NRCS:
Land Resource Region: R - Northeastern Forage and Forest Region
MLRA: 142X–St. Lawrence-Champlain Plain
LRU: B - Mesic Mean Annual Soil Temperature

Ecological site concept

Landform/Landscape Position:
The site occurs in depressions on till plains. Slopes range from 0 to 3 percent.

Soils:
The site consists of very deep, poorly and very poorly drained calcareous soils that formed in glacial till. Representative soils are Lyons and Sun.

Vegetation
The reference community coincides with NY natural heritage community, Red maple - hardwood swamp and with Vermont's red maple-black ash swamp, alder swamp, and red maple black gum swamp depending on varying site properties.

Associated sites

F142XB013NY	**Moist Till Upland**

Similar sites

F142XB007VT	**Wet Clayplain Depression**
F142XB021NY	**Acidic Wet Till Depression**

Table 1. Dominant plant species

Tree	(1) *Acer rubrum* (2) *Fraxinus nigra*
Shrub	(1) *Alnus incana ssp. rugosa* (2) *Cornus sericea*
Herbaceous	(1) *Symplocarpus foetidus* (2) *Carex*

Physiographic features

The site occurs in depressions on till plains. Slopes range from 0 to 3 percent

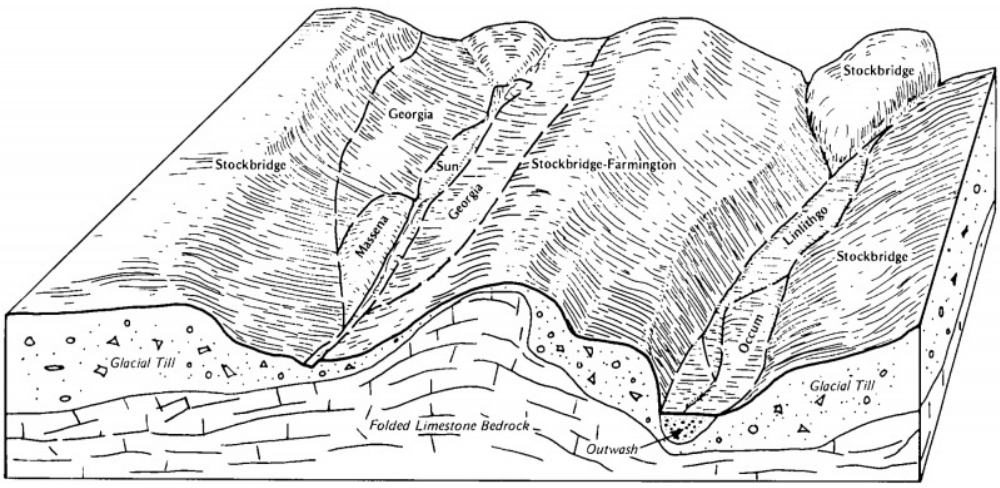


Figure 1. Rich Wet Till (Sun soils)

Table 2. Representative physiographic features

Landforms	(1) Upland > Depression (2) Drumlinoid ridge (3) Hill (4) Till plain
Runoff class	Medium to very high
Flooding frequency	None
Ponding frequency	None to frequent
Elevation	27–540 m
Slope	0–3%
Water table depth	0–20 cm
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, 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 3. Representative climatic features

Frost-free period (characteristic range)	105-126 days
Freeze-free period (characteristic range)	138-158 days
Precipitation total (characteristic range)	914-1,067 mm
Frost-free period (actual range)	103-132 days
Freeze-free period (actual range)	133-164 days
Precipitation total (actual range)	813-1,092 mm
Frost-free period (average)	117 days
Freeze-free period (average)	149 days
Precipitation total (average)	991 mm

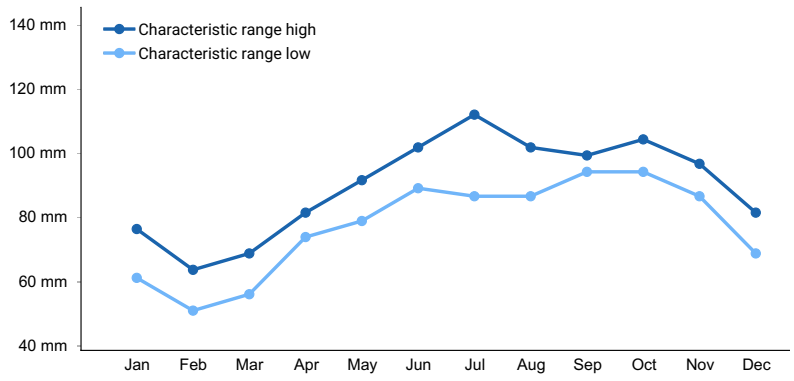


Figure 2. Monthly precipitation range

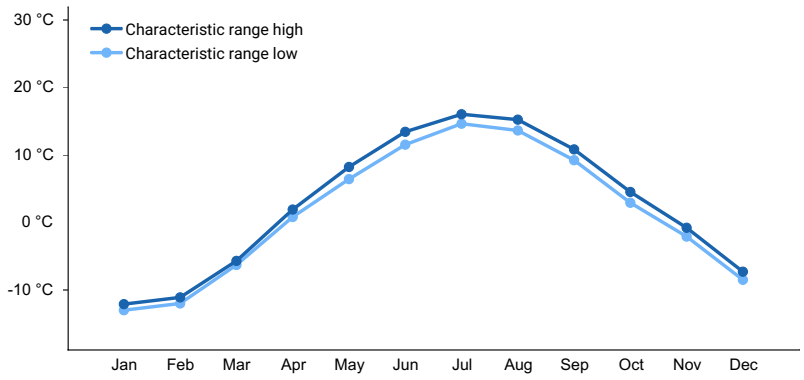


Figure 3. Monthly minimum temperature range

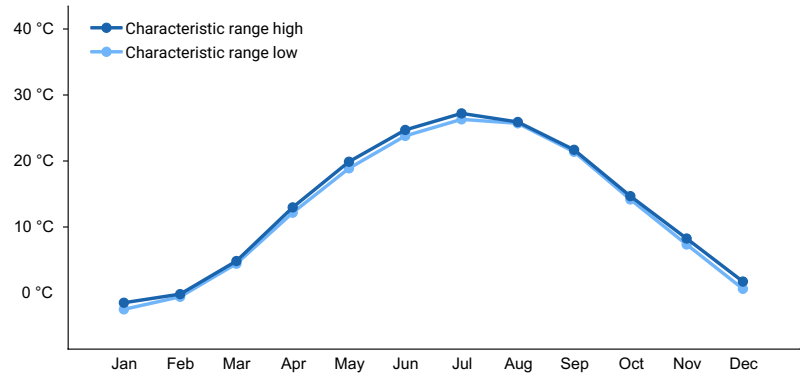


Figure 4. Monthly maximum temperature range

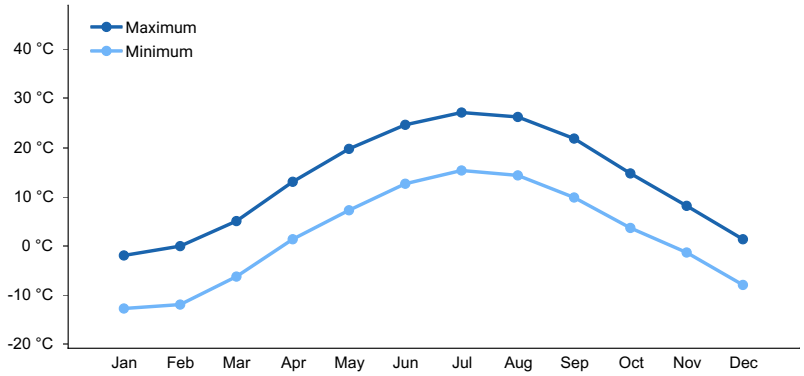


Figure 5. Monthly average minimum and maximum temperature

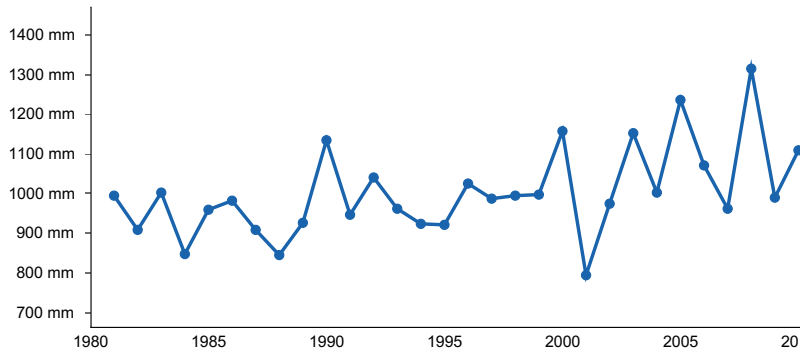


Figure 6. Annual precipitation pattern

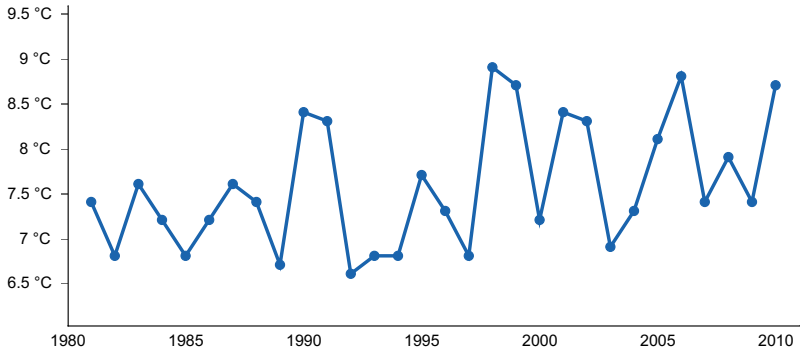


Figure 7. Annual average temperature pattern

Climate stations used

- (1) CORNWALL [USC00431580], Middlebury, VT
- (2) WILLSBORO 1 N [USC00309495], Willsboro, NY
- (3) WATERTOWN INTL AP [USW00094790], Dexter, NY
- (4) GOUVERNEUR 3 NW [USC00303346], Gouverneur, NY
- (5) WATERTOWN [USC00309000], Watertown, NY
- (6) WHITEHALL [USC00309389], Whitehall, 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

Cowardin System of Wetland Classification:

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 very deep, poorly and very poorly drained calcareous soils that formed in glacial till. Representative soils are Lyons, Massena, and Sun.

Table 4. Representative soil features

Parent material	(1) Till–limestone (2) Glaciolacustrine deposits–calcareous shale (3) Sandstone (4) Schist

Surface texture	(1) Stony loam (2) Silt loam (3) Very stony silt loam
Family particle size	(1) Fine-loamy (2) Coarse-loamy
Drainage class	Very poorly drained to poorly drained
Permeability class	Slow to very slow
Depth to restrictive layer	53–183 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0–2%
Available water capacity (Depth not specified)	7.62–17.78 cm
Soil reaction (1:1 water) (Depth not specified)	5.1–8.4
Subsurface fragment volume <=3" (Depth not specified)	6–19%
Subsurface fragment volume >3" (Depth not specified)	2–5%

Ecological dynamics

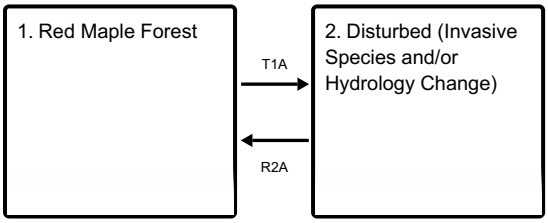
The reference community coincides with NatureServe's Black Ash - Red Maple Swamp Forest (CEGL007441)and with Vermont's red maple-black ash swamp, alder swamp, and red maple black gum swamp depending on varying site properties (Thompson and Sorenson 2000) . A similar community from NY Natural Heritage Program is the Red maple-hardwood swamp, however, it is a broader concept.

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.

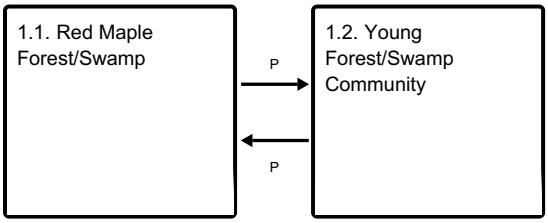
Activities that impact hydrology (roads, dams, diversions, drainage) and introduction of invasive species are some of the primary drivers of ecological change.

State and transition model

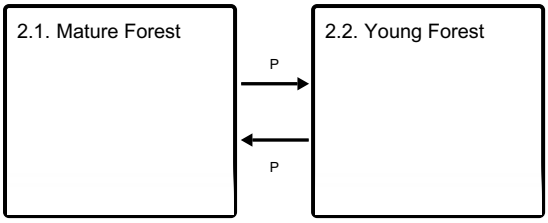
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1
Red Maple Forest

Reference state. Minimally managed.

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 and with Vermont's red maple-black ash swamp, alder swamp, and red maple black gum swamp depending on varying site properties (Thompson and Sorenson, 2000).

Community 1.2
Young Forest/Swamp Community

Pathway P
Community 1.1 to 1.2

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

Pathway P
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 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

Succession, removal of invasives and outplanting of natives

Conservation practices

Invasive Plant Species Control

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

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.

Golet, F.C., Calhoun, A.J.K., DeRagon, W.R., Lowry, D.J., and Gold, A.J. 1993. Ecology of red maple swamps in the glaciated northeast: A community profile. United States. Biological Report 12. US Fish and Wildlife Service.

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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

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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	05/22/2020
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:

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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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:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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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:**