USDA Natural Resources Conservation Service

Ecological site F142XB018VT
Moist Lake Plain

Last updated: 5/23/2020
Accessed: 05/04/2024

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 on lake plains and lacustrine terraces. Slopes range from 0 to 25 percent.

Soils:
The site consists of very deep, moderately well drained or somewhat poorly drained soils formed in glaciolacustrine deposits. Soils are mostly coarse -silty, coarse-loamy, or sandy over clayey. Representative soils are Belgrade, Claverack, Elmridge, Munson, Stafford, and Tonawanda.

Vegetation
The reference community coincides with NY Natural Heritage Community: Maple-Basswood rich mesic forest and Vermont's Mesic Maple-Ash-Hickory-Oak forest.

Similar sites

F142XB003VT	**Moist Outwash**
F142XB013NY	**Moist Till Upland**
F101XY009NY	**Moist Lake Plain**

Table 1. Dominant plant species

Tree	(1) *Acer saccharum* (2) *Fraxinus americana*
Shrub	(1) *Ostrya virginiana* (2) *Hamamelis virginiana*
Herbaceous	(1) *Polystichum acrostichoides* (2) *Trillium cernuum*

Physiographic features

The site occurs on lake plains and lacustrine terraces. Slopes range from 0 to 25 percent.

Table 2. Representative physiographic features

Landforms	(1) Lake plain (2) Lake terrace (3)
Aspect	Aspect is not a significant factor

Climatic features

Mean annual precipitation is 39 inches. Frost free and freeze free days are 117 and 149, respectively.

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

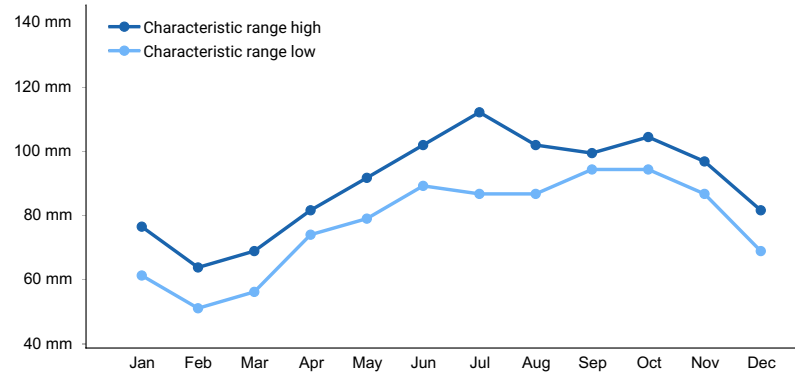


Figure 1. Monthly precipitation range

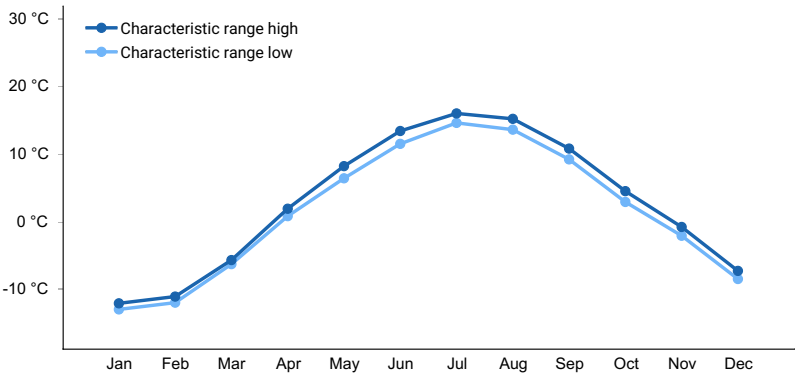


Figure 2. Monthly minimum temperature range

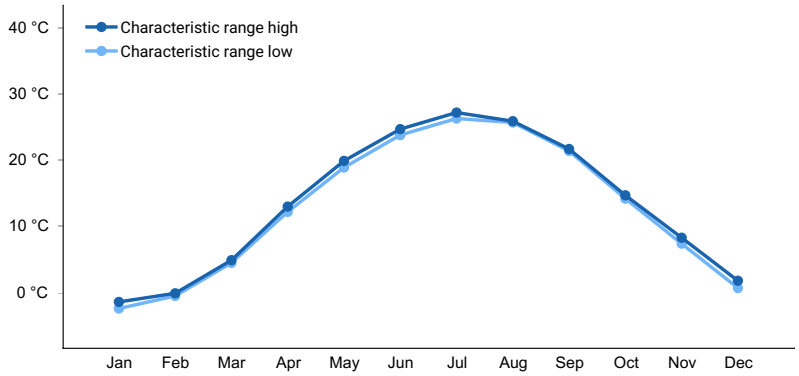


Figure 3. Monthly maximum temperature range

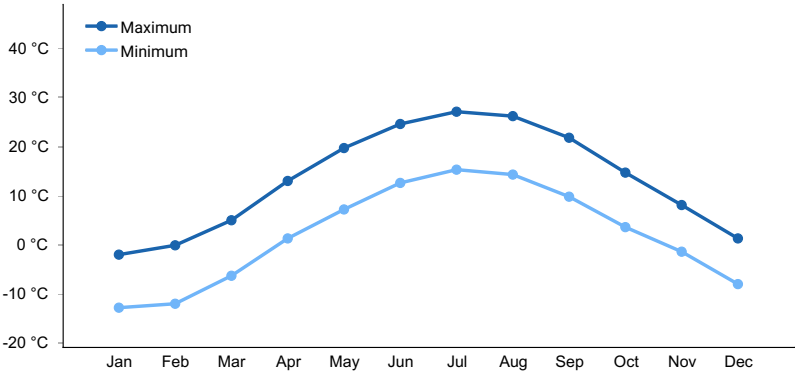


Figure 4. Monthly average minimum and maximum temperature

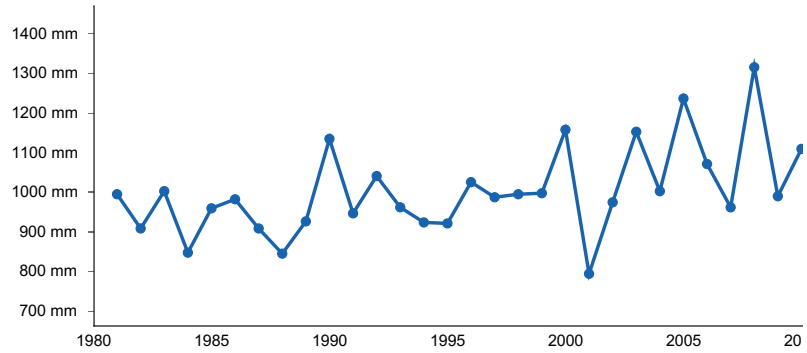


Figure 5. Annual precipitation pattern

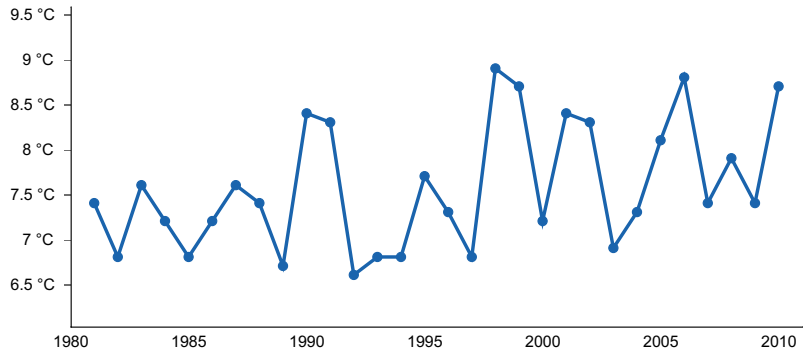


Figure 6. Annual average temperature pattern

Climate stations used

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

Influencing water features

Soil features

The site consists of very deep, moderately well drained or somewhat poorly drained soils formed in mostly glaciolacustrine deposits derived from sedimentary and igneous rocks. Munson soils also occur on marine deposits. Soils are mostly coarse-silty, coarse-loamy, or sandy over clayey. Representative soils are Belgrade, Claverack, Elmridge, Munson, Stafford, and Tonawanda.

Table 4. Representative soil features

Parent material	(1) Glaciolacustrine deposits–igneous and sedimentary rock (2) Marine deposits–sedimentary rock
Drainage class	Somewhat poorly drained to moderately well drained

Ecological dynamics

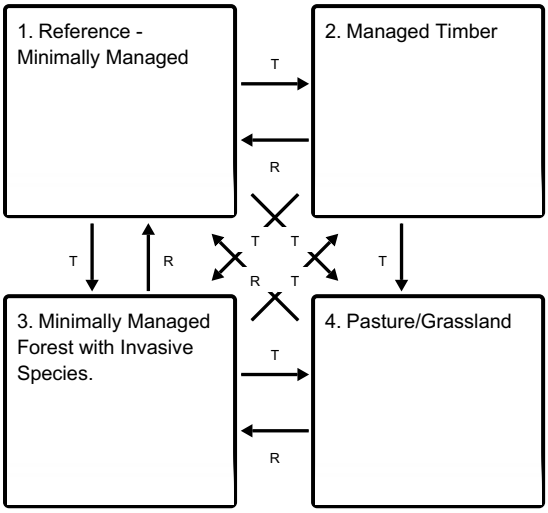
The reference community coincides with NY Natural Heritage Community: Maple-Basswood rich mesic forest, beech-maple forest, and Vermont's Mesic Maple-Ash-Hickory-Oak forest.

Common trees are sugar maple, white ash, northern red oak, basswood, yellow birch, eastern white pine, American beech, and hop hornbeam. Shrubs include striped maple, witch-hazel, American hophornbeam, and dogwood.

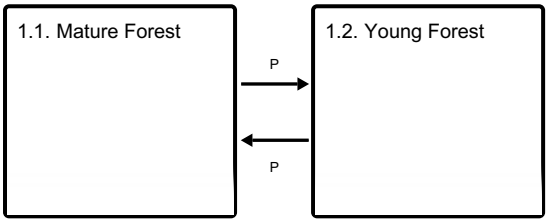
Dynamics includes an invasive species state and conversion of site into agricultural production (pasture/hayland or cropland). Disturbances include wind, ice, insects, and land clearing or timber harvest.

State and transition model

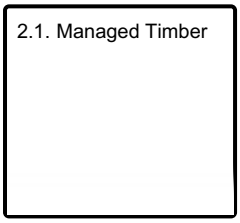
Ecosystem states



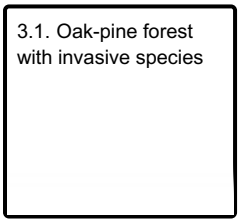
State 1 submodel, plant communities



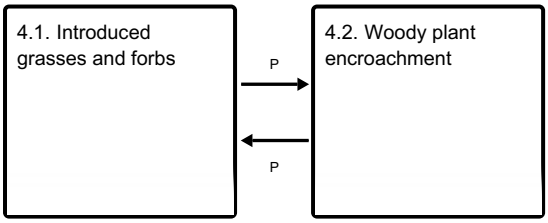
State 2 submodel, plant communities



State 3 submodel, plant communities



State 4 submodel, plant communities



State 1
Reference - Minimally Managed

Natural disturbances such and wind and ice storms, tree fall, insect damage will create openings for an early successional plant community or young forest. This forest may have at one time been cleared or plowed during colonial times.

Characteristics and indicators. Soil may have evidence of an historic plow layer (Ap horizon).

Resilience management. Ensure that regenerating trees and shrubs are not heavily browsed by deer that they cannot replace overstory trees. Deer have been shown to have negative effects on forest understories (New York Natural Heritage Program, 2020). Avoid cutting old-growth forests.

Community 1.1
Mature Forest

Mature, late successional closed canopy forest. The reference community coincides with NY Natural Heritage Community: Maple-Basswood rich mesic forest, beech-maple forest, and Vermont's Mesic Maple-Ash-Hickory-Oak forest. Common trees are sugar maple, white ash, northern red oak, basswood, yellow birch, eastern white pine, American beech, and hop hornbeam. Shrubs include striped maple, witch-hazel, American hophornbeam, and dogwood.

Community 1.2
Young Forest

Open canopy, early successional, young forest.

Pathway P
Community 1.1 to 1.2

Natural disturbances - wind/ice storm, tree fall, and insect damage.

Conservation practices

Early Successional Habitat Development/Management

Pathway P
Community 1.2 to 1.1

Time (succession).

State 2
Managed Timber

The state is characterized by active logging. Composition of forest stands will vary based on management objectives.

Community 2.1
Managed Timber

State 3
Minimally Managed Forest with Invasive Species.

Invasive species such as Japanese barberry, bush honeysuckle, multiflora rose, garlic mustard, and stiltgrass are common in the understory.

Community 3.1
Oak-pine forest with invasive species

State 4
Pasture/Grassland

Forest has been cleared and grasses and forbs have been introduced for livestock grazing, hay production, and/or wildlife.

Resilience management. Grazing, mowing, or prescribed fire is required to maintain grassland and prevent woody plant encroachment.

Community 4.1
Introduced grasses and forbs

Community 4.2
Woody plant encroachment

Pathway P
Community 4.1 to 4.2

Abandonment (lack of mowing or fire suppression)

Pathway P
Community 4.2 to 4.1

Mowing, prescribed fire, and/or brush management.

Conservation practices

Brush Management

Transition T
State 1 to 2

Timber harvest; logging.

Transition T
State 1 to 3

Introduction of invasive species usually after disturbance.

Transition T
State 1 to 4

Land use conversion.

Restoration pathway R
State 2 to 1

Time (succession). Forest stand improvement, restoration.

Transition T
State 2 to 3

Introduction of invasive species. Lack of timber management.

Transition T
State 2 to 4

Land use conversion

Restoration pathway R
State 3 to 1

Brush management, invasive species management.

Transition T
State 3 to 2

Timber management/harvest, logging.

Transition T
State 3 to 4

Land use conversion.

Restoration pathway R
State 4 to 1

Abandonment, Time (succession), forest restoration.

Restoration pathway R
State 4 to 3

Abandonment, time (sucession) and introduction of invasive species.

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.

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, 5/23/2020

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):**

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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:**
