

Ecological site F142XA018NY

Rich Till Upland 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

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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:

The site occurs on till plains, hills, ridges, and benches. Slope ranges from 0 to 35 percent.

Soils:

The site consists of moderately deep and very deep, well drained, coarse-loamy soils formed in glacial till derived mostly from limestone but other sources include dolomite, sandstone, marble, and some igneous rocks. Soils are non-acid or high base (calcareous). Representative soils are Grenville, Neckrock, Nehasne, and Pyrities.

Vegetation:

The reference plant community coincides with Vermont's, Rich Northern Hardwood Forest and New York's Maple-Basswood Rich Mesic Forest (Thompson and Sorenson 2005 and Edinger et al., 2014).

Associated sites

F142XA020NY	Rich Moist Till Frigid
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Table 1. Dominant plant species

Tree	(1) <i>Acer saccharum</i> (2) <i>Fraxinus americana</i>
Shrub	(1) <i>Acer pensylvanicum</i> (2) <i>Cornus alternifolia</i>
Herbaceous	(1) <i>Laportea canadensis</i> (2) <i>Adiantum pedatum</i>

Physiographic features

The site occurs on till plains, hills, ridges, and benches. Slope ranges from 0 to 35 percent.

Table 2. Representative physiographic features

Landforms	(1) Till plain (2) Bench (3) Ridge (4) Hill
Slope	0–35%

Climatic features

Mean annual precipitation is 35 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 133 and 158, respectively.

Table 3. Representative climatic features

Frost-free period (average)	133 days
Freeze-free period (average)	158 days
Precipitation total (average)	35 in

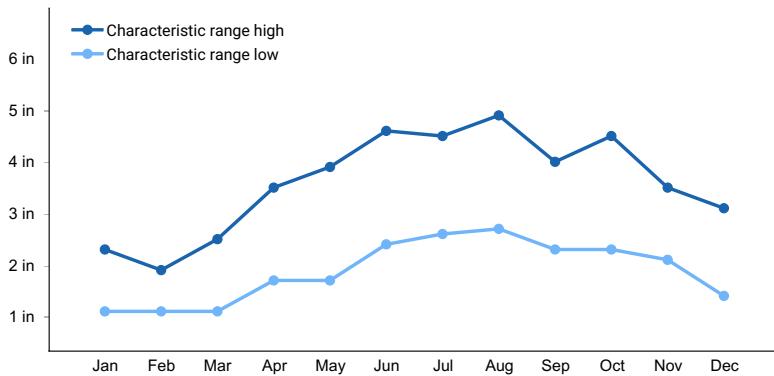


Figure 1. Monthly precipitation range

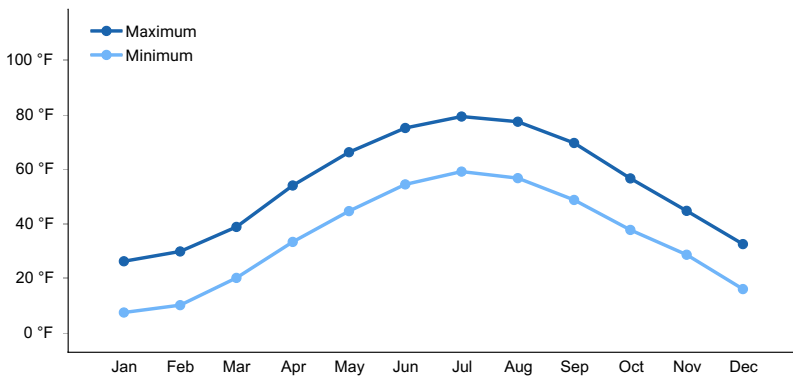


Figure 2. Monthly average minimum and maximum temperature

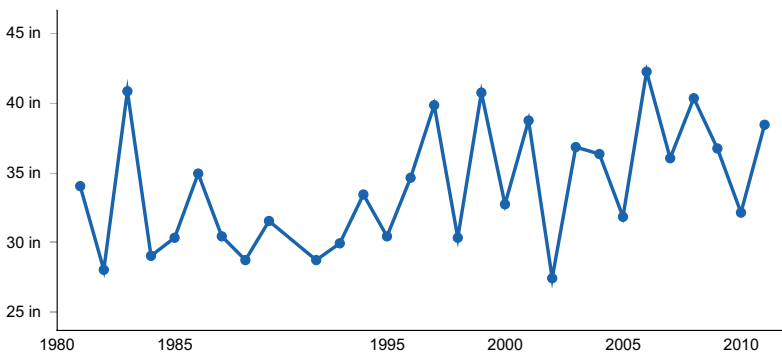


Figure 3. Annual precipitation pattern

Climate stations used

- (1) MALONE [USC00304996], Malone, NY
- (2) PLATTSBURGH AFB [USC00306659], Plattsburgh, NY

- (3) PERU 2 WSW [USC00306538], Peru, NY

Influencing water features

Soil features

The site consists of moderately deep and very deep, well drained, coarse-loamy soils formed in glacial till derived mostly from limestone but other sources include dolomite, sandstone, marble, and some igneous rocks. Soils are non-acid or high base (calcareous). Representative soils are Grenville, Neckrock, Nehasne, and Pyrities.

Table 4. Representative soil features

Parent material	(1) Till–limestone
Family particle size	(1) Coarse-loamy (2) Fine-loamy
Drainage class	Well drained
Surface fragment cover >3"	0–2%
Subsurface fragment volume ≤3" (Depth not specified)	0–20%
Subsurface fragment volume >3" (Depth not specified)	5–20%

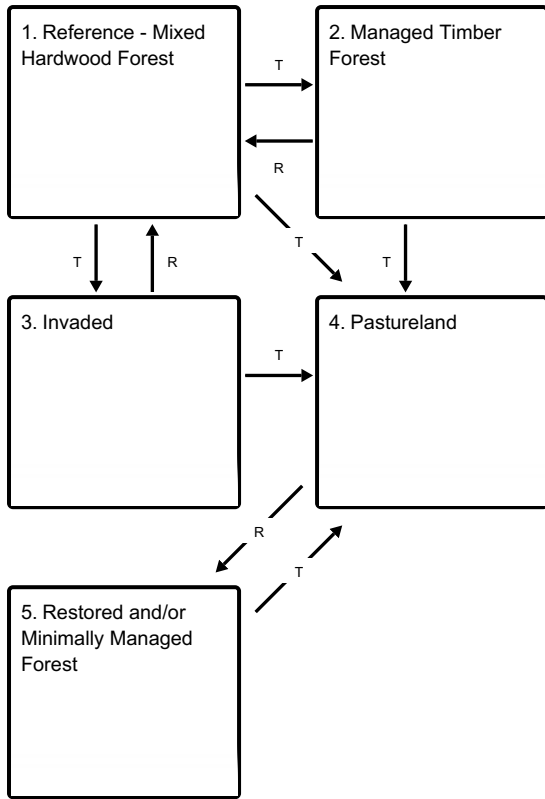
Ecological dynamics

The reference plant community coincides with Vermont's, Rich Northern Hardwood Forest and New York's Maple-Basswood Rich Mesic Forest (Thompson and Sorenson 2005 and Edinger et al., 2014).

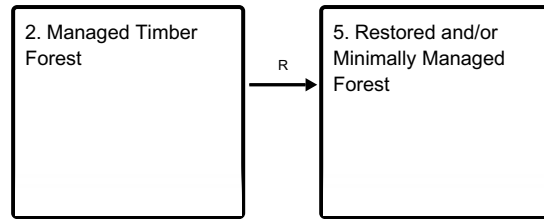
Wind, ice storms, and insects are common natural disturbances. The site is susceptible to establishment of invasive species such as oriental bittersweet, barberry, multi-flora rose, bush honeysuckle, etc. especially in areas along roads, trails, clearings, and landings. The site can be managed for timber harvest and in low relief areas is suitable to conversion to agriculture (pastureland, hayland, cropland). However, cleared land has long term impact on the native flora's ability to reestablish readily (Thompson and Sorenson, 2000).

State and transition model

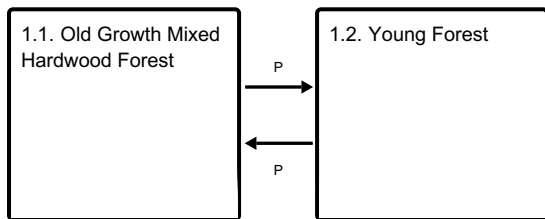
Ecosystem states



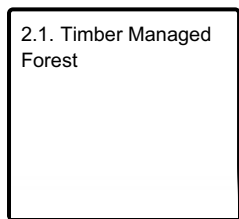
States 2 and 5 (additional transitions)



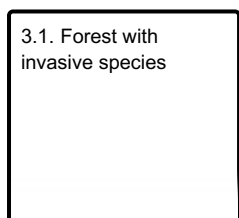
State 1 submodel, plant communities



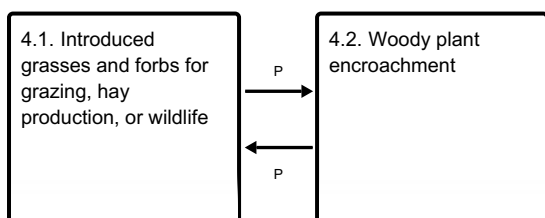
State 2 submodel, plant communities



State 3 submodel, plant communities



State 4 submodel, plant communities



State 1

Reference - Mixed Hardwood Forest

The reference community coincides with Rich Northern Hardwood Forest and New York's Maple-Basswood Rich Mesic Forest (Thompson and Sorenson 2005 and Edinger et al., 2014). Wind, ice storms, and insects are common natural disturbances which will lead to openings and allow early successional plants to emerge. The site is susceptible to establishment of invasive species such as oriental bittersweet, barberry, multi-flora rose, bush honeysuckle, etc. especially in areas along roads, trails, clearings, and landings. The site can be managed for timber harvest and in low relief areas is suitable to conversion to agriculture (pastureland, hayland, cropland). However, cleared land has long term impact on the native flora's ability to reestablish readily (Thompson and Sorenson, 2000).

Characteristics and indicators. Site was not cleared or cultivated historically.

Community 1.1

Old Growth Mixed Hardwood Forest

Mature closed canopy forest.

Community 1.2

Young Forest

Pathway P

Community 1.1 to 1.2

Wind, ice storm,, insect damage.

Pathway P

Community 1.2 to 1.1

Time; succession

State 2

Managed Timber Forest

Removal of trees of commercial value. Invasive species may be present.

Community 2.1

Timber Managed Forest

Forest managed for timber.

State 3

Invaded

Invasive species abundant. Minimally managed forest.

Community 3.1

Forest with invasive species

Non-native and invasive species present (Japanese barberry, multiflora rose, bush honeysuckle, stiltgrass).

State 4

Pastureland

Site converted to pasture for livestock grazing or hay production.

Resilience management. Must be managed (grazed, mowed, etc.) to maintain pastureland.

Community 4.1

Introduced grasses and forbs for grazing, hay production, or wildlife

Community 4.2

Woody plant encroachment

Pathway P

Community 4.1 to 4.2

Lack of management (mowing, grazing, prescribed fire)

Pathway P

Community 4.2 to 4.1

Mowing, brush management, prescribed fire.

Conservation practices

Brush Management
Prescribed Burning

State 5

Restored and/or Minimally Managed Forest

Restored forest or second-growth forest.

Characteristics and indicators. Site was cleared and/or cultivated historically.

Transition T

State 1 to 2

Timber harvest.

Transition T

State 1 to 3

Establishment of invasive species.

Transition T

State 1 to 4

Land use conversion.

Conservation practices

Land Clearing

Restoration pathway R

State 2 to 1

Ecological restoration.

Conservation practices

Forest Stand Improvement
Forest Land Management

Transition T
State 2 to 4

Land use conversion

Conservation practices

Land Clearing

Restoration pathway R
State 2 to 5

Restoration pathway R
State 3 to 1

Invasive species management/removal.

Conservation practices

Invasive Plant Species Control

Transition T
State 3 to 4

Land use conversion.

Restoration pathway R
State 4 to 5

Ecological restoration.

Transition T
State 5 to 4

Land use conversion.

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, 5/22/2020

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	06/01/2023
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:**
