

# Ecological site F142XA016NY

## Shallow Rich Till Upland

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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 till plains, benches, and ridges. Slopes are mostly less than 15 percent but can range up to 35 percent. Soils: The site consists of shallow and very shallow, well drained and excessively drained loamy soils formed in glacial till derived from mostly limestone and other calcareous rock. Representative soils are Gouverneur, Kings Falls, and Summerville. Vegetation: The reference community coincides with NY Natural Heritage Communities: Limestone Woodland; Northern White Cedar Forest and NatureServe's Limestone Bluff Northern White-cedar - Pine Forest - CEGLO06021.

### Associated sites

|             |                         |
|-------------|-------------------------|
| F142XA018NY | Rich Till Upland Frigid |
| F142XA021NY | Wet Till Depression     |

#### Similar sites

|             |                            |
|-------------|----------------------------|
| F142XB019NY | Shallow Acidic Till Upland |
| F142XB009VT | Acidic Till Upland         |

Table 1. Dominant plant species

|            |                                                              |
|------------|--------------------------------------------------------------|
| Tree       | (1) <i>Thuja occidentalis</i><br>(2) <i>Pinus strobus</i>    |
| Shrub      | (1) <i>Rhamnus alnifolia</i><br>(2) <i>Lonicera dioica</i>   |
| Herbaceous | (1) <i>Carex eburnea</i><br>(2) <i>Trillium grandiflorum</i> |

#### Physiographic features

The site occurs on till plains, benches, and ridges. Slopes are mostly less than 15 percent but can range up to 35 percent.

Table 2. Representative physiographic features

|                    |                                                                                |
|--------------------|--------------------------------------------------------------------------------|
| Landforms          | (1) Till plain > Till plain<br>(2) Lake plain > Bench<br>(3) Ridge<br>(4) Hill |
| Runoff class       | Medium to very high                                                            |
| Flooding frequency | None                                                                           |
| Ponding frequency  | None                                                                           |
| Elevation          | 50 – 310 m                                                                     |

|                   |                                    |
|-------------------|------------------------------------|
| Slope             | 0 – 20 %                           |
| Water table depth | 180 cm                             |
| 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 – 40 %      |
| 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)   | 120-130 days |
| Freeze-free period (characteristic range)  | 150-160 days |
| Precipitation total (characteristic range) | 860-970 mm   |
| Frost-free period (actual range)           | 120-140 days |
| Freeze-free period (actual range)          | 150-170 days |
| Precipitation total (actual range)         | 840-990 mm   |
| Frost-free period (average)                | 130 days     |

|                               |          |
|-------------------------------|----------|
| Freeze-free period (average)  | 160 days |
| Precipitation total (average) | 910 mm   |

- (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

NONE

### Wetland description

NONE

### Soil features

The site consists of shallow and very shallow, well drained and excessively drained loamy soils formed in glacial till derived from mostly limestone and other calcareous rock. Representative soils are Gouverneur, Kings Falls, and Summerville.

Table 5. Representative soil features

|                             |                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------|
| Parent material             | (1) Till – limestone<br>(2) Residuum – metamorphic and sedimentary rock<br>(3) Marble |
| Surface texture             | (1) Loam<br>(2) Fine sandy loam                                                       |
| Family particle size        | (1) Loamy                                                                             |
| Drainage class              | Well drained to excessively drained                                                   |
| Depth to restrictive layer  | 20 – 40 cm                                                                            |
| Surface fragment cover <=3" | Not specified                                                                         |
| Surface fragment cover >3"  | Not specified                                                                         |

|                                                          |           |
|----------------------------------------------------------|-----------|
| Available water capacity<br>(Depth not specified)        | 5.08 cm   |
| Soil reaction (1:1 water)<br>(Depth not specified)       | 4.5 – 8.4 |
| Subsurface fragment volume <=3"<br>(Depth not specified) | 0 – 10 %  |
| Subsurface fragment volume >3"<br>(Depth not specified)  | 0 – 20 %  |

## Ecological dynamics

The reference community coincides with NY Natural Heritage Communities: Limestone Woodland; Northern White Cedar Forest and NatureServe's Limestone Bluff Northern White-cedar - Pine Forest - CEGLO06021. The canopy is dominated by *Tsuga canadensis*, and may be either almost entirely coniferous or a mixture of conifers and deciduous trees. Northern hardwoods are characteristic associates, including *Betula alleghaniensis*, *Betula papyrifera*, *Fagus grandifolia*, and *Acer saccharum*. *Picea rubens* is a common conifer associate, and may approach codominance with hemlock at some sites. Scattered subcanopy and shrub layers may feature *Acer pensylvanicum* and *Viburnum lantanoides*. Herb richness and cover are very low; typical species include *Aralia nudicaulis*, *Cornus canadensis*, *Dryopteris intermedia*, *Gaultheria procumbens*, *Maianthemum canadense*, *Medeola virginiana*, *Mitchella repens*, *Thelypteris noveboracensis*, and *Trientalis borealis*. In northern settings (e.g., where red spruce is common), the herb layer may contain more boreal species such as *Dryopteris campyloptera*, *Huperzia lucidula*, *Oxalis montana*, and *Trillium undulatum*.

## State and transition model

### Additional community tables

Table 6. Community 1.1 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

Table 7. Community 1.2 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

Table 8. Community 2.1 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

Table 9. Community 2.2 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production () | Foliar Cover (%) |
|-------|-------------|--------|-----------------|----------------------|------------------|
|-------|-------------|--------|-----------------|----------------------|------------------|

## 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 2020:

[https://explorer.natureserve.org/Taxon/ELEMENT\\_GLOBAL.2.687513/Thuja\\_occidentalis\\_-\\_Carex\\_eburnea\\_Forest](https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.687513/Thuja_occidentalis_-_Carex_eburnea_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

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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                                 |                   |
| Approval date                               |                   |
| Composition (Indicators 10 and 12) based on | Annual Production |

## Indicators

### 1. Number and extent of rills:

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### 2. Presence of water flow patterns:

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### 3. Number and height of erosional pedestals or terracettes:

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4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):

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5. Number of gullies and erosion associated with gullies:

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6. Extent of wind scoured, blowouts and/or depositional areas:

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7. Amount of litter movement (describe size and distance expected to travel):

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8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):

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9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):

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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:
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