

# Ecological site F142XB012VT

## Rich Till Upland

Last updated: 5/23/2020  
Accessed: 04/27/2024

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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): 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 hills, knolls, ridges, benches, and till plains. Slopes are mostly less than 25 percent but can range up to 60 percent.

### Soils:

The site consists of moderately deep to very deep, well drained soils that formed in glacial till derived mostly from limestone. Representative soils are Dover, Galway, Lowville, Nellis, Palatine, Pittsfield, and Stockbridge.

### Vegetation

The reference community coincides with with Vermont's Mesic Maple-Ash-Hickory-Oak Forest and Transition Hardwoods Limestone Forest (Thompson and Sorenson, 2000).

## Associated sites

F142XB010NY	Shallow Rich Till Upland
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## Similar sites

F142XA018NY	Rich Till Upland Frigid
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Table 1. Dominant plant species

Tree	(1) <i>Acer saccharum</i> (2) <i>Quercus rubra</i>
Shrub	(1) <i>Alnus incana ssp. rugosa</i> (2) <i>Cornus sericea</i>
Herbaceous	(1) <i>Symplocarpus foetidus</i> (2) <i>Carex</i>

## Physiographic features

The site occurs on hills, knolls, ridges, benches, and till plains. Slopes are mostly less than 25 percent but can range up to 60 percent.

Table 2. Representative physiographic features

Landforms	(1) Till plain (2) Hill (3) Knoll (4) Ridge (5) Bench
Slope	3–25%

Table 3. Representative physiographic features (actual ranges)

Slope	0–60%
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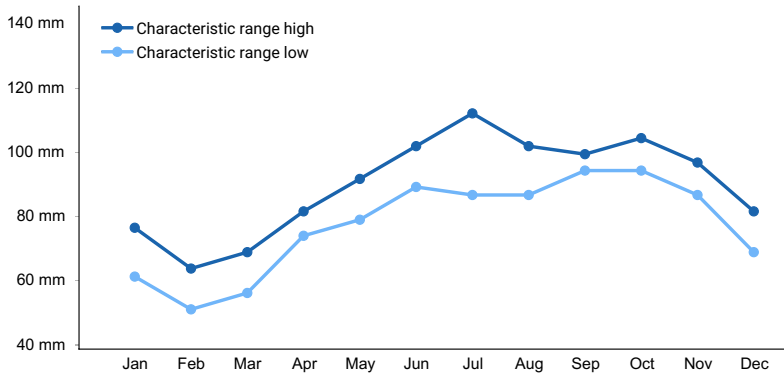
## Climatic features

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

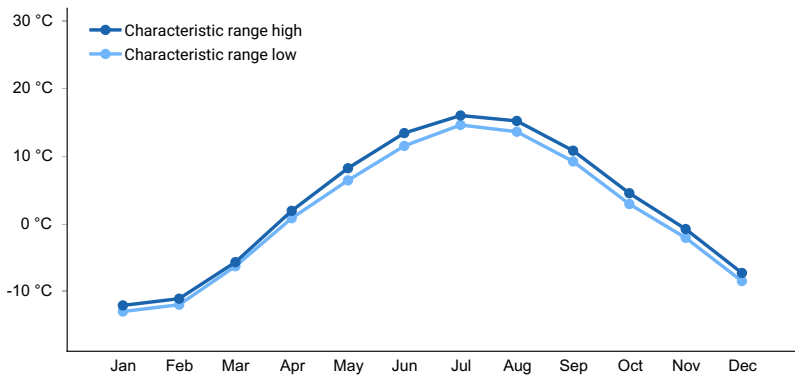
Table 4. Representative climatic features

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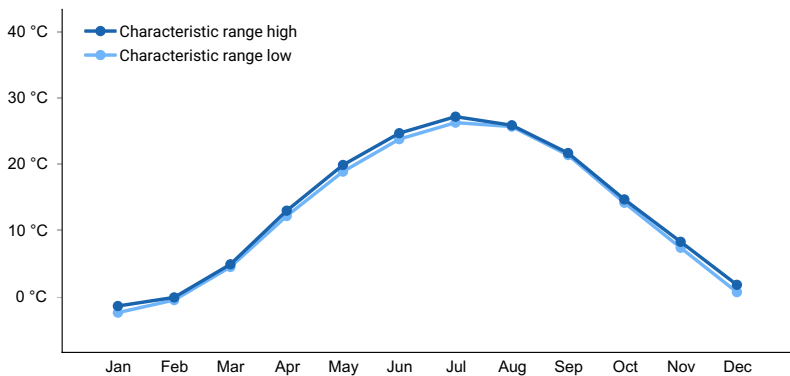
Freeze-free period (characteristic range)	138-158 days
Precipitation total (characteristic range)	914-1,067 mm
Frost-free period (actual range)	103-132 days
Freeze-free period (actual range)	133-164 days
Precipitation total (actual range)	813-1,092 mm
Frost-free period (average)	117 days
Freeze-free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



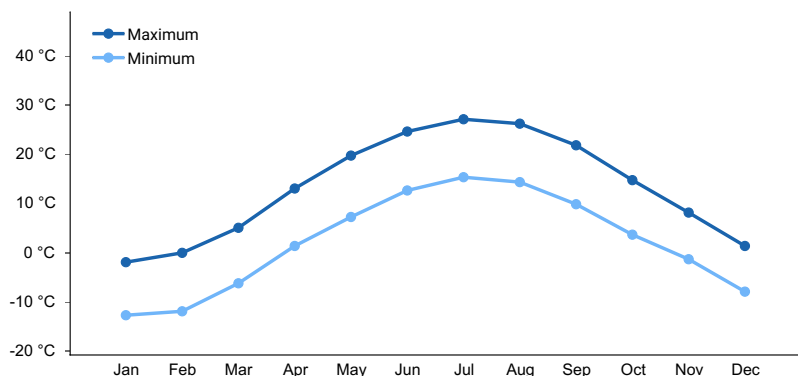
**Figure 1. Monthly precipitation range**



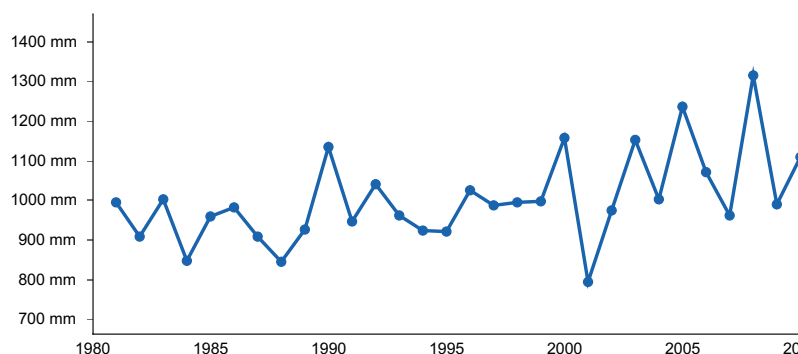
**Figure 2. Monthly minimum temperature range**



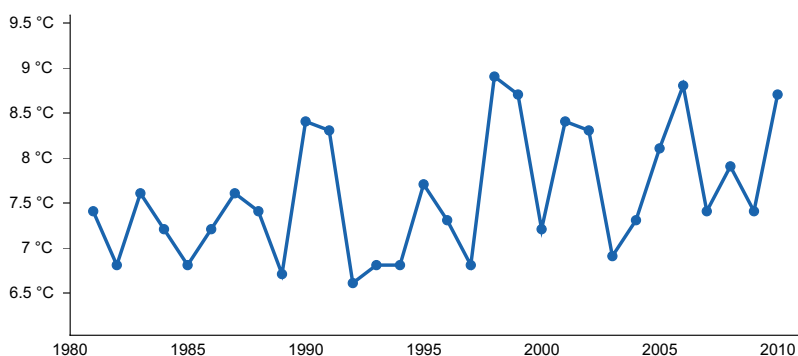
**Figure 3. Monthly maximum temperature range**



**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 moderately deep to very deep, well drained soils that formed in glacial till derived mostly from limestone. Soils are coarse-loamy or loamy skeletal (greater than 35 percent subsurface rock fragments by volume). Depth to limestone bedrock ranges from 24 inches to greater than 72 inches. Representative soils are Dover, Galway, Lowville, Nellis, Palatine, Pittsfield, and Stockbridge.

**Table 5. Representative soil features**

Parent material	(1) Till–limestone (2) Till–igneous and sedimentary rock
Family particle size	(1) Coarse-loamy (2) Loamy-skeletal
Drainage class	Well drained
Depth to restrictive layer	61–188 cm
Surface fragment cover >3"	0–10%
Subsurface fragment volume <=3" (Depth not specified)	5–40%
Subsurface fragment volume >3" (Depth not specified)	0–10%

## Ecological dynamics

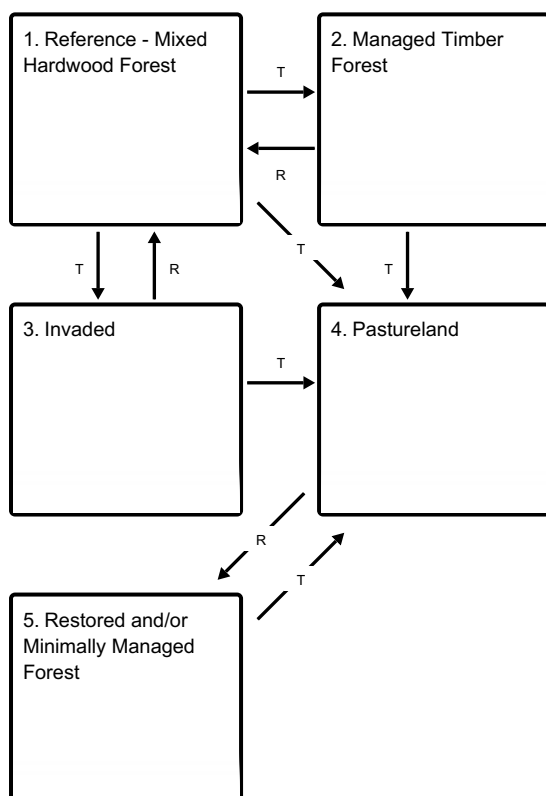
The reference community coincides with Vermont's Mesic Maple-Ash-Hickory-Oak Forest and Transition Hardwoods Limestone Forest (Thompson and Sorenson, 2000). Common trees include sugar maple, red oak, white ash, shagbark hickory, eastern white pine, eastern hemlock, basswood, and paper birch. Shrubs include witch hazel, striped maple, and shadbush. Herbs include marginal wood fern, maiden hair fern, large-flowered trillium, and dutchman's breeches.

Some invasive plants that can occur in disturbed areas include Morrow's honeysuckle, Japanese barberry, and common buckthorn. Pasture and hayland is a land use that is suitable in low relief areas. The site is also used for timber harvest.

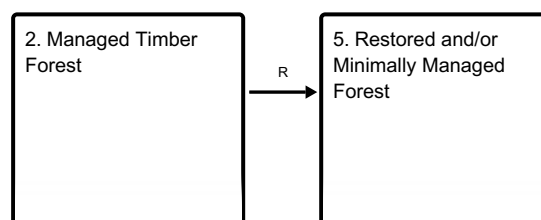
Natural disturbances include wind and ice storms, insect damage, and droughts. Forest fragmentation is a threat to the site.

## State and transition model

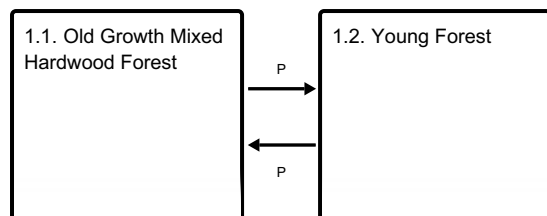
### Ecosystem states



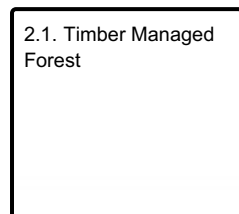
### States 2 and 5 (additional transitions)



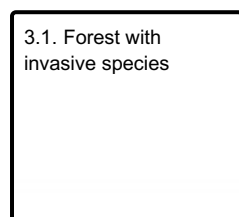
### State 1 submodel, plant communities



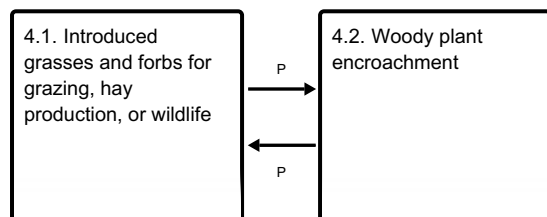
### State 2 submodel, plant communities



### State 3 submodel, plant communities



### State 4 submodel, plant communities



## State 1

### Reference - Mixed Hardwood Forest

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

### Community 1.1

#### Old Growth Mixed Hardwood Forest

Mature closed canopy forest. The reference community coincides with with Vermont's Mesic Maple-Ash-Hickory-Oak Forest and Transition Hardwoods Limestone Forest (Thompson and Sorenson, 2000). Common trees include sugar maple, red oak, white ash, shagbark hickory, eastern white pine, eastern hemlock, basswood, and paper birch. Shrubs include witch hazel, striped maple, and shadbush. Herbs include marginal wood fern, maiden hair fern, large-flowered trillium, and dutchman's breeches.

### 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, primarily oak species. Depending on type of management birch, beech, and maple may dominate following commercial timber harvest.

## **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
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**Restoration pathway R  
State 2 to 1**

Ecological restoration.

**Conservation practices**

Forest Stand Improvement
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Forest Land Management
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**Transition T  
State 2 to 4**

Land use conversion

**Conservation practices**

Land Clearing
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**Restoration pathway R  
State 2 to 5**

**Restoration pathway R  
State 3 to 1**

Invasive species management/removal.

**Conservation practices**

Invasive Plant Species Control
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**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

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	04/27/2024
Approved by	Nels Barrett
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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