

Ecological site F142XB019NY

Shallow Acidic Till Upland

Last updated: 5/23/2020
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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 till plains, hills, ridges, and benches. Slopes range from 0 to 60 percent.

Soils:

The site consists of shallow, well drained to somewhat excessively drained soils that formed in glacial till derived from mostly granite, gneiss, and schist. Depth to bedrock ranges from 7 to 19 inches. Reaction ranges from extremely acid through moderately acid in the organic horizons and very strongly acid through moderately acid in the mineral horizons. Representative soils are Hollis and Galoo (acid phase).

Vegetation:

The reference plant community is an oak dominated forest. In some places the canopy may be more open forming a woodland. Black oak and chestnut are common trees in association with scarlet oak, red oak, pignut hickory, white ash, eastern white pine, and eastern hemlock. Trees are generally lower in stature and productivity relative to forests in deeper soils. Lowbush blueberry and black huckleberry are common shrubs. Spotted wintergreen and Pennsylvania sedge are common understory species. In openings following tree falls or other natural disturbances poverty oatgrass and little bluestem may occur with early successional trees such as black birch. Invasive exotic plants such as Japanese barberry, multiflora rose, winged euonymus, and shrub honeysuckles can occur in disturbed sites.

Associated sites

F142XB009VT	Acidic Till Upland
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Similar sites

F144AY033MA	Shallow Dry Till Uplands
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Table 1. Dominant plant species

Tree	(1) <i>Quercus montana</i> (2) <i>Quercus velutina</i>
Shrub	(1) <i>Vaccinium angustifolium</i> (2) <i>Gaylussacia baccata</i>
Herbaceous	(1) <i>Carex pensylvanica</i> (2) <i>Danthonia spicata</i>

Physiographic features

The site occurs on till plains, hills, ridges, and benches. Slopes range from 0 to 60 percent.

Table 2. Representative physiographic features

Landforms	(1) Till plain (2) Bench (3) Ridge (4) Hill
Slope	0–60%

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)	36-42 in
Frost-free period (actual range)	103-132 days
Freeze-free period (actual range)	133-164 days
Precipitation total (actual range)	32-43 in
Frost-free period (average)	117 days
Freeze-free period (average)	149 days
Precipitation total (average)	39 in

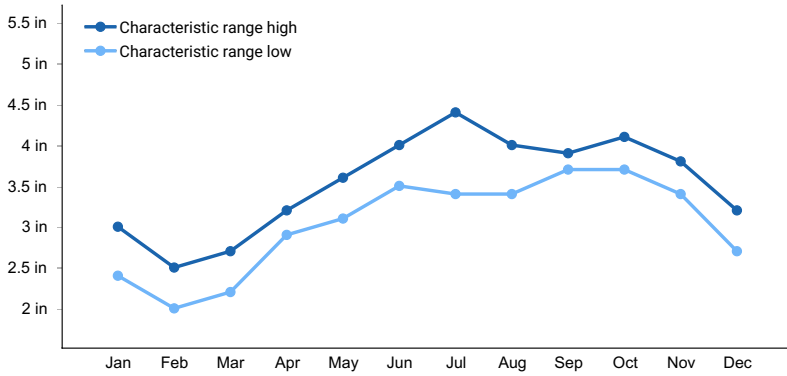


Figure 1. Monthly precipitation range

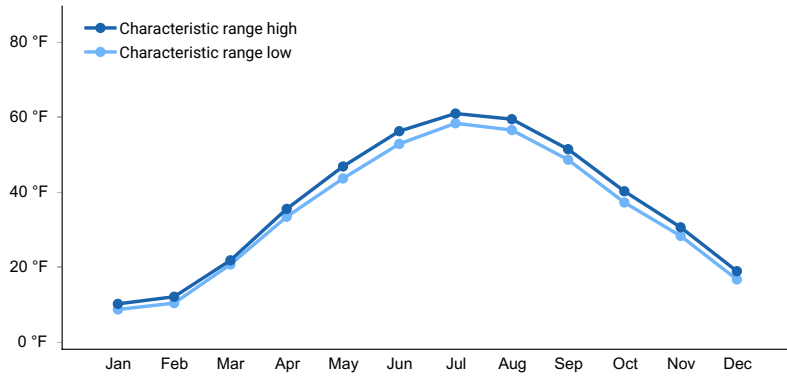


Figure 2. Monthly minimum temperature range

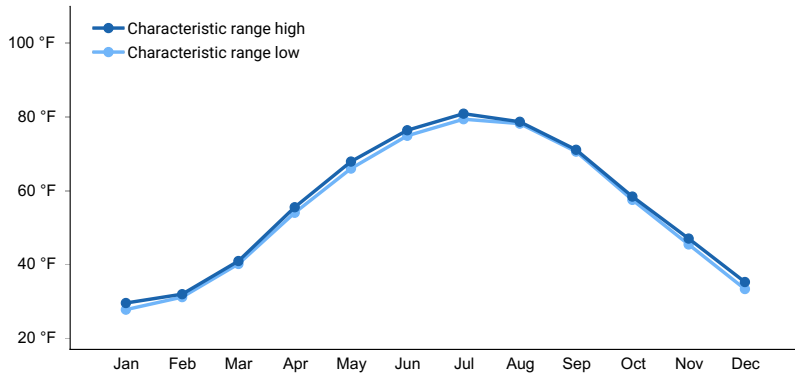


Figure 3. Monthly maximum temperature range

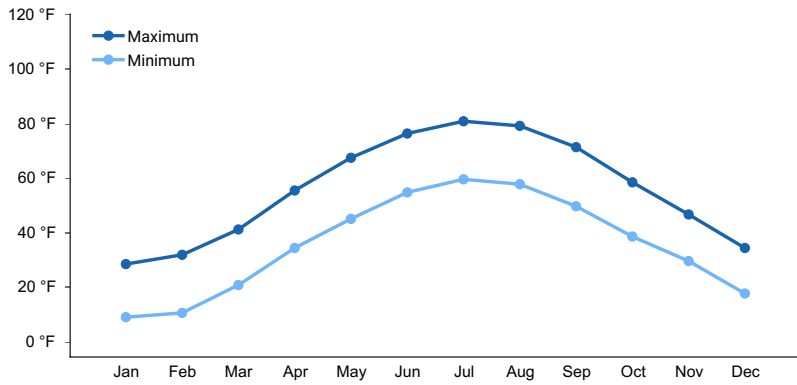


Figure 4. Monthly average minimum and maximum temperature

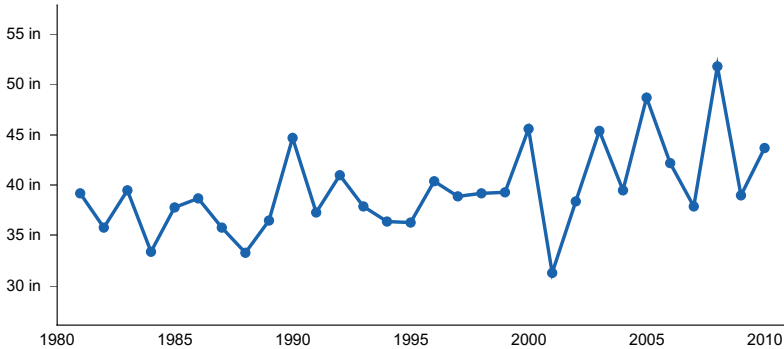


Figure 5. Annual precipitation pattern

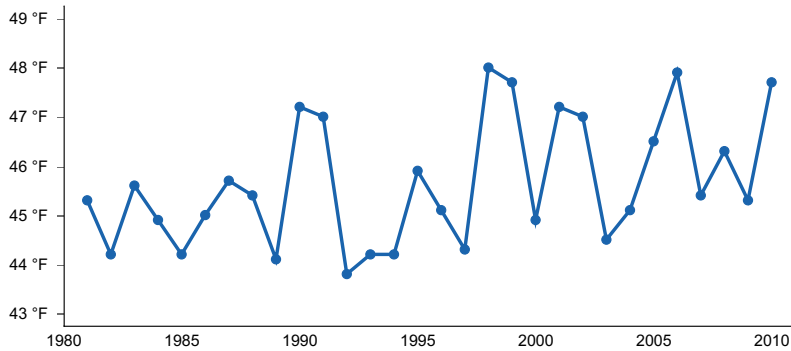


Figure 6. Annual average temperature pattern

Climate stations used

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

Influencing water features

Soil features

The site consists of shallow, well drained to somewhat excessively drained soils that formed in glacial till derived from mostly granite, gneiss, and schist. Depth to bedrock ranges from 7 to 19 inches. Reaction ranges from extremely acid through moderately acid in the organic horizons and very strongly acid through moderately acid in the mineral horizons. Representative soils are Hollis and Galoo (acid phase).

Table 4. Representative soil features

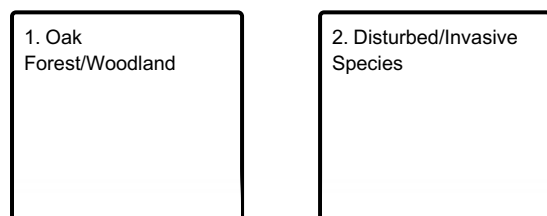
Parent material	(1) Till–granite and gneiss (2) Till–schist
Surface texture	(1) Gravelly fine sandy loam (2) Loam
Family particle size	(1) Loamy
Drainage class	Well drained to somewhat excessively drained
Soil depth	7–19 in
Surface fragment cover >3"	0–2%
Subsurface fragment volume <=3" (Depth not specified)	4–13%
Subsurface fragment volume >3" (Depth not specified)	1–8%

Ecological dynamics

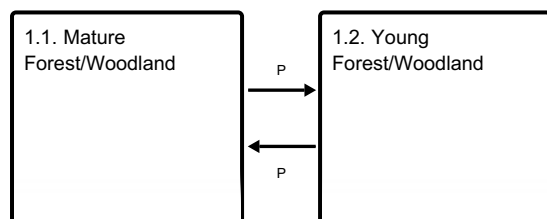
The reference plant community is an oak dominated forest. In some places the canopy may be more open forming a woodland. Black oak and chestnut are common trees in association with scarlet oak, red oak, pignut hickory, white ash, eastern white pine, and eastern hemlock. Trees are generally lower in stature and productivity relative to forests in deeper soils. Lowbush blueberry and black huckleberry are common shrubs. Spotted wintergreen and Pennsylvania sedge are common understory species. In openings following tree falls or other natural disturbances poverty oatgrass and little bluestem may occur with early successional trees such as black birch. Invasive exotic plants such as Japanese barberry, multiflora rose, winged euonymus, and shrub honeysuckles can occur in disturbed sites.

State and transition model

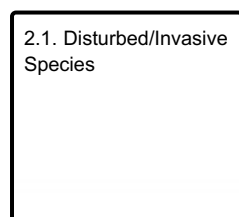
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1 Oak Forest/Woodland

Reference conditions (minimally managed). Early and late successional (young and mature forests/woodlands)

characterize the site. If present, only traces of invasive species occurring.

Community 1.1 Mature Forest/Woodland

The reference plant community is an oak dominated forest or woodland. In some places the canopy may be more open forming a woodland. Black oak and chestnut are common trees in association with scarlet oak, red oak, pignut hickory, white ash, eastern white pine, eastern hemlock, and in some locations pitch pine. Trees are generally lower in stature and productivity relative to forests in deeper soils. Lowbush blueberry and black huckleberry are common shrubs. Spotted wintergreen and Pennsylvania sedge are common understory species.

Community 1.2 Young Forest/Woodland

In openings following tree falls or other natural disturbances poverty oatgrass and little bluestem may occur with early successional trees such as black birch.

Pathway P Community 1.1 to 1.2

Disturbance (tree fall, wind and ice storms, insect damage).

Pathway P Community 1.2 to 1.1

Time (succession)

State 2 Disturbed/Invasive Species

Disturbed forest or woodland. Can be managed for timber production. Invasive species may be common. Ecological structure and function impacted.

Community 2.1 Disturbed/Invasive Species

Invasive exotic plants such as Japanese barberry, multiflora rose, winged euonymus, and shrub honeysuckles can occur in disturbed sites.

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.
<https://guides.nynhp.org/communities/>

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	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:**
