

# Ecological site RX141X502

## Loamy Till Toeslope

Last updated: 10/03/2024  
Accessed: 09/17/2026

### 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): 141X–Tug Hill Plateau

MLRA 141 is entirely in New York and makes up about 1,173 square kilometers (3,037 square kilometers). It consists of a relatively small but unique upland that lies just off the eastern end of Lake Ontario and west of the Black River Valley and Adirondack Mountain region. It is essentially a north- and east-facing glaciated cuesta scarp and is underlain by thick Wisconsin till and small areas of outwash. Most of the plateau is woodland, so forestry and recreation are the primary uses, but small isolated dairy operations and hobby farms are located around the perimeter. The area is bordered on the east by the Black River Valley, on the north by the St. Lawrence Lowland, on the west by the Ontario Lowland, and on the south by the Upper Mohawk Valley. The northern and eastern boundaries of MLRA 141 are distinct where they contact the physiographically dissimilar southwestern part of MLRA 142 (St. Lawrence-Champlain Plain). The western and southern boundaries are also distinct where they contact the physiographically dissimilar MLRA 101 (Ontario-Erie Plain and Finger Lakes Region).

### Ecological site concept

This site occurs on gentle foot and toe slopes (0-15%) at the base of watersheds where water and nutrients accumulate near slope breaks. Soils are underlain by a densely compacted till layer within 43 inches of the soil surface, which perches water and nutrients in the plant rooting zone. Occasionally groundwater seeps out at the surface, leaving rivulets as useful site indicators. The resulting plant community is highly-productive and commonly dominated by northern hardwoods, though red spruce and balsam fir are often abundant, particularly in flatter areas. Abundant yellow birch is a good indicator of this site.

### Associated sites

|                  |                                                                                                                                                      |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>RX141X305</b> | <b>Wet Loamy Flat</b><br><br>Wet Loamy Flat ecological sites may be adjacent to or grade into Loamy Till Toeslope ecological sites on the landscape. |
| <b>RX141X501</b> | <b>Loamy Slopes</b><br><br>Loamy Slopes ecological sites may be adjacent to or grade into Loamy Till Toeslope ecological sites on the landscape.     |
| <b>RX141X503</b> | <b>Loamy Flat</b><br><br>Loamy Flat ecological sites may be adjacent to or grade into Loamy Till Toeslope ecological sites on the landscape.         |

### Similar sites

|                  |                                                                                                                                                               |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>RX141X501</b> | <b>Loamy Slopes</b><br><br>Loamy Slopes ecological sites may have similar vegetative composition, soil properties, and may be situated on similar topography. |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Table 1. Dominant plant species**

|            |                                                                    |
|------------|--------------------------------------------------------------------|
| Tree       | (1) <i>Betula alleghaniensis</i><br>(2) <i>Picea rubens</i>        |
| Shrub      | (1) <i>Viburnum lantanoides</i><br>(2) <i>Viburnum acerifolium</i> |
| Herbaceous | (1) <i>Dryopteris intermedia</i><br>(2) <i>Aralia nudicaulis</i>   |

### Legacy ID

F141XY502NY

### Physiographic features

**Table 2. Representative physiographic features**

|                   |                                                                                                                                                                      |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Landforms         | (1) Till plain > Depression<br>(2) Till plain > Drumlinoid ridge<br>(3) Till plain > Low hill<br>(4) Drumlin<br>(5) Hill<br>(6) Lake plain<br>(7) Bench<br>(8) Ridge |
| Runoff class      | Very high                                                                                                                                                            |
| Elevation         | 90 – 620 m                                                                                                                                                           |
| Water table depth | 10 – 40 cm                                                                                                                                                           |
| Aspect            | Aspect is not a significant factor                                                                                                                                   |

### Climatic features

Throughout the year precipitation is evenly distributed around most of this area with slightly less rainfall occurring around the lower margins of the plateau. Rainfall occurs as high-intensity, convective thunderstorms during the summer. Lake-effect snowfall is heavy from late autumn to early spring with the summit of the plateau having the lowest temperatures and the shortest freeze-free periods.

Climate stations Watertown and Old Forge are adjacent to the MLRA and were used to tabulate additional representative climate data.

**Table 3 Representative climatic features**

|                                            |                |
|--------------------------------------------|----------------|
| Frost-free period (characteristic range)   | 90-120 days    |
| Freeze-free period (characteristic range)  | 130-160 days   |
| Precipitation total (characteristic range) | 1,190-1,350 mm |
| Frost-free period (actual range)           | 90-130 days    |
| Freeze-free period (actual range)          | 120-160 days   |
| Precipitation total (actual range)         | 1,120-1,450 mm |
| Frost-free period (average)                | 110 days       |
| Freeze-free period (average)               | 140 days       |
| Precipitation total (average)              | 1,270 mm       |

- (1) BOONVILLE 4 SSW [USC00300785], Boonville, NY
- (2) CAMDEN [USC00301110], Camden, NY
- (3) WATERTOWN [USC00309000], Watertown, NY
- (4) OLD FORGE [USC00306184], Eagle Bay, NY

## Influencing water features

## Soil features

**Table 4. Representative soil features**

|                                               |                                                                                                                                                                                                 |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parent material                               | (1) Till<br>(2) Eolian deposits<br>(3) Glaciolacustrine deposits<br>(4) Till – sedimentary rock<br>(5) Till – sandstone<br>(6) Till – shale and siltstone<br>(7) Till – sandstone and siltstone |
| Surface texture                               | (1) Loam<br>(2) Silt<br>(3) Very fine sand<br>(4) Loam<br>(5) Loam<br>(6) Loam<br>(7) Loam                                                                                                      |
| Drainage class                                | Poorly drained to somewhat poorly drained                                                                                                                                                       |
| Permeability class                            | Very slow                                                                                                                                                                                       |
| Soil depth                                    | 30 – 80 cm                                                                                                                                                                                      |
| Surface fragment cover <=3"                   | Not specified                                                                                                                                                                                   |
| Surface fragment cover >3"                    | 0 – 10 %                                                                                                                                                                                        |
| Available water capacity<br>(2.5-15.2cm)      | Not specified                                                                                                                                                                                   |
| Soil reaction (1:1 water)<br>(8.9-21.3cm)     | Not specified                                                                                                                                                                                   |
| Subsurface fragment volume <=3"<br>(0-88.9cm) | Not specified                                                                                                                                                                                   |

|                                                |               |
|------------------------------------------------|---------------|
| Subsurface fragment volume >3"<br>(2.5-17.8cm) | Not specified |
|------------------------------------------------|---------------|

### Ecological dynamics

[Caveat: The vegetation information contained in this section and is only provisional, based on concepts, and future projects support validation through field work. \*] The vegetation groupings described in this section are based on the terrestrial ecological system classification and vegetation associations developed by NatureServe (Comer 2003) and localized associations provided by the New York Natural Heritage Program (Edinger et al. 2014).

This site is dominated by northern hardwoods and can be co-dominant with conifers, particularly red spruce. Yellow birch is a good site indicator, and red and sugar maples are often dominant.

Tree throw and logging are the most common disturbances on this site. The site is resilient following these disturbances and succeeds through an herbaceous and shrubby phase prior to tree establishment and eventual return to the reference community. The young forest stands include several species not typically dominant in the reference community, including grey and white birch, aspen, balsam fir, etc. After about 80-100 years these species die out and the reference community species retain dominance.

This site may be cultivated for crop or pasture. When cropland or pastureland management ceases, the site either returns to northern hardwoods or may transition to a white pine forest. Once white pine is established, it tends to form a single age stand with low diversity and little understory.

### State and transition model

### Additional community tables

Table 5. Community 1.1 plant community composition

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

Table 6. Community 1.2 plant community composition

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

Table 7. Community 2.1 plant community composition

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

Table 8. Community 2.2 plant community composition

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

Table 9. Community 3.1 plant community composition

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

Table 10. Community 3.2 plant community composition

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

### Inventory data references

Future work is needed, as described in a future project plan, to validate the information presented in this provisional ecological site description. Future work includes field sampling, data collection and analysis by qualified vegetation ecologists and soil scientists. As warranted, annual reviews of the project plan can be conducted by the Ecological Site Technical Team. A final field review, peer review, quality control, and quality assurance reviews of the ESD are necessary to approve a final document.

### Other references

Comer, P., D. Faber-Langendoen, R. Evans, S. Grawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schultz, K. Snow, and J. Teague. 2003. Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems. NatureServe, Arlington, Virginia

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## Contributors

Christopher Mann

## Approval

Greg Schmidt, 10/03/2024

## Acknowledgments

Nels Barrett and Nick Butler provided considerable review of this ecological site concept.

## 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                     | 09/17/2026 |
| 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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