

Ecological site RX141X301

Semi-rich Loamy Swamp

Last updated: 10/03/2024
Accessed: 09/16/2026

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 in relatively flat areas (0-8% slopes) near the bottom of watersheds where water saturates lodgment till soils for most of the growing season. Soils are poorly- to very poorly-drained with loamy textures, a mucky peat surface, and a compacted (densic) horizon within ~35 inches of the soil surface. Representative soils include Ilion and Sun. The water table is seasonally high (within 6 inches of the surface) and typically lowers somewhat in late summer and fall. This site often has pit and mound topography, with ponding and organic matter accumulation in the pits, and drier soil conditions on the mounds where most trees are rooted. Northern white cedar is abundant, often with small amounts of balsam fir, black ash, red maple, white pine, black spruce, and/or yellow birch. Diverse herbs and bryophytes dominate the understory.

Associated sites

RX141X110	Floodplain Riparian Complex Floodplain Riparian Complex may be adjacent to or surround Semi-rich Loamy Swamp ecological sites.
RX141X210	Marsh Wetland Complex Marsh Wetland Complex may be adjacent to or surround Semi-rich Loamy Swamp ecological sites.
RX141X302	Mucky Swamp Mucky Swamp may be adjacent to or surround Semi-rich Loamy Swamp ecological sites.

Similar sites

RX141X302	Mucky Swamp Mucky Swamp has similar vegetative properties to Semi-rich Loamy Swamp ecological sites
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Table 1. Dominant plant species

Tree	(1) <i>Thuja occidentalis</i> (2) <i>Acer rubrum</i>
Shrub	(1) <i>Alnus incana ssp. rugosa</i> (2) <i>Cornus sericea</i>
Herbaceous	(1) <i>Carex trisperma</i> (2) <i>Equisetum scirpoides</i>

Legacy ID

F141XY301NY

Physiographic features

This site occurs mainly in depressions. It is characterized by pit and mound* topography, with frequent ponding of water in the pits and drier conditions on the mounds. The water table is at or near the surface during the growing season.

*Pit and mound topography is formed by the natural process of falling trees, which removes soil from the pit as they are uprooted, and deposit the soil in a mound next to the pit as the tree decays. When pit and mound topography is eliminated by land-leveling practices, it can take decades or centuries to develop naturally on this site. Much of the species diversity of this site results from the high variability in soil and plant growing conditions associated with pit and mound topography.

Table 2. Representative physiographic features

Landforms	(1) Depression
Runoff class	Medium
Flooding frequency	None
Ponding frequency	Occasional to frequent
Elevation	80 – 550 m
Slope	0 – 10 %
Water table depth	0 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

Water can come from nutrient-rich groundwater or surface runoff. Sites are basins or low areas in floodplains, usually near the edge of the floodplain in a localized basin or at the base of a bluff where groundwater emerges. Soils are muck or fine-textured mineral. Small hummocks and depressions, created from tree tip-ups, sluggish streams, or tree root build up, create drier and wetter microsites within the system. Sites are usually flooded in the spring, and low areas may remain wet for all or most of the growing season, but if stands remain under water for multiple years, the trees die. The microsite differences allow a mixture of wet-mesic upland species and wetland species to exist in the herbaceous layer of this system. (NatureServe, 2022)

Wetland description

The hydrologic regime is critical to maintenance of this system. Sites must be wet or flooded for part of the growing season but not completely saturated or under water for too long over a large portion of the site. Periodic sustained floods or droughts can kill canopy trees and allow the mostly shade-intolerant canopy trees to regenerate. (NatureServe, 2022)

Soil features

Representative soils include Ilion and Sun.

Table 4. Representative soil features

Parent material	(1) Till – calcareous shale (2) Till – limestone and sandstone
Surface texture	(1) Loam
Drainage class	Very poorly drained to poorly drained
Permeability class	Very slow
Soil depth	180 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (Depth not specified)	12.7 – 15.24 cm
Soil reaction (1:1 water) (Depth not specified)	5.1 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	10 – 20 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

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 white cedar, often with black spruce, balsam fir, red maple, yellow birch, white pine, and/or brown ash present in small amounts. Most trees are rooted in the poorly-drained soil mounds rather than the very poorly-drained soil depressions. The understory is diverse with sphagnum moss, creeping snowberry, and three-seed sedge common.

Treethrow, altered hydrology, and logging are common disturbances on this site. Small openings created by treethrow are typically

colonized by species already present in the community and eventually return to cedar dominance. Persistent ponding caused by beavers, man-made structures (such as roads, dams, etc.), or increased runoff in the watershed above can cause water levels to rise and kill cedar trees, resulting in an open ponded or marsh condition. If hydrology is restored to reference conditions, the site is likely to transition through a marsh and/or early seral forest phase before eventually returning to cedar dominance.

Logging is limited to very dry years or winter harvest methods due to the wetness of this site. Cedar removal may result in an early seral phase dominated by balsam fir, grey birch, red maple, and other colonizers before eventually reverting to cedar dominance. In some areas, this site has been logged and converted to perennial grass hay land.

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 (%)
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Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 1.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 2.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 2.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 11. Community 3.1 plant community composition

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

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Contributors

Christopher Mann

Approval

Greg Schmidt, 10/03/2024

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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	09/16/2026
Approved by	
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:
