

Ecological site RX141X302

Mucky Swamp

Last updated: 10/03/2024
Accessed: 09/14/2026

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 (0-2% slopes) near the bottom of watersheds where water saturates deep organic muck deposits for most of the growing season. These organic soils are very poorly-drained and often underlain by mineral deposits at depths greater than 16 inches. The water table is within a few inches of the surface. This site often has pit and mound topography, with ponding typical in the pits, and slightly drier soil conditions on the mounds where most trees are rooted. Northern white cedar is abundant, with balsam fir, black spruce, larch, black ash, and grey birch as common associates. Diverse herbs, shrubs, and bryophytes dominate the understory. Treethrow and altered hydrology are common disturbances on this site. Small openings created by treethrow, which is very common on these unstable soils, are typically colonized by species already present in the community and may persist as canopy openings dominated by herbaceous species for a long time.

Associated sites

RX141X110	Floodplain Riparian Complex Floodplain Riparian Complex may be adjacently located or surround Mucky Swamp ecological sites.
RX141X210	Marsh Wetland Complex Marsh Wetland Complex may be adjacently located or surround Mucky Swamp ecological sites.

Similar sites

RX141X210	Marsh Wetland Complex Mucky Swamp ecological sites may have similar vegetative composition and can transition to a Marsh Wetland Complex under select environmental conditions and/or constraints.
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RX141X301	Semi-rich Loamy Swamp Mucky Swamp ecological sites may have similar vegetative composition and can transition to a Semi-rich Loamy Swamps under select environmental conditions and/or constraints.
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Table 1. Dominant plant species

Tree	(1) <i>Thuja occidentalis</i> (2) <i>Picea mariana</i>
Shrub	(1) <i>Cornus sericea</i> (2) <i>Alnus incana ssp. rugosa</i>
Herbaceous	(1) <i>Carex trisperma</i> (2) <i>Osmunda cinnamomea</i>

Legacy ID

F141XY302NY

Physiographic features

Table 2. Representative physiographic features

Landforms	(1) Swamp or marsh (2) Depression
Runoff class	Negligible
Ponding frequency	Frequent
Elevation	180 – 610 m
Slope	0 %
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

Wetland description

Water levels in these swamps typically fluctuate seasonally; they may be flooded in spring and relatively dry by late summer.

Soil features

Table 4. Representative soil features

Parent material	(1) Organic material
Surface texture	(1) Loam
Drainage class	Very poorly drained
Permeability class	Slow

Soil depth	180 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (22.9-25.4cm)	Not specified
Soil reaction (1:1 water) (13-18.5cm)	Not specified
Subsurface fragment volume <=3" (0cm)	Not specified
Subsurface fragment volume >3" (0cm)	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 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 and altered hydrology are common disturbances on this site. Small openings created by treethrow, which is very common on these unstable soils, are typically colonized by species already present in the community and may persist as canopy openings dominated by herbaceous species for a long time.

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 on this site and requires winter harvest methods when the ground is frozen. 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. This may take a very long time to occur.

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 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 2.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 2.3 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. 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

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	09/14/2026
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:
