

Ecological site F142XA008NY

Wet Outwash Depression

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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): Frigid Soil Temperature Regime The upper St. Lawrence and Champlain Valleys are characterized with soils in the frigid soil temperature regime (mean annual soil temperature greater than 32°F but less than 46°F and with a difference between mean summer and mean winter soil temperatures greater than 41°F at 20 inches below the surface or at a densic, lithic, or paralithic contact, whichever is shallower). The Frigid Soil Temperature Regime (STR) will have shorter growing season than the lower St. Lawrence and Champlain Valleys which are characterized with soils in the mesic STR. Species more tolerant of colder year round temperatures would also be evident in the Frigid LRU.

Classification relationships

NRCS: Land Resource Region: R - Northeastern Forage and Forest Region MLRA: 142 - St. Lawrence-Champlain Plain LRU: A/02 - Frigid Mean Annual Soil Temperature USFS: Domain: 200 - Humid Temperate Division: 210 - Warm Continental Province: 211 - Northeastern Mixed Forest Section: 211E - St. Lawrence and Champlain Valley Subsections: 211Ea - St. Lawrence Glacial Marine Plain EPA: Level I: 8 - Eastern Temperate Forests Level II: 8.1 - Mixed Wood Plains Level III: 83 - Eastern Great Lakes Lowlands Level IV: 83d - St. Lawrence Lowlands 83e - Upper St. Lawrence Valley

Ecological site concept

Landform/Landscape Position: The site occurs on nearly level areas, concave areas, or depression on till plains. A thin mantle of sandy deposits overlies firm glacial till or clayey marine sediments. Slopes range from 0 to 5 percent. Soils: The site consists of very deep, poorly and very poorly drained soils in low areas and depressions. Soils have a thin mantle of sandy wave-washed or beach deposits overlying glacial till or clayey marine sediments. Reaction ranges from strongly acid to neutral up to a depth of about 30 inches. A water table is present from the mineral soil surface to a depth of 6 inches from November through June. Representative soils are Deinache, Stockholm, and Cook. Vegetation: Based on existing information and known soil/vegetation relationships of the area, the reference plant community is considered to be a spruce-fir swamp (Edinger et al. 2014). The dominant tree is usually a red spruce and codominant trees include balsam fir and red maple. Other trees include yellow birch, tamarack, black spruce, eastern white pine and eastern hemlock. Blueberries and common winterberry are characteristic shrubs, cinnamon fern is a common herb, and peat mosses and liverworts may be

common to abundant (Edinger et al 2014).

Associated sites

F142XB003VT	Moist Outwash
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Similar sites

F142XB013NY	Moist Till Upland
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

The site occurs on nearly level areas, concave areas, or depression on till plains. A thin mantle of sandy deposits overlies firm glacial till or clayey marine sediments. Slopes range from 0 to 5 percent.

Table 2. Representative physiographic features

Landforms	(1) Till plain > Depression (2) Beach ridge (3) Marsh (4) Swamp
Flooding frequency	None
Ponding frequency	None to frequent
Elevation	0 – 760 m
Slope	0 – 10 %
Water table depth	0 – 30 cm
Aspect	Aspect is not a significant factor

Climatic features

The Koppen-Geiger climate classification of the area in which this MLRA occurs is Dfb, Warm-summer humid continental. Rainfall occurs as high-intensity, convective thunderstorms in the summer, and snowfall is heavy from late in Autumn to early Spring. The frost-free period in this area is longest in a narrow belt around Lake Champlain.

Table 3 Representative climatic features

Frost-free period (characteristic range)	130-130 days
Freeze-free period (characteristic range)	150-160 days
Precipitation total (characteristic range)	810-910 mm
Frost-free period (actual range)	130-130 days
Freeze-free period (actual range)	150-160 days
Precipitation total (actual range)	810-970 mm
Frost-free period (average)	130 days
Freeze-free period (average)	160 days
Precipitation total (average)	860 mm

- (1) MALONE [USC00304996], Malone, NY
- (2) PLATTSBURGH AFB [USC00306659], Plattsburgh, NY
- (3) PERU 2 WSW [USC00306538], Peru, NY

Influencing water features

Poorly drained

Water is removed so slowly that the soil is wet at shallow depths periodically during the growing season or remains wet for long periods. Internal free water occurrence is shallow or very shallow and common or persistent. Free water is commonly at or near the surface long enough during the growing season that most mesophytic crops cannot be grown, unless the soil is artificially drained. The soil, however, is not continuously wet directly below plow depth. Free water at shallow depth is common. The water table is commonly the result of low or very low saturated hydraulic conductivity, nearly continuous rainfall, or a combination of these.

Very poorly drained

Water is removed from the soil so slowly that free water remains at or very near the surface during much of the growing season. Internal free water occurrence is very shallow and persistent or permanent. Unless the soil is artificially drained, most mesophytic crops cannot be grown. The soils are commonly level or depressed and frequently ponded. In areas where rainfall is high or nearly continuous, slope gradients may be greater.

Wetland description

National Wetland Classification (Cowardin et al., 1979):

Palustrine, class variable, leaf morphology variable, water regime variable, chemistry modifier variable.

Soil features

The site consists of very deep, poorly and very poorly drained soils in low areas and depressions. Soils have a thin mantle of sandy wave-washed or beach deposits overlying glacial till or clayey marine sediments. Reaction ranges from strongly acid to neutral up to a depth of about 30 inches. A water table is present from the mineral soil surface to a depth of 6 inches from November through June. Representative soils are Deinache, Stockholm, Cook, Deford, Coveytown, Munuscong, Pinconning, Searsport, and Walpole.

Table 4. Representative soil features

Parent material	(1) Till (2) Glaciolacustrine deposits (3) Glaciomarine deposits (4) Glaciofluvial deposits
Surface texture	(1) Loamy fine sand (2) Stony loamy sand (3) Fine sand (4) Very stony loamy sand (5) Gravelly loamy sand (6) Cobbly loamy sand (7) Mucky fine sandy loam (8) Mucky loamy fine sand (9) Muck (10) Loamy sand
Family particle size	(1) Coarse-loamy over clayey (2) Sandy (3) Sandy over clayey (4) Sandy over loamy
Drainage class	Very poorly drained to poorly drained
Permeability class	Very slow to moderately rapid
Depth to restrictive layer	60 – 180 cm
Surface fragment cover <=3"	Not specified

Surface fragment cover >3"	Not specified
Available water capacity (Depth not specified)	5.08 – 12.7 cm
Soil reaction (1:1 water) (Depth not specified)	3.5 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

Ecological dynamics

The information in this provisional ecological site description, including the state-and-transition model (STM), was developed using existing plant community descriptions for the area, professional experience, and scientific studies. The information is representative of a complex set of plant communities. Not all scenarios or plants are included. Key indicator plants and ecological processes are described to inform land management decisions. Field validation is required to confirm soil/plant community relationship across the extent of the soil map unit.

Cultural Ecology: Humans have occupied the St. Lawrence River and Champlain Valley for at least ten thousand years, adapting their ways of life in a variety of changing environments. Initially people lived in small, nomadic groups and later in larger settlements. Historically, the area was within the Iroquois Tribal Territory. European exploration of the area began in the 17th century. Fur trade and settlement of the area followed during the 18th century. Industrialization, riverine-related activities, agriculture, concentrated human settlement in metropolitan areas, and recreation are currently the major human activities affecting the ecosystem (USDA USFS).

The reference plant community is considered to be a spruce-fir swamp (Edinger et al. 2014). The dominant tree is usually a red spruce and codominant trees include balsam fir and red maple. Other trees include yellow birch, tamarack, black spruce, eastern white pine and eastern hemlock. Blueberries and common winterberry are characteristic shrubs, cinnamon fern is a common herb, and peat mosses and liverworts may be common to abundant (Edinger et al 2014).

Primary natural disturbances are wind, insects (spruce budworm), and ice storms. Hydrology changes (drainage, diversions, roads, dams) will affect species composition. The site is susceptible to nonpoint source pollution which may contain excess nutrients, sediments, road salts, and other particulates. The site is also threatened by invasive species such as reedgrass (*Phragmites australis*) (Edinger et al 2014).

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 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 3.1 plant community composition

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

Site Development and Testing Plan Future work, as described in a project plan, to validate the 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. Annual 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 document. Annual reviews of the project plan are to be conducted by the Ecological Site Technical Team.

Other references

Edinger, G. J., D. J. Evans, S. Gebauer, T. G. Howard, D. M. Hunt, and A. M. Olivero (editors). 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.

USDA-NASS. 2012 Census of Agriculture. St. Lawrence County New York. Accessed on 11/17/17: https://www.agcensus.usda.gov/Publications/2012/Online_Resources/County_Profiles/New_York/cp36089.pdf

USDA-USFS. Ecological Subregions of the United States. 212E--St. Lawrence and Champlain Valley. Northeastern Forest Experiment Station, Northeastern Area State and Private Forestry, and the Eastern Region. Accessed on 11/17/17: <https://www.fs.fed.us/land/pubs/ecoregions/ch14.html#212E>

Contributors

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Approval

Greg Schmidt, 10/03/2024

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	05/22/2020
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:
