Ecological site RX141X210
Marsh Wetland Complex

Last updated: 10/03/2024
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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): 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 next to small rivers and streams and includes a complex of soils and landforms associated with floodplains. Poorly-drained banks occur nearest the channel, with broad, somewhat poorly to moderately well-drained floodplains behind. Side channels often carry large amounts of water into the floodplains at high flows, and the lowest areas of the floodplain, including poorly- and very poorly-drained oxbows and depressions, may be ponded at times. Soils are derived from alluvium, are typically silt loams to fine sands in texture, and may have gravel or sand layers from particular flooding events. Poorly-drained soils are often organic over alluvium. Representative soils include: Carbondale, Carlisle, and Rifle.

The variability in microtopography on this site results in a patchy mosaic of plant communities that may include trees, shrubs, and herbs. Diverse grasses and other herbaceous species indicate differences in soil wetness throughout the site due to slight variability in elevation above the water table. This site is subject to flooding and ice scour, which periodically removes woody species, maintaining the herbaceous component of the plant community. Beaver activity can alter reaches of this site by slowing the flow, which results in less flooding and scour. These narrow landforms are nutrient rich with high water-holding capacity, but are too small for extensive cultivation. Much of this site occurs upstream of dams, though altered flow regimes below dams may have significant impact on this site. Further study is needed to better describe the properties and disturbances that define this site concept. There are likely more than one Marsh Wetland ecological sites in this MLRA.

These freshwater emergent and/or submergent marshes are dominated by herbaceous vegetation. They are common throughout the northeastern United States and adjacent Canadian provinces. Freshwater marshes occur in closed or open basins that are generally flat and shallow. They are associated with lakes, ponds, slow-moving streams, and/or impoundments or ditches. The herbaceous vegetation does not persist through the winter. Scattered shrubs are often present and usually total less than 25% cover. Trees are generally absent and, if

present, are scattered. The substrate is typically muck over mineral soil.

Associated sites

RX141X110	**Floodplain Riparian Complex** Marsh Wetland Complex sites may often be adjacent and intersect with Floodplain Riparian Complex sites and transition into one another as a semi-natural state.

Similar sites

RX141X110	**Floodplain Riparian Complex** Marsh Wetland Complex sites may have similar composition of herbaceous vegetation and shrubs as Floodplain Riparian Complex sites.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Alnus incana ssp. rugosa* (2) *Spiraea alba var. latifolia*
Herbaceous	(1) *Thelypteris palustris* (2) *Glyceria*

Legacy ID

F141XY210NY

Physiographic features

Table 2. Representative physiographic features

Landforms	(1) Swamp or marsh (2) Depression
Elevation	76–610 m
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)	92-124 days
Freeze-free period (characteristic range)	129-159 days
Precipitation total (characteristic range)	1,194-1,346 mm
Frost-free period (actual range)	86-131 days
Freeze-free period (actual range)	119-164 days
Precipitation total (actual range)	1,118-1,448 mm

Frost-free period (average)	108 days
Freeze-free period (average)	143 days
Precipitation total (average)	1,270 mm

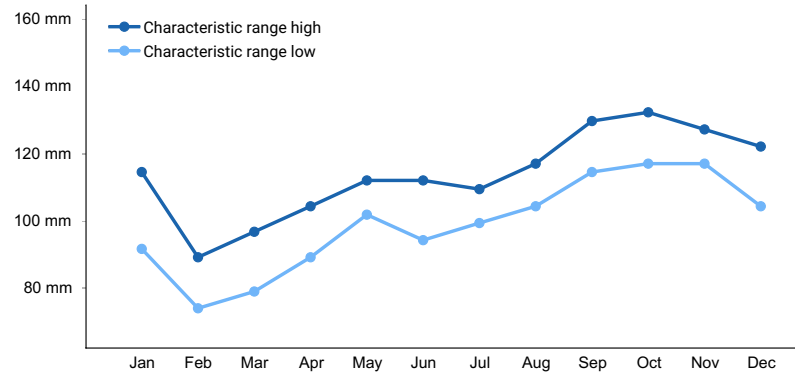


Figure 1. Monthly precipitation range

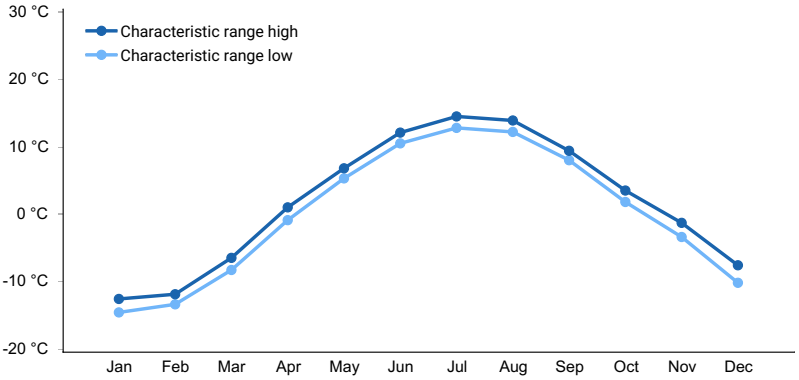


Figure 2. Monthly minimum temperature range

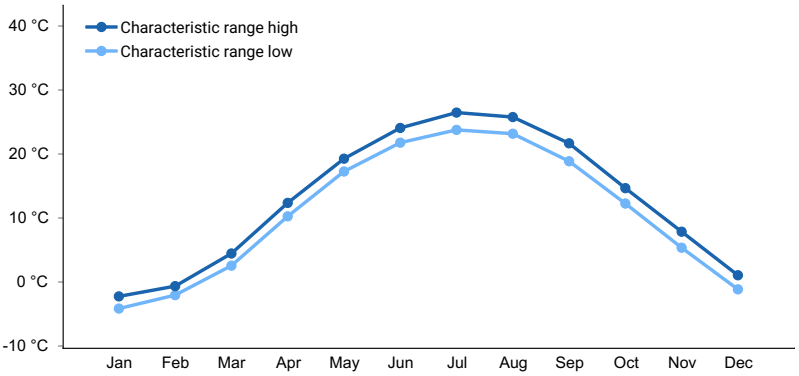


Figure 3. Monthly maximum temperature range

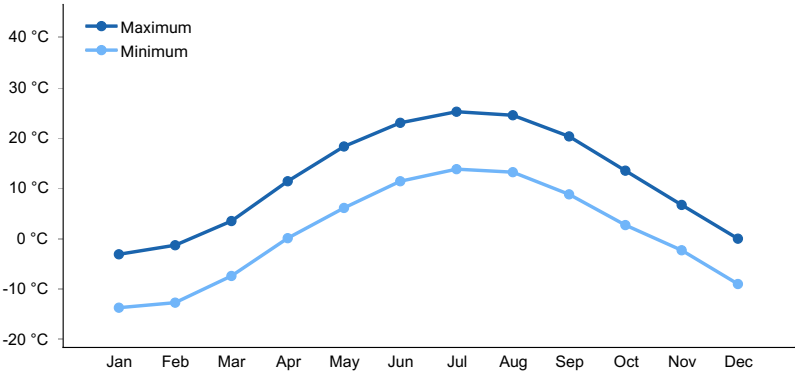


Figure 4. Monthly average minimum and maximum temperature

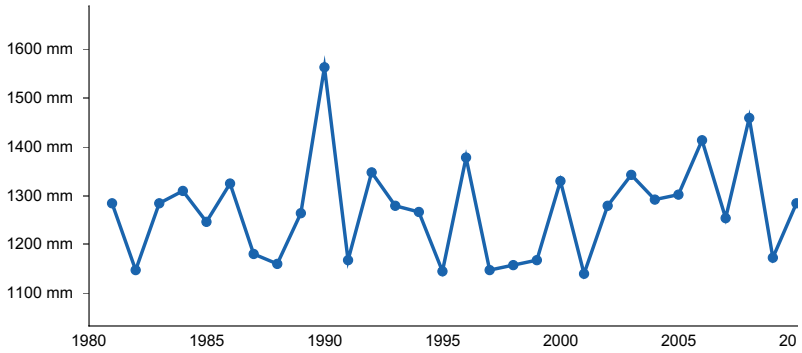


Figure 5. Annual precipitation pattern

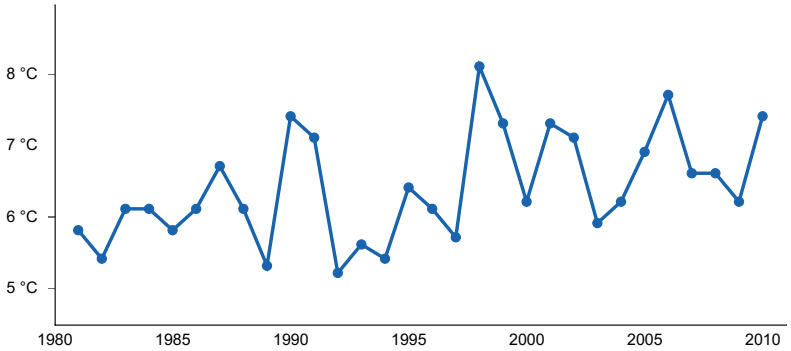


Figure 6. Annual average temperature pattern

Climate stations used

- (1) 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

This ecological site is associated with lakes, ponds, slow-moving streams, and/or impoundments or ditches. Due to its low-lying position, this site is susceptible to altered hydrology from beaver dams and man-made structures (e.g. roads). Increased ponding depth and duration results in a ponded phase dominated by emergent vegetation such as cattails. As ponding depth and duration returns to the natural regime due to dam/road removal (or over long periods of time the infilling of pond with sediment and debris) this site will transition through many short-lived marsh communities before eventually returning to dominance by those of the reference community.

Wetland description

This ecological site may be saturated or seasonally flooded to semi-permanently flooded freshwater emergent marshes, characterized by wetland herbs and shrubs.

Soil features

Representative soils include: Carbondale, Carlisle, and Rifle.

Table 4. Representative soil features

Parent material	(1) Organic material
Surface texture	(1) Muck (2) Gravelly sand
Drainage class	Very poorly drained

Permeability class	Slow to moderately slow
Depth to restrictive layer	183 cm
Soil depth	0 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (Depth not specified)	40.64–53.34 cm
Soil reaction (1:1 water) (Depth not specified)	0
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

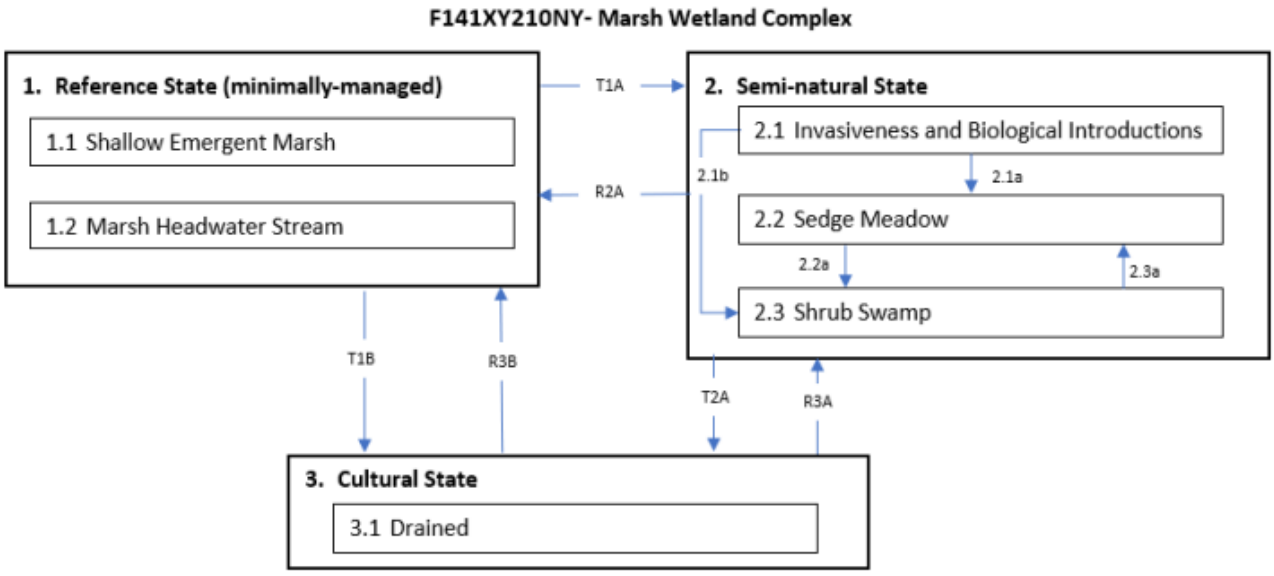
[Caveat: The vegetation information contained in this section and is only provisional, based on concepts, and future projects support validation through field work. *] The vegetation groupings described in this section are based on the terrestrial ecological system classification and vegetation associations 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 diverse graminoid, herb, and shrub species. Shrubs such as speckled alder tend to dominate the higher perimeter and mounds within the marsh site, while diverse sedges, bulrushes, grasses, and forbs dominate the wetter areas. Relatively small changes in soil wetness may alter the distribution of these species within the site, and further study is required to distinguish the relationship between hydrology and vegetation on this site.

Due to its low-lying position, this site is susceptible to altered hydrology from beaver dams and man-made structures (e.g. roads). Increased ponding depth and duration results in a ponded phase dominated by emergent vegetation such as cattails. As ponding depth and duration returns to the natural regime due to dam/road removal (or over long periods of time the infilling of pond with sediment and debris) this site will transition through many short-lived marsh communities before eventually returning to dominance by those of the reference community.

Artificial drainage of this site is yet to be observed.

State and transition model



Transition	*Drivers/practices*
T1A	streambank erosion, climate change, hydrological alteration (beavers, debris), significant increase in flooding events and annual precipitation, introduction of invasive species, pests, and pathogens
T1B	hydrologic alteration (anthropogenic), timber harvesting, mechanical soil disturbance, landscape alteration
2.1a, 2.1b	introduction of invasive species, pests, and pathogens as a result of shifts between states or communities, highly influenced by pressures from disturbance and climate change
R2A	remediation of hydrologic alteration, management of invasive species, pests, and pathogens, restoration of key plant species
2.2a, 2.3a	remediation of hydrologic alteration, drought, warmer annual temperatures (decadal); hydrologic alteration (obstruction or barrier), increase in annual precipitation or significant flooding events
T2A	hydrologic alteration, significant drought, potential for agricultural use
R3A, R3B	remediation of hydrologic alteration, increased flooding frequency/duration, planting/seeding, active forest management plan

State 1
Reference State (minimally-managed)

This site is dominated by diverse graminoid, herb, and shrub species. Shrubs such as speckled alder tend to dominate the higher perimeter and mounds within the marsh site, while diverse sedges, bulrushes, grasses, and forbs dominate the wetter areas. Relatively small changes in soil wetness may alter the distribution of these species within the site, and further study is required to distinguish the relationship between hydrology and vegetation on this site. Due to its low-lying position, this site is susceptible to altered hydrology from beaver dams and man-made structures (e.g. roads). Increased ponding depth and duration results in a ponded phase dominated by emergent vegetation such as cattails. As ponding depth and duration returns to the natural regime due to dam/road removal (or over long periods of time the infilling of pond with sediment and debris) this site will transition through many short-lived marsh communities before eventually returning to dominance by those of the reference community.

Characteristics and indicators. More documentation and research is needed to distinguish the different types of marshes within this ecological site.

Dominant resource concerns

- Bank erosion from streams, shorelines, or water conveyance channels
- Ponding and flooding
- Seasonal high water table
- Surface water depletion
- Nutrients transported to surface water
- Pesticides transported to surface water

- Pathogens and chemicals from manure, biosolids, or compost applications transported to surface water
- Petroleum, heavy metals, and other pollutants transported to surface water
- Elevated water temperature
- Plant productivity and health
- Plant structure and composition
- Plant pest pressure
- Terrestrial habitat for wildlife and invertebrates
- Aquatic habitat for fish and other organisms

Community 1.1
Shallow Emergent Marsh

Shallow emergent marshes typically occur in lake basins and along streams often intergrading with deep emergent marshes, shrub swamps, and sedge meadows, and they may occur together in a complex mosaic in a large wetland. This site occurs on mineral soil or deep muck soils, that are typically permanently saturated and seasonally flooded. Water depths may range from 15 cm to 1 m (6 in to 3.3 ft) during flood stages, but the water level usually drops by mid to late summer and the substrate is exposed during an average year. Shallow emergent marshes are common and variable, and may be dominated by a mixture of herbaceous vegetation or a single species. Shrubs may be scattered throughout marshes, though areas with greater than 50% shrub cover are classified as shrub swamps. The hydroperiod of these sites may determine species composition, with species dependent on differing hydrologic states (permanently saturated, seasonally flooded, or temporarily saturated). (Edinger et al. 2014)

Resilience management. New York Natural Heritage Program State Rank: S5-Demonstrably secure in New York State. Species composition may be strongly influenced by annual and seasonal water levels. These sites may be found on found in agricultural or cleared land that may present issues related to agricultural runoff (pesticide, petroleum, waste, etc.) (Edinger et al. 2014)

Dominant plant species

- gray alder (*Alnus incana*), shrub
- speckled alder (*Alnus incana ssp. rugosa*), shrub
- swamp loosestrife (*Decodon verticillatus*), shrub
- silky dogwood (*Cornus amomum*), shrub
- white meadowsweet (*Spiraea alba var. latifolia*), shrub
- common buttonbush (*Cephalanthus occidentalis*), shrub
- redosier dogwood (*Cornus sericea*), shrub
- three-way sedge (*Dulichium arundinaceum*), grass
- rattlesnake mannagrass (*Glyceria canadensis*), grass
- reed canarygrass (*Phalaris arundinacea*), grass
- sedge (*Carex*), grass
- eastern marsh fern (*Thelypteris palustris*), other herbaceous
- common spikerush (*Eleocharis palustris*), other herbaceous
- blunt spikerush (*Eleocharis obtusa*), other herbaceous
- woolgrass (*Scirpus cyperinus*), other herbaceous
- green bulrush (*Scirpus atrovirens*), other herbaceous
- king of the meadow (*Thalictrum pubescens*), other herbaceous
- Virginia marsh St. Johnswort (*Triadenum virginicum*), other herbaceous
- spotted joe pye weed (*Eutrochium maculatum*), other herbaceous
- common boneset (*Eupatorium perfoliatum*), other herbaceous
- jewelweed (*Impatiens capensis*), other herbaceous
- sweetflag (*Acorus americanus*), other herbaceous
- common marsh bedstraw (*Galium palustre*), other herbaceous
- wrinkleleaf goldenrod (*Solidago rugosa*), other herbaceous
- giant goldenrod (*Solidago gigantea*), other herbaceous
- tufted loosestrife (*Lysimachia thyrsiflora*), other herbaceous
- earth loosestrife (*Lysimachia terrestris*), other herbaceous
- harlequin blueflag (*Iris versicolor*), other herbaceous
- sensitive fern (*Onoclea sensibilis*), other herbaceous

Dominant resource concerns

- Bank erosion from streams, shorelines, or water conveyance channels
- Ponding and flooding
- Seasonal high water table
- Pesticides transported to surface water
- Pathogens and chemicals from manure, biosolids, or compost applications transported to surface water
- Petroleum, heavy metals, and other pollutants transported to surface water
- Elevated water temperature
- Plant productivity and health
- Plant structure and composition
- Plant pest pressure
- Terrestrial habitat for wildlife and invertebrates
- Aquatic habitat for fish and other organisms

Community 1.2
Marsh Headwater Stream

The aquatic community of a small, marshy perennial brook with a very low gradient, slow flow rate, and cool to warm water that flows through a marsh, fen, or swamp where a stream system originates. Most of the erosion is primarily lateral, and deposition can be substantial. The substrate is typically gravel or sand, but some examples or segments may be dominated by silt, muck, peat, marl deposits or woody or leafy debris. These streams may have high turbidity and be somewhat poorly oxygenated and can vary in alkalinity and color. Sparse emergent marshes, floating aquatic beds, submerged aquatic beds, and mussel beds are typically present in this broadly defined community. Four to seven ecoregional variants of marsh headwater stream are suspected to differ in dominant and characteristic vascular plants, fishes, bryophytes, invertebrates, and algae as well as water chemistry, water temperature, underlying substrate type, and surrounding forest type. Major watershed may be a secondary factor in distinguishing streams lower in a drainage basin. (Edinger et al. 2014)

Resilience management. New York Natural Heritage Program State Rank: S4-Apparently secure in New York State. Stream bank erosion can be substantial and deposit excessive sediment and nutrients into these areas. Depending on the surrounding development, this system may experience watershed instability from agricultural runoff and debris during period of heavy precipitation and flooding. More research and data is needed to distinguish characteristic ecological properties, potential conservation issues, and to further define marsh headwater streams within this MLRA. (Edinger et al. 2014)

Dominant plant species

- American eelgrass (*Vallisneria americana*), grass
- twoleaf watermilfoil (*Myriophyllum heterophyllum*), other herbaceous
- coon's tail (*Ceratophyllum demersum*), other herbaceous
- ribbonleaf pondweed (*Potamogeton epihydrus*), other herbaceous
- common duckweed (*Lemna minor*), other herbaceous
- star duckweed (*Lemna trisulca*), other herbaceous
- floating pondweed (*Potamogeton natans*), other herbaceous
- grassleaf mudplantain (*Heteranthera dubia*), other herbaceous
- American bur-reed (*Sparganium americanum*), other herbaceous
- narrowleaf bur-reed (*Sparganium angustifolium*), other herbaceous
- floating bur-reed (*Sparganium fluctuans*), other herbaceous
- western waterweed (*Elodea nuttallii*), other herbaceous
- American white waterlily (*Nymphaea odorata*), other herbaceous
- varigated yellow pond-lily (*Nuphar lutea ssp. variegata*), other herbaceous

Dominant resource concerns

- Bank erosion from streams, shorelines, or water conveyance channels
- Ponding and flooding
- Seasonal high water table
- Nutrients transported to surface water

- Elevated water temperature
- Plant productivity and health
- Plant structure and composition
- Plant pest pressure
- Terrestrial habitat for wildlife and invertebrates
- Aquatic habitat for fish and other organisms

State 2
Semi-natural State

Shifts in ecological site composition, functionality, and dynamics driven by natural disturbances, processes, and pressures (may have some anthropogenic influences). More research is needed to determine the extent of the Semi-natural state associated with this ecological site.

Dominant resource concerns

- Organic matter depletion
- Elevated water temperature
- Plant productivity and health
- Plant structure and composition
- Plant pest pressure
- Terrestrial habitat for wildlife and invertebrates
- Aquatic habitat for fish and other organisms

Community 2.1
Invasiveness and Biological Introductions

Introduction of invasive species, pathogens, and/or pests resulting in shifts in ecological site composition, functionality, and dynamics. More research is needed to determine the extent of these effects on the semi-natural state associated with this ecological site.

Dominant resource concerns

- Organic matter depletion
- Elevated water temperature
- Plant productivity and health
- Plant structure and composition
- Plant pest pressure
- Terrestrial habitat for wildlife and invertebrates
- Aquatic habitat for fish and other organisms

Community 2.2
Sedge Meadow

a wet meadow community that has organic soils (muck or fibrous peat). Soils are permanently saturated and seasonally flooded; there is usually little peat accumulation in the substrate and usually underlain by deep muck. Sparse shrubs may be present and the dominant herbaceous vegetation must be members of the sedge family (Cyperaceae), typically of the genus Carex. Sedge meadows typically occur along streams and near the inlets and outlets of lakes and ponds; they also occur in lake basins as a zone near the upland edge of a shallow emergent marsh. A sedge meadow does not typically form a floating mat, instead it is covered with water during flooding. When water levels are low, there is little or no open water. (Edinger et al. 2014)

Resilience management. New York Natural Heritage Program State Rank: S4-Apparently secure in New York State.

Dominant plant species

- white meadowsweet (*Spiraea alba var. latifolia*), shrub
- steeplebush (*Spiraea tomentosa*), shrub

- leatherleaf (*Chamaedaphne calyculata*), shrub
- sweetgale (*Myrica gale*), shrub
- speckled alder (*Alnus incana ssp. rugosa*), shrub
- upright sedge (*Carex stricta*), grass
- Northwest Territory sedge (*Carex utriculata*), grass
- hairy sedge (*Carex lacustris*), grass
- blister sedge (*Carex vesicaria*), grass
- silvery sedge (*Carex canescens*), grass
- bluejoint (*Calamagrostis canadensis*), grass
- three-way sedge (*Dulichium arundinaceum*), grass
- mannagrass (*Glyceria*), grass
- rough bentgrass (*Agrostis scabra*), grass
- eastern marsh fern (*Thelypteris palustris*), other herbaceous
- sensitive fern (*Onoclea sensibilis*), other herbaceous
- water horsetail (*Equisetum fluviatile*), other herbaceous
- spotted joe pye weed (*Eutrochium maculatum*), other herbaceous
- Virginia marsh St. Johnswort (*Triadenum virginicum*), other herbaceous

Dominant resource concerns

- Ponding and flooding
- Seasonal high water table
- Nutrients transported to surface water
- Pesticides transported to surface water
- Pathogens and chemicals from manure, biosolids, or compost applications transported to surface water
- Petroleum, heavy metals, and other pollutants transported to surface water
- Elevated water temperature
- Plant productivity and health
- Plant structure and composition
- Plant pest pressure
- Terrestrial habitat for wildlife and invertebrates
- Aquatic habitat for fish and other organisms

Community 2.3
Shrub Swamp

This systems is generally an inland wetland dominated by tall shrubs that occurs along the shore of a lake or river, in a wet depression or valley not associated with lakes, or as a transition zone between a marsh, fen, or bog and a swamp or upland community. The substrate is usually mineral soil or muck. A few examples may have a shallow layer of sphagnous peat. Shrub swamps are common and variable, and may be dominated by a mixture of herbaceous vegetation or a single species. The hydroperiod of these sites may determine species composition, with species dependent on differing hydrologic states (permanently saturated, seasonally flooded, or temporarily saturated). (Edinger et al. 2014)

Resilience management. New York Natural Heritage Program State Rank: S5-Demonstrably secure in New York State. Species composition may be strongly influenced by annual and seasonal water levels. These sites may be found on found in agricultural or cleared land that may present issues related to agricultural runoff (pesticide, petroleum, nutrients, waste, etc.). More research and data is needed to distinguish characteristic ecological properties, potential conservation issues, and to further define shrub swamps as a semi-natural state within this ecological site. (Edinger et al. 2014)

Dominant plant species

- red maple (*Acer rubrum*), tree
- American elm (*Ulmus americana*), tree
- green ash (*Fraxinus pennsylvanica*), tree
- speckled alder (*Alnus incana ssp. rugosa*), shrub
- redosier dogwood (*Cornus sericea*), shrub
- silky dogwood (*Cornus amomum*), shrub

- swamp loosestrife (*Decodon verticillatus*), shrub
- common buttonbush (*Cephalanthus occidentalis*), shrub
- white meadowsweet (*Spiraea alba var. alba*), shrub
- white meadowsweet (*Spiraea alba var. latifolia*), shrub
- highbush blueberry (*Vaccinium corymbosum*), shrub
- hazel alder (*Alnus serrulata*), shrub
- withe-rod (*Viburnum nudum var. cassinoides*), shrub
- Bebb willow (*Salix bebbiana*), shrub
- pussy willow (*Salix discolor*), shrub
- meadow willow (*Salix petiolaris*), shrub

Dominant resource concerns

- Bank erosion from streams, shorelines, or water conveyance channels
- Ponding and flooding
- Seasonal high water table
- Surface water depletion
- Nutrients transported to surface water
- Pesticides transported to surface water
- Pathogens and chemicals from manure, biosolids, or compost applications transported to surface water
- Petroleum, heavy metals, and other pollutants transported to surface water
- Elevated water temperature
- Plant productivity and health
- Plant structure and composition
- Plant pest pressure
- Terrestrial habitat for wildlife and invertebrates
- Aquatic habitat for fish and other organisms

Pathway 2.1b
Community 2.1 to 2.2

introduction of invasive species, pests, and pathogens as a result of shifts between states or communities, highly influenced by pressures from disturbance and climate change

Conservation practices

Monitoring and Evaluation

Pathway 2.1a
Community 2.1 to 2.3

introduction of invasive species, pests, and pathogens as a result of shifts between states or communities, highly influenced by pressures from disturbance and climate change

Conservation practices

Monitoring and Evaluation

Pathway 2.2a
Community 2.2 to 2.3

hydrologic alteration, drought, warmer temperatures (decadal)

Conservation practices

Monitoring and Evaluation

Pathway 2.3a
Community 2.3 to 2.2

hydrologic alteration (obstruction, barrier, beaver activity), increase in annual precipitation or significant flooding events

Conservation practices

Shallow water habitat
Monitoring and Evaluation

State 3
Cultural State

Shifts in ecological site composition, functionality, and dynamics that are primary driven by anthropogenic disturbances and pressures (may have some associated natural influences). More research is needed to determine the extent of the cultural state associated with this ecological site.

Dominant resource concerns

- Surface water depletion
- Ground water depletion
- Naturally available moisture use
- Plant productivity and health
- Plant structure and composition
- Plant pest pressure
- Terrestrial habitat for wildlife and invertebrates
- Aquatic habitat for fish and other organisms

Community 3.1
Drained

Hydrological alteration of site resulting in depleted or drained surface or ground water.

Dominant resource concerns

- Surface water depletion
- Ground water depletion
- Naturally available moisture use
- Plant productivity and health
- Plant structure and composition
- Plant pest pressure
- Terrestrial habitat for wildlife and invertebrates
- Aquatic habitat for fish and other organisms

Transition T1A
State 1 to 2

streambank erosion, climate change, hydrological alteration (beaver activity), significant increase in flooding events and annual precipitation, introduction of invasive species, pests, and pathogens

Conservation practices

Monitoring and Evaluation

Transition T1B
State 1 to 3

hydrologic alteration (anthropogenic), timber harvesting, mechanical soil disturbance, landscape alteration

Conservation practices

Dam, Diversion
Dam
Rock Barrier

Restoration pathway R2A
State 2 to 1

remediation of hydrologic alteration, management of invasive species, pests, and pathogens, restoration of key plant species

Conservation practices

Obstruction Removal
Streambank and Shoreline Protection
Restoration and Management of Rare and Declining Habitats
Wetland Wildlife Habitat Management
Early Successional Habitat Development/Management
Wetland Restoration
Wetland Enhancement
Stream Corridor Improvement
Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management
Invasive Plant Species Control
Invasive Species Pest Management
Extending riparian forest buffers for water quality protection and wildlife habitat
Extending existing riparian herbaceous cover for water quality protection and wildlife habitat
Shallow water habitat
Non-forested riparian zone enhancement for fish and wildlife
Riparian forest buffer, terrestrial and aquatic wildlife habitat
Restoration and Management of Rare or Declining Habitats
Multi-species Native Perennials for Biomass/Wildlife Habitat
Establish pollinator habitat
Habitat Development for Beneficial Insects for Pest Management
Drainage water management for nutrient, pathogen, or pesticide reduction
Monitoring and Evaluation
Herbaceous Weed Control
Riparian buffer, terrestrial and aquatic wildlife habitat
Establish pollinator and/or beneficial insect habitat

Transition T2A
State 2 to 3

hydrologic alteration, significant drought, potential for agricultural use

Conservation practices

Dam, Diversion
Diversion
Dam
Floodproofing

Restoration pathway R3B
State 3 to 1

remediation of hydrologic alteration, increased flooding frequency/duration, planting/seeding, active forest management plan

Conservation practices

Stream Habitat Improvement and Management
Aquatic Organism Passage
Obstruction Removal
Streambank and Shoreline Protection
Restoration and Management of Rare and Declining Habitats
Wetland Wildlife Habitat Management
Shallow Water Development and Management
Early Successional Habitat Development/Management
Wetland Restoration
Wetland Enhancement
Stream Corridor Improvement
Riparian Buffers - Vegetative
Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management
Extending existing riparian herbaceous cover for water quality protection and wildlife habitat
Shallow water habitat
Non-forested riparian zone enhancement for fish and wildlife
Riparian forest buffer, terrestrial and aquatic wildlife habitat
Establish pollinator habitat
Monitoring and Evaluation
Riparian buffer, terrestrial and aquatic wildlife habitat

Restoration pathway R3A
State 3 to 2

remediation of hydrologic alteration, increased flooding frequency/duration, planting/seeding, active forest management plan

Conservation practices

Obstruction Removal
Restoration and Management of Rare and Declining Habitats

Wetland Wildlife Habitat Management
Shallow Water Development and Management
Early Successional Habitat Development/Management
Wetland Restoration
Wetland Enhancement
Stream Corridor Improvement
Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management
Extending existing riparian herbaceous cover for water quality protection and wildlife habitat
Shallow water habitat
Non-forested riparian zone enhancement for fish and wildlife
Riparian forest buffer, terrestrial and aquatic wildlife habitat
Establish pollinator habitat
Monitoring and Evaluation

Additional community tables

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

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.

Gawler, S. and A. Cutko. 2010. Natural Landscapes of Maine: A Guide to Natural Communities and Ecosystems. Maine Natural Areas Program, Maine Department of Conservation, Augusta, Maine.

NatureServe. 2021. NatureServe Explorer: An online encyclopedia of life [web application]. NatureServe, Arlington, Virginia. https://explorer.natureserve.org/. (accessed 10 July. 2021).

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. Agricultural Handbook 296

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions. Available online. (accessed 11 Aug. 2021).

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Climate Research Station Data. Available online. (accessed 23 June. 2021).

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for [MLRA 141, Maine]. Available online. (accessed 14 Oct. 2021).

USNVC [United States National Vegetation Classification]. 2017. United States National Vegetation Classification Database V2.01. Federal Geographic Data Committee, Vegetation Subcommittee, Washington DC. Available The U.S. National Vegetation Classification (usnvc.org) (accessed 2 July. 2021).

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	05/12/2025
Approved by	Greg Schmidt
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:

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17. **Perennial plant reproductive capability:**
