USDA Natural Resources Conservation Service

Ecological site F144AY012CT
Sandy Low Floodplain

Last updated: 10/04/2024
Accessed: 05/11/2025

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): 144A–New England and Eastern New York Upland, Southern Part

MLRA 144A: New England and Eastern New York Upland, Southern Part

The eastern half of the eastern part of this MLRA is in the Seaboard Lowland Section of the New England Province of the Appalachian Highlands. The western half of the eastern part and the southeastern half of the western part are in the New England Upland Section of the same province and division. The northwestern half of the western part is in the Hudson Valley Section of the Valley and Ridge Province of the Appalachian Highlands. This MLRA is a very scenic area of rolling to hilly uplands that are broken by many gently sloping to level valleys that terminate in coastal lowlands. Elevation ranges from sea level to 1,000 feet in much of the area, but it is 2,000 feet on some hills. Relief is mostly about 6 to 65 feet in the valleys and about 80 to 330 feet in the uplands.

This area has been glaciated and consists almost entirely of till hills, drumlins, and bedrock-controlled uplands with a mantle of till. It is dissected by narrow glacio-fluvial valleys. The southernmost boundary of the area marks the farthest southward extent of Wisconsinian glaciation on the eastern seaboard. The river valleys and coastal plains are filled with glacial lake sediments, marine sediments, and glacial outwash. The bedrock in the eastern half of the area consists primarily of igneous and metamorphic rocks of early Paleozoic age. Granite is the most common igneous rock, and gneiss, schist, and slate are the most common metamorphic rocks. In the parts of the MLRA in eastern and southeastern New York, Devonian- to Pennsylvanian-age sandstone, shale, and limestone are dominant. Carbonate rocks, primarily dolomite and limestone, are the dominant kinds of bedrock in the part of this MLRA in northwestern Connecticut.

Classification relationships

USDA-NRCS (USDA 2006):
Land Resource Region (LRR): N—East and Central Farming and Forest Region
Major Land Resource Area (MLRA): 144A— New England and Eastern New York Upland, Southern Part.

USDA-FS (Cleland et al. 2007)
Province: 221 - Eastern Broadleaf Province
Section: 221A - Lower New England
Subsection: 221Aa – Boston Basin
221Ac – Narragansett-Bristol Lowland and Islands
221Ad – Southern New England Coastal Lowland
221Ae – Hudson Highlands
221Ag - Southeast New England Coastal Hills and Plains
221Ah - Worcester-Monadnock Plateau
221Ai – Gulf of Maine Coastal Plain
221Ak - Gulf of Maine Coastal Lowland
Section: 221B – Hudson Valley

Subsection: 221Ba – Hudson Limestone Valley
221Bb - Miami – Taconic Foothills
221Bc – Hudson Glacial Lake Plains

Ecological site concept

The Sandy Low Floodplain ecological site consists of deep, coarse-loamy, moderately well drained, alluvial soils on low floodplains. These floodplains are subject frequent to occasional flooding and for longer duration than high floodplains. Representative soils include Middlebury, Suncook, Pootatuck, and Pawling. River types such as large, low gradient and small-medium low and high gradient rivers differ in hydrologic regime and fluvial geomorphology and consequently have different community composition (Marks et al. 2011). The forest composition varys with the size of the river system.
On largerer river systems, the reference community is characterized by silver maple (*Acer saccharinum*), eastern cottonwood (*Populus deltoides*), American elm (*Ulmus americana*), and sensitive fern (*Onoclea sensibilis*). On smaller river systems, swamp oak (*Quercus bicolor*), red Maple (*Acer rubrum*) American basswood (Tilea americana), American sycamore (*Platanus occidentalis*) predominate with abundant sedges (Carex spp.) and white avens (*Geum canadense*).

Associated sites

F144AY006CT	**High Floodplain Levee**
F144AY014CT	**Wet Sandy Low Floodplain**

Similar sites

F144AY018NY	**Moist Lake Plain**
F144AY019NH	**Wet Lake Plain**

Table 1. Dominant plant species

Tree	(1) *Acer saccharinum* (2) *Quercus palustris*
Shrub	Not specified
Herbaceous	(1) *Onoclea sensibilis* (2) *Geum canadense*

Physiographic features

The site occurs on low floodplains of mostly small to medium sized river valleys but can be found within large river valleys. These floodplains are subject frequent to occasional flooding and for longer duration than high floodplains.

Table 2. Representative physiographic features

Landforms	(1) Alluvial plain > Flood plain (2) Outwash plain > Stream terrace (3) Piedmont (4) River valley
Runoff class	Negligible to very high
Flooding duration	Brief (2 to 7 days) to long (7 to 30 days)
Flooding frequency	None to frequent
Ponding frequency	None to frequent
Elevation	0–2,998 ft
Slope	0–5%
Water table depth	15–72 in

Aspect	Aspect is not a significant factor

Climatic features

The Koppen-Geiger climate classification of the area in which this MLRA occurs varies between Dfb (Warm-summer humid continental) in the North, and Dfa (Hot-summer humid continental) to the southern portion of the MLRA. Precipitation is usually uniformly distributed throughout the year. Near the coast, however, it is slightly lower in summer. It is slightly higher in spring and fall in inland areas. Rainfall occurs as high-intensity, convective thunderstorms during the summer. During the winter, most of the precipitation occurs as moderate-intensity storms (northeasters) that produce large amounts of rain or snow. The freeze-free period increases in length to the south.

Table 3. Representative climatic features

Frost-free period (characteristic range)	121-152 days
Freeze-free period (characteristic range)	153-188 days
Precipitation total (characteristic range)	42-51 in
Frost-free period (actual range)	112-161 days
Freeze-free period (actual range)	137-201 days
Precipitation total (actual range)	41-53 in
Frost-free period (average)	139 days
Freeze-free period (average)	174 days
Precipitation total (average)	48 in

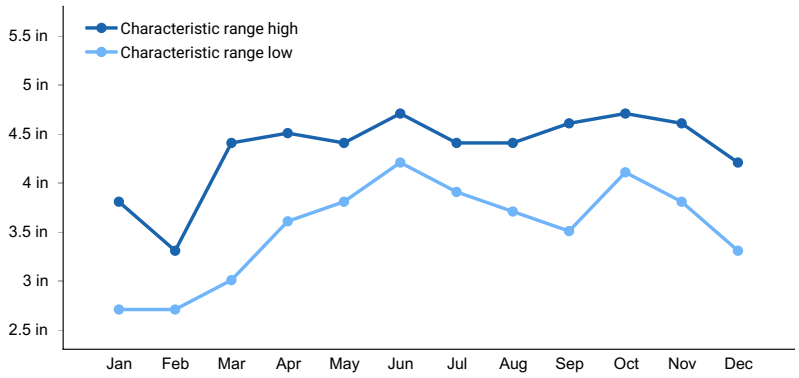


Figure 1. Monthly precipitation range

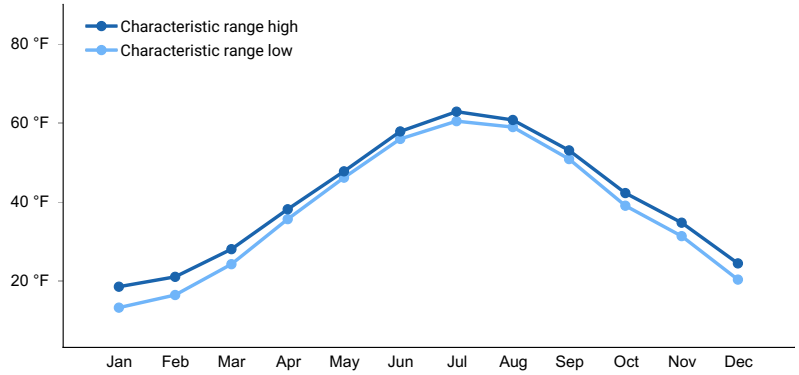


Figure 2. Monthly minimum temperature range

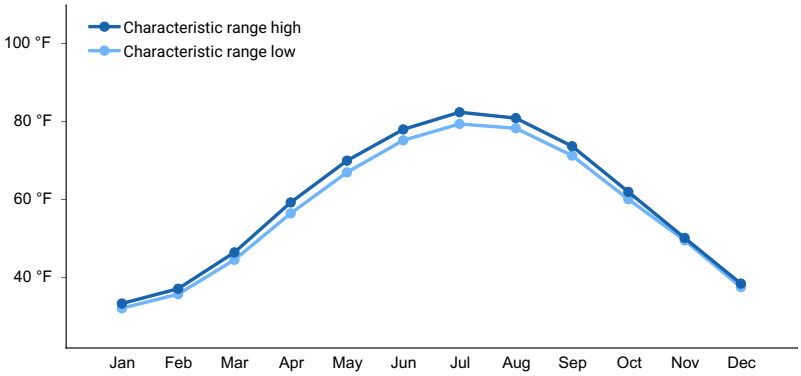


Figure 3. Monthly maximum temperature range

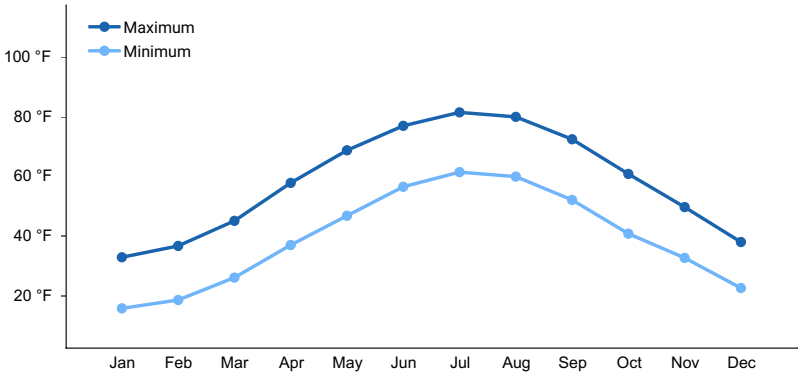


Figure 4. Monthly average minimum and maximum temperature

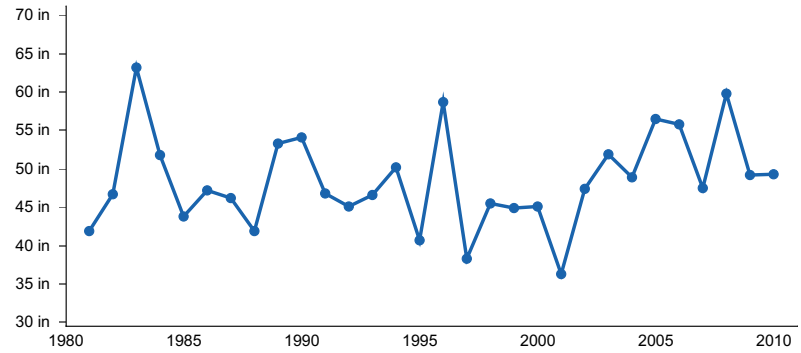


Figure 5. Annual precipitation pattern

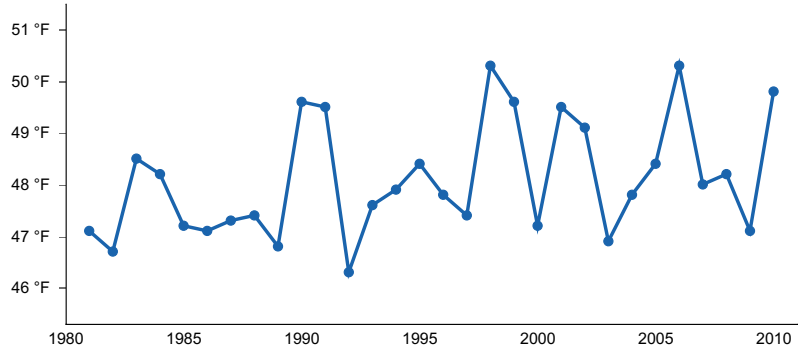


Figure 6. Annual average temperature pattern

Climate stations used

- (1) BAKERSVILLE [USC00060227], New Hartford, CT
- (2) STORRS [USC00068138], Storrs Mansfield, CT
- (3) TROY L&D [USC00308600], Troy, NY

- (4) MASSABESIC LAKE [USC00275211], Manchester, NH
- (5) YORKTOWN HEIGHTS 1W [USC00309670], Yorktown Heights, NY
- (6) WORCESTER RGNL AP [USW00094746], Leicester, MA

Influencing water features

Floodwaters are dependent on the season and flood elevation of the substrate.

Wetland description

NONE

Soil features

The site consists of deep, coarse-loamy, moderately well drained, alluvial soils on low floodplains of mostly small to medium sized river valleys but can be found within large river valleys. These floodplains are subject frequent to occasional flooding and for longer duration than high floodplains. Soil pH ranges from very strongly acid to neutral.

Representative soils are Middlebury, Suncook, Pootatuck, and Pawling.

Table 4. Representative soil features

Parent material	(1) Alluvium–granite and gneiss (2) Igneous and metamorphic rock (3) Sandstone and siltstone (4) Shale (5) Schist
Surface texture	(1) Fine sandy loam (2) Silt loam (3) Very fine sandy loam
Family particle size	(1) Coarse-loamy (2) Coarse-loamy over sandy or sandy-skeletal (3) Loamy
Drainage class	Poorly drained to excessively drained
Permeability class	Very slow to moderate
Depth to restrictive layer	22–72 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	2–7 in
Calcium carbonate equivalent (0-40in)	0–15%
Soil reaction (1:1 water) (0-40in)	3.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–15%
Subsurface fragment volume >3" (Depth not specified)	0–27%

Ecological dynamics

[Caveat: The vegetation information contained in this section and is only provisional, based on concepts, not yet validated with 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). Terrestrial ecological SYSTEMS are specifically defined as a group of plant community-types called ASSOCIATIONS that tend to [co-]occur within landscapes with similar ecological processes, substrates, and/or environmental gradients. Any given system will typically manifest itself in a landscape at intermediate geographic scales of tens-to-thousands of hectares and will persist for 50 or more years. A vegetation association is a plant community that is much more specific to a given soil, geology, landform, climate, hydrology, and disturbance history. It is the basic unit for vegetation classification and recognized by the US National Vegetation Classification (US FDGC 2008). Each association will be named by the diagnostic and often dominant species that occupy the different height strata (tree, sapling, shrub, and herb). Within the NatureServe Explorer database (NatureServe, 2015), ecological systems are numbered by a Community Ecological System Code (CES) and individual vegetation associations are assigned an identification number called a Community Element Global Code (CEGL).

Additional and more localized vegetation information is provided by the State Natural Heritage Programs of Connecticut (Metzler and Barrett 2001), Massachusetts (Swain and Kearsley 2001), New Hampshire (Sperduto and Nichols, 2011), New York (Edinger et al., 2014), and Rhode Island (Enser and Lungren, 2006).

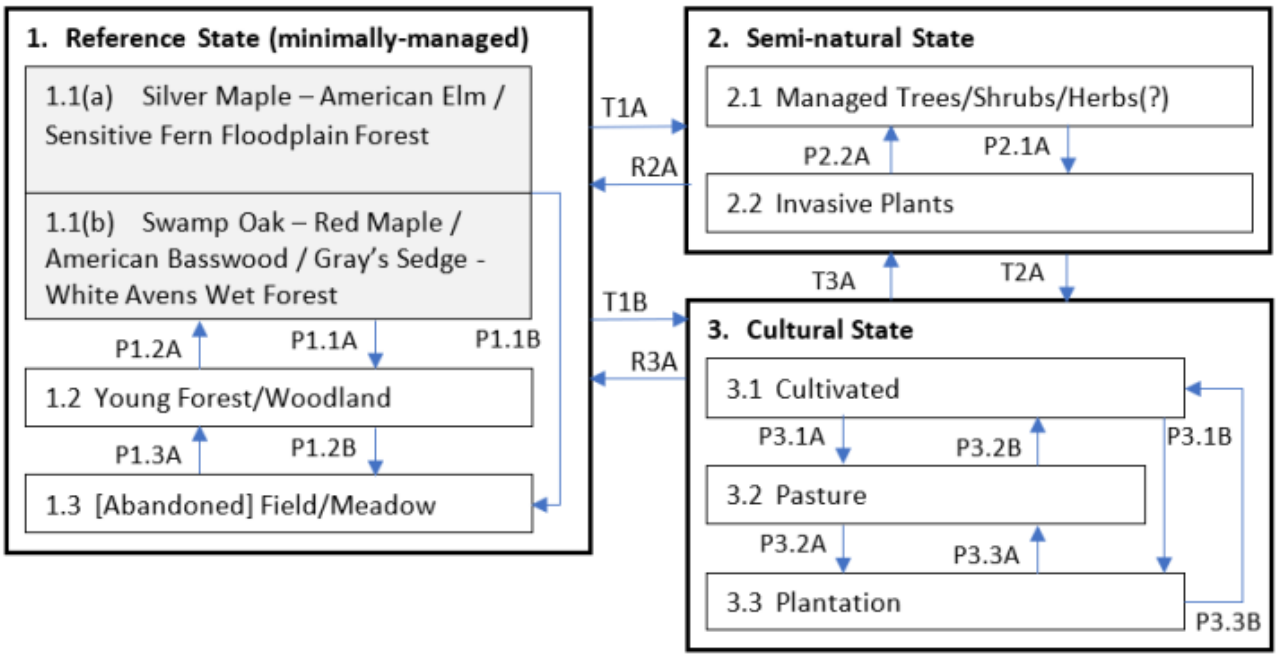
The Wet Sandy Low Floodplain Levee ecological site is characteristic of the Laurentian-Acadian Floodplain Forest system (CES201.587) and to a lesser the extent the Central Appalachian River Floodplain Forest system (CES201.587) (NatureServe 2015). The Sandy Low Floodplain ecological site consists of deep, coarse-loamy, moderately well drained, alluvial soils on low floodplains. These floodplains are subject frequent to occasional flooding and for longer duration than high floodplains. River types such as large, low gradient and small-medium low and high gradient rivers differ in hydrologic regime and fluvial geomorphology and consequently have different community composition (Marks et al. 2011). The forest composition varies with the size of the river system. The representative plant community is a Northeastern Silver Maple - Elm Floodplain Forest (CEGL006001).

Invasive exotic plants are a significant threat to the community since many can successfully displace native species. Common invasive exotic plants are Japanese barberry (Berberis thunbergia), Norway maple, Oriental bittersweet (*Celastrus orbiculatus*), honeysuckles (lonicera spp.), garlic mustard (Allaria petiolate), and Japanese stiltgrass (MIcrostegium vimineum).

[*Caveat] The information presented is representative of very complex vegetation communities. Key indicator plants and ecological processes are described to help inform land management decisions. Plant communities will differ across the MLRA because of the naturally occurring variability in weather, soils, and geography. The reference plant community is not necessarily the management goal. The drafts of species lists are merely representative and are not botanical descriptions of all species occurring, or potentially occurring, on this site. They are not intended to cover every situation or the full range of conditions, species, and responses for the site.

State and transition model

144AY012 – Sandy Low Floodplain



Transition	*Drivers/practices*
T1A	Forest mgmt., Disturbance
T1B, T2A	Disturbance/cutting/clearing, Brush removal
R2A, R2B	Restoration & Mgmt, Forest Stand Improvement, Early Successional Habitat Development, Upland Wildlife Mgmt, Invasive spp. Control, Plant establishment
T3A	Abandonment, Plant establishment, Forest mgmt.
P2.1A	Disturbance, Invasive species establishment
P2.2A	Invasive spp. Control, Forest mgmt..
P1.3A, P1.2A	Abandonment, succession
P3.1A, P3.2A, P3.3A, P3.1B, P3.2B, P3.3B	Changing Agricultural phases
P1.1A, P1.1B, P1.2B	Disturbance, Early Successional Habitat Development

State 1
Reference State (minimally-managed)

The reference community varies with the size of the river system. On larger river systems, the predominant plant community is: • Northeastern Silver Maple - Elm Floodplain Forest (CEGL006001), *Acer saccharinum - Ulmus americana* / *Onoclea sensibilis* Floodplain Forest, ([Translated] Silver Maple - American Elm / Sensitive Fern Floodplain Forest). On smaller river systems the predominant reference community is: • Pin Oak Small River Floodplain Forest (CEGL006185), *Quercus palustris - Acer rubrum* / *Carex grayi - Geum canadense* Wet Forest, ([Translated] Pin Oak - Red Maple / Gray's Sedge - White Avens Wet Forest); Other plant communities include: • Red Maple Floodplain Forest (CEGL006503), *Acer rubrum - Prunus serotina* / *Cornus amomum* Floodplain Forest, ([Translated] Red Maple - Black Cherry / Silky Dogwood Floodplain Forest); • Riverine Floodplain Forest (Early-Successional Type) (CEGL006036) *Platanus occidentalis - Fraxinus pennsylvanica* Floodplain Forest ([Translated] American Sycamore - Green Ash Floodplain Forest).

Community 1.1

1.1(a) Silver Maple - American Elm / Sensitive Fern Floodplain Forest (CEGL006001) 1.1(b). Pin Oak - Red Maple / Gray's Sedge - White Avens Wet Forest (CEGL006185)

1.1(a). Northeastern Silver Maple - Elm Floodplain Forest (CEGL006001), *Acer saccharinum - Ulmus americana* / *Onoclea sensibilis* Floodplain Forest, ([Translated] Silver Maple - American Elm / Sensitive Fern Floodplain Forest This floodplain forest occurs on higher terraces along the lower reaches of larger and medium sized rivers where flood depth and duration are relatively less than immediately adjacent to the river channel. The canopy is strongly dominated by silver maple (*Acer saccharinum*), slippery elm (*Ulmus rubra*), American elm (*Ulmus americana*), black cherry (*Prunus serotina*), and green ash (*Fraxinus pennsylvanica*) can occur in the subcanopy. Eastern cottonwood (*Populus deltoides*) occurs sporadically. Shrubs occur, unlike adjacent areas at lower elevations, including northern arrowwood (*Viburnum dentatum* var. lucidum), northern spicebush (*Lindera benzoin*), and silky dogwood (*Cornus amomum*). The herb layer is strongly dominated by sensitive fern (*Onoclea sensibilis*). Other hers include sweet woodreed (*Cinna arundinacea*), white avens (*Geum canadense*), white turtlehead (*Chelone glabra*), jewelweed (*Impatiens capensis*), fringed sedge (*Carex crinita*), hop sedge (*Carex lupulina*), and Gray's sedge (*Carex grayi*). (Source: NatureServe 2018 [accessed 2019], USNVC 2017 [accessed 2019]). Cross-referenced plant community concepts (typically by political state): CT: Sugar maple – Sensitive Fern Floodplain Forest (Metzler and Barrett, 2006) MA: Transitional Floodplain Forest (Swain and Kearsley, 2001) NH: Silver maple - false nettle - sensitive fern Floodplain Forest (Sperduto and Nichols, 2011) NY: Floodplain Forest (Edinger et al., 2014) Pin Oak Small River Floodplain Forest (CEGL006185), *Quercus palustris - Acer rubrum* / *Carex grayi - Geum canadense* Wet Forest, ([Translated] Pin Oak - Red Maple / Gray's Sedge - White Avens Wet Forest); This floodplain forest occurs along smaller rivers ranging within the freely drained floodplain profile. The canopy is composed of pin oak (*Quercus palustris*), green ash (*Fraxinus pennsylvanica*), red maple (*Acer rubrum*), American elm (*Ulmus americana*), and occasionally swamp white oak (*Quercus bicolor*), white ash (*Fraxinus americana*), black ash (*Fraxinus nigra*), bitternut hickory (*Carya cordiformis*), black gum (*Nyssa sylvatica*), and/or American sycamore (*Platanus occidentalis*). More typically upland trees sometimes found on higher terraces, including wite oak (*Quercus alba*), tuliptree (*Liriodendron tulipifera*), yellow birch (*Betula alleghaniensis*), white pine (*Pinus strobus*), and occasionally sugar maple (*Acer saccharum*). American hornbeam (Carpinus Carolinian ssp. virginiana) may grow as a small tree. Shrubs include northern spicebush (*Lindera benzoin*), northern arrowwood (*Viburnum dentatum* var. lucidum), silky dogwood (*Cornus amomum*), *Cornus obliqua*, or American black elderberry (*Sambucus nigra* L. ssp. canadensis). The herbaceous layer is highly variable in composition. It can have abundant sedges, including sallow sedge (*Carex lurida*), fringed sedge (Carex crinite), greater bladder sedge (*Carex intumescens*), rosy sedge (*Carex rosea*), drooping sedge (Carex prasine), hop sedge (*Carex lupulina*), or Gray's sedge (*Carex grayi*), with additional plants, like, sweet woodreed (*Cinna arundinacea*), white cutgrass (*Leersia virginica*), dwarf ginsing (*Panax trifolius*), skunkcabage (*Symplocarpus foetidus*), white avens (*Geum canadense*), jumpseed (*Polygonum virginianum*), jewelweed (Impatiens spp)., sensitive fern (*Onoclea sensibilis*), common ladyfern (*Athyrium filix-femina*), Jack-in-the-pulpit (*Arisaema triphyllum*), blueflag iris (*Iris versicolor*), common blue violet (*Viola sororia*), and poison ivy (*Toxicodendron radicans*). Barberry (*Berberis thunbergii*) and Japanese stiltweed)*Microstegium vimineum*) are common invasive species in these forests. (Source: NatureServe 2018 [accessed 2019], USNVC 2017 [accessed 2019]). CT: Pin oak -green ash Temporarily Flooded Forest (Metzler and Barrett, 2006) MA: Small River Floodplain Forest (Swain and Kearsley, 2001) NH: Silver maple - false nettle - sensitive fern Floodplain Forest (Sperduto and Nichols, 2011) NY: Floodplain Forest (Edinger et al., 2014) RI red maple- pin oak Floodplain Forest (Enser 2006)

Community 1.2
Ruderal Forest/Woodland

Community 1.3
Abandoned Field/Meadow

Pathway P1.1A
Community 1.1 to 1.2

Disturbance

Pathway P1.1B
Community 1.1 to 1.3

Disturbance

Pathway P1.2A
Community 1.2 to 1.1

Abandonment, succession

Pathway P1.2B
Community 1.2 to 1.3

Disturbance

Pathway P1.3A
Community 1.3 to 1.2

Abandonment, succession

State 2
Semi-Natural State

The Semi-natural State would expect plant communities where ecological processes are primarily operating with some land conditioning in the past or present, e.g., managed forests, or plant communities that are an artifact of land management e.g., predominately invasive plants.

Community 2.1
Managed Trees/Shrubs/Herbs

Community 2.2
Invasive Plants

Barberry (*Berberis thunbergii*) and Japanese stiltweed)*Microstegium vimineum*) are common invasive species in these forests.

Pathway P2.1A
Community 2.1 to 2.2

Disturbance, Invasive species establishment

Pathway P2.2A
Community 2.2 to 2.1

Invasive spp. Control, Forest mgmt..

State 3
Cultural State

Changing agricultural phases

Characteristics and indicators. The Cultural State would expect the ecological site to be very strongly conditioned by land management conversion, by transformation to Cultivated/Pasture/Plantation.

Community 3.1
Cultivated

Community 3.2
Pasture

Community 3.3
Plantation

Pathway P3.1A
Community 3.1 to 3.2

Changing agricultural phases

Pathway P3.1B
Community 3.1 to 3.3

Changing agricultural phases

Pathway P3.2A
Community 3.2 to 3.1

Changing agricultural phases

Pathway P3.2B
Community 3.2 to 3.3

Changing agricultural phases

Pathway P3.3A
Community 3.3 to 3.1

Changing agricultural phases

Pathway P3.3B
Community 3.3 to 3.2

Changing agricultural phases

Transition T1A
State 1 to 2

Disturbance, Forest mgmt.

Conservation practices

Tree/Shrub Establishment
Forest Stand Improvement
Forest Land Management

Transition T1B
State 1 to 3

Disturbance/cutting/clearing

Conservation practices

Brush Management
Land Clearing
Herbaceous Weed Control

Restoration pathway R2A
State 2 to 1

Plant removals, plantings, Invasive plant control, successional mgmt., forestry practices Restoration & Mgmt, Forest Stand Improvement, Early Successional Habitat Development, Upland Wildlife Mgmt, Invasive spp. Control, Plant establishment

Conservation practices

Early Successional Habitat Development/Management
Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management
Forest Land Management
Invasive Plant Species Control

Transition T2A
State 2 to 3

Disturbance/cutting/clearing

Conservation practices

Brush Management
Land Clearing
Invasive Plant Species Control

Restoration pathway R3A
State 3 to 1

Plant removals, plantings, Invasive plant control, successional mgmt., forestry practices Restoration & Mgmt, Forest Stand Improvement, Early Successional Habitat Development, Upland Wildlife Mgmt, Invasive spp. Control, Plant establishment

Conservation practices

Early Successional Habitat Development/Management
Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management
Forest Land Management
Invasive Plant Species Control

Transition T3A
State 3 to 2

Abandonment, Plant establishment, Forest mgmt.

Conservation practices

Tree/Shrub Establishment
Forest Stand Improvement
Forest Land Management

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

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Contributors

Nels Barrett, Ph.D. (vegetation)

Approval

Greg Schmidt, 10/04/2024

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Michael Margo and tech team provided earlier drafts. Josh Hibit made compliance updates w/ 2021 Checklist V.2

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	05/11/2025
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:**
