USDA Natural Resources Conservation Service

Ecological site F144AY006CT
High Floodplain Levee

Last updated: 10/03/2024
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 (0 to 305 meters) in much of the area, but it is 2,000 feet (610 meters) on some hills. Relief is mostly about 6 to 65 feet (2 to 20 meters) in the valleys and about 80 to 330 feet (25 to 100 meters) 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 ecological site concept consists of floodplains formed in deep, sandy, excessively drained alluvial soils occurring on high river levees. Representative soils are Suncook.

The reference plant community is classified as the Silver Maple Floodplain Levee Forest, characterized by silver maple (*Acer saccharinum*), eastern cottonwood (*Populus deltoides*), American elm (Ulmus americana), ostrich fern (*Matteuccia struthiopteris*), and Canadian woodnettle (Laportia cnadensis).

Associated sites

F144AY010NH	**Sandy High Floodplain**
F144AY012CT	**Sandy Low Floodplain** Associated floodplain site on large to medium sized rivers

Similar sites

F144AY014CT	**Wet Sandy Low Floodplain**
F144AY016MA	**Very Wet Low Floodplain**

Table 1. Dominant plant species

Tree	(1) *Acer saccharinum* (2) *Populus deltoides*
Shrub	(1) *Lindera benzoin* (2) *Cornus amomum*
Herbaceous	(1) *Ageratina altissima* (2) *Ambrosia trifida*

Physiographic features

The site occurs on floodplain and levees subject to frequent or occasional flooding.

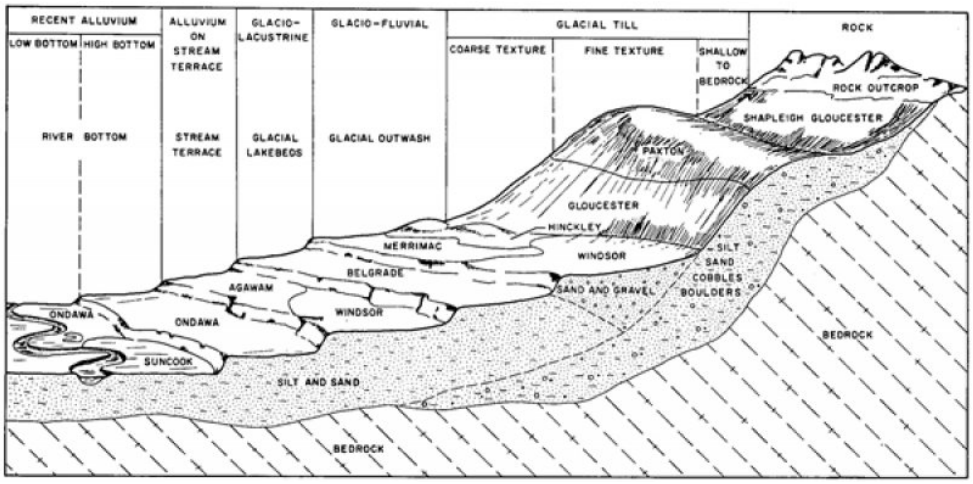


Figure 1. High Floodplain Levee ecological site (Suncook soi

Table 2. Representative physiographic features

Landforms	(1) Natural levee (2) Flood plain
Runoff class	Negligible
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Occasional
Ponding frequency	None
Elevation	16–787 ft
Slope	0–3%
Water table depth	54 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) in the southern portion of the MLRA. Precipitation is usually uniformly distributed throughout the year. Near the coast, however, it is slightly lower in summer. Precipitation 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)	123-152 days
Freeze-free period (characteristic range)	166-184 days
Precipitation total (characteristic range)	45-52 in
Frost-free period (actual range)	112-166 days
Freeze-free period (actual range)	142-203 days
Precipitation total (actual range)	40-53 in
Frost-free period (average)	139 days
Freeze-free period (average)	173 days
Precipitation total (average)	48 in

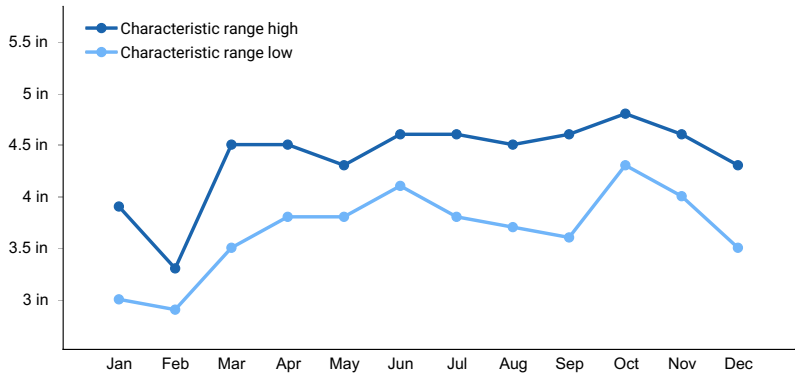


Figure 2. Monthly precipitation range

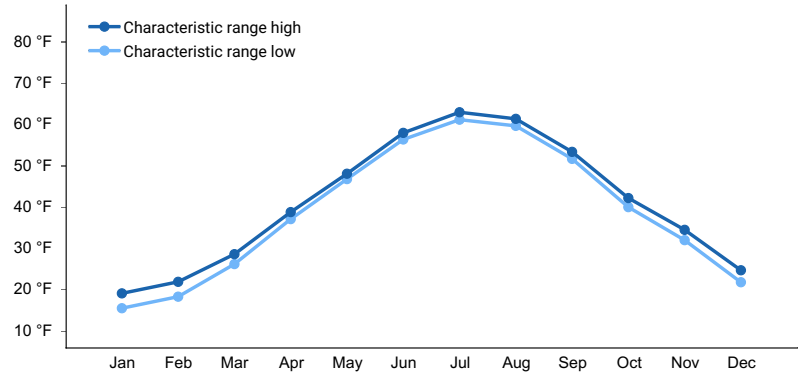


Figure 3. Monthly minimum temperature range

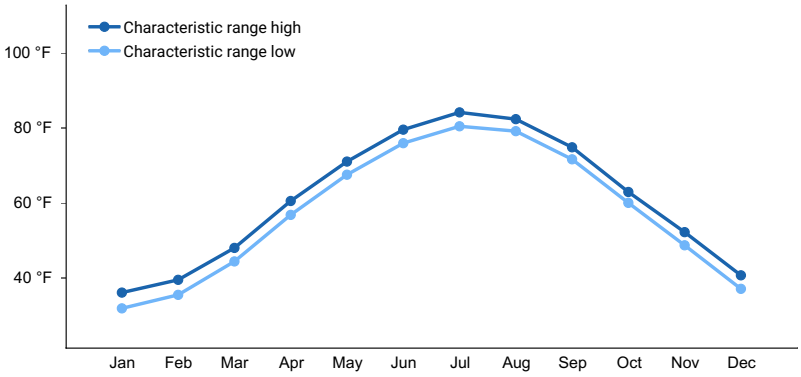


Figure 4. Monthly maximum temperature range

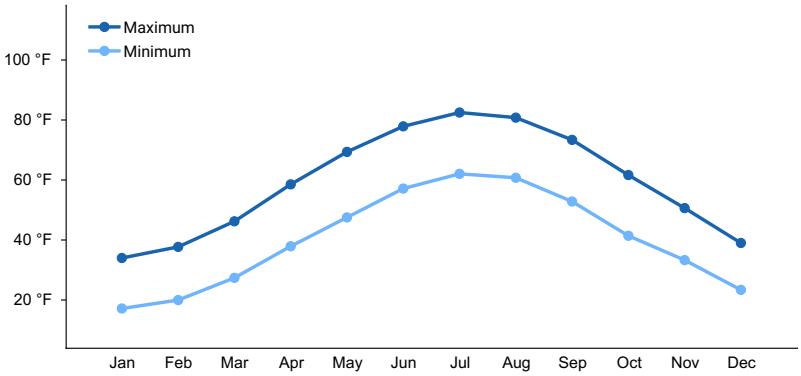


Figure 5. Monthly average minimum and maximum temperature

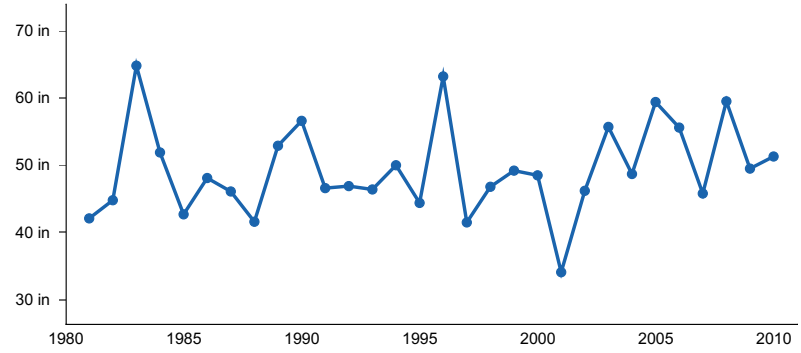


Figure 6. Annual precipitation pattern

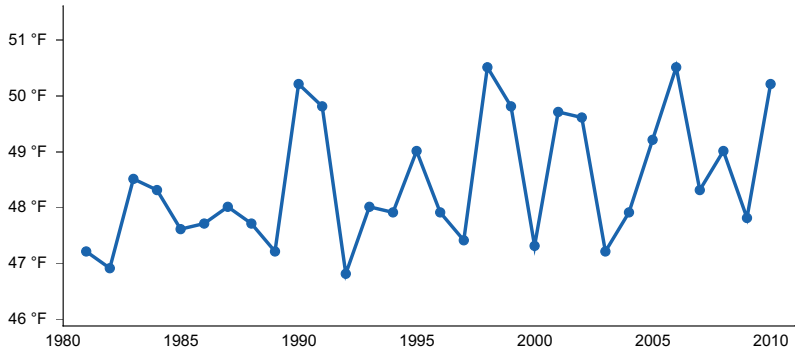


Figure 7. Annual average temperature pattern

Climate stations used

- (1) DANBURY [USC00061762], Bethel, CT
- (2) MASSABESIC LAKE [USC00275211], Manchester, NH
- (3) CHARLOTTEBURG RESERVE [USC00281582], Newfoundland, NJ
- (4) STORRS [USC00068138], Storrs Mansfield, CT
- (5) WEST POINT [USC00309292], Cold Spring, NY
- (6) WOONSOCKET [USC00379423], Manville, RI
- (7) WORCESTER RGNL AP [USW00094746], Leicester, MA
- (8) ALBANY AP [USW00014735], Latham, NY

Influencing water features

NONE

Wetland description

NONE

Soil features

Suncook soils represent the High Floodplain Levee ecological site.

The site consists of very deep, excessively drained sandy soils formed in alluvial sediments. They are nearly level soils on flood plains, subject to frequent or occasional flooding. Slope ranges from 0 to 3 percent. Saturated hydraulic conductivity is high or very high in the surface layer and underlying strata.

Table 4. Representative soil features

Parent material	(1) Alluvium–schist (2) Granite and gneiss (3) Conglomerate (4) Sandstone (5) Quartzite
Surface texture	(1) Loamy fine sand (2) Loamy sand (3) Sandy loam
Drainage class	Excessively drained
Permeability class	Moderate to rapid
Depth to restrictive layer	72 in
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%

Available water capacity (Depth not specified)	3–4 in
Soil reaction (1:1 water) (Depth not specified)	3.6–6.5
Subsurface fragment volume <=3" (Depth not specified)	0–9%
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, 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. They are intended to provide a classification unit that is readily mappable, often from terrain and remote imagery, and readily identifiable by conservation and resource managers in the field. A 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, 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).

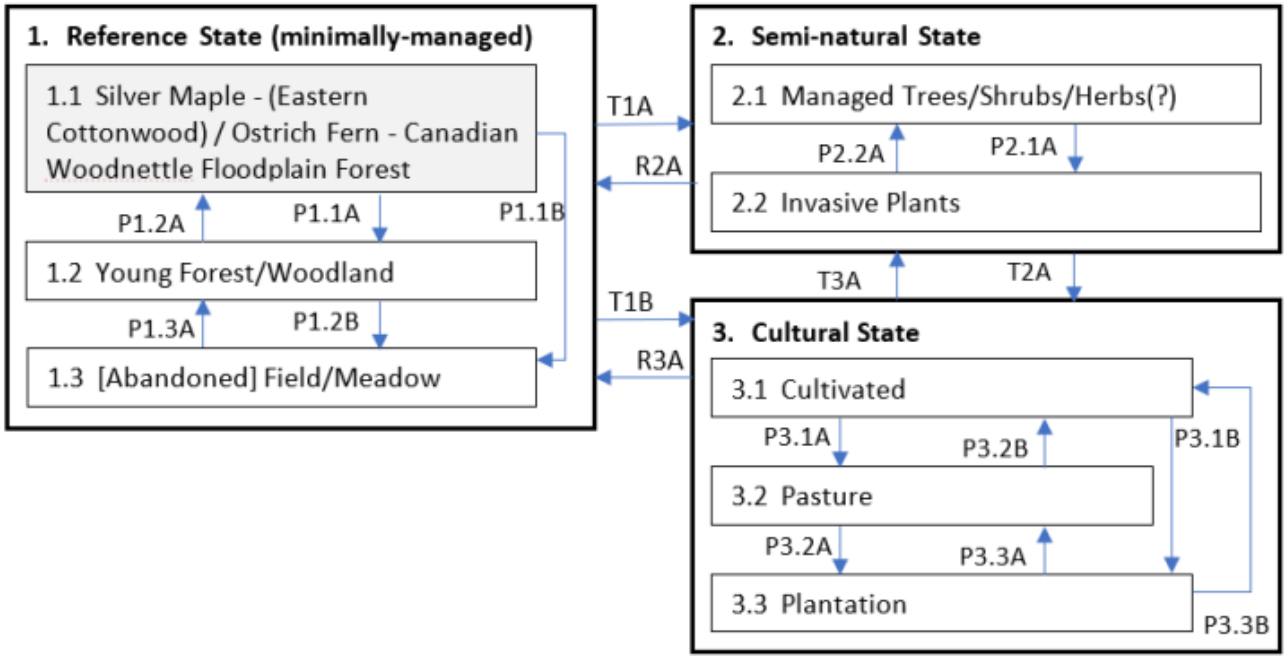
Additional and more localized vegetation information is provided by the State Natural Heritage Programs of Connecticut (Metzler and Barrett 2001) and Massachusetts (Swain and Kearsley 2001), New Hampshire (Sperduto and Nichols, 2011), and New York (Edinger et al., 2014).

The High 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). This floodplain forest develops along medium to large river systems with a medium to low gradient. Disturbances are related to the magnitude, frequency, and seasonal timing of flooding. At higher elevations in the floodplains and floodplain terraces, much of this ecological site has been converted to agriculture. The vegetation is often a mosaic of forest, woodland, shrub land, and herbaceous communities. However, due to flooding, shrubs are typically less developed and vines more developed. The characteristic trees are *Acer saccharinum* (silver maple) and *Populus deltoides* (eastern cottonwood), but *Acer saccharum* (sugar maple) may occur on slightly elevated river terraces undisturbed by agriculture.

[*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

144AY006 – High Floodplain Levee



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 occurs on high river levees that receive active sedimentation. • Silver Maple Floodplain Levee Forest (CEGL006147), *Acer saccharinum* - (*Populus deltoides*) / *Matteuccia struthiopteris* - *Laportea canadensis* Floodplain Forest, [translated -Silver Maple - (Eastern Cottonwood) / Ostrich Fern - Canadian Woodnettle Floodplain Forest]

Dominant plant species

- silver maple (*Acer saccharinum*), tree
- eastern cottonwood (*Populus deltoides*), tree
- ostrich fern (*Matteuccia struthiopteris*), other herbaceous

Community 1.1

Silver Maple - (Eastern Cottonwood) / Ostrich Fern - Canadian Woodnettle Floodplain Forest (CEGL006147)

Silver Maple Floodplain Levee Forest (CEGL006147) *Acer saccharinum* - (*Populus deltoides*) / *Matteuccia struthiopteris* - *Laportea canadensis* Floodplain Forest [translated -Silver Maple - (Eastern Cottonwood) / Ostrich Fern - Canadian Woodnettle Floodplain forest] These are silver maple floodplain forests along major rivers in the temperate northeastern United States. They occur on the deep, alluvial, silty to somewhat coarse soils of point bars, levees, and adjacent terraces of medium to large, high-energy and moderate-gradient rivers with heavy erosion and sedimentation, and are subjected to spring flooding. The more-or-less closed canopy is high and arching, and the dominant below-canopy feature is the lush and extensive herb layer, with ferns especially prominent. Shrubs are scattered and the overall shrub cover is low. Bryoids are very minor. The canopy is strongly dominated by silver maple (*Acer saccharinum*). Other trees may be locally common, or scattered, including eastern cottonwood (*Populus deltoides*), boxelder (*Acer negundo*), slippery elm (*Ulmus rubra*), white ash (*Fraxinus americana*), and green ash (*Fraxinus pennsylvanica*) and sometimes black walnut (*Juglans nigra*). Eastern cottonwood tends to be characteristic of the siltier soils and levees within these forests. Shrubs are not typical but may include northern spicebush (*Lindera benzoin*), silky doggwood (*Cornus amomum*), Amerrican black elderberry (*Sambucus nigra* ssp. canadensis), and potentially invasive non-native honeysuckles (Lonicera spp.), multiflora rose (*Rosa multiflora*), or European privit (*Ligustrum vulgare*). Vines such as river grape (*Vitis riparia*) are abundant at some sites. The dominant herbs are ostrich fern (*Matteuccia struthiopteris*) and Canada woodnettle (*Laportea canadensis*). Associated herbs include riverbank wildrye (*Elymus riparius*), Virginia wildrye (*Elymus virginicus*), American hogpeanut (*Amphicarpaea bracteata*), white snakeroot (*Ageratina altissima*), Jack-in-the-pulpit (*Arisaema triphyllum*), broad-leaved enchanter's nightshade (*Circaea lutetiana* var. canadensis), tall meadow-rue (*Thalictrum pubescens*), sensitive fern (*Onoclea sensibilis*), and jumpseed (*Polygonum virginianum*). Particularly in the southern portions of this type's range, non-native herbs such as garlic mustard (*Alliaria petiolata*), wild garlic (*Allium vineale*), fig buttercup (*Ranunculus ficaria*), and Japanese stiltgrass (*Microstegium vimineum*) may essentially replace the native herbs. Flood duration is usually shorter in the ostrich fern type. (Source: NatureServe 2018 [accessed 2019], USNVC 2017 [accessed 2019]). Cross-referenced plant community concepts (typically by political state): CT: Silver maple /white snakeroot floodplain forest (Metzler and Barret, 2006) MA: Major River Floodplain Forest (Swain and Kearsley, 2001) NH: Silver maple / wood nettle – ostrich fern Floodplain Forest (Sperduto and Nichols, 2011) NY: Floodplain Forest (Edinger et al., 2014)

Community 1.2
Early 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, Sucession

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. non-native herbs such as garlic mustard (*Alliaria petiolata*), wild garlic (*Allium vineale*), fig buttercup (*Ranunculus ficaria*), and Japanese stiltgrass (*Microstegium vimineum*) may essentially replace the native herbs.

Community 2.1
Managed Trees/Shrubs/Herbs(?)

Community 2.2
Invasive Plants

Although shrubs are not common, potentially invasives plants include non-native honeysuckles (Lonicera spp.), multiflora rose (*Rosa multiflora*), or European privit (*Ligustrum vulgare*). Particularly in the southern portions of this type's range, non-native herbs such as garlic mustard (*Alliaria petiolata*), wild garlic (*Allium vineale*), fig buttercup (*Ranunculus ficaria*), and Japanese stiltgrass (*Microstegium vimineum*) may essentially replace the native herbs. Flood duration is usually shorter in the ostrich fern type. (Source: NatureServe 2018 [accessed 2019], USNVC 2017 [accessed 2019]).

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

The Cultural State would expect the ecological site to be very strongly conditioned by land management conversion, by transformation to Cultivated/Pasture/Plantation. Different phase of intense land use - may be cultivated crops, pasture/hay, or plantations (including nursery crops)

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

altered by human- induced Disturbance or Management

Conservation practices

Tree/Shrub Establishment
Forest Land Management
Forest stand improvement for habitat and soil quality

Transition T1B
State 1 to 3

Disturbance, clearing, cutting

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

Brush Management
Tree/Shrub Establishment
Early Successional Habitat Development/Management
Forest Stand Improvement
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

Land clearing, cutting

Conservation practices

Brush Management
Land Clearing
Herbaceous Weed 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

Restoration and Management of Natural Ecosystems
Native Plant Community Restoration and Management

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, 10/03/2024

Acknowledgments

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):**

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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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:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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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:**