

Ecological site F144AY012CT Sandy Low Floodplain

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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): 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 plains and drumlins dissected by narrow valleys with a thin mantle of till. The southernmost boundary of the area marks the farthest southward extent of 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 northeastern Pennsylvania and in eastern and southeastern New York, Devonian- to Pennsylvanian-age sandstone, shale, and limestone bedrock is dominant. Carbonate rocks, primarily dolomite and limestone, are the dominant kinds of bedrock in the part of this MLRA in northwestern Connecticut.

Ecological site concept

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. Representative soil is Pootatuck.

The reference community is characterized by pin oak, green ash, American sycamore, American elm, spicebush, dogwoods, sensitive fern, jewelweed, and numerous sedges. Silver maple, cottonwood, and white ash will be more common within larger river valleys.

The frequency, duration, and timing of floods is the primary natural disturbance affecting species composition. Floodplain forests are commonly found in early to mid-successional stages because of the dynamic nature of floodplains (Thompson and Sorenson 2000). Young alluvial forests are typically dominated by eastern cottonwood along major rivers or American sycamore in small to medium sized rivers. 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).

Invasive exotic plants are a significant threat to the community since many can successfully displace native species.

Common invasive exotic plants are Japanese barberry, Norway maple, Oriental bittersweet, European bush honeysuckle, garlic mustard, and Japanese stiltgrass.

Table 1. Dominant plant species

Tree	(1) <i>Quercus palustris</i> (2) <i>Fraxinus pennsylvanica</i>
Shrub	Not specified
Herbaceous	Not specified

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) Flood plain
Flooding duration	Brief (2 to 7 days) to long (7 to 30 days)
Flooding frequency	Occasional to frequent
Ponding frequency	None
Water table depth	53–69 cm
Aspect	Aspect is not a significant factor

Climatic features

Mean annual precipitation is 50 inches and is usually uniformly distributed throughout the year. Frost free and freeze free days average 146 and 174, respectively.

Table 3. Representative climatic features

Frost-free period (average)	145 days
Freeze-free period (average)	170 days
Precipitation total (average)	1,245 mm

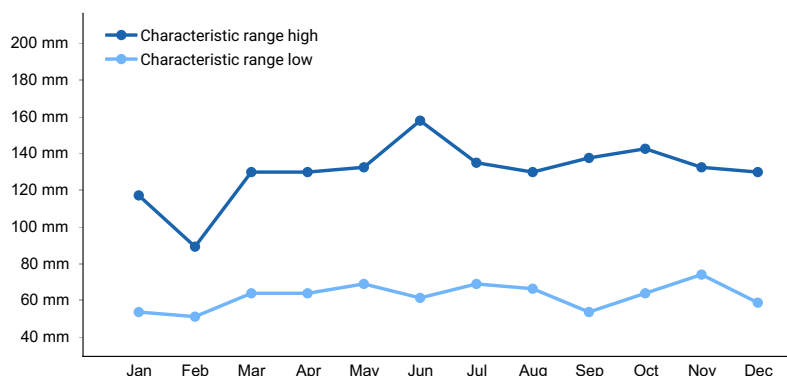


Figure 1. Monthly precipitation range

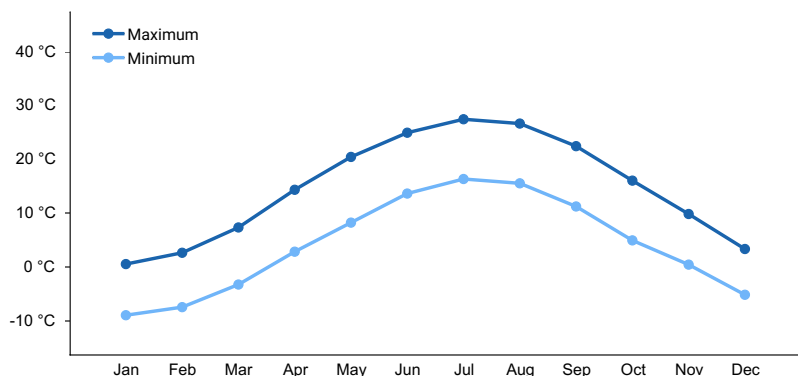


Figure 2. Monthly average minimum and maximum temperature

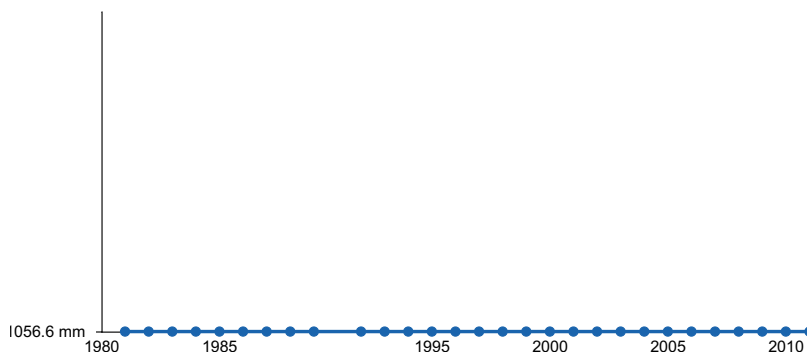


Figure 3. Annual precipitation pattern

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

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 soil is Pootatuck.

Table 4. Representative soil features

Parent material	(1) Alluvium–granite
Surface texture	(1) Fine sandy loam (2) Sandy loam (3) Very fine sandy loam
Drainage class	Moderately well drained
Permeability class	Moderate to moderately slow
Soil depth	183 cm
Surface fragment cover <=3"	0%

Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	10.16–12.7 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Soil reaction (1:1 water) (0-101.6cm)	4.5–7.3
Subsurface fragment volume <=3" (Depth not specified)	5–25%
Subsurface fragment volume >3" (Depth not specified)	0–5%

Ecological dynamics

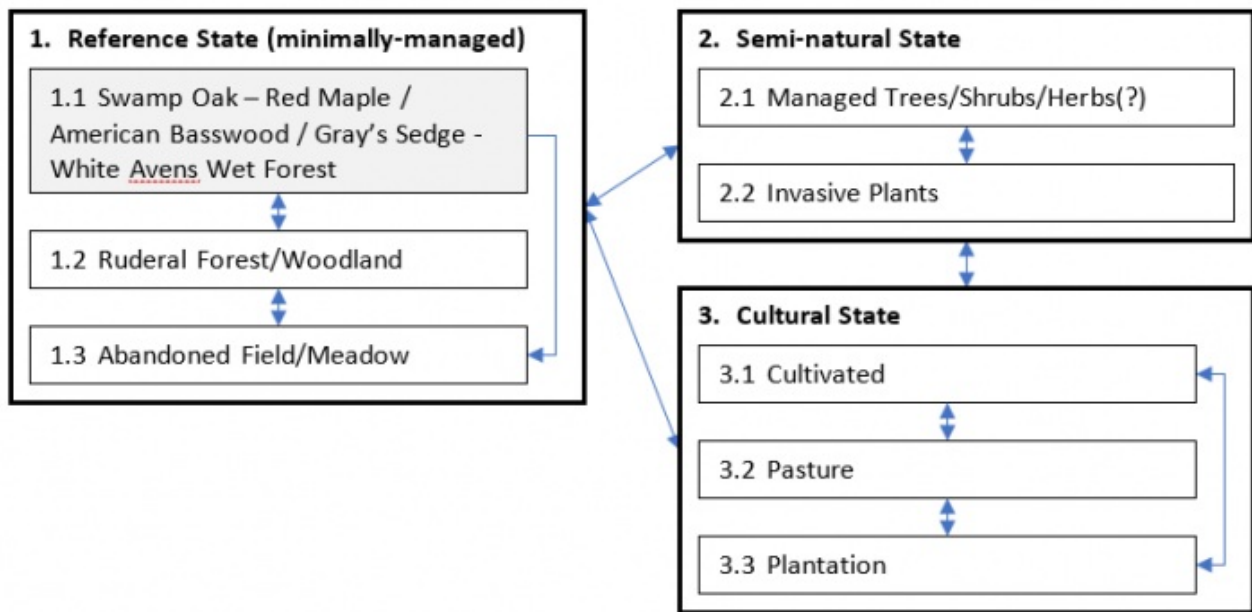
The reference community is characterized by pin oak, green ash, American sycamore, American elm, spicebush, dogwoods, sensitive fern, jewelweed, and numerous sedges. Silver maple, cottonwood, and white ash will be more common within larger river valleys.

The frequency, duration, and timing of floods is the primary natural disturbance affecting species composition. Floodplain forests are commonly found in early to mid-successional stages because of the dynamic nature of floodplains (Thompson and Sorenson 2000). Young alluvial forests are typically dominated by eastern cottonwood along major rivers or American sycamore in small to medium sized rivers. 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).

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State and transition model

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Transition	Drivers/practices
T1-2	Forest mgmt., Disturbance
T1-3, T2-3	Disturbance/cutting/clearing, Brush removal
R2-1, R3-1	Restoration & <u>Mgmt</u> , Forest Stand Improvement, Early Successional Habitat Development, Upland Wildlife <u>Mgmt</u> , Invasive spp. Control, Plant establishment
T3-2	Abandonment, Plant establishment, Forest mgmt.
CP2.1-2.2	Disturbance, Invasive species establishment
CP2.2-2.1	Invasive spp. Control, Forest mgmt..
CP1.3-1.2, CP1.2-1.1	Abandonment, succession
CP3.1-3.2/3.3, CP 3.2-3.1/3.3 3.3-3.1/3.2	Changing Agricultural phases
CP1.1-1.2/1.3, CP1.2-1.3,	Disturbance, Early Successional Habitat Development

State 1

Reference State (minimally-managed)

Sandy Low Floodplain = Pin Oak Small River Floodplain Forest

Community 1.1

Pin Oak - Red Maple / Gray's Sedge - White Avens Wet Forest

The canopy is composed of *Quercus palustris*, *Fraxinus pennsylvanica*, *Acer rubrum*, *Ulmus americana*, and occasionally *Quercus bicolor*, *Fraxinus americana*, *Fraxinus nigra*, *Carya cordiformis*, *Nyssa sylvatica*, and/or *Platanus occidentalis*. More typically upland trees sometimes found on these terraces include *Quercus alba*, *Liriodendron tulipifera*, *Betula alleghaniensis*, *Pinus strobus*, and *Acer saccharum*. *Carpinus caroliniana* may be present as a small tree. The shrub layer includes *Lindera benzoin*, *Viburnum recognitum*, *Cornus amomum*, *Cornus obliqua*, or *Sambucus canadensis*. The herbaceous layer is variable in composition and usually dense. It can have

abundant sedges, including *Carex lurida*, *Carex crinita*, *Carex intumescens*, *Carex rosea*, *Carex prasina*, *Carex lupulina*, or *Carex grayi*, with additional species such as *Cinna arundinacea*, *Leersia virginica*, *Panax trifolius*, *Symplocarpus foetidus*, *Geum canadense*, *Polygonum virginianum* (= *Tovara virginiana*), *Impatiens* spp., *Onoclea sensibilis*, *Athyrium filix-femina*, *Arisaema triphyllum*, *Iris versicolor*, *Viola sororia*, and *Toxicodendron radicans*. *Berberis thunbergii* and *Microstegium vimineum* are common invasive species in these forests. (source NVC-CEGL006185)

Community 1.2 Ruderal Forest/Woodland

Community 1.3 Abandoned Field/Meadow

Pathway CP1.1-1.2 Community 1.1 to 1.2

Disturbance

Pathway CP1.1-1.3 Community 1.1 to 1.3

Disturbance

Pathway CP1.2-1.1 Community 1.2 to 1.1

Abandonment, succession

Pathway CP1.2-1.3 Community 1.2 to 1.3

Disturbance

Pathway CP1.3-1.2 Community 1.3 to 1.2

Abandonment, succession

State 2 Semi-Natural State

Altered by human disturbance or management

Community 2.1 Managed Trees/Shrubs/Herbs

Community 2.2 Invasive Plants

Pathway CP2.1-2.2 Community 2.1 to 2.2

Disturbance, Invasive species establishment

Pathway CP2.2-2.1

Community 2.2 to 2.1

Invasive spp. Control, Forest mgmt..

State 3

Cultural State

Changing agricultural phases

Community 3.1

Cultivated

Community 3.2

Pasture

Community 3.3

Plantation

Transition T1-2

State 1 to 2

Disturbance, Forest mgmt.

Conservation practices

Tree/Shrub Establishment
Forest Stand Improvement
Forest Land Management

Transition T1-3

State 1 to 3

Disturbance/cutting/clearing

Conservation practices

Brush Management
Land Clearing
Herbaceous Weed Control

Restoration pathway R2-1

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 T2-3

State 2 to 3

Disturbance/cutting/clearing

Conservation practices

Brush Management
Land Clearing
Invasive Plant Species Control

Restoration pathway R3-1

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 T3-2

State 3 to 2

Abandonment, Plant establishment, Forest mgmt.

Conservation practices

Tree/Shrub Establishment
Forest Stand Improvement
Forest Land Management

Additional community tables

Other references

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Swain, P.C. and Kearsley, J.B., 2001. Classification of the natural communities of Massachusetts. Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries and Wildlife.

Thompson, E.H. and Sorenson, E.R., 2000. Wetland, woodland, wildland. Vermont Department of Fish and Wildlife and The Nature Conservancy. Publ. University Press of New England.

Approval

Nels Barrett, 5/01/2019

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	
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:**
