

# Ecological site F145XY001MA

## Silty High 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): 145X–Connecticut Valley

The nearly level floor of the Connecticut River Valley makes up most of the area. Nearly level to sloping lowlands are at the outer edges of the river valley. These lowlands are broken by isolated, north- to south-trending trap-rock ridges that are hilly and steep. Elevation ranges from sea level to 330 feet in the lowlands and from 650 to 1,000 feet on ridges.

Recent alluvium has been deposited on the nearly level flood plain along the Connecticut River since the glacial retreat about 10,000 to 12,000 years ago. These deposits created some of the most productive agricultural soils in New England. Glacial lake deposits, outwash, and recent alluvial deposits dominate.

The area primarily supports central hardwoods. Habitat loss and fragmentation are widespread throughout the lower part of the Connecticut River Valley. The major tree species in the rest of the forested areas are sugar maple, birch, beech, oaks, and hickory. White pine and hemlock are the dominant conifers, but pitch pine and red pine are more common on sandy soils. Red maple grows on the wetter sites.

The most common understory plants are moosewood and hobblebush in the northern part of the area and dogwood in the southern part. Abandoned agricultural land is dominated by white pine and paper birch in the northern part and red cedar and gray birch in the southern part. The important upland habitats include trap-rock ridges and sand plains. Oak woodlands and cedar glades are common on the ridges. Black oak savannas mixed with pitch pine and varying amounts of little bluestem are common on the sand plains. Other habitats of significance include wetlands associated with the Connecticut River freshwater marshes, swamps, flood plains, and lowlands. The dominant trees on the flood plains are black willow, cottonwood, and sycamore.

### Classification relationships

USDA NRCS:

LRR: Northeastern Forage and Forest Region

MLRA 145 Connecticut Valley

USDA USFS:

Province221: Eastern Broadleaf Forest

Section 221A: Lower New England

Subsection 221Af: Lower Connecticut River Valley

EPA Ecoregions:

Level III: 59 Northeast Coastal Zone

Level IV: 59a Connecticut Valley

## Ecological site concept

The site consists of deep, coarse-silty, well drained, alluvial soils on high floodplains of mostly large river valleys but can occasionally be found within small river valleys. The site is flooded less frequently or for a shorter duration than low floodplains. Representative soil is Hadley.

The reference community is a sugar maple – basswood forest. Associated plants include white ash, bitternut hickory, black walnut, ostrich fern, waterleaf, wild ginger, and presence of other rich herbs. Unlike low floodplain forests, silver maple is absent from this community. Limited examples of this forest type exist since they have mostly been converted to agricultural use. 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).

## Associated sites

F144AY006CT	<b>High Floodplain Levee</b> The High Floodplain Levee site occurs on excessively drained soils along rivers.
F145XY002MA	<b>Silty Low Floodplain</b> Low Floodplain occurs on moderately well drained soils.

Table 1. Dominant plant species

Tree	(1) <i>Acer saccharum</i> (2) <i>Tilia americana</i>
Shrub	(1) <i>Staphylea trifolia</i>
Herbaceous	(1) <i>Matteuccia struthiopteris</i> (2) <i>Hydrophyllum canadense</i>

## Physiographic features

The site occurs on nearly level floodplains of river valleys. The alluvial deposits are derived from mixed crystalline and sedimentary rocks. Flooding by stream overflow ranges from once a year to once in 5 to 10 or more years. Flooding generally occurs during the early spring runoff or occasionally during periods of high rainfall in the fall. Floodwater seldom covers these soils for periods of more than 2 or 3 days on the high bottoms, but the duration is up to 7 days in the lower positions. Slopes range from 0 to 3 percent and runoff potential is low.

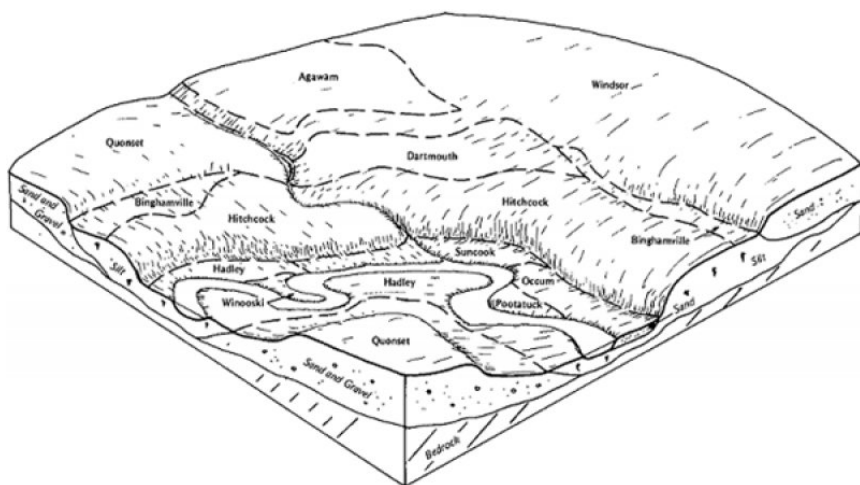


Figure 1. High Floodplain - Hadley soils

Table 2. Representative physiographic features

Landforms	(1) Flood plain
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)

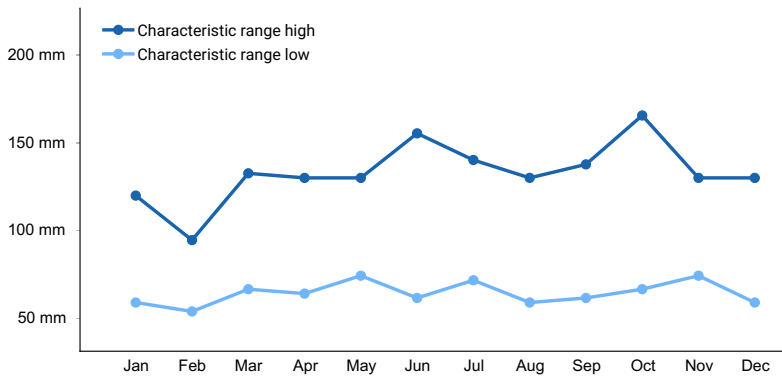
Flooding frequency	Occasional to frequent
Ponding frequency	None
Elevation	6–244 m
Slope	0–3%
Water table depth	137 cm
Aspect	Aspect is not a significant factor

## Climatic features

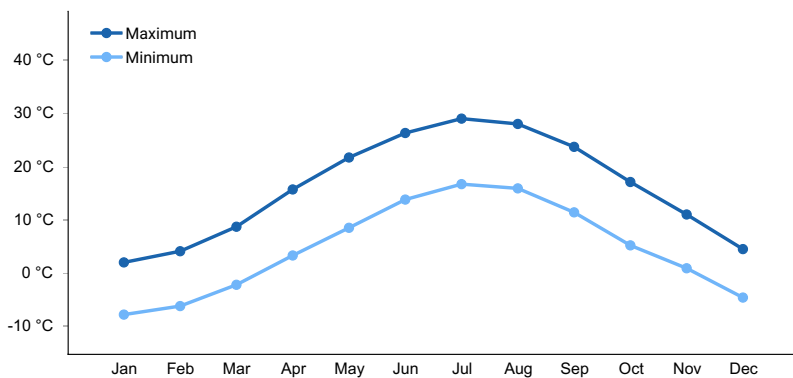
Humid continental climate which is typified by large seasonal temperature differences with warm to hot (often humid) summers and cold winters. Average annual precipitation is 50 inches with an average 143 frost free days and 169 freeze free days.

**Table 3. Representative climatic features**

Frost-free period (average)	143 days
Freeze-free period (average)	169 days
Precipitation total (average)	1,295 mm



**Figure 2. Monthly precipitation range**



**Figure 3. Monthly average minimum and maximum temperature**

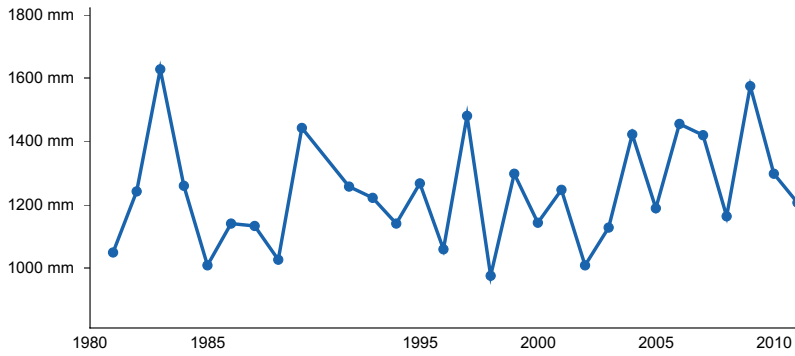


Figure 4. Annual precipitation pattern

### Climate stations used

- (1) HARTFORD BRADLEY INTL AP [USW00014740], Suffield, CT
- (2) MIDDLETOWN 4 W [USC00064767], Middlefield, CT
- (3) MT CARMEL [USC00065077], Hamden, CT
- (4) AMHERST [USC00190120], Amherst, MA

### Influencing water features

#### Soil features

The site consists of very deep, well drained soils that formed in silty alluvial sediments derived from mixed crystalline and sedimentary rocks.

Hadley soils mapped within MLRA 145 and surrounding MLRA 144A are associated with the High Floodplain ecological site.

Table 4. Representative soil features

Parent material	(1) Alluvium–sandstone and shale
Surface texture	(1) Fine sandy loam (2) Silt loam (3) Very fine sandy loam
Drainage class	Well drained
Permeability class	Moderate to moderately slow
Soil depth	183 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	4.5–7.8
Subsurface fragment volume <=3" (Depth not specified)	0–2%
Subsurface fragment volume >3" (Depth not specified)	0%

## Ecological dynamics

The reference community is a sugar maple – basswood forest. Associated plants include black walnut, white ash, ostrich fern, waterleaf, wild ginger, and presence of other rich herbs. Unlike low floodplain forests, silver maple is absent from this community. Limited examples of this forest type exist since they have mostly been converted to agricultural use. 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).

## State and transition model

### Inventory data references

A PROVISIONAL ECOLOGICAL SITE is a conceptual grouping of soil map unit components within a major land resource area (MLRA) based on the similarities in response to management. A provisional ecological site is a first approximation based on a cursory literature review, personal experience, and limited field reconnaissance. As more adequate literature review, and plot data are collected, the site concept is subject to change. Likewise, the community dynamics will be more elaborate in content, and may also change in structure, upon reaching approved status.

Future work, as described in a project plan, to validate the information in this provisional ecological site description is needed. This will include field activities to collect low and medium intensity sampling, soil correlations, and analysis of that data. Annual field reviews should be done by soil scientists and vegetation specialists. A final field review, peer review, quality control, and quality assurance reviews of the ESD will be needed to produce the final document. Annual reviews of the project plan are to be conducted by the Ecological Site Technical Team.

### Other references

Marks, C.O., K.A. Lutz, A.P. Olivero-Sheldon. 2011. Ecologically important floodplain forests in the Connecticut River watershed. The Nature Conservancy, Connecticut River Program. 44pp.

Metzler, K. J. and J. P. Barrett. 2006. The vegetation of Connecticut: A preliminary classification. State Geological and Natural History of Connecticut, Department of Environmental Protection, Hartford, CT.

Swain, P.C. and J.B. Kearsley. 2011. Classification of the Natural Communities of Massachusetts. Version 1.4. Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries and Wildlife. Westborough, MA. URL: <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/natural-communities/classification-of-natural-communities.html#>

### Contributors

Michael Margo

### 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:**

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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or terracettes:**

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

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5. **Number of gullies and erosion associated with gullies:**

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6. **Extent of wind scoured, blowouts and/or depositional areas:**

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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):**
- 

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:**
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