

Ecological site F145XY005MA

Moist Lake Plain

Accessed: 05/20/2024

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, moderately well drained soil formed in loamy outwash over glaciolacustrine sediments (Amostown soils) and very deep, moderately well drained soils formed in silty lacustrine material (Dartmouth soils).

The reference community of Amostown soils is an “oak-tuliptree forest” (Swain and Kearsley 2011). These are mesic forests with intermediate fertility that occur in cove slopes and flats. The canopy is oaks, maples (red & sugar) white ash and tuliptrees. The understory is characteristically dominated by witch-hazel and mapleleaf viburnum and a diverse ground flora of herbs such as trillium, false solomons seal, and toothwort and ferns such as, intermediate fern, Christmas fern, New York fern, and clubmosses.

A secondary community is the “oak-hemlock-white pine forest” (Swain and Kearsley 2011). This is a matrix forest with much variability in composition. Predominant trees are oaks, with white pine, with a sparse shrub layer of witch hazel and mapleleaf viburnum, and a sparse herb layer of indian cucumber root, star flower, wild oats and Canada mayflower.

Dartmouth soils are mapped in the northern portion of MLRA 145 and the reference community is more closely related to a “mesic, maple-ash-hickory-oak/fern forest” (Thompson and Sorenson 2000). Forest is variable in composition mostly sugar maple, oaks and white pine with a characteristic fern understory.

Table 1. Dominant plant species

Tree	(1) <i>Quercus rubra</i> (2) <i>Acer saccharum</i>
Shrub	(1) <i>Hamamelis virginiana</i>
Herbaceous	(1) <i>Dryopteris intermedia</i>

Physiographic features

The site is on nearly level to gently sloping glaciofluvial or glaciolacustrine plains, deltas, or terraces. Slopes commonly are 0 to 8 percent, but range up to 15 percent.

Table 2. Representative physiographic features

Landforms	(1) Lake plain (2) Terrace (3) Delta
Flooding frequency	None
Ponding frequency	None
Slope	0–15%
Water table depth	38–69 cm

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 45 inches with an average 138 frost free days and 157 freeze free days.

Table 3. Representative climatic features

Frost-free period (average)	138 days
Freeze-free period (average)	157 days
Precipitation total (average)	1,143 mm

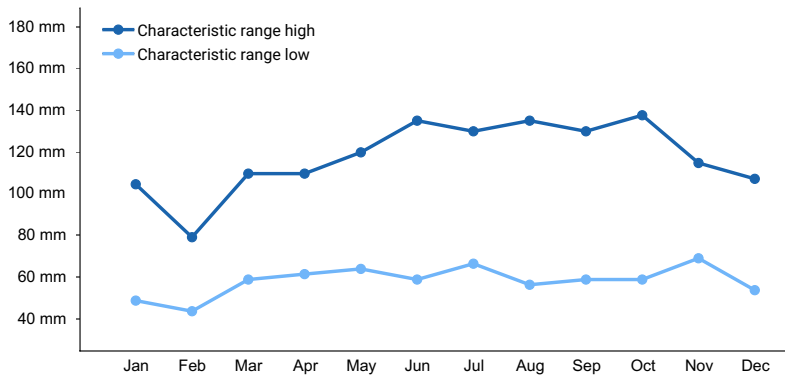


Figure 1. Monthly precipitation range

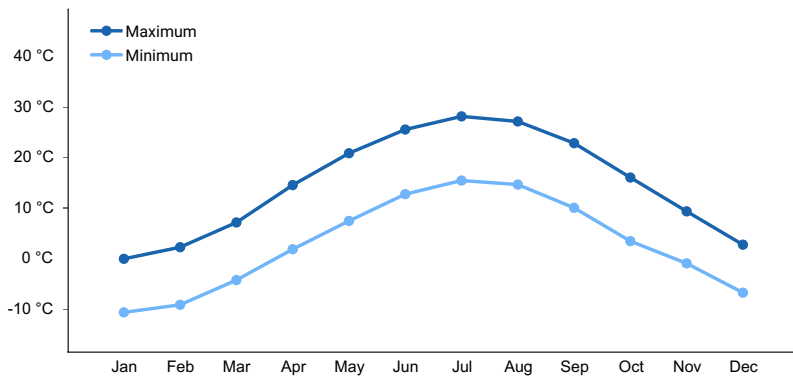


Figure 2. Monthly average minimum and maximum temperature

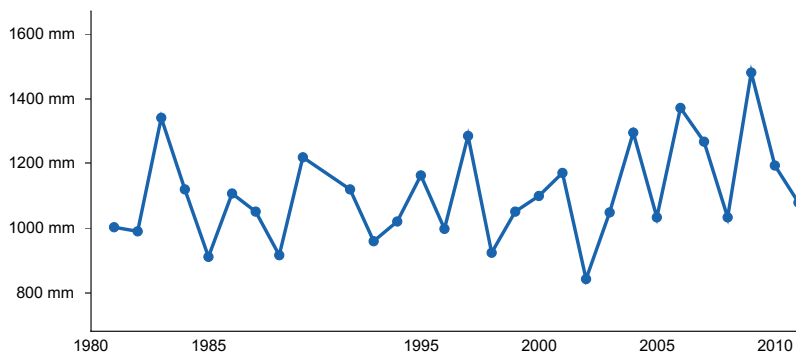


Figure 3. Annual precipitation pattern

Climate stations used

- (1) WALPOLE 3 [USC00278858], Walpole, NH
- (2) AMHERST [USC00190120], Amherst, MA
- (3) HARTFORD BRADLEY INTL AP [USW00014740], Suffield, CT
- (4) LEBANON MUNI AP [USW00094765], Lebanon, NH

Influencing water features

Soil features

The site consists of deep, moderately well drained soil formed in loamy outwash over glaciolacustrine sediments (Amostown soils) and very deep, moderately well drained soils formed in silty lacustrine material (Dartmouth soils).

Table 4. Representative soil features

Parent material	(1) Lacustrine deposits—sandstone and shale (2) Glaciofluvial deposits—granite
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Surface texture	(1) Fine sandy loam (2) Silt loam
Drainage class	Moderately well drained
Permeability class	Very slow
Soil depth	183 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	15.24–17.78 cm
Soil reaction (1:1 water) (0-101.6cm)	4.4–7.3
Subsurface fragment volume <=3" (Depth not specified)	0–5%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The reference community of Amostown soils is an “oak-tuliptree forest” (Swain and Kearsley 2011). These are mesic forests with intermediate fertility that occur in cove slopes and flats. The canopy is oaks, maples (red & sugar) white ash and tuliptrees. The understory is characteristically dominated by witch-hazel and mapleleaf viburnum and a diverse ground flora of herbs such as trillium, false solomons seal, and toothwort and ferns such as, intermediate fern, Christmas fern, New York fern, and clubmosses.

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State and transition model

Other references

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.

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):**
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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:**
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