

Ecological site F145XY014CT

Moist Dense Till Uplands

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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 moderately well drained soils formed in coarse-loamy lodgment till. They are very deep to bedrock and moderately deep to a densic contact. They are nearly level to strongly sloping soils on till plains, hills, and drumlins. Representative soil is Ludlow.

The reference community coincides with the northern red oak – yellow birch wetland transition forest (Metzler and Barrett 2006). Dominant tree species include red oak, black oak, red maple, sugar maple, and yellow birch. Common shrubs include highbush blueberry, spicebush, and American witch hazel. Herbaceous plants include cinnamon fern, New York fern, and sessileleaf bellwort. The site is threatened by invasive exotic plants such as Japanese barberry, shrubby honeysuckle, buckthorn, garlic mustard, and multiflora rose.

The site is very similar to the Moist Dense Till Uplands within MLRA 144A, however the growing season is longer within MLRA 145 relative to the surrounding MLRA 144A. Additionally, the unique red soil mineralogy which characteristic of the Connecticut River Valley (MLRA 145) provides a relatively richer substrate for vegetative growth.

Table 1. Dominant plant species

Tree	(1) <i>Quercus rubra</i> (2) <i>Betula alleghaniensis</i>
Shrub	(1) <i>Lindera benzoin</i>
Herbaceous	(1) <i>Osmunda cinnamomea</i>

Physiographic features

The site occurs on nearly level to strongly sloping till plains, hills, and drumlins. Slope ranges from 0 to 15 percent.

Table 2. Representative physiographic features

Landforms	(1) Till plain (2) Hill (3) Drumlin
Elevation	1–366 m
Slope	0–15%
Water table depth	61 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 50 inches with an average 143 frost free days and 170 freeze free days.

Table 3. Representative climatic features

Frost-free period (average)	143 days
Freeze-free period (average)	170 days
Precipitation total (average)	1,245 mm

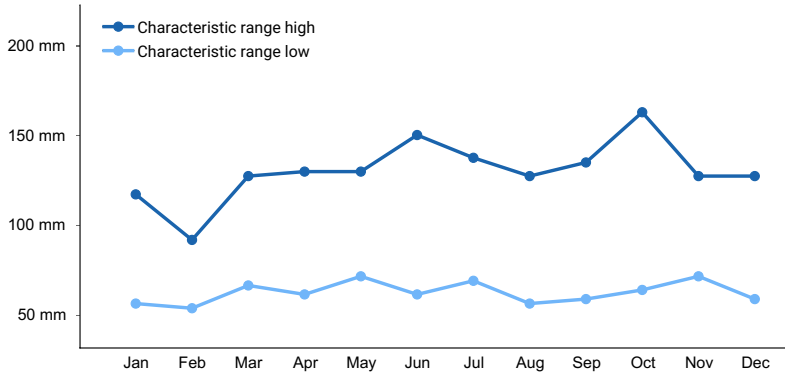


Figure 1. Monthly precipitation range

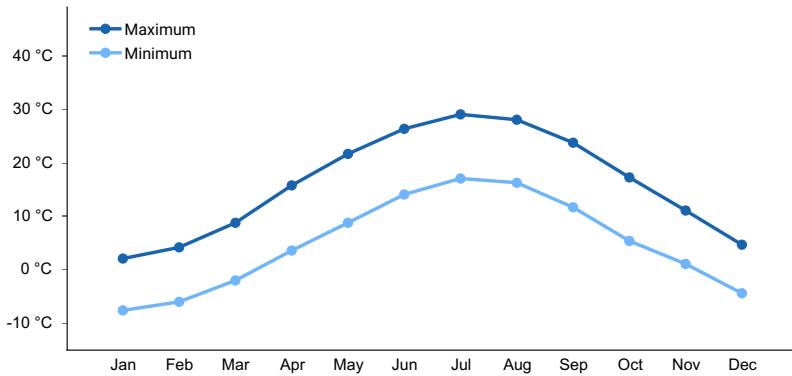


Figure 2. Monthly average minimum and maximum temperature

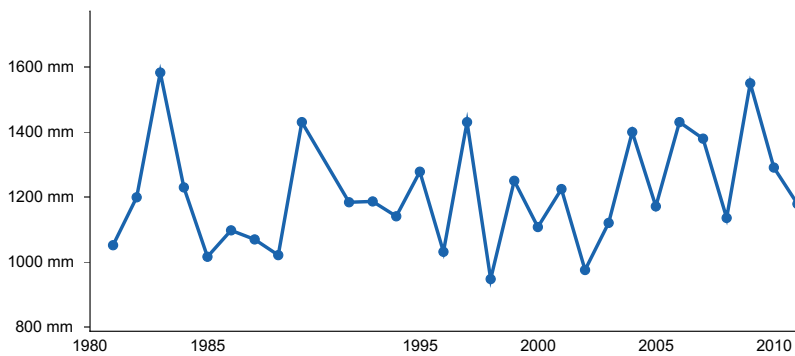


Figure 3. Annual precipitation pattern

Climate stations used

- (1) MIDDLETOWN 4 W [USC00064767], Middlefield, CT
- (2) AMHERST [USC00190120], Amherst, MA
- (3) HARTFORD BRAINARD FLD [USW00014752], Wethersfield, CT
- (4) MT CARMEL [USC00065077], Hamden, CT
- (5) HARTFORD BRADLEY INTL AP [USW00014740], Suffield, CT

Influencing water features

Soil features

The site consists of moderately well drained soils formed in coarse-loamy lodgment till. They are very deep to bedrock and moderately deep to a densic contact (root restricting layer). Chemical reaction (pH) ranges from very strongly acid to moderately acid. Representative soil is Ludlow.

Table 4. Representative soil features

Parent material	(1) Lodgment till–sandstone and shale
Surface texture	(1) Silt loam (2) Fine sandy loam (3) Loam
Drainage class	Moderately well drained
Surface fragment cover >3"	0–10%
Available water capacity (0-101.6cm)	10.16–12.7 cm
Soil reaction (1:1 water) (0-101.6cm)	4.5–6
Subsurface fragment volume <=3" (Depth not specified)	4–15%
Subsurface fragment volume >3" (Depth not specified)	4–10%

Ecological dynamics

The reference community coincides with the northern red oak – yellow birch wetland transition forest (Metzler and Barrett 2006). Dominant tree species include red oak, black oak, red maple, sugar maple, and yellow birch. Common shrubs include highbush blueberry, spicebush, and American witch hazel. Herbaceous plants include cinnamon fern, New York fern, and sessileleaf bellwort. The site is threatened by invasive exotic plants such as Japanese barberry, shrubby honeysuckle, buckthorn, garlic mustard, and multiflora rose.

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State and transition model

Other references

Metzler, K.J. and Barrett, J.P., 2006. The Vegetation of Connecticut, a Preliminary Classification. Department of Environmental Protection, State Geological and Natural History Survey of Connecticut.

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:**
