

Ecological site F145XY011CT

Well Drained Shallow 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 shallow, well drained and somewhat excessively drained soils formed in a thin mantle of till derived mainly from basalt and red sandstone, conglomerate, and shale. The site occurs nearly level to steep hills and ridges. Slopes range from 3 to 45 percent. Representative soil is Holyoke.

The reference plant community is an oak - hickory forest. Chestnut oak and pignut hickory are common trees in association with black oak, scarlet oak, red oak, white ash, eastern white pine, eastern red cedar and eastern hemlock. Trees are generally lower in stature and productivity relative to forests in deeper soils. Lowbush blueberry and black huckleberry are common shrubs. Pennsylvania sedge and wild geranium are common herbaceous plants.

The site also includes eastern red cedar woodlands, a xerophytic community that is restricted to traprock ledges (Metzler and Barrett 2006). Shrubs include scrub oak, low bush blueberry, huckleberry, and downy arrowwood. A discontinuous herb layer includes little bluestem, poverty oatgrass, red columbine, upland boneset, and woodland sunflower.

Table 1. Dominant plant species

| | |
|------------|---|
| Tree | (1) <i>Quercus montana</i> (2) <i>Carya glabra</i> |
| Shrub | (1) <i>Vaccinium pallidum</i> |
| Herbaceous | (1) <i>Danthonia spicata</i> |

Physiographic features

The site occurs on nearly level to very steep bedrock controlled hills and ridges. Slope ranges from 3 to 45 percent. Runoff ranges from medium to very high.

Table 2. Representative physiographic features

| | |
|-----------|-----------------------|
| Landforms | (1) Hill (2) Ridge |
| Slope | 3–45% |

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 141 frost free days and 166 freeze free days.

Table 3. Representative climatic features

| | |
|-------------------------------|----------|
| Frost-free period (average) | 143 days |
| Freeze-free period (average) | 165 days |
| Precipitation total (average) | 49 in |

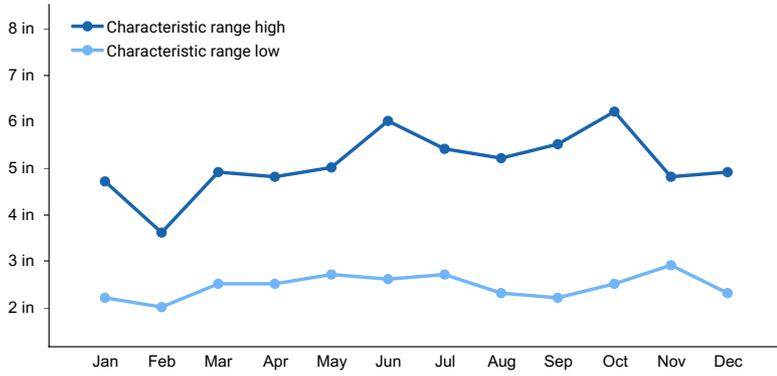


Figure 1. Monthly precipitation range

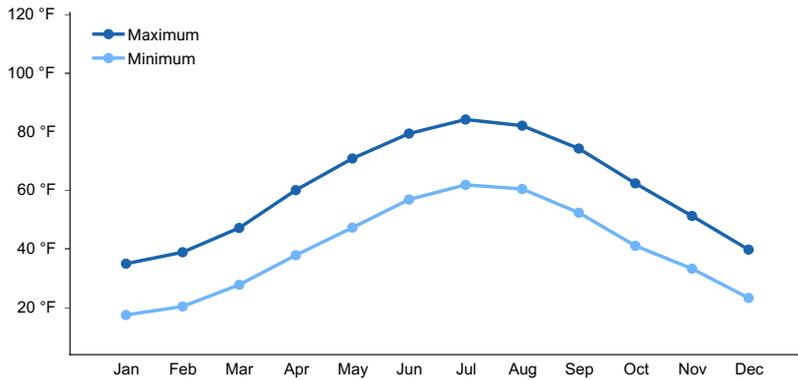


Figure 2. Monthly average minimum and maximum temperature

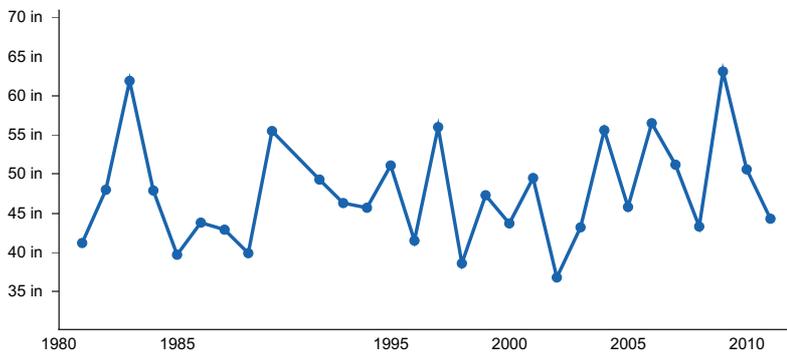


Figure 3. Annual precipitation pattern

Climate stations used

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

Influencing water features

Soil features

The site consists of shallow, well drained and somewhat excessively drained soils formed in a thin mantle of till derived mainly from basalt and red sandstone, conglomerate, and shale. Root restricting layer (bedrock) is at 12-18 inches in depth. Reaction ranges from extremely acid to moderately acid.

Table 4. Representative soil features

| | |
|-----------------|-----------------|
| Parent material | (1) Till-basalt |
|-----------------|-----------------|

| | |
|---|--|
| Surface texture | (1) Silt loam (2) Very fine sandy loam (3) Fine sandy loam |
| Drainage class | Well drained to somewhat excessively drained |
| Permeability class | Very slow |
| Soil depth | 12–18 in |
| Surface fragment cover >3" | 0–10% |
| Available water capacity (0-40in) | 2–3 in |
| Soil reaction (1:1 water) (0-40in) | 3.6–6 |
| Subsurface fragment volume <=3" (Depth not specified) | 5–20% |
| Subsurface fragment volume >3" (Depth not specified) | 5–15% |

Ecological dynamics

The reference plant community is an oak - hickory forest. Chestnut oak and pignut hickory are common trees in association with black oak, scarlet oak, red oak, white ash, eastern white pine, eastern red cedar and eastern hemlock. Trees are generally lower in stature and productivity relative to forests in deeper soils. Lowbush blueberry and black huckleberry are common shrubs. Pennsylvania sedge and wild geranium are common herbaceous plants.

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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:**
