

Ecological site F146XY082ME Loamy Calcareous Till

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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.

Ecological site concept

This site is found on deep, moderately well to well drained soils derived from loamy glacial till deposits. These soils often have gravels or channers that are fairly soft and break easily. As this soft parent material weathers, important nutrients for plant growth are made available, accounting for the richness of the site for plant growth. Although surface pH can be very acidic, most of the soil profile has circumneutral pH values between 5.5 and 6.5.

On gentle slopes, these soils are very productive farmland and are almost entirely under cultivation. Where native vegetation is present, basswood, American elm, hophornbeam, and Christmas fern are indicators of this site, however, sugar maple, yellow birch, and white ash typically dominate. American beech and red maple are also common overstory species, with wild sarsaparilla, Indian cucumber root, starflower, Canada mayflower, and intermediate woodfern as common understory species.

This site is subject to logging, wind, insects and disease, and other natural and human disturbances resulting in a variety of alternative states. Cultivated sites occur on flatter slopes, and are mostly cropland, pasture or hay land. Abandoned farmland may transition to pine, spruce-fir, or reference hardwood-dominated forests, often with an intermediate early seral forest phase.

When managed for timber production, several different ecological states are possible. The pine forest state, reference hardwood-dominated state, and spruce-fir state are managed to maintain dominance of their respective species, and to facilitate profitable harvests along predictable timelines. It is unclear whether hemlock forests are capable of dominating on this site.

With sufficient economic inputs, any of the states that occur on this site may transition from one to another, however, due to cost limitations, forests are typically managed for whatever timber species are currently present on the site.

Associated sites

F146XY032ME	Loamy Till Bottom This site often grades into Loamy Till Bottom site at the base of hillslopes, where the slopes are less and groundwater seeps at or near the soil surface.
F146XY061ME	Shallow Loamy Till The Shallow Loamy Till site grades into this site as soils become shallower, to a depth of less than 20 inches of mineral soil material. Usually the Shallow Loamy Till site is upslope of the Loamy Calcareous Till site

Similar sites

F146XY081ME	Loamy Acidic Till The Loamy Acidic Till site is very similar to this site in landscape position and most soil/site properties, but it has soil pH mostly below 6.0. These lower pH soils do not support basswood other calcareous indicator species, but rather support other mixed hardwoods common to both sites.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs in glacial till deposits on hill slopes, till plains, drumlins and ridges. Slopes are typically 0-15 percent, but can be as high as 30 percent or higher. This site does not experience flooding or ponding, but may have a seasonally high water table in the wettest areas, which tend to be on lower slopes of hills or near drainageways.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Drumlin (3) Till plain
Flooding frequency	None
Ponding frequency	None
Elevation	107–366 m
Slope	0–15%
Water table depth	30 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate of this site is characterized by cold, snowy winters, and cool summers. Annual precipitation ranges from 34 to 51 inches. Precipitation is nearly equally distributed throughout the year, with slightly more moisture falling in June–October. During winter months, and sometimes fall and spring, cold winds from the north bring severe weather events. The effects of a relatively short growing season are somewhat mitigated by long summer days associated with the high latitudes of the region. Occasionally high winds, microbursts, or freezing rain events damage vegetation over small portions of the landscape.

Table 3. Representative climatic features

Frost-free period (average)	100 days
Freeze-free period (average)	129 days
Precipitation total (average)	1,016 mm

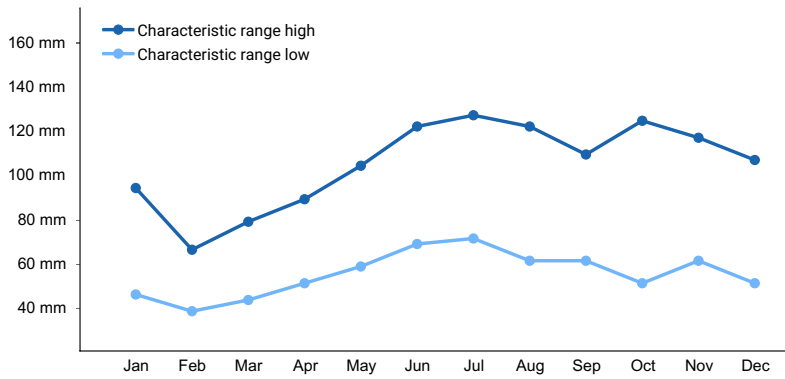


Figure 1. Monthly precipitation range

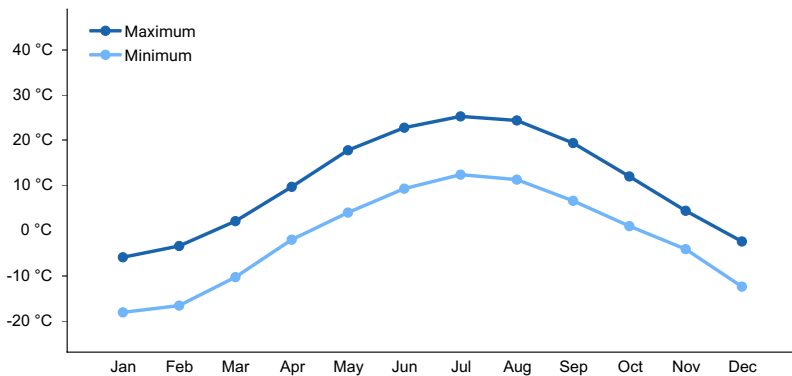


Figure 2. Monthly average minimum and maximum temperature

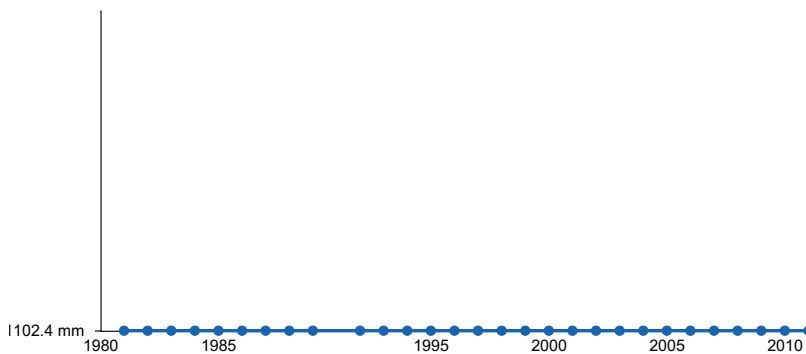


Figure 3. Annual precipitation pattern

Climate stations used

- (1) FT KENT [USC00172878], Fort Kent, ME
- (2) HOULTON 5N [USC00173944], Houlton, ME
- (3) PRESQUE ISLE [USC00176937], Presque Isle, ME
- (4) HOULTON INTL AP [USW00014609], Houlton, ME
- (5) ALLAGASH [USC00170200], Saint Francis, ME
- (6) CARIBOU MUNI AP [USW00014607], Caribou, ME
- (7) BRIDGEWATER [USC00170833], Bridgewater, ME

Influencing water features

Due to its landscape position, this site is not typically influenced by streams or wetlands. Small drainages are often included within this site, and they tend to influence local variations of the plant community.

Soil features

The soils of this site formed in deep or moderately deep loamy glacial till deposits. These soils often have gravels or

channers that are fairly soft and break easily. As this soft parent material weathers, important nutrients for plant growth are made available, accounting for the richness of the site for plant growth. On gentle slopes, these soils are very productive farmland. Although surface pH can be very acidic, most of the soil profile has circumneutral pH values between 5.5 and 6.5. The soil moisture regime is udic and the soil temperature regime is frigid.

Table 4. Representative soil features

Parent material	(1) Supraglacial meltout till–shale and siltstone
Surface texture	(1) Silt loam (2) Gravelly loam (3) Channery silt loam
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained to well drained
Soil depth	51 cm
Surface fragment cover <=3"	0–2%
Surface fragment cover >3"	0–2%
Available water capacity (0-101.6cm)	7.11–27.43 cm
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)	3.6–6.5
Subsurface fragment volume <=3" (Depth not specified)	10–27%
Subsurface fragment volume >3" (Depth not specified)	4–7%

Ecological dynamics

On gentle slopes, these soils are very productive farmland and are almost entirely under cultivation. Where native vegetation is present, basswood, American elm, hophornbeam, and Christmas fern are indicators of this site, however, sugar maple, yellow birch, and white ash typically dominate. American beech and red maple are also common overstory species, with wild sarsaparilla, Indian cucumber root, starflower, Canada mayflower, and intermediate woodfern as common understory species.

State and transition model

Other references

Gawler, S. and A. Cutko. 2010. Natural Landscapes of Maine: A Guide to Natural Communities and Ecosystems. Maine Natural Areas Program, Maine Department of Conservation, Augusta, Maine.

Contributors

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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:**
