

Ecological site F146XY081ME

Loamy Acidic 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 occurs in glacial till deposits on hill slopes, till plains, drumlins and ridges. Soils formed in lodgement till, which consists of 10-34 inches of loamy soil over a highly compacted layer of gravelly loam subsoil. This dense layer was compacted by the weight of overlying glaciers and impedes plant roots and water movement on the site. Drainage ranges from somewhat poorly to well drained. Slopes are typically moderate, but may be as high as 30 percent or higher. This site has a seasonally high water table between 16 and 41 inches in the winter and spring. During the summer and fall the water table is usually deeper, except following heavy rain events. Soil pH ranges from 3.5 to 6.5 and tends to be more acidic near the soil surface and less acidic in the dense subsoil.

Hardwoods are dominant on much of this ecological site, including yellow birch, sugar maple, red maple, American beech, and white ash. Softwood abundance tends to be higher where bedrock is within 40 inches of the soil, near drainageways, and on steeper slopes. Common understory species are intermediate woodfern, wild sarsasparilla, starflower, Canada mayflower, and striped maple.

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. Hemlock forests may also result from logging practices, though these are typically less-desirable and may result from selective harvest of more valuable species, leaving the hemlock behind. As hemlock increases on the site, it inhibits the establishment of other species by shading, reducing soil moisture availability to other plants, and especially by acidifying the soil.

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 Acidic Till site.

Similar sites

F146XY082ME	Loamy Calcareous Till The Loamy Calcareous Till site is very similar to this site in landscape position and most soil/site properties, but it has soil pH mostly above 6.0. These higher pH soils support greater amounts of sugar maple, basswood, American elm, and understory indicators such as Christmas fern. Higher pH soils are also more likely to be cultivated.
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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 does have a seasonally high water table. Typically the water table reaches its highest point from November to May typically between 16 and 41 inches. During the summer and fall the water table is usually deeper, except following heavy rain events.

Table 2. Representative physiographic features

Landforms	(1) Ground moraine (2) Hill (3) Till plain
Flooding frequency	None
Ponding frequency	None
Elevation	37–762 m
Slope	0–30%
Water table depth	41–104 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

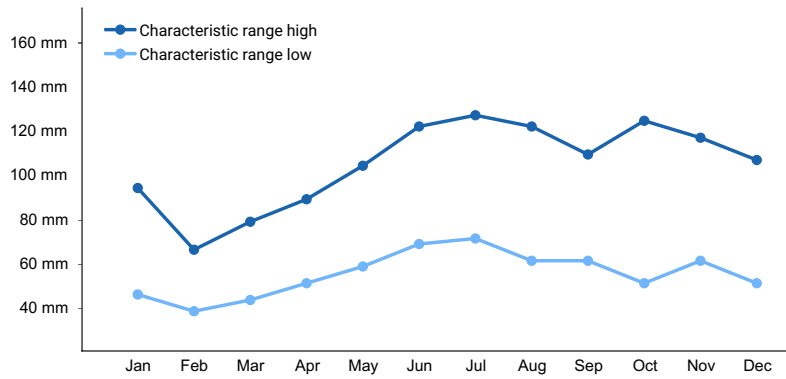


Figure 1. Monthly precipitation range

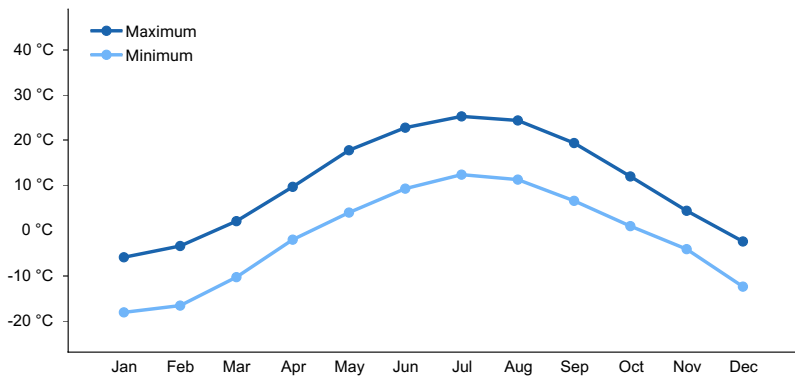


Figure 2. Monthly average minimum and maximum temperature

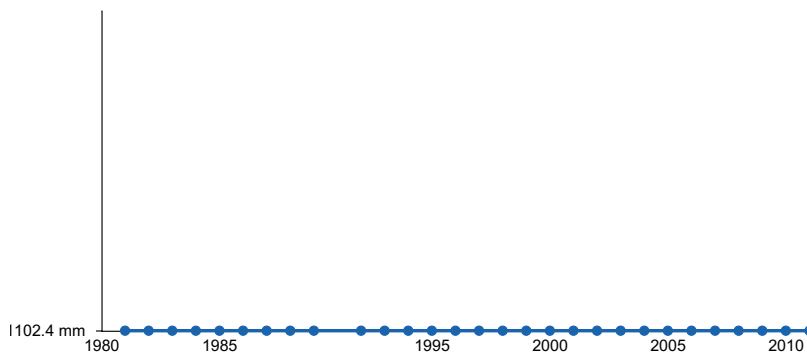


Figure 3. Annual precipitation pattern

Climate stations used

- (1) ALLAGASH [USC00170200], Saint Francis, ME
- (2) FT KENT [USC00172878], Fort Kent, ME
- (3) CARIBOU MUNI AP [USW00014607], Caribou, ME
- (4) BRIDGEWATER [USC00170833], Bridgewater, ME
- (5) HOULTON 5N [USC00173944], Houlton, ME
- (6) PRESQUE ISLE [USC00176937], Presque Isle, ME
- (7) HOULTON INTL AP [USW00014609], Houlton, 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. Higher relative abundances of white ash, sugar maple, yellow birch, and diverse ferns and other herbs coincide with these small drainageways.

Soil features

The soils of this site formed in lodgement till consisting of about 10-34 inches of loamy soil over a highly compacted layer of gravelly loam subsoil. This dense layer was compacted by the weight of overlying glaciers and impedes plant roots and water movement on the site. Drainage ranges from somewhat poorly to well drained. Soil pH ranges from 3.5 to 6.5 and tends to be more acidic near the soil surface and less acidic in the dense subsoil. The soil moisture regime is udic and the soil temperature regime is frigid.

Table 4. Representative soil features

Parent material	(1) Lodgment till—shale and siltstone
Surface texture	(1) Silt loam (2) Gravelly silt loam (3) Loam
Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained to well drained
Soil depth	25–86 cm
Surface fragment cover ≤3"	0–1%
Surface fragment cover >3"	0–2%
Available water capacity (0-101.6cm)	11.68–30.73 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)	3.5–6.5
Subsurface fragment volume ≤3" (Depth not specified)	0–20%
Subsurface fragment volume >3" (Depth not specified)	0–4%

Ecological dynamics

Hardwoods are dominant on much of this ecological site, including yellow birch, sugar maple, red maple, American beech, and white ash. Softwood abundance tends to be higher where bedrock is within 40 inches of the soil, near drainageways, and on steeper slopes. Common understory species are intermediate woodfern, wild sarsasparilla, starflower, Canada mayflower, and striped maple.

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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

Jamin Johanson
Carl Bickford
Nick Butler

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:
