

Ecological site F146XY034ME

Wet Sandy Bog

Accessed: 05/18/2024

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.

Ecological site concept

This site occurs on gently-sloping, very-poorly drained glacial outwash deposits that are frequently ponded for much or all of the year. Soils are deep loams formed, often with a mucky peat surface layer. These saturated bog soils are acidic to very acidic with few rock fragments.

This site receives significant inputs of run-in water from surrounding uplands. This results in year-round saturation, extended surface ponding, and ultimately acidification. These water features influence plant community structure and dynamics on this site.

Black spruce dominates the overstory, with diverse heath shrubs, herbs, and mosses dominating the understory and open patches. Increases in ponding depth due to beaver activity or man-made structures can cause mortality of these dominant species and a transition to a ponded, open wetland state. As ponding decreases to reference levels, this site may transition through a series of open wetland phases prior to re-establishment of reference state species.

Logging, insects (particularly spruce budworm), and windthrow may reduce overstory cover in patches. However, black spruce is expected to regain dominance on this site following these disturbances.

In area where this site is cleared, drained, and cultivated, hay, pasture, and sometimes crops may be produced with significant soil amendment.

The soil moisture regime is aquic and soil temperature regime is frigid.

Associated sites

F146XY021ME	Marsh This site may grade into the Marsh site as soils become wetter.
F146XY033ME	Wet Loamy Flat This site may grade into the Wet Loamy Flat site as soils become drier.

Similar sites

F146XY033ME	Wet Loamy Flat This site is similar to the Wet Loamy Flat, except it is wetter, more acidic, and supports primarily black spruce instead of red spruce and balsam fir
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Table 1. Dominant plant species

Tree	(1) <i>Picea mariana</i> (2) <i>Abies balsamea</i>
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on very-poorly drained glacial outwash deposits that are frequently ponded for much or all of the year. It occurs at elevations below 1500 feet, on very gentle slopes, less than three percent.

Table 2. Representative physiographic features

Landforms	(1) Outwash plain (2) Outwash terrace
Ponding duration	Long (7 to 30 days)
Ponding frequency	Frequent
Elevation	15–457 m
Slope	0–3%
Ponding depth	0–15 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, microburst, 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

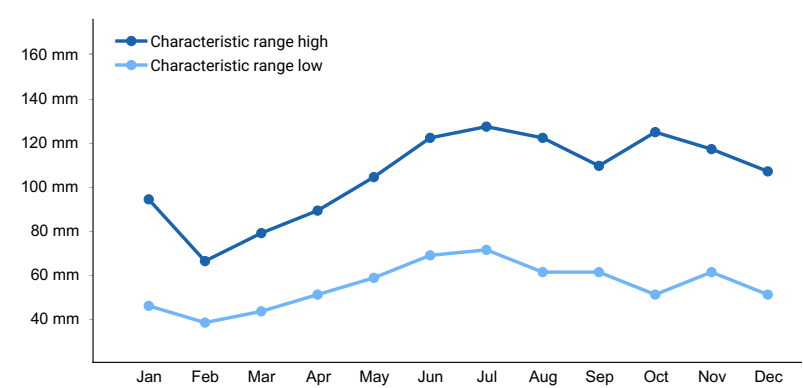


Figure 1. Monthly precipitation range

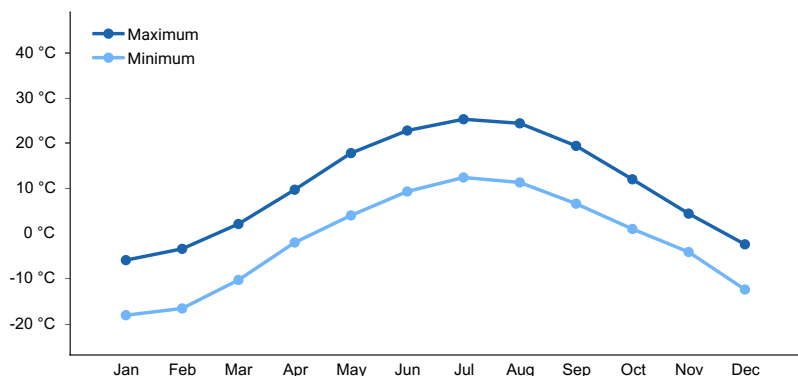


Figure 2. Monthly average minimum and maximum temperature

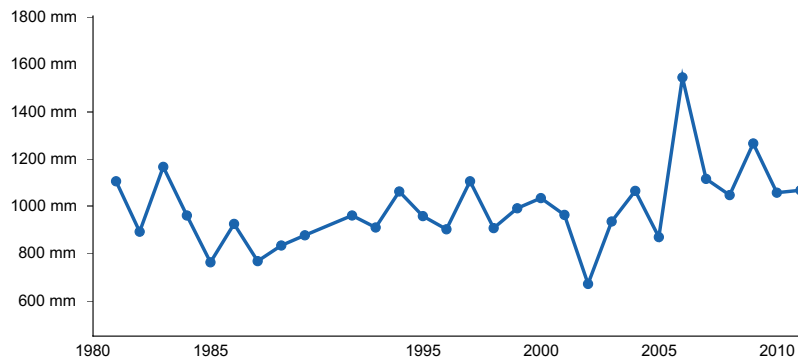


Figure 3. Annual precipitation pattern

Climate stations used

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

Influencing water features

This site receives significant inputs of run-in water from surrounding uplands. This results in year-round saturation, extended surface ponding, and ultimately acidification. These water features influence plant community structure and dynamics on this site.

Soil features

The soils of this site are deep, very poorly-drained loams formed in glacial outwash deposits. These saturated bog soils are acidic to very acidic with few rock fragments. The soil moisture regime is aquic and soil temperature regime is frigid.

Table 4. Representative soil features

Parent material	(1) Glaciofluvial deposits–granite
Surface texture	(1) Silt loam
Family particle size	(1) Loamy
Drainage class	Very poorly drained
Soil depth	165 cm
Surface fragment cover <=3"	0–1%

Surface fragment cover >3"	0–1%
Available water capacity (0-101.6cm)	11.18–21.34 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)	3.6–5.3
Subsurface fragment volume <=3" (Depth not specified)	0–2%
Subsurface fragment volume >3" (Depth not specified)	20–25%

Ecological dynamics

Black spruce dominates the overstory, with diverse heath shrubs, herbs, and mosses dominating the understory and open patches. Increases in ponding depth due to beaver activity or man-made structures can cause mortality of these dominant species and a transition to a ponded, open wetland state. As ponding decreases to reference levels, this site may transition through a series of open wetland phases prior to re-establishment of reference state species.

Logging, insects (particularly spruce budworm), and windthrow may reduce overstory cover in patches. However, black spruce is expected to regain dominance on this site following these disturbances.

In area where this site is cleared, drained, and cultivated, hay, pasture, and sometimes crops may be produced with significant soil amendment.

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

Acknowledgments

Carl Bickford and Nick Butler provided significant input in the development of this site concept.

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)	
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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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