Ecological site F146XY021ME
Marsh

Accessed: 05/19/2024

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 in flat, marshy areas characterized by herbaceous and/or shrubby vegetation with very few trees. The soils are very deep, very poorly-drained, and formed in well-decomposed organic deposits, generally lacking rock and grit throughout the profile. This ecological site requires further study, particularly with regards to the influence of hydrology for distinguishing between the many distinct plant communities that occur on these open marshland soils. The primary drivers of plant community and dynamics are dissolved nutrient levels and hydrology, however specifics about the influence of these drivers on plant community expression and soil properties are poorly understood.

Associated sites

F146XY031ME	**Mucky Peat Bottom** The Mucky Peat Bottom site may occur with this site, often grading into the open Marsh site as wetness increases.
F146XY034ME	**Wet Sandy Bog** The Wet Sandy Bog site may occur in association with the open Marsh site.

Similar sites

F146XY031ME	**Mucky Peat Bottom** The Mucky Peat Bottom site has very similar soils to the Marsh site, but is capable of supporting significant tree cover.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site most commonly occurs in flat, marshy areas where water collects as run-on from surrounding uplands. The water table is almost always at or above the soil surface. Slopes are negligible (0-1 percent), and elevations range from near sea level to around 1,800 feet.

Table 2. Representative physiographic features

Landforms	(1) Marsh (2) Swamp
Flooding frequency	None

Ponding duration	Long (7 to 30 days) to very long (more than 30 days)
Ponding frequency	Frequent
Elevation	3–549 m
Slope	0–1%
Water table depth	0 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.

Table 3. Representative climatic features

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

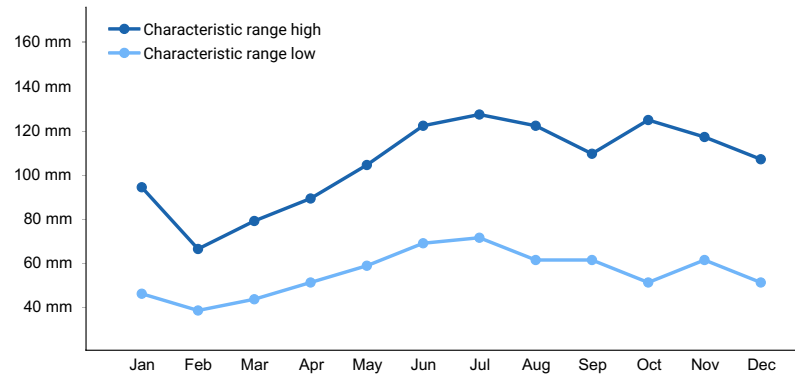

Figure 1. Monthly precipitation range

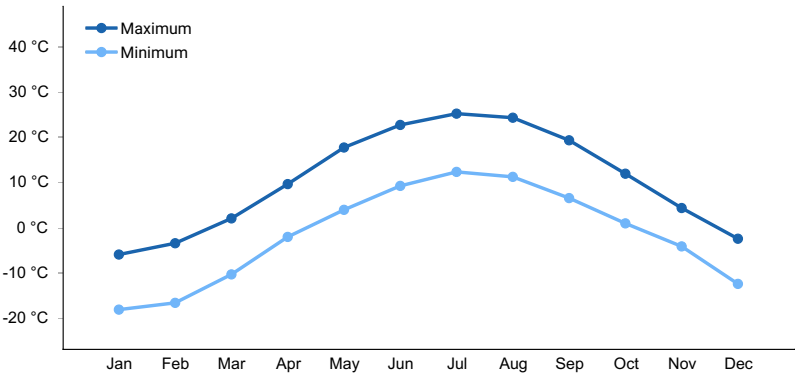

Figure 2. Monthly average minimum and maximum temperature

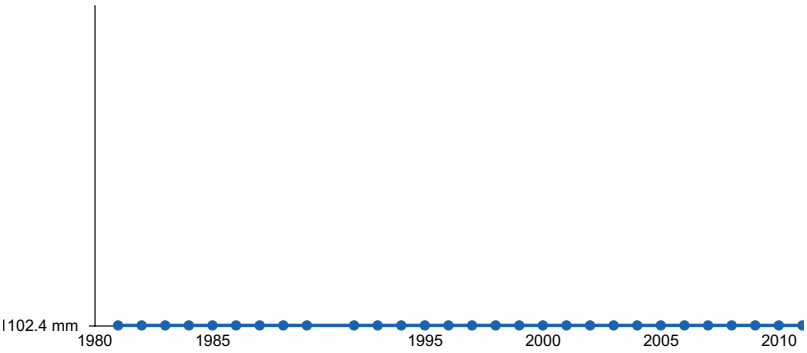

Figure 3. Annual precipitation pattern

Climate stations used

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

Influencing water features

This site receives extra moisture from neighboring watersheds, which causes soil saturation throughout the growing season. Differences in ponding depth and duration, along with other hydrologic features (which are poorly understood), influence plant community dynamics on this site. Further study is required to better define the water features that influence this site.

Soil features

The soils of this site are very deep, very poorly-drained and formed in organic deposits of various stages of decomposition. These soils are mostly acidic, are saturated throughout the year, and have high water-holding capacity. Rock fragments and mineral soil materials are negligible or too deep to have significant influence on the vegetation of this site. The soil moisture regime is aquic and the soil temperature regime is frigid.

Table 4. Representative soil features

Surface texture	(1) Mucky peat
Drainage class	Very poorly drained
Soil depth	165 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	20.07–40.61 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%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The marsh ecological site includes all open wetlands in MLRA 146. Current soil mapping does not distinguish between significant marsh types, and further research is required to define true wetland site concepts for the MLRA. Please refer to Gawler and Cutko (2010) for the most thorough description of wetlands occurring in MLRA 146.

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

Nick Butler and Carl Bickford provided meaningful review 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)	
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:**