

Ecological site F236XY150AK

Boreal Forest Loamy Wet Flood Plains

Last updated: 2/13/2024
Accessed: 09/26/2026

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): 236X–Bristol Bay-Northern Alaska Peninsula Lowlands

MLRA 236 is in southwest Alaska. It covers 19,575 square miles (USDA–NRCS, 2006) and extends inland from Bristol Bay. It is composed primarily of level to rolling plains and low to moderate hills bordered by long footslopes of mountains (Kautz et al., 2012). The flood plains and terraces along the major rivers and lakes are characterized by depressions and small basins. Mountains form the eastern and western borders of the MLRA, and glacially formed lakes are behind terminal moraines (Kautz et al., 2012). The entire MLRA was covered by glacial ice during the early to middle Pleistocene (USDA–NRCS, 2006). The climate near the coast is dominantly maritime, and the climate farther inland is continental and is influenced by weather systems of Interior Alaska (Kautz et al., 2012). Summers typically are warm and short, and winters are long and cold. The average annual precipitation is 13 to 50 inches, and the average annual air temperature is 30 to 36 degrees F (Kautz et al., 2012). The freeze-free period normally is 70 to 125 days. Aspect and elevation, which ranges from sea level to about 2,500 feet above sea level (USDA–NRCS, 2006), influence the climate and weather patterns. This MLRA is sparsely populated. The major communities include Dillingham, Naknek, and King Salmon. Federally managed land in the MLRA includes parts of Katmai National Park and Preserve and the Aniakchak National Monument and Preserve as well as Togiak and Alaska Peninsula National Wildlife Refuges (Kautz et al., 2012; USDA–NRCS, 2006).

Ecological site concept

This boreal ecological site is on high flood plains of lowlands. This site is in concave areas of high flood plains and in convex to linear areas of high flood plains that are surrounded by wetlands. The soils associated with this site are wet during the growing season as a result of ponding, which affects the plants that can reproduce successfully. Many of the plants are facultative or obligate wetland species. The reference plant community is a forest of mixed birch (*Betula* spp.) and white spruce (*Picea glauca*) that has an understory of hydrophilic and shade-loving shrubs and forbs, bluejoint (*Calamagrostis canadensis*), and abundant moss.

Associated sites

F236XY111AK	Boreal Forest Loamy Flood Plains Sites F236XY150AK and F236XY111AK (Boreal Forest Loamy Flood Plains) are both on high flood plains of lowlands, but site F236XY111AK is associated with well drained soils. Differences in the natural drainage class of the soils, frequency of ponding, and proximity to wetlands lead to dissimilar disturbance regimes, reference states, and community phases, making the use of unique ecological sites necessary.
-------------	---

Similar sites

F236XY111AK	Boreal Forest Loamy Flood Plains Sites F236XY150AK and F236XY111AK (Boreal Forest Loamy Flood Plains) are both on high flood plains of lowlands, but site F236XY111AK is not in concave areas and is associated with well drained soils. Differences in the shape of the slope, natural drainage class of the soils, frequency of ponding, and proximity to wetlands lead to dissimilar disturbance regimes, reference states, and community phases, making the use of unique ecological sites necessary.
-------------	---

Table 1. Dominant plant species

Tree	(1) <i>Betula papyrifera</i> var. <i>kenaica</i> (2) <i>Picea glauca</i>
Shrub	(1) <i>Spiraea stevenii</i> (2) <i>Rubus chamaemorus</i>
Herbaceous	(1) <i>Calamagrostis canadensis</i> (2) <i>Equisetum sylvaticum</i>

Physiographic features

The site characteristics specifically relate to the reference plant community phase. Each ecological site has a specific set of site characteristics and disturbance dynamics that results in unique composition, structure, and function of the plant community. Site characteristics (climate, geology, topography, and soil characteristics) are dynamic across a landscape. Subtle changes in site characteristics can result in a different plant community phase or ecological site. Definitions of site characteristics are provided in the United States Department of Agriculture Handbook 296 (USDA–NRCS, 2006), Geomorphic Description System (Schoeneberger and Wysocki, 2012), Field Book for Describing and Sampling Soils (Schoeneberger et al., 2012), and Soil Survey Manual (Soil Science Division Staff, 2017).

Table 2. Representative physiographic features

Geomorphic position, flats	(1) Talf
Slope shape across	(1) Convex (2) Linear (3) Concave
Landforms	(1) Plains > Flood plain
Flooding frequency	None to very rare
Ponding duration	Brief (2 to 7 days)
Ponding frequency	Occasional
Elevation	0 – 270 m
Slope	0 %
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

Climate of land resource region (LRR): Maritime continental (Western Regional Climate Center, 2017); short, warm summers and long, cold winters (USDA–NRCS, 2006).

Climate of major land resource area (MLRA): Maritime by the coast; continental inland and at higher elevations (influenced by Interior Alaska weather systems). The average annual precipitation is 13 to 50 inches, and the average annual air temperature is 30 to 36 degrees F (USDA–NRCS, 2006).

Table 3 Representative climatic features

Frost-free period (characteristic range)	90-140 days
Freeze-free period (characteristic range)	
Precipitation total (characteristic range)	

Influencing water features

Soil features

This ecological site is correlated to D36-Boreal forest loamy flood plains, wet. This soil has a cryic temperature regime and an aquic moisture regime. The saturated hydraulic conductivity is moderately low to a depth of 40 inches. The upper mineral horizon is extremely acid or very strongly acid (pH 3.8 to 4.6), and it has an organic matter content of 65 to 85 percent. The annual frost-free period is 85 to 140 days. The parent material consists of herbaceous organic material over coarse-silty alluvium.

Table 4. Representative soil features

Parent material	(1) Alluvium
Drainage class	Poorly drained
Permeability class	Slow

Ecological dynamics

Overview

This boreal ecological site is on high flood plains of lowlands. It is in concave areas of high flood plains and in convex to linear areas of high flood plains that are surrounded by wetlands. The soils associated with this site are wet during the growing season as a result of ponding, which affects the plants that can reproduce successfully. The reference state contains one documented community. The reference plant community is a closed forest of mixed birch (*Betula* spp.) and white spruce (*Picea glauca*) that has an understory of hydrophilic and shade-loving shrubs and forbs, bluejoint (*Calamagrostis canadensis*), and abundant moss.

Disturbance Dynamics

Flooding, Ponding, and Water Table

This site is subject to flooding and ponding, but an early community phase was not documented. The soils associated with the site are wet during the growing season because of the slope shape and the proximity to wetlands. The frequency of flooding is very rare; it likely only occurs during peak snowmelt in April and May. A typical low-energy flood will not scour the vegetation, so the overstory and understory vegetation will remain. The site is subject to occasional, brief periods of ponding in April through September. The wide range of plants in the reference community phase, including facultative upland species to obligate wetland species, are resilient to brief periods of ponding.

Other Observations

Slight to severe browsing by moose may occur in this ecological site, but it does not appear to affect the ecological processes significantly enough to alter the communities.

Damming of a nearby waterway by beavers (*Castor canadensis*) transitions the community to an alternate state. Hydrophilic graminoids, forbs, and shrubs typically surround the ponded areas upstream from beaver dams.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
-------	-------------	--------	-----------------	----------------------	------------------

Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
-------	-------------	--------	-----------------	----------------------	------------------

Other references

Kautz, D.R., P. Taber, and S. Nield (editors). 2004. Land resource regions and major land resource areas of Alaska. U.S. Department of Agriculture, Natural Resources Conservation Service, Palmer, AK. Revised 2012.

Schoeneberger, P.J., and D.A. Wysocki. 2012. Geomorphic description system. Version 4.2. U.S. Department of Agriculture, Natural Resources Conservation Service, National Soil Survey Center, Lincoln, NE.

Schoeneberger, P.J., D.A. Wysocki, E.C. Benham, and Soil Survey Staff. 2012. Field book for describing and sampling soils. Version 3.0. U.S. Department of Agriculture, Natural Resources Conservation Service, National Soil Survey Center, Lincoln, NE.

Soil Science Division Staff. 2017. Soil survey manual. Ditzler, C., K. Scheffe, and H.C. Monger, editors. U.S. Department of Agriculture Handbook 18. Government Printing Office, Washington, D.C.

U.S. Department of Agriculture, Forest Service, Alaska Region. 2013. Forest health conditions in Alaska - 2012. Publication R10-PR-32.

U.S. Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296.

Viereck, L.A., C.T. Dyrness, A.R. Batten, and K.J. Wezlick. 1992. The Alaska vegetation classification. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station General Technical Report PNW-GTR-286. Portland, OR.

Contributors

Phil Barber
Michael Margo
Sue Tester
Kendra Moseley
Stephanie Schmit

Approval

Kirt Walstad, 2/13/2024

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	09/26/2026
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:
