

Ecological site F237XY261AK

Boreal Forest Mountain Backslopes and Footslopes, Linear to Convex

Last updated: 4/13/2021
Accessed: 04/16/2024

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.

MLRA notes

Major Land Resource Area (MLRA): 237X–Ahklun Mountains

The Ahklun Mountains Major Land Resource Area (MLRA 237) is in western Alaska. This MLRA covers approximately 14,555 square miles, and it includes the mountains, hills, and valleys of the Kilbuck Mountains in the north and the Ahklun Mountains in the south. Except for the Kilbuck Mountains and the highest ridges of the Ahklun Mountains, the MLRA was extensively glaciated during the Pleistocene (Kautz et al., 2004). Today, a few small glaciers persist in mountainous cirques (Gallant et al., 1995). The present-day landscape and landforms reflect this glacial history; glacial moraines and glacial drift cover much of the area (USDA-NRCS, 2006). The landscape of the MLRA is primarily defined by low, steep, rugged mountains cut by narrow-to-broad valleys. Flood plains and terraces of varying sizes are common at the lower elevations in the valley bottoms. Glacially carved valleys host many lakes. Togiak Lake is one of the largest lakes in the region. It is 13 miles long and about 9,500 acres in size. Major rivers include the Goodnews, Togiak, Kanektok, Osviak, Eek, and Arolik Rivers. Where the Goodnews and Togiak Rivers reach the coast, the nearly level to rolling deltas support numerous small lakes.

This MLRA has two distinct climatic zones: subarctic continental and maritime continental. The high-elevation areas are in the subarctic continental zone. The mean annual precipitation is more than 75 inches, and the mean annual air temperature is below about 27 degrees F (-3 degrees C) in extreme locations. The warmer, drier areas at the lower elevations are in the maritime continental zone. The mean annual precipitation is 20 to 50 inches, and the mean annual air temperature is about 30 to 32 degrees F (-0.2 to 1.2 degrees C) (PRISM). This climatic zone is influenced by both maritime and continental factors. The temperatures in summer are moderated by the open waters of the Bering Sea, and the temperatures in winter are more continental due to the presence of ice in the sea (Western Regional Climate Center, 2017). The seasonal ice reaches its southernmost extent off the coast of Alaska in Bristol Bay (Alaska Climate Research Center, 2017). The western coast of Alaska is also influenced by high winds from strong storms and airmasses in the Interior Region of Alaska (Hartmann, 2002).

The Ahklun Mountains MLRA is principally undeveloped wilderness. Federally managed lands include the Togiak and Alaska Maritime National Wildlife Refuges. The MLRA is sparsely populated, but it has several communities, including Togiak, Manokotak, Twin Hills, and Goodnews Bay. Togiak is the largest village. It has a population of approximately 855, most of whom are Yup'ik Alaska Natives (U.S. Census Bureau, 2016). Major land uses include subsistence activities (fishing, hunting, and gathering) and wildlife recreation (USDA-NRCS, 2006; Kautz et al., 2004).

Ecological site concept

This proposed ecological site concept is correlated to the STATSGO component E37-Boreal forest-gravelly colluvial slopes. Site F237XY261AK is the basis for the ecological site group ESG22X2237X00X. This ecological site description (ESD) will be revised when field data are collected that can be used to confirm or update the following information.

Hypothesized Reference Plant Community

This forested community may be a monotypic stand of white spruce, but it more likely is a mix of white spruce and one or more other species, including paper birch, Kenai birch, and quaking aspen. The understory species likely include a mix of graminoids, forbs, and medium to dwarf shrubs.

Classification crosswalk (community descriptions of similar landscapes and landforms in other vegetation classification systems)

*LANDFIRE Biophysical Settings: Western NA Boreal White Spruce-Hardwood Forest (7216030) (USDA et al., 2007)

*Alaska Vegetation Classification System: I.C.1.a (Vioreck et al., 1992)

*Circumboreal Vegetation Mapping (CBVM) Project: Southern Alaska Spruce-Birch-Herb Forests (Jorgensen and Meidinger, 2015)

*Alaska Arctic Tundra Vegetation: None (Raynolds et al., 2006)

*U.S. National Vegetation Classification Database 2.03: G579–Central Alaskan-Yukon Boreal Mesic Forest Group (USNVC, 2019)

Similar sites

F237XY239AK	Boreal Forest Loamy Slopes Site F237XY239AK is on discharge slopes of mountains and on alluvial fans. Field data are required to further describe site F237XY261AK and determine the similarities between these two ecological sites.
-------------	---

Table 1. Dominant plant species

Tree	(1) <i>Picea glauca</i> (2) <i>Betula papyrifera</i> var. <i>kenaica</i>
Shrub	(1) <i>Vaccinium uliginosum</i> (2) <i>Vaccinium vitis-idaea</i>
Herbaceous	(1) <i>Calamagrostis canadensis</i> (2) <i>Chamerion angustifolium</i>

Physiographic features

This ecological site is on linear to convex backslopes and footslopes of boreal mountains.

Table 2. Representative physiographic features

Hillslope profile	(1) Backslope (2) Footslope
Geomorphic position, mountains	(1) Center third of mountainflank (2) Lower third of mountainflank
Landforms	(1) Mountains > Mountain slope
Flooding frequency	None
Ponding frequency	None
Elevation	200–2,300 ft
Slope	15–50%

Aspect	W, NW, N, NE, E, SE, S, SW
--------	----------------------------

Climatic features

Influencing water features

Soil features

This ecological site is associated with well drained soils that are subject to moderate frost action.

Table 3. Representative soil features

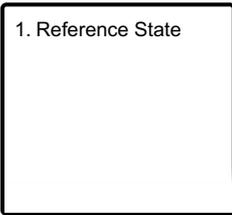
Drainage class	Well drained
----------------	--------------

Ecological dynamics

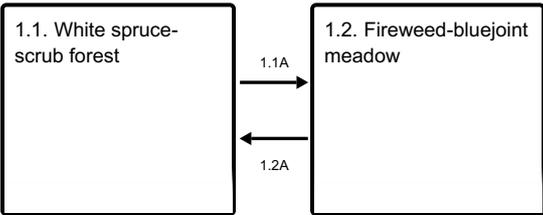
The most common vegetative community likely is an open or closed forest. White spruce likely is the dominant tree species, but other species may be present. The composition of the understory is variable and is based on factors such as slope, aspect, and the density of the canopy; however, medium to dwarf shrubs and sporadic graminoids and forbs can be expected. The ground cover likely is a mix of moss and lichen.

State and transition model

Ecosystem states



State 1 submodel, plant communities



1.1A - Fire.

1.2A - Fire recovery.

State 1 Reference State

The reference state supports all the communities that are a result of natural disturbances on these landforms.

Community 1.1 White spruce-scrub forest

The reference plant community likely is an open white spruce forest, but some areas probably support a mixed conifer-deciduous forest. The understory species likely include a variety of shrubs and a low cover of diverse graminoids and forbs. This community was described from field notes, the Landfire BpS model 7216030 (Western NA Boreal White Spruce-Hardwood Forest), and the CBVM community of South Alaska Spruce-Birch-Herb Forests.

Dominant plant species

- white spruce (*Picea glauca*), tree
- Kenai birch (*Betula papyrifera* var. *kenaica*), tree
- alder (*Alnus*), shrub
- willow (*Salix*), shrub
- prickly rose (*Rosa acicularis*), shrub
- birch (*Betula*), shrub
- blueberry (*Vaccinium*), shrub
- reedgrass (*Calamagrostis*), grass
- sedge (*Carex*), grass
- spreading woodfern (*Dryopteris expansa*), other herbaceous
- horsetail (*Equisetum*), other herbaceous
- false toadflax (*Geocaulon lividum*), other herbaceous

Community 1.2

Fireweed-bluejoint meadow

The post-fire community depends on the severity of the fire disturbance. A crown fire will decrease the competition of the understory for space and light. Extant shrubs, forbs, and graminoids likely will increase in density and height in the post-fire community. A severe ground fire may remove all existing vegetation. Plants that have a high seeding rate, especially forbs and graminoids, will be dominant in the post-fire community.

Dominant plant species

- bluejoint (*Calamagrostis canadensis*), grass
- fireweed (*Chamerion angustifolium*), other herbaceous
- horsetail (*Equisetum*), other herbaceous

Pathway 1.1A

Community 1.1 to 1.2

Fire. A high-severity burn commonly removes all vegetation and leads to community 1.2. A low-severity burn may leave a patchwork community that is a mix of communities 1.1 and 1.2.

Pathway 1.2A

Community 1.2 to 1.1

Fire recovery.

Additional community tables

Other references

Alaska Climate Research Center. 2017. Climatological data—Bristol Bay. <http://oldclimate.gi.alaska.edu>. Accessed September 19, 2017.

Gallant, A.I., E.F. Binnian, J.M. Omernik, and M.B. Shasby. 1995. Ecoregions of Alaska. U.S. Geological Survey Professional Paper 1567. Government Printing Office, Washington, D.C.

Hartmann, B. 2002. Climate regions of Alaska. The Alaska Climate Research Center. <http://oldclimate.gi.alaska.edu/ClimTrends/30year/regions1.html>. Modified August 28, 2002. Accessed September 19, 2017.

Jorgensen, T., and D. Meidinger. 2015. The Alaska-Yukon Region of the circumboreal vegetation map (CBVM). CAFF Strategies Series Report. Conservation of Arctic Flora and Fauna, Akureyri, Iceland. ISBN: 978-9935-431-48-6.

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.

PRISM Climate Group. 2014. PRISM climate data. Oregon State University. <http://prism.oregonstate.edu>. Accessed March 27, 2018.

Raynolds, M.K., D.A. Walker, and H.A. Maier. 2006. Alaska arctic tundra vegetation map. Scale 1:4,000,000. Conservation of Arctic Flora and Fauna (CAFF) Map No. 2. U.S. Fish and Wildlife Service, Anchorage, Alaska.

U.S. Census Bureau. 2016. Vintage 2016 population estimates: Population estimates. <https://www.census.gov>. Accessed August 14, 2017.

U.S. Department of Agriculture, Forest Service; U.S. Department of the Interior, Geological Survey; and the Nature Conservancy. LANDFIRE national vegetation dynamics models. January 2007 (last update). <http://landfire.gov>. Accessed December 16, 2019.

U.S. Department of the Interior, Geological Survey. LANDFIRE biophysical settings layer. 2014 (last update). <http://landfire.cr.usgs.gov/viewer>. Accessed December 8, 2019.

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.

U.S. National Vegetation Classification (USNVC). 2019. The U.S. national vegetation classification database, V2.03. Federal Geographic Data Committee, Vegetation Subcommittee, Washington DC. <http://usnvc.org>. Accessed December 16, 2019.

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.

Western Regional Climate Center. 2017. Climate of Alaska. <http://wrcc.dri.edu>. Accessed September 19, 2017.

Contributors

Phil Barber
Steph Schmit
Michael Margo
Sue Tester

Approval

Curtis Talbot, 4/13/2021

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	04/16/2024

Approved by	Curtis Talbot
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:**
-