

Ecological site R237XY257AK

Western Alaska Maritime Low Scrub Flood Plain Terrace, Hummocks

Last updated: 4/13/2021
Accessed: 05/06/2024

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-Maritime scrub-loamy hummocks. Site R237XY257AK is on stream terraces. This ecological site description (ESD) is the basis for ecological site group ESG12X2237X00X. This description will be revised when field data are collected that can be used to confirm or update the following information.

Hypothesized Reference Plant Community

Hummock communities typically support a mix of low and dwarf scrub and scattered low to medium willow. Graminoids typically are common, but they may not make up a large percentage of the vegetative cover. It is unknown whether the hummock microtopography results in distinct communities in the microhigh and microlow positions.

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

*LANDFIRE Biophysical Settings: Aleutian Crowberry-Herbaceous Heath (7617190); only BpS model in this area that has hummocks (USDA et al., 2007)

*Alaska Vegetation Classification System: II.C.2.d (Viereck et al., 1992)

*Circumboreal Vegetation Mapping (CBVM) Project: South Alaska spruce-birch-herb forests (hummocks described by this model fit, but this site is not forested) (Jorgensen and Meidinger, 2015)

*Alaska Arctic Tundra Vegetation: No Arctic AK Geobotany community fits (Raynolds et al., 2006)

*U.S. National Vegetation Classification Database 2.03: G357–Western Boreal Mesic Alder-Willow Shrubland Group (USNVC, 2019)

Similar sites

| | |
|-------------|--|
| R237XY212AK | Western Alaska Maritime Scrubland Silty Flood Plains Sites R237XY212AK and R237XY257AK are both on terraces of flood plains; however, site R237XY257AK has hummock microfeatures and site R237XY212AK does not. Field data are needed to determine if these ecological sites can be correlated into a single site. |
|-------------|--|

Table 1. Dominant plant species

| | |
|------------|--|
| Tree | Not specified |
| Shrub | (1) <i>Empetrum nigrum</i> (2) <i>Ledum palustre ssp. decumbens</i> |
| Herbaceous | (1) <i>Carex bigelowii</i> |

Physiographic features

This ecological site is on stream terraces that have earth hummocks.

Table 2. Representative physiographic features

| | |
|--------------------|---|
| Landforms | (1) Plains > Stream terrace > Earth hummock |
| Flooding frequency | None to rare |
| Ponding frequency | None |
| Elevation | 2–91 m |
| Slope | 0–2% |
| Aspect | W, NW, N, NE, E, SE, S, SW |

Climatic features

Influencing water features

Soil features

This ecological site is associated with somewhat poorly drained soils. Rare periods of flooding (1 to 5 times in 100 years) are thought to occur during the growing season (May through September).

Table 3. Representative soil features

| | |
|----------------|-------------------------|
| Drainage class | Somewhat poorly drained |
|----------------|-------------------------|

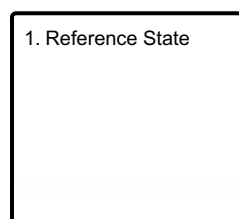
Ecological dynamics

The plant community is influenced by the processes that create hummocks. In other areas of Alaska, hummocks commonly support ericaceous shrubland that consists of sporadic willow, forbs, and graminoids.

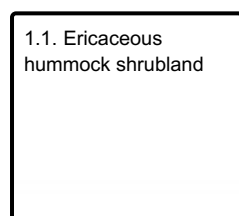
It currently is unknown whether the micro-high and micro-low positions support a similar community or separate, distinct plant communities. This ecological site description assumes that there are no differences in the vegetation in the microhigh and microlow positions. Field data are required to further describe the vegetative dynamics of the site.

State and transition model

Ecosystem states



State 1 submodel, plant communities



State 1 Reference State

The reference state supports all the communities that are a result of natural disturbances on this landform. It is unlikely that flooding occurs on the terraces; therefore, no early flooding community is described.

Community 1.1 Ericaceous hummock shrubland

The hummocks likely support a mix of low and dwarf ericaceous shrubs. The shrubs probably comprise a majority of the vegetative cover. Medium to low willow likely is in the wetter areas created by the hummocks. Graminoids likely are present, and they likely do not form tussocks. The ground cover may be a mix of moss with lichen in the drier areas and standing water in the lower lying areas.

Dominant plant species

- marsh Labrador tea (*Ledum palustre* ssp. *decumbens*), shrub
- black crowberry (*Empetrum nigrum*), shrub
- dwarf birch (*Betula nana*), shrub
- bog blueberry (*Vaccinium uliginosum*), shrub

- willow (*Salix*), shrub
- sedge (*Carex*), grass

Additional community tables

Other references

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Contributors

Phil Barber
Steph Schmit

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 | 05/06/2024 |
| 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:**
-