USDA Natural Resources Conservation Service

Ecological site R236XY110AK
Western Alaska Maritime Graminoid Loamy Depressions

Last updated: 2/13/2024
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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

Follow the link to the USDA-NRCS eFOTG page, where the complete ecological site description may be found.

https://efotg.sc.egov.usda.gov/

Once there, select the State of Alaska. Then, using the dropdown menu, select FOTG Section II, then Ecological Site Descriptions, then MLRA 236.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Carex saxatilis* (2) *Calamagrostis canadensis*

Physiographic features

This maritime ecological site is in depressions of lowlands in western Alaska. Elevation typcially is 140 to 980 feet above sea level, and slopes are 0 to 2 percent. Slope aspect does not influence the plant community dynamics of this site.

Table 2. Representative physiographic features

Landforms	(1) Lowland > Depression
Elevation	43–299 m
Slope	0–2%
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

Table 3. Representative climatic features

Frost-free period (characteristic range)	80-140 days
Freeze-free period (characteristic range)	
Precipitation total (characteristic range)	711-1,448 mm

Influencing water features

Soil features

This ecological site is correlated to D36-Western maritime grass loamy depressions. These soils have a cryic temperature regime and a udic moisture regime. The saturated hydraulic conductivity is moderately high to a depth of 40 inches. The upper mineral horizon is very strongly acid to moderately acid (pH 4.6 to 5.8), and it has an organic matter content of 8 to 15 percent. The annual precipitation is 28 to 57 inches, and the annual frost-free period is 80 to 140 days. The parent material is gravelly drift.

Ecological dynamics

This maritime ecological site is in depressions of lowlands in western Alaska. Elevation typically ranges from 140 to 980 feet above sea level, and slopes are 0 to 2 percent. Slope aspect does not influence the plant community dynamics of this site.

The reference community phase is typified by patchy grassland that includes various graminoid species; areas of unvegetated, bare soil; and areas that have rock fragments on the surface. No similar landforms in the MLRA support a comparable reference community phase. Ecological sites R236XY107AK (Western Alaska Maritime Scrub Gravelly Drainages), R236XY108AK (Western Alaska Maritime Graminoid Peat Flood Plains), and R236XY109AK (Western Alaska Maritime Graminoid Peat Drainages) support hydrophilic plant communities in the lowlands of western Alaska, but low and medium shrubs are in the reference community phase of these sites. Differences in the moisture regime, pH of the upper layer, parent material, natural drainage class, and runoff potential of the soils may cause the dissimilarities in the reference state, community phases, and disturbance regimes of these sites as compared to those of site R236XY110AK.

No known major disturbance regime is associated with this ecological site; thus, only a reference community phase is described. Throughflow and overflow from precipitation and snowmelt and potential snowpack in the depressions result in permanently ponded, nonvegetated areas. This ecological site surrounds those areas. The soils associated with the site are somewhat poorly drained. Occasional, brief periods of ponding occur in April through October, and a year-round water table may be at a depth of 6 to 28 inches. This site is rich in facultative or obligate wetland species, which can withstand the periods of ponding and the high water table. Minor natural variations in the richness and cover of plants may be evident, but no data suggest that ponding will result in an early community phase.

Slight or moderate grazing of sedges by moose may occur in this ecological site, but it does not appear to affect the ecological processes enough to alter the community significantly.

No alternate states for this ecological site have been observed.

This report provides baseline inventory data for the vegetation in this ecological site. Future data collection is needed to provide further information about existing plant communities and the disturbance regimes that would result in transitions from one community to another.

State and transition model

Ecosystem states

1. Reference State

State 1 submodel, plant communities

1.1. Rock sedge-bluejoint-thread rush grassland

State 1
Reference State

The reference state is the only state in this ecological site. There is only one community described in this state, as there is no known disturbance resulting in a post-disturbance community phase.

Community 1.1
Rock sedge-bluejoint-thread rush grassland

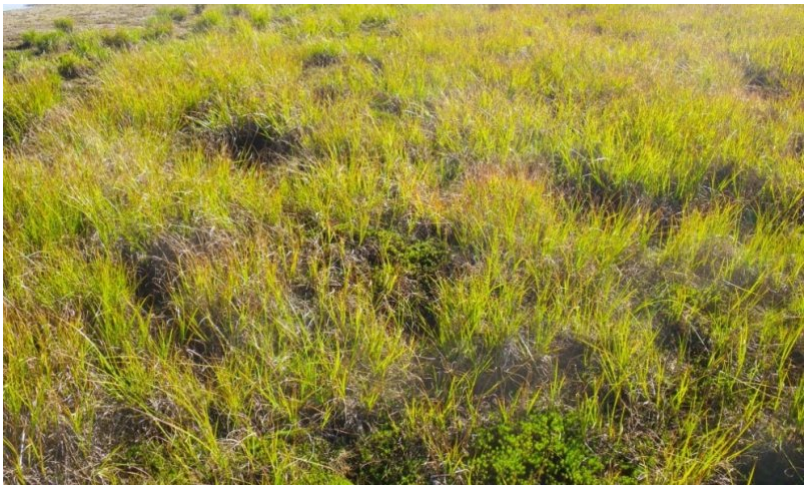

Figure 1. Typical area of community 1.1.

Community Phase Canopy Cover

(Vegetation data in the table are provided as constancy (percent) and average canopy cover (percent) of the most dominant and ecologically relevant species for this community phase.)

Plant group	Common name	Scientific name	USDA plant code	Constancy (percent)	Average canopy cover (percent)
S	Arctic raspberry	*Rubus arcticus*	RUAR	67	2
G	Bluejoint grass	*Calamagrostis canadensis*	CACA4	100	10
G	Rock sedge	*Carex saxatilis*	CASA10	67	35
G	Thread rush	*Juncus filiformis*	JUFI	67	4
F	Violet	*Viola spp.*	VIOLA	67	2

Note: The vegetation and soils for this reference community were sampled at three separate locations. Due to the limited data available for this community phase, personal field observations were used to aid in describing this plant community.

Figure 2. Frequency and canopy cover of plants in community 1.1.

The reference community phase for this ecological site is characterized by grassland that has areas of unvegetated soil and areas that have rock fragments on the surface. Typically, this community consists dominantly of medium and tall graminoids, including rock sedge (*Carex saxatilis*), bluejoint grass (*Calamagrostis canadensis*), tufted hairgrass (*Deschampsia cespitosa*), and thread rush (*Juncus filiformis*). Several other species of rushes (Juncus spp.) and sedges (Carex spp.) may be present. Water-tolerant shrubs and forbs are common, but they generally are not abundant. They may include arctic raspberry (*Rubus arcticus*), bog rosemary (*Andromeda polifolia*), violets (Viola spp.), and purple marshlocks (*Comarum palustre*). The cover of moss may vary (about 40 percent total mean cover). Other ground cover generally includes herbaceous litter (about 35 percent cover). About 9 percent of the surface is covered with rock fragments, and about 20 percent of the total area is bare soil.

Additional community tables

Contributors

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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	05/12/2025
Approved by	Kirt Walstad
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or terracettes:**

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

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5. **Number of gullies and erosion associated with gullies:**

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6. **Extent of wind scoured, blowouts and/or depositional areas:**

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7. **Amount of litter movement (describe size and distance expected to travel):**

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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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:

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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:**
