

Ecological site R236XY129AK

Subarctic Low Scrub Peat Coastal Plains

Last updated: 2/13/2024
Accessed: 10/03/2026

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

The Bristol Bay-Northern Alaska Peninsula Lowland Major Land Resource Area (MLRA 236) is located in Western Alaska. This MLRA covers approximately 19,500 square miles and is defined by an expanse of nearly level to rolling lowlands, uplands and low to moderate hills bordered by long, mountain footslopes. Major rivers include the Egegik, Mulchatna, Naknek, Nushagak, and Wood River. MLRA 236 is in the zone of discontinuous permafrost. It is primarily in areas with finer textured soils on terraces, rolling uplands and footslopes. This MLRA was glaciated during the early to middle Pleistocene. Moraine and glaciofluvial deposits cover around sixty percent of the MLRA. Alluvium and coastal deposits make up a large portion of the remaining area (Kautz et al., 2012; USDA, 2006). Climate patterns across this MLRA shift as one moves away from the coast. A maritime climate is prominent along the coast, while continental weather, commonly associated with Interior Alaska, is more influential inland. Across the MLRA, summers are general short and warm while winters are long and cold. Mean annual precipitation is 13 to 50 inches, with increased precipitation at higher elevations and areas away from the coast. Mean annual temperatures is between 30 and 36 degrees F (USDA, 2006). The Bristol Bay-Northern Alaska Peninsula MLRA is principally undeveloped wilderness. Federally managed land includes parts of the Katmai and Aniakchak National Parks, and the Alaska Peninsula, Becharof, Togiak and Alaska Maritime National Wildlife Refuges. The MLRA is sparsely populated. Principal communities include Dillingham, Naknek, and King Salmon. Commercial fishing in Bristol Bay and the Bering Sea comprises a major part of economic activity in the MLRA. Other land uses include subsistence activities (fishing, hunting, and gathering) and sport hunting and fishing (USDA, 2006).

Classification relationships

Alaska Vegetation Classification: Open low scrubland (II.C.2 - level III) / Sweetgale-graminoid bog (II.C.2.j- level IV) (Viereck et al., 1992)

Ecological site concept

This ecological site is on coastal plain tidal marshes. Site elevation is at or near sea level. Slopes are nearly level. Site hydrology, as influenced by aquic soil conditions, a very shallow water table, and flooding and ponding shape the vegetation on this landform. Further, brackish water intrusion also affects the species found on this site. The reference state supports two communities. The reference plant community is characterized as an open low scrubland (Viereck et al., 1992). It is composed of a mix of hydrophytic shrubs species with facultative to obligate wetland graminoids and forbs throughout. The presence of surface water is a strong indicator of this site on the coastal plain complex. Lower lying areas on this site are commonly wetter, and support more herbaceous species and less shrubs than the reference plant community.

Associated sites

R236XY133AK	Subarctic Graminoid Loamy Tidal Coastal Plains Both sites are part of the coastal plain complex. R236XY129AK defines the tidal marshes. Brackish water influences the vegetation. The soil in this site supports a thick organic layer comprised of fibric material, which isn't found in R236XY133AK. R236XY133AK is found at slightly higher positions on the coastal plain.
-------------	---

R236XY135AK	Western Alaska Maritime Scrub Loamy Plains, Coastal Both sites are on the coastal plain complex. R236XY135AK is associated with Entisols on plain talfs. They lack the organic material associated with soils correlated to R236XY129AK. R236XY135AK supports less hydrophytic species, as the soil is better drained and it does not support a water table throughout the growing season.
R236XY170AK	Subarctic Graminoid Loamy Coastal Plain Rises Both sites are part of the coastal plain complex. R236XY170AK describes the driest areas of the complex, where less hydrophytic vegetation is dominant. Flooding is rare, ponding is absent, and there is no water table present throughout most of the year.

Similar sites

R236XY135AK	Western Alaska Maritime Scrub Loamy Plains, Coastal Both sites are on the coastal plain complex. Both sites are associated with aquic soils and support a mix of facultative wet to obligate wetland species. This site supports a thick, organic soil which is not found in R236XY135AK. Vegetation is also different as this site is under greater influence from brackish water incursion and salt spray.
--------------------	---

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Myrica gale</i> (2) <i>Betula nana</i>
Herbaceous	(1) <i>Comarum palustre</i> (2) <i>Carex lyngbyei</i>

Physiographic features

This site is on frequently flooded tidal marshes on coastal plains. Elevation is at or just above sea level. Slopes are mostly level. This site is found at all aspects. Surface water is often present due to frequent flooding.

Table 2. Representative physiographic features

Geomorphic position, flats	(1) Talf
Landforms	(1) Coastal plain > Coastal plain (2) Coastal plain > Tidal marsh
Runoff class	Negligible
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Frequent

Ponding duration	Not specified
Ponding frequency	None
Elevation	0 – 10 m
Slope	0 %
Water table depth	0 cm
Aspect	W, NW, N, NE, E, SE, S, SW

Table 3. Representative physiographic features (actual ranges)

Runoff class	Negligible to low
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Rare to frequent
Ponding duration	Very long (more than 30 days)
Ponding frequency	None to frequent
Elevation	0 – 10 m
Slope	0 %
Water table depth	0 cm

Climatic features

The climate of this site reflects that of the MLRA, which is described as maritime polar (EPA, 2013). Temperatures are moderated by the nearby Bristol Bay and northern Pacific bodies of water. Annual precipitation ranges from 21 – 34 inches with approximately 40 percent occurring during the June-September growing season (PRISM, 2018).

Table 4 Representative climatic features

Frost-free period (characteristic range)	80-100 days
Freeze-free period (characteristic range)	70-90 days

Precipitation total (characteristic range)	530-860 mm
Frost-free period (actual range)	80-100 days
Freeze-free period (actual range)	70-90 days
Precipitation total (actual range)	380-1,040 mm
Frost-free period (average)	90 days
Freeze-free period (average)	80 days
Precipitation total (average)	740 mm

Influencing water features

This site is influenced by frequent flooding. The flood source may be riverine or coastal. Water is typically present on or at the soil surface throughout the year. This restricts vegetation to primarily facultative wet to obligate wetland species. Lower lying areas of this site support more herbaceous species and less shrubs.

Soil features

These organic soils are cold and minimally decomposed Cryofibrists (Soil Survey Staff, 2013). Soils are very deep and very poorly drained. They support a cryic temperature regime and an aquic or peraquic moisture regime. Parent material is organic material over marine deposits.

Soil hydrology is a major driver of plant community composition. This peaty soil has slightly decomposed fibric soil materials in the top 28 inches. These materials generally have a high water content (Soil Survey Staff, 2013). Aquic conditions are present throughout the profile. A water table is present at the soil surface throughout the year, limiting vegetation to facultative wet to obligate wetland species.

Correlated soil components in MLRA 236: Picnicpoint, Sheepisland, E36-Maritime sedge-sphagnum-organic depressions

Table 5. Representative soil features

Parent material	(1) Marine deposits (2) Organic material
Surface texture	(1) Peat
Drainage class	Poorly drained to very poorly drained
Permeability class	Moderate
Soil depth	150 cm

Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-25.4cm)	7.62 – 14.99 cm
Soil reaction (1:1 water) (0-25.4cm)	5.1 – 6.1
Subsurface fragment volume <=3" (Depth not specified)	Not specified
Subsurface fragment volume >3" (Depth not specified)	Not specified

Table 6. Representative soil features (actual values)

Drainage class	Very poorly drained
Permeability class	Moderate
Soil depth	150 cm
Surface fragment cover <=3"	0 %
Surface fragment cover >3"	0 %
Available water capacity (0-25.4cm)	7.62 – 14.99 cm
Soil reaction (1:1 water) (0-25.4cm)	5.1 – 7.2
Subsurface fragment volume <=3" (Depth not specified)	0 %

Subsurface fragment volume >3" (Depth not specified)	0 %
---	-----

Ecological dynamics

This site is on frequently flooded tidal marsh coastal plains. Site hydrology, influenced by soil characteristics and flooding and ponding disturbances, shape the plant communities. The reference plant community is an open scrubland of hydrophytic shrubs with facultative wet to obligate wetland graminoids throughout.

Hydrology explains the differences between communities on this landform. The reference plant community is drier than community 1.2. Flooding is frequent but does not scour the vegetation or soil under normal conditions. Slower growing shrubs are supported in these areas. Wetter areas exclude shrubs and are dominated by graminoids.

A hydrologic change can shift an area from one community to the other. A raised water table in the reference plant community increases surface ponding and kills shrubs. This is often the result of soil scouring or increased water inflow to an area. A lowered water table often leads to a more stable area where shrubs are supported. This could be due to increased drainage in the marsh or the buildup of organic soil.

There is little evidence of browsing or grazing on this site.

The information in this Ecological Dynamics section, including the state-and-transition model (STM), was developed based on current field data, professional experience, and a review of the scientific literature. As a result, all possible scenarios or plant species may not be included. Key indicator plant species, disturbances, and ecological processes are described to inform land management decisions.

State and transition model

Additional community tables

Table 7. Community 1.1 plant community composition

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

Table 8. Community 1.2 plant community composition

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

Inventory data references

Modal points for Community 1.1 07AO01301 07AO01306 07AO01503 10SS02201 Modal points for community 1.2 07SS24501 07SS09906 07CS15806 07CS16405

References

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

Other references

Kautz, D.R., P. Taber, and S. Nield, editors. 2012. Land Resource Regions and Major Land Resource Areas of Alaska. United States Department of Agriculture, Natural Resources Conservation Service (USDA–NRCS).

PRISM Climate Group. (PRISM) Oregon State University. <https://prism.oregonstate.edu>. Date created October 2018. Accessed 3 Mar 2023.

Scenarios Network for Alaska and Arctic Planning (SNAP).? Historical Monthly Temperature – 1km, 1901-2009. <http://ckan.snap.uaf.edu/dataset/>. Accessed 20 Mar 2023.

Scenarios Network for Alaska and Arctic Planning (SNAP).? Historical monthly and derived precipitation products downscaled from CRU TS data via the delta methods – 2km, 1901-2009.? <http://ckan.snap.uaf.edu/dataset/>. Accessed 20 Mar 2023.

Soil Survey Staff. 2013. Simplified Guide to Soil Taxonomy. USDA-Natural Resources Conservation Service, National Soil Survey Center, Lincoln, NE.

United States 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.

US Environmental Protection Agency (EPA). Level III Ecoregions of the Conterminous United States. UP ESP Office of Research and Development. Corvallis, OR. <http://edg.epa.gov/>. Created 16 Apr 2013. Accessed 20 Mar 2023.

Contributors

Phil Barber
Michael Margo
Sue Tester
Steph Schmit
Kendra Moseley
Steff Shoemaker
Jamin Johanson

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	10/03/2026
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:
