USDA Natural Resources
Conservation Service

Ecological site R237XY258AK
Western Alaska Maritime Sedge-Shrub Oxbow Lakes

Last updated: 4/13/2021
Accessed: 05/12/2025

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 STATSGO component E37-Maritime sedge-scrub-loamy low floodplains. Site R237XY258AK is the basis for the ecological site group ESG14X2237X00X. 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 ecological site is associated with oxbows of flood plains. The reference plant community likely is dominantly facultative or obligate wetland forbs and graminoids. The vegetation is influenced by hydrology, particularly the frequency and duration of ponding. An early sere is in the lower lying, wetter areas of the oxbows.

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

*LANDFIRE Biophysical Settings: Alaska Arctic Wet Sedge Meadow (USDA et al., 2007)

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

*Circumboreal Vegetation Mapping (CBVM) Project: Southern Alaska Coastal Meadows (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: G370–North American Arctic Freshwater Marsh Group (USNVC, 2019)

Similar sites

R237XY208AK	**Western Alaska Maritime Scrubland Peat Depressions** Site R237XY208AK is in organic depressions of flood plains and coastal complexes. Sites R237XY208AK and R237XY258AK likely are subject to similar hydrological influences. Field data are required to determine if these sites are similar or can be correlated into a single site.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Salix fuscescens* (2) *Andromeda polifolia*
Herbaceous	(1) *Carex* (2) *Eriophorum*

Physiographic features

This proposed ecological site is associated with oxbow lakes. Precipitation, flooding, and movement of water through soil are the major hydrologic processes.

Table 2. Representative physiographic features

Landforms	(1) Plains > Flood plain
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Occasional
Ponding duration	Long (7 to 30 days)
Ponding frequency	Frequent
Elevation	5–300 ft
Slope	0–1%
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

Influencing water features

Soil features

This proposed ecological site is associated with poorly drained soils. Frequent (more than 50 times in 100 years), long (7 to less than 30 days) periods of ponding typically occur year round. Occasional (more than 5 to 50 times in 100 years), brief (2 to less than 7 days) periods of flooding typically also occur throughout the year.

Table 3. Representative soil features

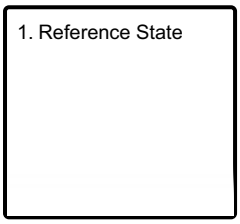
Drainage class	Poorly drained

Ecological dynamics

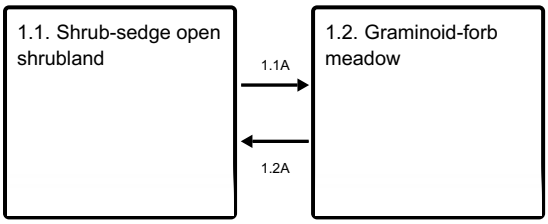
The vegetation is influenced by hydrology, particularly the frequency and duration of ponding. The plants are dominantly facultative or obligate wetland species. An early sere is in the lower lying, wetter areas of the oxbows.

State and transition model

Ecosystem states



State 1 submodel, plant communities



1.1A - Wetter areas.

1.2A - Drier areas.

State 1
Reference State

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

Community 1.1
Shrub-sedge open shrubland

The reference plant community likely is open shrubland consisting of facultative or obligate wetland species. Forb species likely are diverse, but they make up a relatively low amount of the total vegetative cover. This community likely forms a ring around the lowest, wettest areas of the oxbows.

Dominant plant species

- sweetgale (*Myrica gale*), shrub
- bog rosemary (*Andromeda polifolia*), shrub

- water sedge (*Carex aquatilis*), grass
- beaked sedge (*Carex rostrata*), grass
- Lyngbye's sedge (*Carex lyngbyei*), grass
- bulrush (*Trichophorum*), grass
- purple marshlocks (*Comarum palustre*), other herbaceous
- water horsetail (*Equisetum fluviatile*), other herbaceous

Community 1.2
Graminoid-forb meadow

This community is in low-lying areas. The plant species primarily are restricted to obligate wetland species.

Dominant plant species

- sedge (*Carex*), grass
- water horsetail (*Equisetum fluviatile*), other herbaceous
- common mare's-tail (*Hippuris vulgaris*), other herbaceous
- buckbean (*Menyanthes trifoliata*), other herbaceous
- duckweed (*Lemna*), other herbaceous

Pathway 1.1A
Community 1.1 to 1.2

Wetter areas that are subject to more frequent or longer periods of ponding.

Pathway 1.2A
Community 1.2 to 1.1

Drier areas that are subject to less frequent or shorter periods of ponding.

Additional community tables

Other references

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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	05/12/2025
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:**

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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):**

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:**