Ecological site R236XY173AK
Subarctic Riparian Complex Loamy Flood Plains

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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

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 tall scrubland (II.B.2 - level III) / Willow scrubland (II.B.2.a - level IV) (Viereck et al., 1992)

Ecological site concept

This ecological site is on convex berm features on flood plains of low energy rivers. Site elevation is between 160 and 980 feet above sea level. Slopes are nearly level (0 – 3 percent). Soil hydrology in the major influencer of vegetation on this site. Soils are somewhat poorly drained. There is a shallow water table during the growing season and non-scouring flooding contributes to water inputs. The reference state supports one community. The reference plant community is characterized as an open tall scrubland (Viereck et al., 1992). It is composed of one or more willow species with hydrophytic graminoids and forb species throughout. This community is resilient to the hydrologic stressors of this landform position.

Associated sites

R236XY144AK	**Subarctic Scrub Peat Terraces** R236XY144AK describes terraces that experience ponding disturbances. Terraces are higher in elevation and do not flood like the valley flood plains described by R236XY173AK. Different vegetative communities are supported on these sites due to differences in site and soil characteristics.

F236XY176AK	**Boreal Woodland Loamy Flood Plains** Both sites are on valley flood plain talfs. F236XY176AK briefly floods and supports a boreal forest community in the reference state. R236XY173AK floods for a long time. This disturbance and site hydrology does not support trees.

Similar sites

F236XY176AK	**Boreal Woodland Loamy Flood Plains** Both sites are on valley flood plain talfs. F236XY176AK supports a forest community in the reference state, which is not present on R236XY173AK. Ecotonal areas exist where trees are present but are not recognized as a forest community.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Salix pulchra* (2) *Salix barclayi*
Herbaceous	(1) *Calamagrostis canadensis* (2) *Equisetum arvense*

Physiographic features

This site is on flat areas and convex berms along low energy rivers. This site is associated with narrow valley lowland flood plains. Elevation ranges from 160 to 980 feet above sea level. Slopes are nearly level (0 – 3 percent). Flooding is an occasional and long event during the growing season, which limits site plant species. This site is located at all aspects.

Table 2. Representative physiographic features

Slope shape up-down	(1) Linear
Slope shape across	(1) Convex
Geomorphic position, flats	(1) Talf
Landforms	(1) Valley > Flood plain (2) Valley > Flood plain
Runoff class	Negligible to low
Flooding duration	Long (7 to 30 days)
Flooding frequency	Occasional

Ponding frequency	None
Elevation	50 – 300 m
Slope	0 %
Water table depth	30 – 50 cm
Aspect	W, NW, N, NE, E, SE, S, SW

Table 3. Representative physiographic features (actual ranges)

Runoff class	Negligible to low
Flooding duration	Long (7 to 30 days)
Flooding frequency	Occasional
Ponding frequency	None
Elevation	0 – 480 m
Slope	0 %
Water table depth	20 – 110 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 norther 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 riparian water features. Occasional, long periods of flooding occur during the early growing season. This disturbance along with negligible to low run off and somewhat poorly drained soils restrict the vegetation on this site. Periods of high precipitation and seasonal ice and snow melt are the main sources of flooding waters.

Soil features

Soils are young and weakly developed Inceptisols (Soil Survey Staff, 2013). Soils are very deep and somewhat poorly drained. They support a cryic temperature regime and an aquic moisture regime. Parent material is comprised of alluvium.

Soil characteristics affecting vegetation?include soil hydrology and?temperature.?The soils are somewhat poorly drained with a shallow water table throughout the year. Aquic conditions and redox concentrations begin at 18 inches of depth. These conditions restrict vegetation to primarily facultative and facultative wet wetland species. An umbric epipedon hints at low natural soil fertility levels, though flooding deposits may contribute to soil fertility.

Correlated soil components in MLRA 236:
D36-Western maritime scrub loamy flood plains
Fluvaquentic Cryaquepts

Table 5. Representative soil features

Parent material	(1) Alluvium
Surface texture	(1) Silt loam
Drainage class	Somewhat 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)	5.08 – 6.1 cm
Soil reaction (1:1 water) (0-25.4cm)	4.8 – 10
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	Somewhat poorly drained to 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)	5.08 – 7.62 cm
Soil reaction (1:1 water) (0-25.4cm)	4.8 – 10
Subsurface fragment volume <=3" (Depth not specified)	0 %
Subsurface fragment volume >3" (Depth not specified)	0 %

Ecological dynamics

This site describes convex berm features along low energy rivers on lowland valley flood plains. Local site factors such as soil hydrology and a non-scouring flood regime support one hydrophytic community. The reference plant community is an open tall scrubland of one or more willow species. Understory vegetation consists of diverse and dense herbaceous species.

This community is shaped by soil hydrology. Soils are somewhat poorly drained and a support a shallow water table. Aquic conditions are present at 18 inches in the soil profile. These conditions support facultative wet to obligate species resilient to seasonal hypoxic and anoxic conditions. These species are resilient to the low energy scouring caused by occasional, long flooding periods. There is no post-flood community phase described for this site.

Moderate to severe willow browse is common in this site. Moose and caribou may both use this as a food source. This does not appear to affect the ecological processes of the 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 (%)

Inventory data references

Modal points for Community 1.1 08SS08405 09SS02204 09SS02502 10TD12307 10TD12505 10TD13607

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

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Contributors

Phil Barber
Sue Tester
Michael Margo
Kendra Moseley
Steph Schmit

Jamin Johanson
Steff Shoemaker

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	11/01/2026
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):**

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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:**
