USDA Natural Resources
Conservation Service

Ecological site R241XY134AK
Arctic Scrub Loamy Hillslopes

Last updated: 5/29/2025
Accessed: 02/15/2026

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): 241X–Seward Peninsula Highlands

The Seward Peninsula Highlands (MLRA 241X) occurs in Western Alaska, along the southernmost reaches of Land Resource Region Y, which has an arctic climate and occurs in the zone of continuous permafrost. This MLRA is approximately 13,700 square miles across the central Seward Peninsula. The terrain is defined by broad and extensive rolling hills and plains and solitary groups of rugged mountains expanding from sea level to a high point of 4,714 feet on Mount Osborn. Flood plains systems are common but generally narrow. The MLRA 241X watershed drains into Kotzebue Sound and the Chukchi Sea to the north and the Bering Sea to the West. Major rivers include the Buckland, Kiwalik, Serpentine, Agiapuk-American, Kougarok, and Kuzitrin Rivers. The area is mostly undeveloped wild land that is sparsely populated. Residents use this remote area primarily for subsistence hunting, fishing, and gathering. The largest communities in this predominantly inland MLRA are along the coast and include Teller and Brevig Mission. Reindeer herding is a profitable enterprise and many areas of this MRLA are used for reindeer graze and subsistence activities. Parts of this MLRA were mined for gold during the Nome gold rush. Several mines still operate within this boundary (USDA, 2022). Federally managed lands in this MLRA include parts of the Selawik National Wildlife Refuge and parts of Bering Land Bridge National Preserve.

Geology and Soils

MLRA 241X was mostly unglaciated during the late Pleistocene. Glaciers were present during the middle and early Pleistocene in scattered areas such as the York Mountains in the west, the Kiglauik Mountains to the south, and the Upper Kiwalik River drainage. The present-day landscape is mantled with loess, colluvium, and slope alluvium (USDA, 2022).

Modified glacial moraines are evident in areas of past glacial activity. Bedrock material is a mix of rock types, with areas of sedimentary, volcanic and igneous throughout the MLRA. Bedrock is at or near the surface in most upland areas of this MLRA, which is reflected in soil development and vegetative patterns.

This MLRA is in the zone of continuous permafrost. Frozen soils are common across the landscape, though may be absent from high energy systems on floodplains, around lakes and on gravelly, well drained soils. Permafrost is generally shallow to moderately deep (10 to 40 inches) that results in a restrictive layer that perches water and creates poorly to very poorly drained soils. Alongside these permafrost soils (Gelisols), other common soil orders include soils with little to no development in the Entisol and Inceptisol orders. Periglacial features are common and include solifluction lobes, polygonal ground, and thermokarst pits (USDA, 2022). Non-soil areas (rock outcrop, riverwash, and surface water) make up approximated five percent of the MLRA surface.

Climate

Climate is predominantly continental arctic, with brief, cool summers and long, cold winters. Maritime conditions, where summer temperatures are moderated by the proximity to open water, persist through the summer along the Bering Sea coast. Mean annual precipitation is 10 to 15 inches in the north and west, increasing to 20 to 40 inches in the mountainous areas in the south and east (USDA, 2022). Mean annual temperatures ranges from 20 to 26 degrees Fahrenheit (PRISM, 2018; SNAP, 2014).

Vegetation

Vegetation is mainly influenced by climate, site, and soil characteristics such as temperature-degree days, elevation, exposure to wind, soil depth, and soil hydrology. Dwarf scrublands are present across most of the upland, with vegetation further restricted on shallow soils. Lower elevations generally support more developed soils, and host willow-sedge scrublands, mixed ericaceous shrub scrublands, and herbaceous graminoid meadows. Tussock tundra is ubiquitous across much of the poorly drained, low-sloped landforms across the MRLA. Wetland communities dominate in closed depressions and drainages (USDA, 2022).

LRU notes

There are currently no Land Resource Areas (LRUs) delineated or described in MLRA 241X. There is potential for two or more LRUs along a climatic break between the lowlands and low-elevation hills of the north and west, and the higher, mountainous regions more prevalent in the south and east. However, vegetation and land management may not differ between these areas, as soils and vegetation are already restricted by cold annual temperatures even at low elevations.

Classification relationships

Alaska Vegetation Classification:
Open low scrub (II.C.2 - level III) / Open low shrub birch – willow shrub (II.C.2.f – level IV) (Viereck et al., 1992)

BioPhysical Settings: 6816821 – Alaska Arctic Scrub Birch – Ericaceous Shrubland (LANDFIRE, 2009)

Seward Rangesites
43A – Low Shrub-Sedge Meadow
(SCS, 1984; Swanson et al., 1985)

Ecological site concept

Ecological Site characteristics:
• Associated with an open low shrubland on arctic plains and hill slopes
• Fire is the major disturbance and is responsible for one post-disturbance community
• The reference plant community is a birch-ericaceous shrubland with graminoids throughout
• Soils are cold, wet Gelisols in the reference state
• Ponding does not occur
• Nonsorted circles are common periglacial features on the described landform. These are represented by an alternate state.

Associated sites

R241XY130AK	**Arctic Scrub Loamy Warm Hillslopes** R241XY130AK describes open, low scrublands on valley hills and plains. Soils lack permafrost and plant productivity is predicted to be greater than in R241XY134AK.
R241XY131AK	**Arctic Tussock Loamy Frozen Slopes** R241XY131AK describes the tussock tundra on plains and hills with very poorly drained, permafrost soils.

Similar sites

R241XY130AK	**Arctic Scrub Loamy Warm Hillslopes** R241XY130AK describes open, low scrublands on valley hills and plains. Annual temperatures are warmer, permafrost is absent, average shrub height is greater, and community production is expected to be more than that of R241XY134AK.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Ledum palustre ssp. decumbens* (2) *Betula nana*
Herbaceous	(1) *Carex bigelowii* (2) *Eriophorum vaginatum*

Physiographic features

This ecological site occurs on arctic hill slopes and plains. Elevation typically ranges from 100 to 1,000 feet above sea level, though may extend higher on warm slopes. Slope gradients are nearly level to strongly sloping (0 to 12 percent) and this site occurs on all aspects. A shallow water table between 0 and 10 inches is present throughout the year. The reference state ponds briefly and occasionally at depths up to 12 inches.

Non-sorted circles are common periglacial microfeatures. The diameter of nonsorted circles ranges from 1.5 to 10 feet and can be mounded well above the surrounding vegetation. Nonsorted circles have unique site and soil properties that result in a mosaic of vegetation. Nonsorted circles have drier soils compared to the reference state.

Table 2. Representative physiographic features

Slope shape across	(1) Linear
Slope shape up-down	(1) Linear
Hillslope profile	(1) Backslope (2) Footslope (3) Toeslope
Landforms	(1) Plains > Plain (2) Hills > Hill (3) Plains > Plain > Nonsorted circle (4) Hills > Hill > Nonsorted circle
Runoff class	Negligible to low
Flooding frequency	None
Ponding duration	Brief (2 to 7 days)
Ponding frequency	Occasional
Elevation	30–305 m
Slope	0–12%
Ponding depth	0–30 cm
Water table depth	0–25 cm

Aspect	W, NW, N, NE, E, SE, S, SW

Table 3. Representative physiographic features (actual ranges)

Runoff class	Not specified
Flooding frequency	Not specified
Ponding duration	Brief (2 to 7 days)
Ponding frequency	None to occasional
Elevation	30–457 m
Slope	Not specified
Ponding depth	Not specified
Water table depth	0–99 cm

Climatic features

The Arctic climate of this ecological site includes short, cool growing seasons and long, cold winters. Mean annual temperature at sea level is about 22 degrees Fahrenheit in the coastal village of Wales. Approximately 35 percent of total precipitation occurs during the growing season months of June through August. Across the MLRA, snowfall ranges from 40 to 100 inches (USDA-NRCS, 2022).

Table 4. Representative climatic features

Frost-free period (characteristic range)	60-90 days
Freeze-free period (characteristic range)	50-80 days
Precipitation total (characteristic range)	356-406 mm
Frost-free period (actual range)	50-90 days
Freeze-free period (actual range)	40-80 days
Precipitation total (actual range)	254-457 mm
Frost-free period (average)	75 days
Freeze-free period (average)	65 days
Precipitation total (average)	381 mm

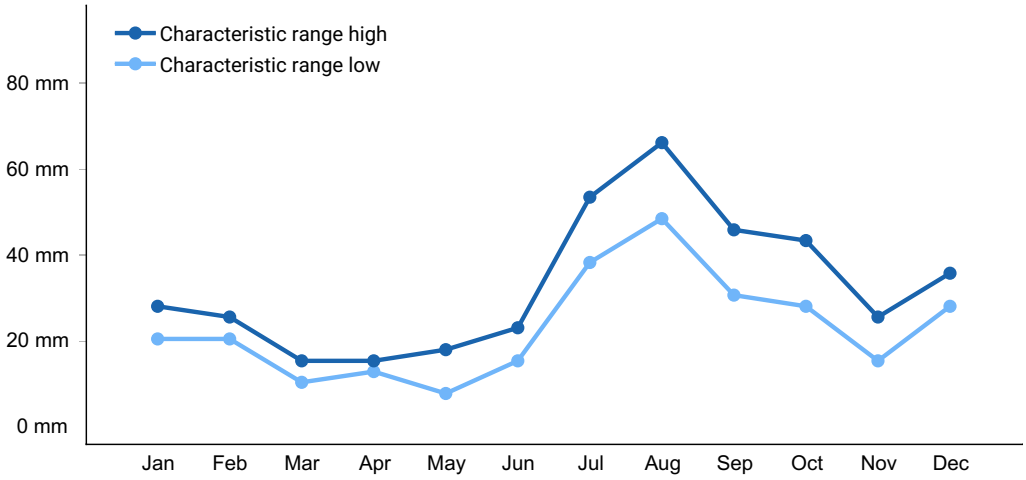


Figure 1. Monthly precipitation range

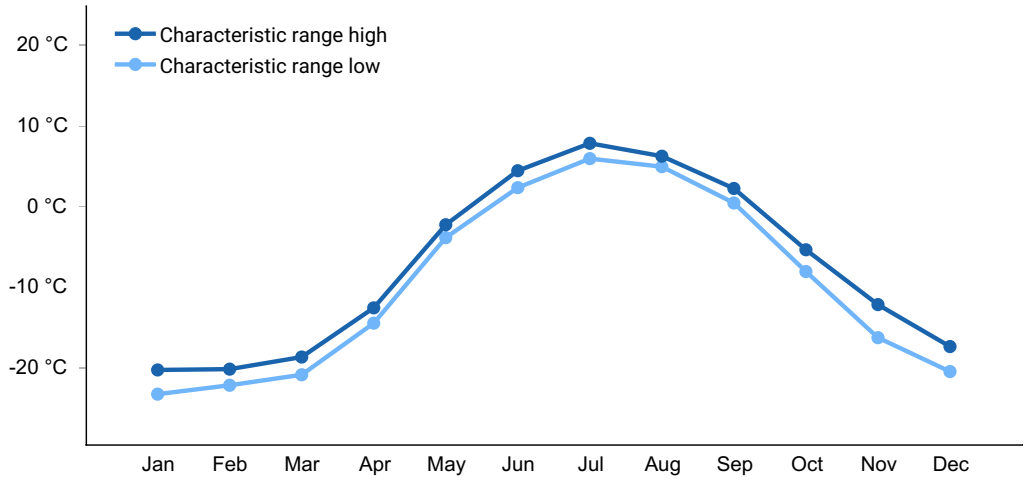


Figure 2. Monthly minimum temperature range

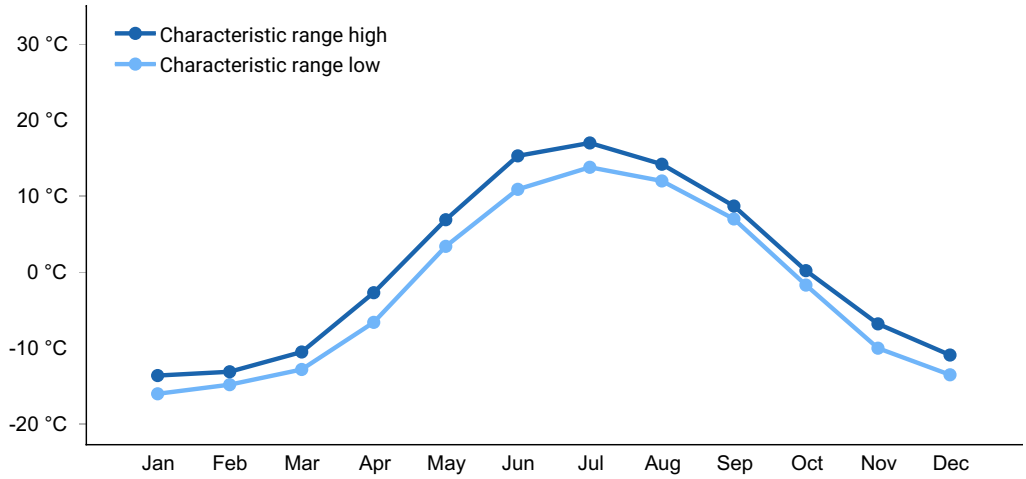


Figure 3. Monthly maximum temperature range

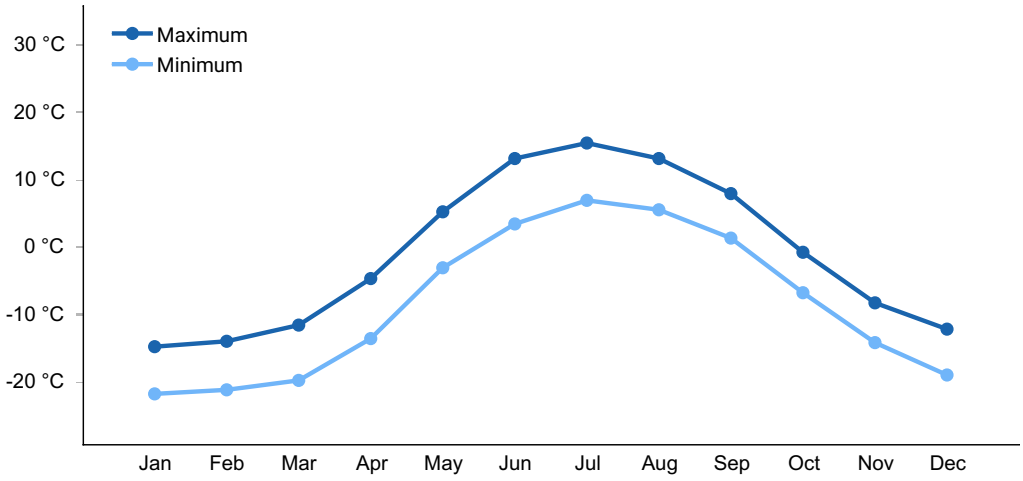


Figure 4. Monthly average minimum and maximum temperature

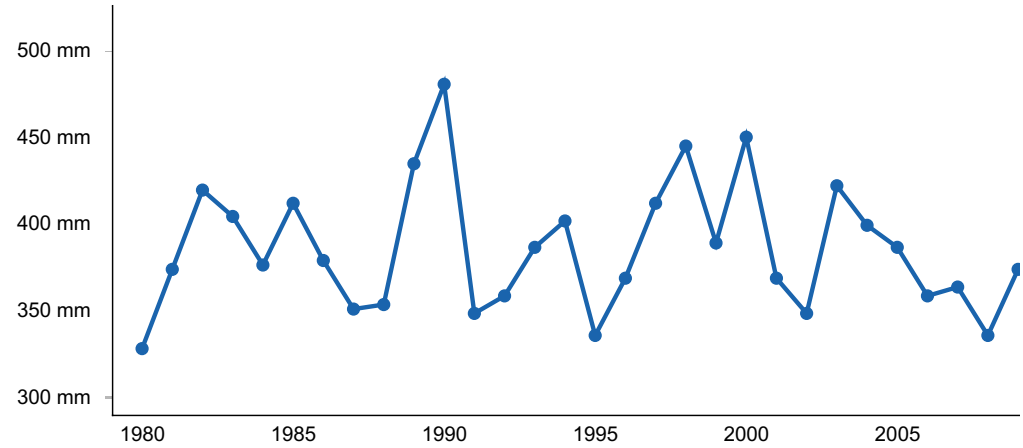


Figure 5. Annual precipitation pattern

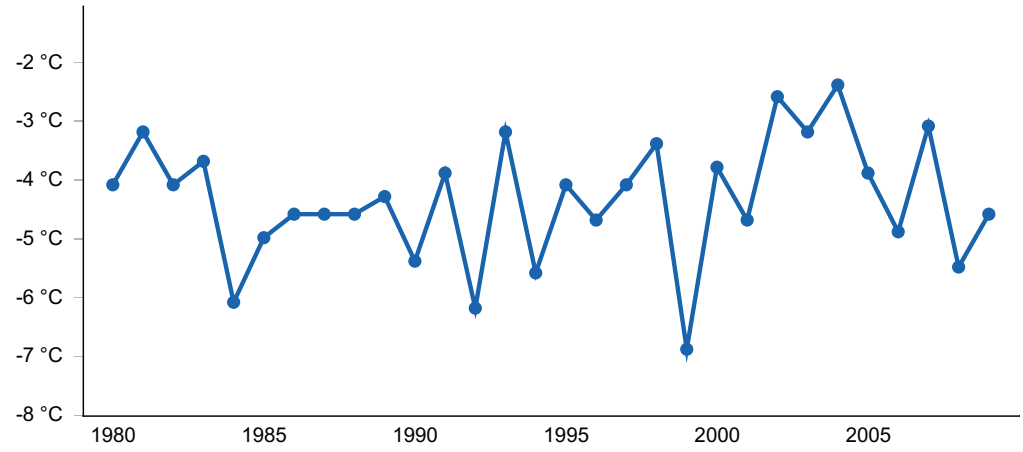


Figure 6. Annual average temperature pattern

Influencing water features

This site is not associated with or influenced by streams or wetlands. Precipitation and throughflow are the main source of water for this ecological site. Surface runoff and throughflow contribute water to downslope ecological sites.

Wetland description

This ecological site may be classified as a slope wetland under the Hydrogeomorphic (HGM) classification system (Smith et al. 1995; USDA-NRCS 2008). A shallow water table is present in the reference state throughout the year.

Soil features

Soils in the reference state are frozen, highly organic Historthels (Soil Survey Staff, 2013). All soils formed in gravelly till or outwash. Rock fragments comprise less than 15 percent of surface area. The organic cap is about 11 inches. Soils are very deep. Permafrost is moderately deep, and strongly contrasting textural stratification is shallow when present. Subsurface rock fragment volume is moderate (15 to 35 percent). Soil pH is extremely to moderately acidic.

Soils in the alternate state are cryoturbated turbels. Nonsorted circles have unique soil properties distinct from the reference state. Soils are drier and cryoturbated with high surface fragment cover. Subsurface rock volume can exceed 70 percent.

Table 5. Representative soil features

Parent material	(1) Till (2) Eolian deposits (3) Outwash
Surface texture	(1) Peat (2) Silt loam
Drainage class	Poorly drained
Permeability class	Moderate
Depth to restrictive layer	33–64 cm
Soil depth	152 cm
Surface fragment cover <=3"	1–9%
Surface fragment cover >3"	0–5%
Available water capacity (0-101.6cm)	8.89–12.7 cm
Soil reaction (1:1 water) (0-25.4cm)	3.7–5.6
Subsurface fragment volume <=3" (0-152.4cm)	6–13%
Subsurface fragment volume >3" (0-152.4cm)	8–20%

Table 6. Representative soil features (actual values)

Drainage class	Poorly drained to moderately well drained
Permeability class	Not specified
Depth to restrictive layer	3–64 cm
Soil depth	152 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	8.89–12.7 cm
Soil reaction (1:1 water) (0-25.4cm)	2.1–5.6
Subsurface fragment volume <=3" (0-152.4cm)	6–48%
Subsurface fragment volume >3" (0-152.4cm)	1–20%

Ecological dynamics

The Seward Peninsula Highlands (MLRA 241X) is in the arctic where the harsh climate limits the composition and structure of plant communities. This area has cool, short summers and long, cold winters. Limited warmth during the short growing season inhibits trees from occurring. Ordinarily, cold temperatures limit the vertical structure of shrubs and other functional groups (Raynolds et al., 2006).

The low scrub reference plant community is shaped by factors including cold annual air temperatures and soil wetness caused by permafrost and seasonal melt. Snow pack may further shorten an already short growing season in concave positions. Cool temperatures and a shortened growing season support slow growing, often evergreen shrubs. Average shrub height is taller here than in more exposed, convex slopes. Soils are cold and wet and support permafrost.

Fire is the major disturbance on this ecological site. It is responsible for a unique post-disturbance community. Post-fire community composition depends on fire factors such as frequency and severity. Moderate fires may only burn surface vegetation, leaving extant species to resprout immediately from seed source and surviving root stock. A severe fire burns the organic layer and destroys part or all of the root stock. The post-fire community is comprised of colonizing, fast-growing herbaceous species.

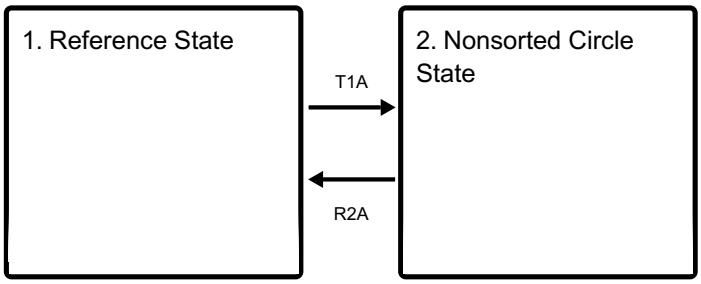
One alternate state is recognized in this ecological site. Non-sorted circles are a type of patterned ground that is not managed for. On gentle slopes, these patterned features are roughly circular and become elongated as steepness increases. In this area, non-sorted

circles diameter commonly ranges from 1.5 to 10 feet and are mounded above the surrounding vegetation. These circles are considered nonsorted due to an absence of coarse rock fragments on their borders (Schoeneberger and Wysocki 2017). The formation of these nonsorted circles leads to a distinct mosaic of vegetation.

Non-sorted circles have distinct plant communities that are associated with different positions on the non-sorted circle. The first plant community (2.2) occurs between non-sorted circles and generally resembles the reference plant community. Plant community 2.2 is classified as open low scrub (Viereck et al. 1992). The second community is in the circle center and is mostly unvegetated area with high surface rock fragments (community 2.1). by a mostly unvegetated area with high surface rock fragments (community 2.1). The information in this Ecological Dynamics section, including the state-and-transition model (STM), was developed based on professional experience and a review of available 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

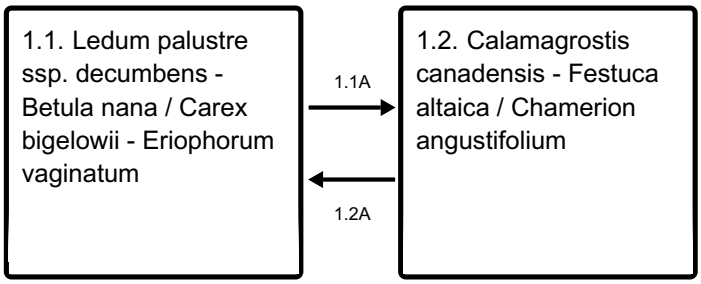
Ecosystem states



T1A - Nonsorted circle creation

R2A - Cessation of microfeature freezing processes

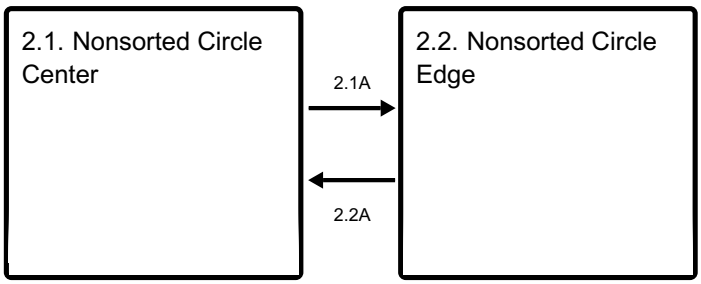
State 1 submodel, plant communities



1.1A - Fire

1.2A - Fire recovery

State 2 submodel, plant communities



2.1A - The process that creates nonsorted circles creates communities 2.1 and 2.2 simultaneously. Soil at the center of a circle is frozen and cryoturbated, restricting most vegetation colonization and growth.

2.2A - Frost heave sorting

State 1
Reference State

This reference state is developed and characterized using available vegetation models, most notably United States Department of Agriculture - Soil Conservation Service range surveys (SCS, 1984; Swanson et al., 1985). The reference state describes two distinct vegetative communities supported by a fire cycle regime. Vegetation height is restricted by shallow to moderately deep permafrost. There is no indication of an alternate grazing state on this site. Targeted data collection may be able to address whether grazing or browsing in the reference state result in an alternate state.

Dominant plant species

- marsh Labrador tea (*Ledum palustre ssp. decumbens*), shrub
- dwarf birch (*Betula nana*), shrub
- bog blueberry (*Vaccinium uliginosum*), shrub
- mountain alder (*Alnus viridis ssp. crispa*), shrub
- Bigelow's sedge (*Carex bigelowii*), grass
- tussock cottongrass (*Eriophorum vaginatum*), grass

Community 1.1
Ledum palustre ssp. decumbens - Betula nana / Carex bigelowii - Eriophorum vaginatum

This community is an open low scrubland (Viereck et al., 1992). Major plant groups are medium shrubs, low shrubs, and medium graminoids (Swanson et al., 1985). This community is comprised of birch, alder, and ericaceous shrubs. Vegetation ranges from facultative to obligate wetland species. Ground cover is a mix of mosses, lichens, and herbaceous litter. Tabular data for this community is from the 1984 Seward range site publication (SCS, 1984), with supplemental information from Swanson et al. (1985).

Forest understory. Live lichen and moss annual production cannot be measured accurately due to a lack of information on growth rates and/or slow annual growth rates.

Lichen and moss biomass data below refers to total biomass, while vascular plants biomass refers to annual production.

Dominant plant species

- marsh Labrador tea (*Ledum palustre ssp. decumbens*), shrub
- dwarf birch (*Betula nana*), shrub
- bog blueberry (*Vaccinium uliginosum*), shrub
- mountain alder (*Alnus viridis ssp. crispa*), shrub
- tealeaf willow (*Salix pulchra*), shrub
- lingonberry (*Vaccinium vitis-idaea*), shrub
- Bigelow's sedge (*Carex bigelowii*), grass
- tussock cottongrass (*Eriophorum vaginatum*), grass
- cup lichen (*Cladonia*), other herbaceous
- greygreen reindeer lichen (*Cladina rangiferina*), other herbaceous

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Moss	2802	9169	9527
Shrub/Vine	768	841	919
Grass/Grasslike	275	303	325
Forb	56	62	67
Lichen	34	50	67
Total	**3935**	**10425**	**10905**

Table 8. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	50-75%
Grass/grasslike foliar cover	12-25%
Forb foliar cover	0-6%
Non-vascular plants	20-40%
Biological crusts	0%
Litter	25-50%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0-6%
Bedrock	0%
Water	0-6%

Bare ground	0-6%

Community 1.2
Calamagrostis canadensis - Festuca altaica / Chamerion angustifolium

This community has generally been burned within the last 5 to 20 years (Landfire, 2009). It is comprised of extant species present pre-burn, as well as fast-growing colonizing herbaceous species. Major plant groups are tall and medium graminoids, and medium and low forbs (Landfire, 2009). Ground cover varies based on burn severity and time since burn, but usually supports mosses, lichens, herbaceous litter, and water.

Forest understory. Live lichen and moss annual production cannot be measured accurately due to a lack of information on growth rates and/or slow annual growth rates. Lichen and moss biomass data below refers to total biomass, while vascular plants biomass refers to annual production.

Dominant plant species

- bluejoint (*Calamagrostis canadensis*), grass
- tussock cottongrass (*Eriophorum vaginatum*), grass
- Bigelow's sedge (*Carex bigelowii*), grass
- fireweed (*Chamerion angustifolium*), other herbaceous

Pathway 1.1A
Community 1.1 to 1.2

Fire is the major disturbance on this site, though poorly understood. Without fire, this site appears to be stable over time (Viereck et al., 1992). Even though susceptible to fire, the mean fire return intervals may range up to once per six hundred to one thousand years (Landfire, 2009). Fire effects on this site are dependent on fire severity and frequency. One effect is the creation of open areas where fast growing, herbaceous species colonize.

Pathway 1.2A
Community 1.2 to 1.1

Fire recovery occurs regularly quickly, generally within five years (Landfire, 2009). Shrubs recolonize and spread from surviving rootstock or via seed.

State 2
Nonsorted Circle State

This state is developed and characterized using available vegetation models and published literature and is supplemented with field experience. This state describes two communities that make up nonsorted circles. The inner part of the circle is often

unvegetated and is dominated by surface rock fragments and bare soil. The circle ring is comprised of similar vegetation to that of the reference state. This community does not appear to be susceptible to fire. Exposure to wind and low annual temperatures restrict vegetation height. The historic and current use of introduced ungulates in MLRA 241X may have altered the potential natural vegetation on this ecological site. No data indicates an alternate grazing state on this site. Targeted data collection may be able to address whether grazing or browsing in the reference state result in an alternate state.

Dominant plant species

- eightpetal mountain-avens (*Dryas octopetala*), shrub
- black crowberry (*Empetrum nigrum*), shrub
- sedge (*Carex*), grass
- Altai fescue (*Festuca altaica*), grass

Community 2.1
Nonsorted Circle Center

Vegetation in this community is sparse or absent. Surface rock fragments and bare soil make up the majority of ground cover.

Community 2.2
Nonsorted Circle Edge

This community is a low scrubland (Viereck et al., 1992). It is typically made up of species present in the reference state. Community composition of nonsorted circle ring vegetation varies between and within areas.

Dominant plant species

- marsh Labrador tea (*Ledum palustre ssp. decumbens*), shrub
- dwarf birch (*Betula nana*), shrub
- bog blueberry (*Vaccinium uliginosum*), shrub
- tealeaf willow (*Salix pulchra*), shrub
- tussock cottongrass (*Eriophorum vaginatum*), grass
- Bigelow's sedge (*Carex bigelowii*), grass

Pathway 2.1A
Community 2.1 to 2.2

The process that creates nonsorted circles creates communities 2.1 and 2.2 simultaneously. Soil at the center of a circle is frozen and cryoturbated, restricting most vegetation colonization and growth.

Pathway 2.2A

Community 2.2 to 2.1

The process that creates nonsorted circles creates communities 2.1 and 2.2 simultaneously. Soil pushed to the edge of the circle generally remains vegetated with the same species found in the reference state.

Transition T1A
State 1 to 2

The process that creates nonsorted circles creates communities 2.1 and 2.2 simultaneously. Gaps in the insulation provided by the organic layer allow available water to freeze. Surface and subsurface freezing and cryoturbation of the soil restrict plant roots and growth, eventually removing vegetation from the center. A ring of vegetation is created as the circle center is cryoturbated and vegetation is restricted (Daanen et al., 2008). The formation of these nonsorted circles leads to a distinct mosaic of vegetation.

Restoration pathway R2A
State 2 to 1

The conditions required for nonsorted circles to disappear is poorly understood. It is suggested that if the freeze/thaw process that creates and maintains nonsorted circles ends, then edge vegetation may colonize the circle, reestablishing the reference state across the microfeature.

Additional community tables

Table 9. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Undefined					
1	**Vascular Plants**			1098–1311	
Shrub/Vine					
2	**Shrub**			768–919	
	marsh Labrador tea	LEPAD	*Ledum palustre ssp. decumbens*	163–196	–
	dwarf birch	BENA	*Betula nana*	151–185	–
	bog blueberry	VAUL	*Vaccinium uliginosum*	140–168	–
	mountain alder	ALVIC	*Alnus viridis ssp. crispa*	123–146	–
	tealeaf willow	SAPU15	*Salix pulchra*	101–123	–
	lingonberry	VAVI	*Vaccinium vitis-idaea*	62–73	–
	Richardson's willow	SARI4	*Salix richardsonii*	10–12	–

	black crowberry	EMNI	*Empetrum nigrum*	9–10	–
	Lapland rosebay	RHLA2	*Rhododendron lapponicum*	0–1	–
	Alaska bog willow	SAFU	*Salix fuscescens*	1	–
	alpine bearberry	ARAL2	*Arctostaphylos alpina*	0–1	–
	netleaf willow	SARE2	*Salix reticulata*	1	–
	small cranberry	VAOX	*Vaccinium oxycoccos*	0–1	–
Grass/Grasslike					
3	**Grass/Grasslike**			275–325	
	Bigelow's sedge	CABI5	*Carex bigelowii*	163–191	–
	tussock cottongrass	ERVA4	*Eriophorum vaginatum*	118–140	–
	water sedge	CAAQ	*Carex aquatilis*	11–13	–
	cottongrass	ERIOP	*Eriophorum*	8–9	–
Forb					
4	**Forb**			56–67	
	cloudberry	RUCH	*Rubus chamaemorus*	22	–
	field horsetail	EQAR	*Equisetum arvense*	11–13	–
	arctic sweet coltsfoot	PEFR5	*Petasites frigidus*	6–7	–
Lichen					
5	**Live lichen biomass**			34–67	
		FLCU	*Flavocetraria cucullata*	7–15	–
	cup lichen	CLADO3	*Cladonia*	6–12	–
	greygreen reindeer lichen	CLRA60	*Cladina rangiferina*	6–11	–
	reindeer lichen	CLAR60	*Cladina arbuscula*	3–8	–
	reindeer lichen	CLMI60	*Cladina mitis*	3–7	–
	cup lichen	CLGR13	*Cladonia gracilis*	2–6	–
	island cetraria lichen	CEIS60	*Cetraria islandica*	2–6	–
	cup lichen	CLAM60	*Cladonia amaurocraea*	1–2	–
	Lichen	2LICHN	*Lichen*	1–2	–
Moss					
6	**Moss/Clubmoss biomass**			2802–9527	

Animal community

From winter through late spring snows blanket the low-growing vegetation. This site supports a variety of wildlife species adapted to take advantage of foods that appear only briefly, but often in great abundance. Grizzly bear, and to a lesser extent black bear, arrive first in spring to feed on emerging sedges, grasses, and forbs, and return again in fall to gorge themselves on ripening berries. In spring, arctic ground squirrels and, near rocky cover, hoary marmots end their hibernations and begin their brief season of breeding, raising young, and putting on fat for the winter. Voles, and other small mammals active all winter in the relative warmth of underground burrows, nests, and runways, emerge to feed. breed and store "hay" for the winter. They provide prey for the raptors, foxes, wolverines, and other predators that arrive to take advantage of the seasonal flurry of small mammal activity. Migratory birds adapted to breed here, hardy species like the seed-eating common redpoll and the insectivorous water pipit and Lapland longspur, arrive for their brief nesting season. During the summer, these high shrub meadows are also favored by moose, who feed particularly on the abundant dwarf arctic birch and willows, as well as sedges and forbs. As winter approaches, many of these birds and mammals move to lower elevations or latitudes to escape the harsh mountain winter, or like the ground squirrel and marmot, withdraw to winter dens to hibernate. Then only a few small mammals remain active beneath the snow, feeding on stored plant matter and buried parts of herbs and shrubs.

Recreational uses

This site is used for snowmobiling, dogsledding, and hunting (ptarmigan, grizzly bear, and caribou). This site has potential for trapping of red fox. Aesthetically this site provides the photographer or artist with a picturesque landscape. There is also potential for blueberry and crowberry picking. Hot mineral springs may also be found near this site.

Wood products

No wood products available from this site.

Other products

Grazing

This site is a fair winter range, and due to the fragile characteristics of lichens, it should not be used for any other seasonal range. Sedges and grasses can provide high value forage during the early part of this season.

Other information

These interpretive narratives were developed for USDA reports of range sites on the Seward Peninsula and appear here as written when originally published (SCS, 1984;

Swanson et al., 1985).

Inventory data references

Vegetative communities and transitions are described using existing models and expert knowledge. There are no vegetation inventory data points in NASIS associated with this ecological site.

External data sources:
The Alaska Vegetation Classification (Viereck et al., 1992)

LANDFIRE Biophysical Settings Models (LANDFIRE, 2009)

Ecological site descriptions of the Seward Peninsula (SCS, 1984).

Range survey of the Seward Peninsula reindeer ranges (Swanson et al., 1985)

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).

LANDFIRE Biophysical Settings. 2009. Biophysical Setting 6816821 – Alaska Arctic Scrub Birch-Ericaceous Shrub. In: LANDFIRE Biophysical Setting Model: Map zone 68, [Online]. In: Vegetation Dynamics Models. In: LANDFIRE. Washington, DC: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory; U.S. Geological Survey; Arlington, VA: The Nature Conservancy (Producers). Available: https://www.landfire.gov/national_veg_models_op2.php. Accessed Sept 24, 2024

PRISM Climate Group. 2018. “Alaska – average monthly and annual precipitation and minimum, maximum, and mean temperature for the period 1981-2010.” Oregon State University, Corvallis, Oregon. https://prism.oregonstate.edu/projects/alaska.php. Accessed Sept 17, 2024.

Raynolds, M.K., D.A. Walker and H.A Maier. 2006. Alaska Arctic Tundra Vegetation Map. Scale 1:4,000,000. Conservation of Arctic Flora and Fauna (CAFF) Map No. 2, U.S. Fish

and Wildlife Service, Anchorage, Alaska.

Scenarios network for Alaska and arctic planning (SNAP). 2014. “Historical Monthly Temperature – 1km, 1901-2009”. http://ckan.snap.uaf.edu/dataset/. Accessed Sept 17, 2024.

Scenarios network for Alaska and arctic planning (SNAP). 2014. “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 Sept 17, 2024.

Schoeneberger, P.J., and Wysocki, D.A. 2017. Geomorphic Description System, Version 5.0. Natural Resources Conservation Service, National Soil Survey Center, Lincoln, NE.

SCS (Soil Conservation Service). 1984. Ecological site descriptions, Seward Peninsula. U.S. Department of Agriculture, Soil Conservation Service, Alaska Field Office, Anchorage.

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

Swanson, J.D., M. Schuman, and P.C. Scorup. 1985. Range survey of the Seward Peninsula reindeer ranges, Alaska. US Department of Agriculture, Soil Conservation Service.

United States Department of Agriculture, Natural Resources Conservation Service. 2022. 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.

United States Department of Agriculture, Natural Resources Conservation Service. 2008. Hydrogeomorphic Wetland Classification System: an overview and modification to better meet the needs of the Natural Resources Conservation Service. Technical Note No 190-8-76.

Western Regional Climate Center. 2021. Climate of Alaska. Retrieved from https://wrcc.dri.edu/Climate/narrative_ak.php. Accessed November 15, 2024.

Contributors

Phil Barber
Blaine Spellman
Marji Patz
Steph Schmit
Karin Sonnen
Abigail Clapp

Acknowledgments

The described soil – ecological site correlations described in this document were reviewed during a February 2024 Provisional Ecological Site workshop in Wasilla, AK. Many thanks are given to the NRCS staff who have provided feedback regarding the MLRA 241X ecological site key and ESDs delivered under the PES national initiative.

This ecological site description (ESD) fulfills the requirements of the Provisional Ecological Site (PES) national initiative. This ESD is published to fit current site-soil correlations as they are currently mapped and understood. Further data collection may provide the information to update this ESD from the provisional level to the approved level.

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	02/15/2026
Approved by	Blaine Spellman
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:**