USDA Natural Resources Conservation Service

Ecological site XA232X01Y224
Boreal Woodland Sandy Terrace Rises

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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): 232X–Yukon Flats Lowlands

The Yukon Flats Lowlands MLRA is an expansive basin characterized by numerous levels of flood plains and terraces that are separated by minimal breaks in elevation. This MLRA is in Interior Alaska and is adjacent to the middle reaches of the Yukon River. Numerous tributaries of the Yukon River are within the Yukon Flats Lowlands MLRA. The largest are Beaver Creek, Birch Creek, Black River, Chandalar River, Christian River, Dall River, Hadweenzic River, Hodzana River, Porcupine River, and Sheenjek River. The MLRA has two distinct LRU—lowlands and marginal uplands. The lowlands have minimal local relief and are approximately 9,000 square miles in size (Williams 1962). Landforms associated with the lowlands are flood plains and stream terraces. The marginal uplands consist of rolling and dissected plains that are a transitional area between the lowlands and adjacent mountain systems. The marginal uplands are approximately 4,700 square miles in size (Williams 1962).

This MLRA is bounded by the Yukon-Tanana Plateau to the south, Hodzana Highlands to the west, Porcupine Plateau to the east, and southern foothills of the Brooks Range to the north (Williams 1962). These surrounding hills and mountains partially isolate the Yukon Flats Lowlands MLRA from weather systems affecting other MLRAs of Interior Alaska. As a result, temperatures are generally warmer in summer and colder in winter than is characteristic in other areas at comparable latitude. There is a moisture and temperature gradient in which the lowlands region tends to be drier and colder and the surrounding marginal uplands region tends to be moister and warmer (PRISM Climate Group 2006).

The Yukon Flats Lowlands MLRA is mostly undeveloped lands that are sparsely populated and not accessible by a road system. A number of villages, including Beaver, Birch Creek, Chalkyitsik, Circle, Fort Yukon, Stevens Village, and Venetie, are adjacent to the Yukon River or one of its major tributaries. The largest village is Fort Yukon, which according to the 2010 U.S. Census has 583 residents that are dominantly Gwich'in Alaska Natives.

LRU notes

Alaska has no officially recognized LRU. However, there appear to be two distinct LRU in the Yukon Flats Lowlands MLRA. These LRU are thought to have differing climatic regimes, landforms, and soil types (STATSGO and Jorgensen and Meidinger 2015). The two LRU were previously discussed in the MLRA notes section above and are termed the lowlands LRU and the marginal uplands LRU.

This ecological site is associated with the lowlands LRU.

Classification relationships

Yukon Flats Lowlands MLRA.

Ecological site concept

This ecological site is associated with dunes on stream terraces in the Yukon Flats Lowlands MLRA. The dunes were formed by deposition of windblown sand and silt. Because of the convex slope shape and sandy texture of dunes, associated soils are well to somewhat excessively drained. This impacts the growth and productivity of associated plant species. Fieldwork and aerial/satellite reconnaissance have yet to result in the positive identification of barren and/or actively moving dunes. All dunes observed, even those recently burned, have minimal exposed bare soil and are considered stable and vegetated.

Reference plant community 1.1 is characterized as a needleleaf woodland (10 to 25 percent cover; Viereck et al. 1992) composed primarily of mature white spruce (Picea glauca). Commonly observed understory species include kinnikinnick (Arctostaphylos uva-ursi), lingonberry (Vaccinium vitis-idaea), purple reedgrass (Calamagrostis purpurascens), false toadflax (Geocaulon lividum), flavo lichen (Flavocetraria cucullata), grey reindeer lichen (Cladina rangiferina), star-tipped reindeer lichen (Cladina stellaris), and mixed cup lichen (Cladonia spp.).

Associated sites

XA232X01Y229	**Boreal Scrub Loamy Terrace Swales** This ecological site is associated with swales on stream terraces in lowlands region of the Yukon Flats Lowlands MLRA. Associated soils are considered very poorly drained. The reference plant community is characterized as open tall scrub (Viereck et al. 1992) and the dominant shrubs are willow (Salix spp.) and shrub birch (Betula glandulosa).

XA232X01Y221	**Boreal Forest Loamy Terraces** This ecological site is associated with moderately well to well drained soils on the tread of stream terraces in the Yukon Flats Lowlands MLRA. Flooding frequency ranges from rare to none. The reference plant community is characterized as an open needleleaf forest (25 to 60 percent cover) primarily composed of mature white spruce (Picea glauca).
XA232X01Y222	**Boreal Graminoid Loamy Terrace Depressions** This ecological site is associated with closed depressions of stream terraces that support a reference state with multiple graminoid-dominant community phases. These depressions are considered closed because they are not associated with a flood regime and have limited, if any, groundwater flow or recharge. The presumed hydrological inputs for this ecological site are primarily thaw of the annual active soil layer and/or permafrost, snowmelt runoff, and precipitation. This hydrologic regime results in the development of sodic soil properties.
XA232X01Y223	**Boreal Scrub Loamy Frozen Terrace Depressions** This shrubby ecological site occurs in the transitional area between the forested tread of a stream terrace and the graminoid-dominant communities associated with closed, terrace depressions (ecological site R232XY222AK). This site typically occurs between the outer third and lip of these closed depressions. The reference plant community for ecological site is characterized as an open tall scrubland (Viereck et al. 1992) and those shrubs are primarily an assortment of willow (Salix spp.).
XA232X01Y218	**Boreal Woodland Loamy Frozen Terraces** This ecological site is associated with wet soils on the tread of stream terraces in Yukon Flats Lowlands MLRA. Soils generally have permafrost at moderate depth (20 to 40 inches) and pond occasionally for long durations of time. The reference plant community is characterized as a needleleaf woodland (10 to 25 percent cover; Viereck et al. 1992) composed of black spruce (Picea mariana) and white spruce (Picea glauca).
XA232X01Y219	**Boreal Forest Loamy Terraces Moist** This ecological site is associated with somewhat poorly to moderately well drained soils on the treads of stream terraces in the Yukon Flats Lowlands MLRA. Flooding frequency ranges from rare to none. The reference plant community is characterized as an open needleleaf forest (25 to 60 percent cover) primarily composed of mature white spruce (Picea glauca).

Similar sites

XA232X01Y250	**Boreal Woodland Gravelly Terraces Dry** Ecological site XA232X01Y250 is associated with somewhat excessively drained soils with gravelly horizons at very shallow depths. Sites XA232X01Y250 and XA232X01Y224 have similar reference plant communities, but site XA232X01Y250 generally has less tree cover and more foliose and fruticose lichen cover.

Figure 1. Typical interdune plant community (ecological site XA232X01Y218). As compared to soils on dunes, interdune soils are wetter and commonly have permafrost.

Table 1. Dominant plant species

Tree	(1) *Picea glauca*
Shrub	(1) *Arctostaphylos uva-ursi*
Herbaceous	(1) *Flavocetraria cucullata* (2) *Cladina rangiferina*

Legacy ID

F232XY224AK

Physiographic features

Dunes in the Yukon Flats Lowlands MLRA occur on old terraces. The Yukon Flats Lowlands MLRA is composed of broad and numerous terrace levels. Individual terrace levels commonly span several miles in all directions, but one level to the next can be separated by less than 25 feet in elevation. These terrace levels can be broadly segregated by age. Young terraces are generally proximal to active stream channels and have a recent or current association with a flood regime (rare flooding, 1 to 5 times in 100 years). While capped with organic material, soils on young terraces are primarily composed of alluvium. Flight or satellite reconnaissance of young terraces results in observance of readily identifiable stream landforms, which in the Yukon Flats Lowlands MLRA commonly include meander scrolls, abandoned channels, and oxbow lakes. Old terraces are generally distal from active stream channels and are disconnected from a flood regime. Soils on old terraces are generally composed of eolian deposits and/or loess underlain by alluvium. The depositional surface material commonly is thick enough to mask stream landforms like abandoned linear channels. From the air, the depressions appear to be circular to amorphous in shape.

The dunes in the Yukon Flats area were formed by deposition of windblown sand and silt. The shape and size of the dunes are highly variable. The majority of the sample plots were on longitudinal dunes, but a few were on parabolic dunes. The longest dune sampled was approximately 0.5 mile long and more than 50 feet high. Many of the dunes appear to be less than 0.25 mile long and commonly are only 10 to 20 feet above the terrace tread (personal observation). Although the shape and size of the dunes are highly variable, neither of these factors results in unique plant community phases. The major factors that drive plant community composition on dunes are drought stress and fire history.

Figure 2. Aerial image of longitudinal dunes adjacent to the Upper Mouth of Birch Creek. The dunes are the linear features.

Table 2. Representative physiographic features

Geomorphic position, terraces	(1) Tread
Landforms	(1) Alluvial plain > Dune
Flooding frequency	None
Ponding frequency	None
Elevation	91–305 m
Slope	1–10%
Aspect	W, NW, N, NE, E, SE, S, SW

Climatic features

Short, warm summers and long, very cold winters characterize the subarctic continental climate of the area. The surrounding hills and mountains of this MLRA partially isolate it from weather systems affecting other interior lowlands. As a result, temperatures are generally warmer in summer and colder in winter than is characteristic in other areas of comparable latitude. The average annual temperature ranges from about 20 to 25 degrees F (-7 to -4 degrees C). The freeze-free period averages 70 to 120 days. The temperature usually remains above freezing from early June through late August. The average annual precipitation ranges from about 6 inches (150 millimeters) in the central basin to 15 inches (380 millimeters) along the boundary with the surrounding highlands. The maximum precipitation occurs in late summer, mainly as a result of thunderstorms. The average annual snowfall is about 45 to 55 inches (115 to 140 centimeters) (USDA, NRCS 2006).

All of the tabular data below was calculated from the PRISM dataset (1971-2000) and is specific to the Lowlands LRU in the Yukon Flats Lowlands MLRA.

Table 3. Representative climatic features

Frost-free period (characteristic range)	45-97 days
Freeze-free period (characteristic range)	70-120 days
Precipitation total (characteristic range)	203-330 mm
Frost-free period (average)	75 days
Freeze-free period (average)	
Precipitation total (average)	254 mm

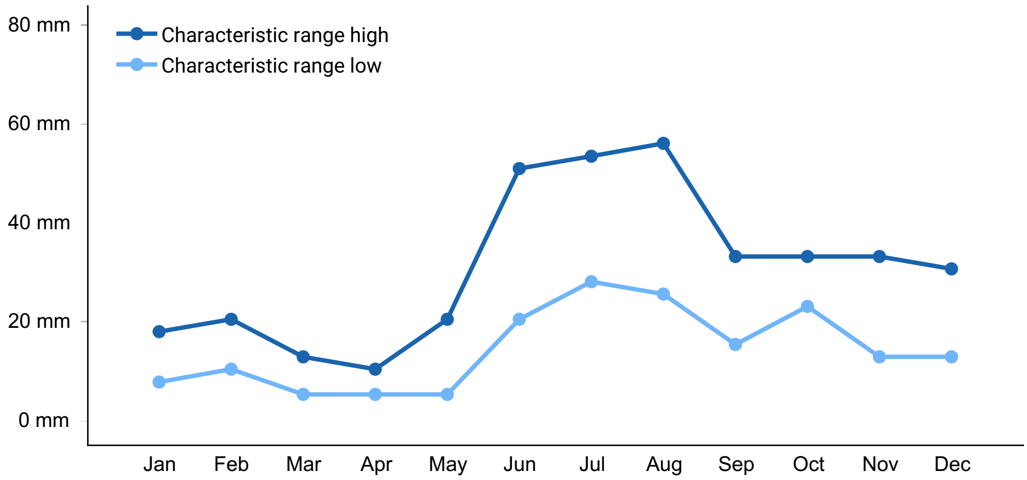


Figure 3. Monthly precipitation range

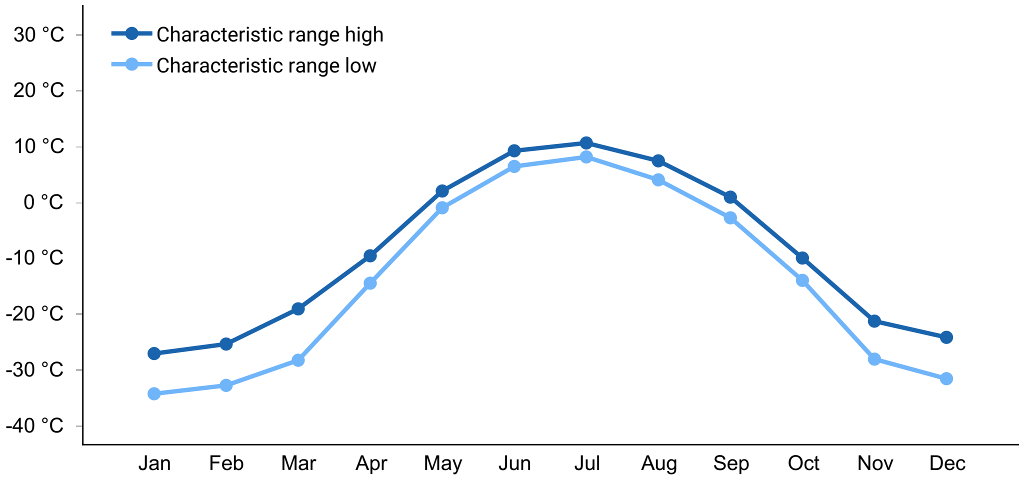


Figure 4. Monthly minimum temperature range

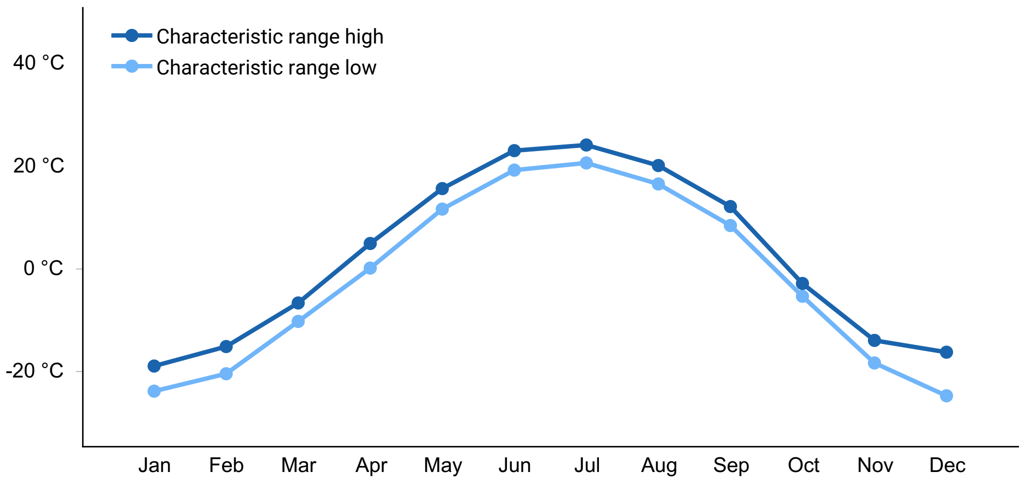


Figure 5. Monthly maximum temperature range

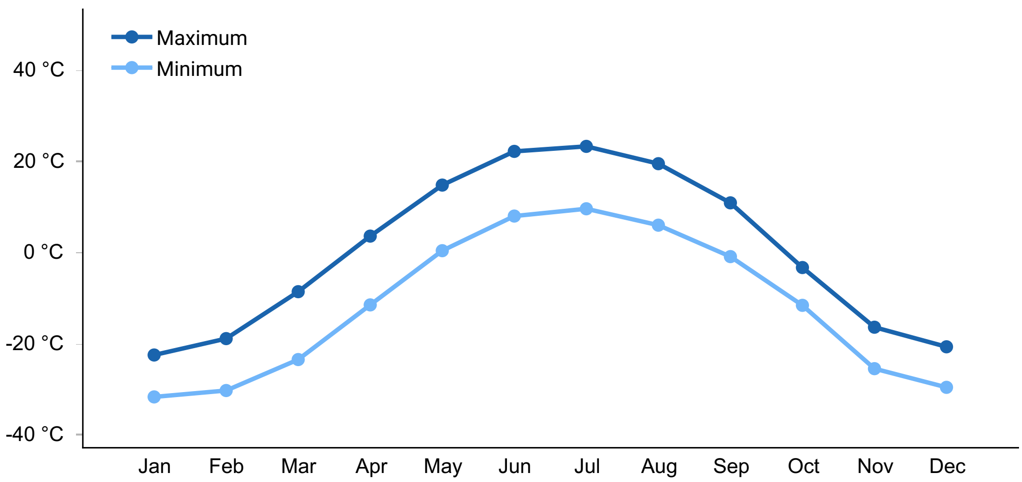


Figure 6. Monthly average minimum and maximum temperature

Influencing water features

Soil features

Correlated soil components: Nolitna.

Figure 7. Typical soil profile associated with Nolitna soil component.

Table 4. Representative soil features

Parent material	(1) Eolian deposits (2) Loess
Surface texture	(1) Sand
Drainage class	Well drained to somewhat excessively drained
Soil depth	203 cm

Ecological dynamics

Drought stress

The soils associated with the dunes in the Yukon Flats Lowlands MLRA are well to somewhat excessively drained. Dunes are convex rises on the treads of terraces. These site factors limit ground water connectivity resulting in precipitation being the major hydrologic input for the plant communities. After a rain event, available water is rapidly drained through the porous sandy soil profile. During most of the growing season, depth to internal free water in the profile is thought to be below the rooting zone of plants, which results in drought stress.

Drought stress impacts the structure and composition of plant communities on the dunes. While white spruce and quaking aspen (*Populus tremuloides*) are commonly observed on dunes, individuals commonly appear stunted and they are limited in quantity. These communities typically are characterized as woodland (10 to 25 percent tree cover). Many species that are common on terrace treads are uncommon or do not occur on dunes in this MLRA (e.g. *Salix glauca*, *Mertensia paniculata*, *Hylocomium splendens*, and *Ptilidium ciliare*). Certain species are dominant on dunes and much less abundant on terrace treads in this MLRA (e.g. kinnikinnick and Flavocetraria spp.).

Fire

In the Yukon Flats Lowlands MLRA, fire is a common and natural event that has a significant effect on the vegetation dynamics across the landscape. A typical fire event in areas associated with this ecological site will reset plant succession. For this ecological site to progress from the pioneering fire stage to the reference plant community phase, data suggest that 100 years or more must elapse without another fire event.

When comparing all MLRAs of Interior Alaska, land in the Yukon Flats Lowlands MLRA burns most frequently (Begét et al. 2006). Within this MLRA, fire is considered a natural and common event that typically goes unmanaged. Fire suppression generally occurs adjacent to villages or on allotments with known structures, both of which have a relatively limited acre footprint. From 2000 to 2015, 132 known fire events occurred on land in the Yukon Flats Lowlands MLRA and the burn perimeters of the fires totaled about 4.1 million acres (AICC 2016). Fire-related disturbances are highly patchy and can leave undisturbed areas within the burn perimeters. Ten of the fire events were attributed to human activities (affecting a total of 2,864 acres), but the majority were caused by lightning strikes (AICC 2016).

The fire regime within Interior Alaska follows two basic scenarios—low-severity burns and high-severity burns. It should be noted, however, that the fire regime in Interior Alaska is generally thought to be much more complex (Johnstone et al. 2008). Burn severity refers to the proportion of the vegetative canopy and organic material consumed in a fire event (Chapin et al. 2006). Fires in cool and moist habitat tend to result in low-severity burns, while fires in warm and dry habitat tend to result in high-severity burns. From field observations and because the associated soils are warm and somewhat excessively drained, the typical fire scenario for this ecological site is considered to be a high-severity burn.

Field data suggest that each of the forested communities will burn and that fire events will cause a transition to the pioneering stage of fire succession. This pioneering stage (which was observed but was not sampled during field operations) is a mix of species that regenerate in place (e.g., subterranean root crowns for willow and rhizomes for graminoids) and/or from wind-dispersed seeds or spores that colonize exposed mineral soil (e.g., quaking aspen [*Populus tremuloides*] and Ceratodon moss [*Ceratodon purpureus*]). The pioneering stage of fire succession is composed primarily of tree seedlings, forbs, grasses, and weedy bryophytes. Drought-tolerant shrub species and deciduous tree seedlings continue to colonize and grow in recently burned areas until tree seedlings become dominant in the overstory, which marks the transition to the early stage of fire succession (community 1.3). In the absence of fire, tree species continue to become more dominant in the stand. The later stages of succession have an overstory that is a mix of deciduous and needleleaf trees (community 1.2) or is primarily needleleaf trees (community 1.1).

The time elapsed since the most recent fire event plays a large role in determining the community observed in the field. While field data for the various burn communities associated with this ecological site were limited, the pioneering fire stage is thought to persist for up to 10 years postfire and the early fire community phase persists about 10 to 30 years postfire. After approximately 30 years, a woodland with some combination of aspen and white spruce is thought to persist until the next fire event. The average age of white spruce in the reference plant community is 105 years; therefore, it takes more than a century to progress from the pioneering stage to reference plant community 1.1.

Given the high frequency of fire and its associated footprint, much of the land in the Yukon Flats Lowlands MLRA has burned too recently to support the reference plant community. GIS data and flight reconnaissance have made it apparent that large swaths of mature white spruce forests are uncommon throughout the MLRA. Mixed and open broadleaf forests have the greatest spatial representation in the Yukon Flats Lowlands MLRA.

Other Observations

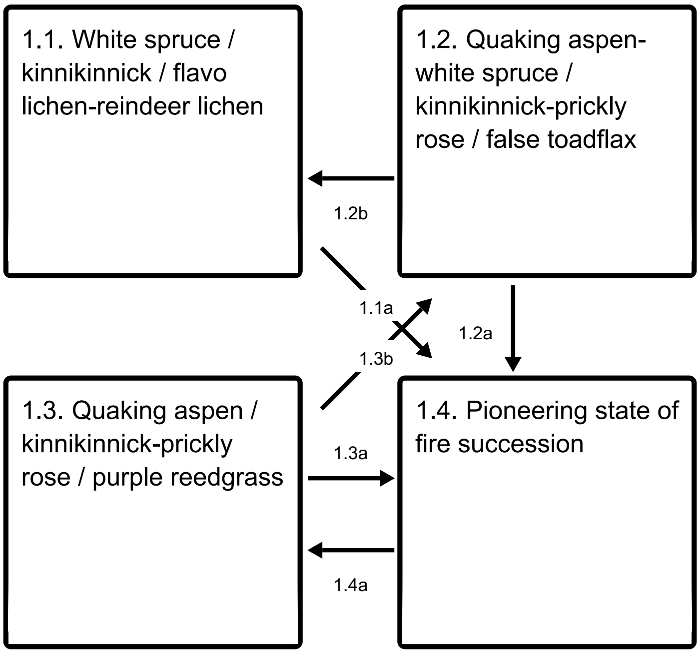
Animal use (browsing and grazing) of this ecological site primarily consists of slight moose browse on willow and tree regeneration. A browse severity rating of slight on willow and tree regeneration is defined as a majority of individuals having no signs of browsing.

State and transition model

Ecosystem states

1. Reference

State 1 submodel, plant communities



State 1
Reference

Figure 8. Aerial image of a stream terrace in the Yukon Flats Lowlands MLRA. This ecological site occurs on dunes of stream terraces in this MLRA.

The reference state has three documented plant communities, which are grouped by the structure and dominance of the vegetation (e.g., coniferous trees, deciduous trees, shrubs, and forbs) and their ecological function and stability. Plant communities in the reference state appear to be largely controlled by the influences of fire. This report provides baseline vegetation inventory data for the ecological site. More 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. The common and scientific names are from the USDA PLANTS database. All communities in the report are characterized using the Alaska Vegetation Classification (Viereck et al. 1992).

Community 1.1
White spruce / kinnikinnick / flavo lichen-reindeer lichen

Figure 9. Typical plant community associated with community 1.1.

Community Phase 1.1 Canopy Cover Table

Vegetation data is aggregated from all sample plots for this community phase. The data is provided as frequency (percent) and mean canopy cover (percent) of the most dominant and ecologically relevant species. Canopy cover is represented as a mean with the range in parentheses.

Plant group	Common name	Scientific name	USDA plant code	Frequency (percent)	Mean canopy cover (percent)
T	white spruce	*Picea glauca*	PIGL	100	15 (9-25)
T	quaking aspen	*Populus tremuloides*	POTR5	100	1 (0.1-3)
S	kinnikinnick	*Arctostaphylos uva-ursi*	ARUV	100	50 (30-70)
S	lingonberry	*Vaccinium vitis-idaea*	VAVI	80	2 (0-5)
G	purple reedgrass	*Calamagrostis purpurascens*	CAPU	100	3 (1-5)
F	false toadflax	*Geocaulon lividum*	GELI2	80	3 (0-5)
L	flavo lichen	*Flavocetraria cucullata*	FLCU	80	10 (0-35)
L	greygreen reindeer lichen	*Cladina rangiferina*	CLRA60	80	7 (0-20)
L	flavo lichen	*Flavocetraria nivalis*	FLNI	60	4 (0-15)
L	star-tipped reindeer lichen	*Cladina stellaris*	CLST60	60	3 (0-5)
L	quill lichen	*Cladonia amaurocraea*	CLAM60	60	1 (0-3)
L	true Iceland lichen	*Cetraria islandica*	CEIS60	40	1 (0-3)

This dataset comes from five sample plots. The plots are distributed across the survey area and are independent of one another.

Values for tall, medium, regenerative, and stunted tree strata are used to calculate mean canopy cover and range values. Regenerative trees are not considered part of the overstory canopy.

Plant functional group classifications—T = trees, S = shrubs, G = graminoids, F = forbs, B = bryophytes, L = lichens

Canopy cover data is rounded, except trace (0.1 percent) cover. Data ranging from 1 to 9 percent cover is rounded to the nearest integer. Data ranging from 10 to 100 percent cover is rounded to the nearest factor of 5.

Figure 10. Canopy cover table for community 1.1.

Reference plant community 1.1 is characterized as a needleleaf woodland (Viereck et al. 1992) primarily composed of mature white spruce. White spruce tree cover is primarily in the tall tree stratum (greater than 40 feet in height). Occasional live deciduous trees, dominantly quaking aspen, are in the tree canopy. Most of these deciduous trees are in the medium tree stratum (15 to 40 feet in height). The soil surface is covered primarily with herbaceous litter and foliose and fructose lichen. Commonly observed understory species include kinnikinnick, lingonberry, purple reedgrass, false toadflax, flavo lichen, greygreen reindeer lichen, star-tipped reindeer lichen, and an assortment of cup lichen. The understory vegetative strata that characterize this community are dwarf scrubs (less than 8 inches in height) and foliose and fruticose lichens. White spruce trees were sampled for diameter at breast height (dbh), height, and age at dbh (18 trees, 6 without age). In addition, stand basal area and site index was determined for each sample plot. The mean dbh is 8.9 inches (ranging from 2.1 to 19.9 inches), the mean height is 46 feet (ranging from 13 to 72 feet), and the mean age is 105 years (ranging from 22 to 178 years). The mean stand basal area is 41 (ranging from 5 to 60), while mean site index for white spruce is 47 (ranging from 38 to 55).

Dominant plant species

- white spruce (*Picea glauca*), tree
- quaking aspen (*Populus tremuloides*), tree
- kinnikinnick (*Arctostaphylos uva-ursi*), shrub
- lingonberry (*Vaccinium vitis-idaea*), shrub
- purple reedgrass (*Calamagrostis purpurascens*), grass
- false toadflax (*Geocaulon lividum*), other herbaceous
- (*Flavocetraria cucullata*), other herbaceous
- greygreen reindeer lichen (*Cladina rangiferina*), other herbaceous
- (*Flavocetraria nivalis*), other herbaceous
- star reindeer lichen (*Cladina stellaris*), other herbaceous
- cup lichen (*Cladonia amaurocraea*), other herbaceous
- island cetraria lichen (*Cetraria islandica*), other herbaceous

Community 1.2
Quaking aspen-white spruce / kinnikinnick-prickly rose / false toadflax

Figure 11. Typical plant community associated with community 1.2.

Community Phase 1.2 Canopy Cover Table

Vegetation data is aggregated from all sample plots for this community phase. The data is provided as frequency (percent) and mean canopy cover (percent) of the most dominant and ecologically relevant species. Canopy cover is represented as a mean with the range in parentheses.

Plant group	Common name	Scientific name	USDA plant code	Frequency (percent)	Mean canopy cover (percent)
T	white spruce	*Picea glauca*	PIGL	100	15 (9-25)
T	quaking aspen	*Populus tremuloides*	POTR5	83	15 (0-35)
S	kinnikinnick	*Arctostaphylos uva-ursi*	ARUV	100	70 (30-90)
S	prickly rose	*Rosa acicularis*	ROAC	100	6 (0.1-15)
S	russet buffaloberry	*Shepherdia canadensis*	SHCA	83	6 (0-20)
S	lingonberry	*Vaccinium vitis-idaea*	VAVI	67	5 (0-20)
S	willow	*Salix sp.*	SALIX	50	2 (0-12)
G	purple reedgrass	*Calamagrostis purpurascens*	CAPU	50	3 (0-15)
F	false toadflax	*Geocaulon lividum*	GELI2	100	3 (0.1-7)

This dataset comes from six sample plots. The plots are distributed across the survey area and are independent of one another.

Values for tall, medium, regenerative, and stunted tree strata are used to calculate mean canopy cover and range values. Regenerative trees are not considered part of the overstory canopy.

Plant functional group classifications—T = trees, S = shrubs, G = graminoids, F = forbs, B = bryophytes, L = lichens

Canopy cover data is rounded, except trace (0.1 percent) cover. Data ranging from 1 to 9 percent cover is rounded to the nearest integer. Data ranging from 10 to 100 percent cover is rounded to the nearest factor of 5.

Community pathway 1.2A
Fire.

Community pathway 1.2B
Time without fire.

Figure 12. Canopy cover table for community 1.2.

Community 1.2 is in the late-stage of fire-induced secondary succession for this ecological site. This community phase is characterized as a mixed woodland (Viereck et al. 1992) composed primarily of mature aspen and immature and/or regenerating white spruce. Deciduous trees are starting to be replaced by white spruce in the tree canopy. Tree cover is primarily in the medium tree stratum (15 to 40 feet in height). The soil surface is covered with herbaceous and woody litter, leaving minimal if any exposed soil. Commonly observed understory species include russet buffaloberry (*Shepherdia canadensis*), prickly rose (*Rosa acicularis*), kinnikinnick, lingonberry, purple reedgrass, and false toadflax. The understory vegetative strata that characterize this community are dwarf shrubs (less than 8 inches in height), low shrubs (8 to 36 inches in height), and medium forbs (4 to 24 inches in height). White spruce trees were sampled for diameter at breast height (dbh), height, and age at dbh (11 trees). In addition, stand basal area was determined for five of the six sample plots. The mean dbh is 6.3 inches (ranging from 4.2 to 10.0 inches), the mean height is 36 feet (ranging from 26 to 52 feet), and the mean age is 56 (ranging from 42 to 79 years). The mean stand basal area is 43 (ranging from 20 to 90).

Dominant plant species

- white spruce (*Picea glauca*), tree
- quaking aspen (*Populus tremuloides*), tree
- kinnikinnick (*Arctostaphylos uva-ursi*), shrub
- prickly rose (*Rosa acicularis*), shrub
- russet buffaloberry (*Shepherdia canadensis*), shrub
- lingonberry (*Vaccinium vitis-idaea*), shrub
- willow (*Salix*), shrub
- purple reedgrass (*Calamagrostis purpurascens*), grass
- false toadflax (*Geocaulon lividum*), other herbaceous

Community 1.3
Quaking aspen / kinnikinnick-prickly rose / purple reedgrass

Figure 13. Typical plant community associated with community 1.3.

Community Phase 1.3 Canopy Cover Table

Vegetation data is aggregated from all sample plots for this community phase. The data is provided as frequency (percent) and mean canopy cover (percent) of the most dominant and ecologically relevant species. Canopy cover is represented as a mean with the range in parentheses.

Plant group	Common name	Scientific name	USDA plant code	Frequency (percent)	Mean canopy cover (percent)
T	quaking aspen	*Populus tremuloides*	POTR5	50	20 (0-35)
T	white spruce	*Picea glauca*	PIGL	100	5 (0-9)
T	balsam poplar	*Populus balsamifera*	POBA2	50	3 (0-5)
S	kinnikinnick	*Arctostaphylos uva-ursi*	ARUV	100	45 (30-55)
S	prickly rose	*Rosa acicularis*	ROAC	100	25 (5-45)
S	russet buffaloberry	*Shepherdia canadensis*	SHCA	100	15 (5-20)
G	purple reedgrass	*Calamagrostis purpurascens*	CAPU	100	15 (10-15)
G	Pumpelly's brome	*Bromus inermis ssp. pumpellianus*	BRINP5	50	3 (0-5)
F	larkspurleaf monkshood	*Aconitum delphiniifolium*	ACDE2	50	8 (0-15)

This dataset comes from two sample plots. The plots are distributed across the survey area and are independent of one another.

Values for tall, medium, regenerative, and stunted tree strata are used to calculate mean canopy cover and range values. Regenerative trees are not considered part of the overstory canopy.

Plant functional group classifications—T = trees, S = shrubs, G = graminoids, F = forbs, B = bryophytes, L = lichens

Canopy cover data is rounded, except trace (0.1 percent) cover. Data ranging from 1 to 9 percent cover is rounded to the nearest integer. Data ranging from 10 to 100 percent cover is rounded to the nearest factor of 5.

Community pathways 1.3A
Time without fire.

Figure 14. Canopy cover table for community 1.3.

Community 1.3 is in the early stage of fire-induced secondary succession for this ecological site. This community phase is characterized as closed low scrub (Viereck et al. 1992). Tree cover is primarily in the regenerative tree stratum (less than 15 feet in height). The most common species are quaking aspen and white spruce. The soil surface is primarily covered with herbaceous litter and woody debris, but large patches of exposed bare soil were observed (as much as 25 percent of plot). Commonly observed understory species include prickly rose, russet buffaloberry, kinnikinnick, and purple reedgrass. The understory vegetative strata that characterize this community are dwarf shrubs (less than 8 inches in height) and low shrubs (8 to 36 inches in height).

Dominant plant species

- quaking aspen (*Populus tremuloides*), tree
- white spruce (*Picea glauca*), tree
- balsam poplar (*Populus balsamifera*), tree
- kinnikinnick (*Arctostaphylos uva-ursi*), shrub
- prickly rose (*Rosa acicularis*), shrub

- russet buffaloberry (*Shepherdia canadensis*), shrub
- purple reedgrass (*Calamagrostis purpurascens*), grass
- Pumpelly's brome (*Bromus inermis ssp. pumpellianus var. pumpellianus*), grass
- larkspurleaf monkshood (*Aconitum delphiniifolium*), other herbaceous

Community 1.4
Pioneering state of fire succession

This was an observed but undocumented plant community in the Yukon Flats Lowlands MLRA. This plant community is thought to be composed primarily of tree seedlings, forbs, grasses, and weedy bryophytes.

Pathway 1.1a
Community 1.1 to 1.4

Fire.

Pathway 1.2b
Community 1.2 to 1.1

Quaking aspen-white spruce / kinnikinnick-prickly rose / false toadflax

White spruce / kinnikinnick / flavo lichen-reindeer lichen

Time without fire.

Pathway 1.2a
Community 1.2 to 1.4

Fire.

Pathway 1.3b
Community 1.3 to 1.2

Quaking aspen / kinnikinnick-prickly rose / purple reedgrass

Quaking aspen-white spruce / kinnikinnick-prickly rose / false toadflax

Time without fire.

Pathway 1.3a
Community 1.3 to 1.4

Fire.

Pathway 1.4a
Community 1.4 to 1.3

Time without fire.

Additional community tables

Inventory data references

NASIS User Site ID / Modal Datasets
12SN00202 community 1.1
13BA01704 community 1.1
13NR02102 community 1.1
S2014AK290003 community 1.1
14NR02901 community 1.1
11BB06304 community 1.2
14AK2903017 community 1.2
14DM00102 community 1.2
14NR01002 community 1.2
2015AK290486 community 1.2
2015AK290487 community 1.2
10BB01402 community 1.3
11BB06303 community 1.3

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Approval

Michael Margo, 5/18/2020

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	05/08/2020
Approved by	Michael Margo
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:**
