

Ecological Site Description ID: F232XY227AK

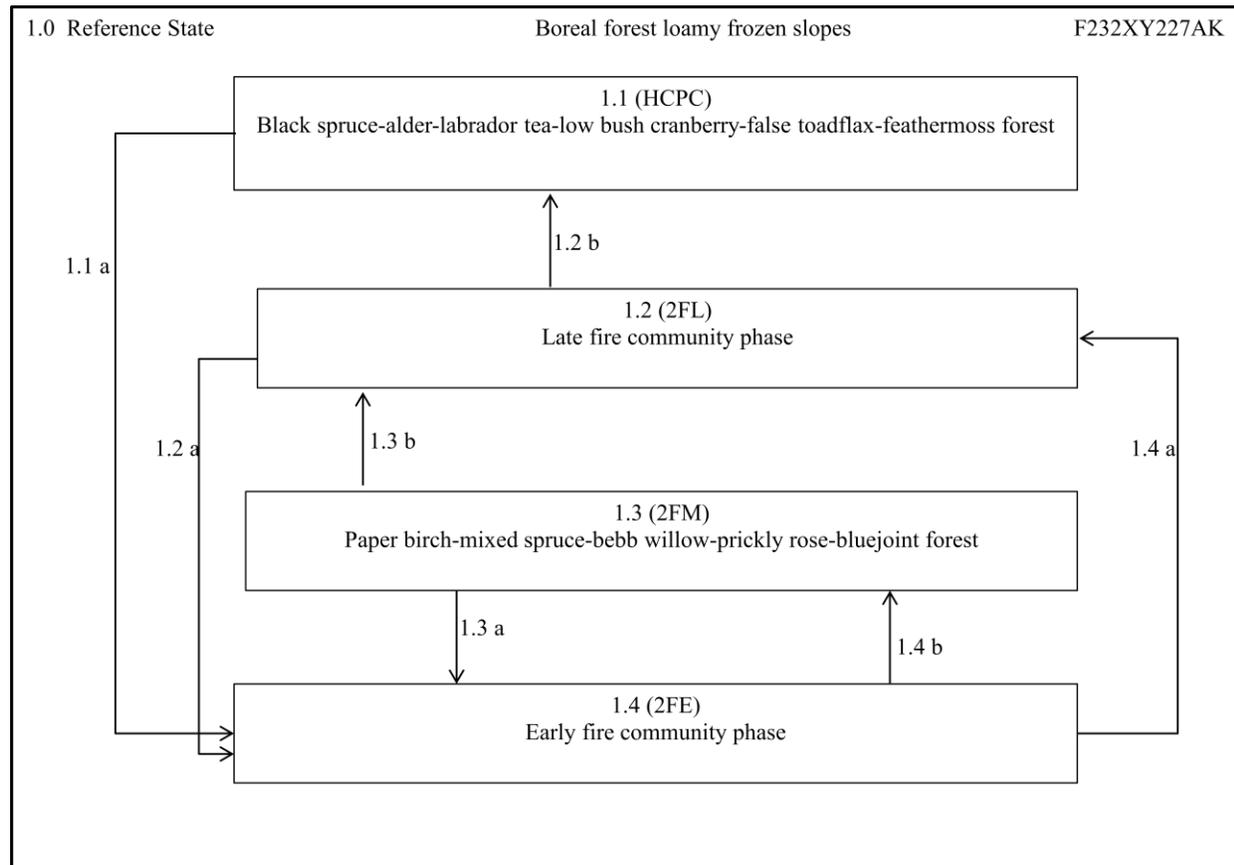
Ecological Dynamics of the Site:

This boreal ecological site occurs on low-sloping escarpments adjacent to loess plains. Average slope was 13% for sampled locations and ranged from 10-20%. This ecological site occurs on all aspects. Fire resulted in two documented phases. As sites progress from community phase 1.3 to 1.1, surface organic matter increases and permafrost develops and/or rises in the soil profile. For community phase 1.1, soils were classified as haplorthels and were composed of organic matter over loamy colluvium.

Fire is a natural and typically unmanaged disturbance regime. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. For this ecological site, it was presumed that both low-severity and high-severity fire events occur. Low-severity and high-severity fire events lead to differences in the depth of organic material, presence and/or depth of permafrost, present vegetation, and potential vegetation.

Due to limited sampling, only two community phases were developed for this ecological site. Since this ecological site has an associated fire regime, there are likely numerous undocumented community phases making the state-and-transition model incomplete.

State and Transition Diagram:



State ID Number:	1	State Name:	Reference
State Narrative:	<p>Phases within the reference state were grouped on the structure and dominance of deciduous and coniferous trees which was believed to directly relate to severity of burn and time since last fire event.</p> <p>In a low-severity fire, minimal proportions of the organic mat are consumed and mineral soils will typically not be exposed. Permafrost typically remains in the soil profile, which often perches water. Graminoids and scrubs quickly recolonize and dominate a site using below ground root reserves that were not consumed in the fire event. Due to their semi-serotinous cones, black spruce quickly reestablishes after fire events. With the absence of fire, early fire communities associated with this disturbance regime are thought to progress to community phase 1.2.</p> <p>In a high-severity fire, large proportions of the organic mat are consumed and mineral soils will typically be exposed. Permafrost often drops out of the soil profile and the sites become drier. While many pre-fire species likely regenerate as mentioned above, conditions are suitable for the establishment and growth of species with wind-blown seed (e.g. paper birch, fireweed, willow). With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.3.</p> <p>The fire return interval plays a large role in the structure of the observed forest. Longer fire return intervals favors development of community phases 1.1, while shorter fire return intervals favor development of community phases 1.2 and 1.3.</p> <p>Tall trees are defined as trees growing &gt;40' in height, medium trees are defined as growing 15-40' in height, while stunted and regenerative trees are defined as growing less than 15' in height. Tall shrubs are defined to grow greater than 10' in height, medium shrubs are defined to grow 3-10' in height, low shrubs are defined to grow 8" – 3' in height, and dwarf shrubs are defined to grow less than 8" in height.</p>		

Photo 1.1



Community Phase Number:	1.1	Community Phase Name:	Black spruce-alder-labrador tea-low bush cranberry-false toadflax-feathermoss forest
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Community Phase Narrative:

*Picea mariana* is the dominant tree species and cover primarily occurs in the medium tree stratum (total mature tree cover ~40%; average age 105). Shrub cover primarily occurred in the low and dwarf strata (total shrub cover ~80%) and species commonly observed are *Alnus viridis* ssp. *fruticosa*, *Ledum groenlandicum*, and *Vaccinium vitis-idaea*. Forbs were abundant (~30% cover) and the most commonly observed species was *Geocaulon lividum*. Lichen (30%) and moss (40%) formed an extensive ground cover. Commonly observed species include *Cladina* sp., *Hylocomium splendens* and *Pleurozium schreberi*. This phase had 3 observations.

Community Pathways

Pathway Number	Pathway Name & Description
1.1 a	Fire. Please read state narrative for differences in low- and high-severity fire scenarios.

Photo 1.2	n/a		
Community Phase Number:	1.2	Community Phase Name:	Late fire community phase

Community Phase Narrative:

This community phase is theoretical but based on field observations.

Community Pathways

Pathway Number	Pathway Name & Description
1.2 a	Fire. Please read state narrative for differences in low- and high-severity fire scenarios.
1.2 b	Normal time and growth. Phase 1.2 is thought to have a shorter fire return interval then phase 1.1 and a longer fire return interval then phase 1.4.

Photo 1.3



Community Phase Number:

1.3

Community Phase Name:

Paper birch-mixed spruce-bebb willow-prickly rose-bluejoint forest

Community Phase Narrative:

*Betula neoalaskana* was the dominant tree species with *Picea mariana* and *Picea glauca* both occurring at lesser densities and primarily in the regenerative tree stratum. Tree cover is split between the tall, medium, and regenerative tree strata (total mature tree cover ~95%; average age of *Picea glauca* was 40). Shrub cover primarily occurs in the tall, medium, and low shrub strata (total shrub cover ~40%) and commonly observed species include *Salix bebbiana*, *Rosa acicularis*, *Ribes hudsonianum*, and *Spiraea stevenii*. Graminoids, forbs, and lichens all were minor vegetative components but commonly observed species are *Calamagrostis canadensis* and *Mertensia paniculata*. Moss was abundant (25% cover) the most commonly observed species being *Dicranum sp.* and *Hylocomium*

*splendens*. This phase had two observations.

Community Pathways	
Pathway Number	Pathway Name & Description
1.3 a	Fire. Please read state narrative for differences in low- and high-severity fire scenarios. Due to limited organic material, a fire event would likely consume a large proportion of organic mat leading towards a high-severity fire scenario.
1.3 b	<p>Normal time and growth without fire. Organic material increases and permafrost migrates upward in the soil profile. Phase 1.3 is thought to have a shorter fire return interval than phase 1.1 and a longer fire return interval than phase 1.4.</p> <p>A long lapse in fire would be needed for pathway 1.3b to occur. This lapse is likely longer than the typical interval between fire events in Interior Alaska, which is reported to be approximately 100 years.</p>

Photo 1.4	n/a		
Community Phase Number:	1.3	Community Phase Name:	Early fire community phase
Community Phase Narrative:			
This community phase is theoretical but based on field observations.			

Community Pathways	
Pathway Number	Pathway Name & Description
1.4 a	Normal time and growth without fire. This pathway occurs from a low-intensity fire regime.
1.4 b	Normal time and growth without fire. This pathway occurs from a high-intensity fire regime.