

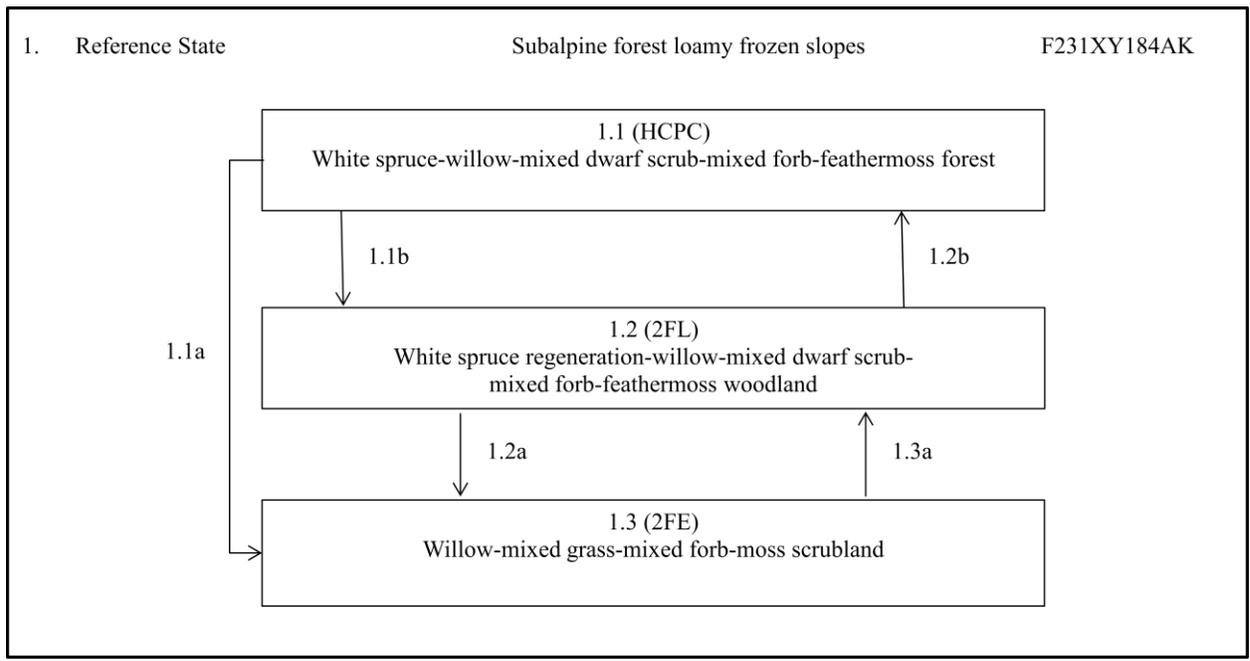
Ecological Site Description ID: F231XY184AK

Ecological Dynamics of the Site:

This subalpine ecological site was generally observed on moderate slopes at high elevation (i.e. > 20% slopes; 1050-2000 meters elevation). A similar subalpine ecological site was F231XY140AK, which differs from ecosite 184 in that the soils have greater amounts of rock fragments, soils lack permafrost, and climax phase vegetation was considered a white spruce woodland. For community phase 1.1, soils were classified as haplorthels and were composed of organic matter over loess and/or gravelly colluvium.

Fire was a documented disturbance regime resulting in three observed phases. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. For this ecological site, high-severity fire events are more typical than low-severity fire events. Low-severity and high-severity fire events appear to cause differences in the depth of organic material on the soil surface, presence and/or depth of permafrost, present vegetation, and potential vegetation.

State and Transition Diagram:



State ID Number:	1	State Name:	Reference
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State Narrative:

For the climax phase, vegetation was considered a highly diverse mixture of trees, shrubs, graminoids, forbs, lichens, and moss. Trees primarily grew in the tall and medium strata. Shrubs primarily grew in the medium, low, and dwarf strata. The late and climax phase were similar vegetatively. The decision to split the phases was based primarily on the general height/age of the tree strata, which we felt indicated time since fire disturbances.

In a high-severity fire, large proportions of the organic mat are consumed and mineral soils will typically be exposed. 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 1.2.

In interior Alaska, the dominant sub-alpine tree species is *Picea glauca*. As *Picea glauca* establishes after fire from off-site seed sources, fire return intervals likely play a substantial role in controlling the abundance of white spruce cover at any given location. Shorter fire return intervals will likely result in less long-term coniferous tree cover than areas with longer fire return intervals.

Tall trees are defined as trees growing >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. 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.

Photo 1.1



Community Phase Number:

1.1

Community Phase Name:

White spruce-willow-mixed dwarf scrub-mixed forb-feathermoss forest

Community Phase Narrative:

The majority of the tree canopy was split between medium and tall trees but stunted and regenerative trees were also present. While *Picea glauca* was the most common tree species, *Picea mariana* was also observed. For this phase, *Picea glauca* averaged 135 years of age (i.e. ranging 52-272) and had an average dbh of 8.3". Medium, low, and dwarf shrubs were equally abundant often exceeding 100% combined cover. The most common medium shrubs were *Betula glandulosa* and an assortment of willows including *Salix pulchra*, *Salix glauca*, *Salix bebbiana*, and *Salix richardsonii*. The most

common low shrubs were *Ledum palustre* and *Vaccinium uliginosum*. There were numerous dwarf shrub species present (i.e. 9 species) and some common species were *Dryas octopetala*, *Arctostaphylos rubra*, *Cassiope tetragona*, and *Salix reticulata*. When compared to shrubs, graminoids and forbs were minor vegetative components. Common graminoids include *Festuca altaica* and *Carex scirpoidea*. Forb diversity was high (i.e. often exceeding 20 species per plot) but no individual species were abundant. Some forb species unique to this ecological site were *Saussurea angustifolia*, *Valeriana capitata*, and *Papavar sp.* Moss cover was typically higher than lichen cover at sites and consisted primarily of feathermoss species including *Hylocomium splendens* and *Pleurozium schreberi*. Lichen diversity was high but no individual species were abundant. This phase had 13 observations.

Community Pathways	
Pathway Number	Pathway Name & Description
1.1 a	High-intensity fire. Climax sites generally had wet soil and thick organic layers (i.e. often > 15 cm). These site conditions may hinder high-severity fires. However, field observations resemble communities associated with high-intensity fires (e.g. lacking permafrost and herbaceous dominance).
1.1 b	Low-intensity fire or spot fire. While not observed for this ecological site, a low-intensity or spot fire would likely resemble a late fire phase community. Under a low-severity burn scenario, some shrubs and graminoids can quickly recolonize and dominate a site using below ground root reserves that are not consumed in the fire event.

Photo 1.2



Community Phase Number:	1.2	Community Phase Name:	White spruce regeneration-willow-mixed dwarf scrub-mixed forb-feathermoss woodland
Community Phase Narrative:			
<p>As most other vegetative components were similar between the late and climax phases, the tree canopy was the major distinguishing factor. The tree canopy consisted primarily of medium, stunted, and regenerating trees. While <i>Picea glauca</i> was the most common species, <i>Picea mariana</i> was also observed. <i>Picea glauca</i> averaged 87 years of age (i.e. ranging 32-229) and had an average dbh of 4.8". Medium, low, and dwarf shrubs were equally abundant often exceeding 100% combined cover. The most common shrub species are similar as phase 1.1. Graminoids, forbs, and lichen were all minor vegetative components. The most common graminoids were sedges primarily being <i>Carex sp.</i> As for phase 1.1, forbs had high diversity. Moss cover was typically higher than lichen cover at sites and consisted primarily of feathermoss species including <i>Hylocomium splendens</i> and <i>Pleurozium schreberi</i>. This phase had 4 observations.</p>			

Community Pathways	
Pathway Number	Pathway Name & Description
1.2a	Fire.
1.2 b	Normal time and growth without fire. Overall, late and climax phase plant communities are very similar but were split in large part due to the typical size/age of trees. The fire return interval was presumed to be shorter than phase 1.1 but longer than phase 1.3.

Photo 1.3



Community Phase Number:

1.3

Community Phase Name:

Willow-mixed grass-mixed forb-moss scrubland

Community Phase Narrative:

No live tree species were observed. When compared to the climax and late phase communities, the early fire phase community has decreased shrub abundance and increased forb and graminoid abundance. The most common shrub was *Salix pulchra*. The most common graminoids were *Poa sp.* and *Calamagrostis canadensis*. The most common forb was *Chamerion angustifolium*. Moss was the dominant vegetative ground cover and the most common species was *Hylocomium splendens*. This phase had one observation. The fire appears to greatly reduce vegetative diversity.

Community Pathways

Pathway Number

Pathway Name & Description

1.3 a

Normal time and growth without fire. A mixed spruce woodland develops.