

**172Xy111AK - Peat Mounds**  
**Spruce/shrub birch woodland**

**Part A: Description of Site**

*1.c. Landscape Narrative:* This site occurs on frozen peat mounds (also called palsa) adjacent to ponds, lakes, and wet meadows on glaciolacustrine uplands and occasionally on stream terraces. The rounded to flat-topped mounds and ridges are elevated 2 to 30 feet (0.6 to 9.1 m) above the adjacent landscape. Frozen peat, often with thin lenses or large ice masses, is usually encountered within 40 inches (102 cm) of the surface and most mounds have a core of massive ice at varying depths. Slopes range from 0 to 100 percent. Elevation is 1900 to 2500 feet (579 to 762 m).

In the Gulkana River area, this site is found in scattered locations usually of small extent on lacustrine terraces above the North Branch, West Fork and Main Stem. It is also found occasionally on stream terraces near the confluence of the Middle Fork and the Main Stem. This site likely occurs elsewhere in the Copper River basin.

MLRA (USDA 1981): 172X - Copper River Plateau

Ecological Unit (Nowacki and Brock 1995): 135A - Copper River Basin Section

*1.d.(3). Associated Water Features Narrative:* (BLM)

*2.j. Climate Narrative:* The subarctic continental climate of this site is characterized by long cold winters and short warm summers. Mean January temperature is -2 °F.; mean July temperature is 54 °F. Mean annual precipitation ranges from 15 to 21 inches. Annual snowfall ranges from 54 to 102 inches. The frost-free season is about 60 to 80 days (28 °F. base temperature). The growing season varies greatly from year to year and frosts can occur during any summer month.

*3.s. Soils Narrative:* The soils on this site are formed in slightly to moderately decomposed organic materials derived from *Sphagnum* spp., *Carex* spp., and ericaceous shrubs. Mineral lenses and horizons are present in some soils. In most places, the soils are shallow or moderately deep over permafrost. Most soils do not have a water table perched on the permafrost and are well drained.

*4.e. Vegetation Narrative:* Spruce/shrub birch woodland is the correlated PNC on this site. In many places, particularly on lower relief mounds, cover of stunted trees is less than 10 percent and Low shrub birch scrub may be the potential or, at the least, a persistent late seral stage.

*5.b. Wildlife Narrative:*

*6. Community Dynamics (Fire, etc.):* This site is probably highly susceptible to wild fire in most places. During summer and in otherwise dry years, the elevated, convex mounds are well drained and the surface organic matter is dry. This site also occurs adjacent to other glaciolacustrine upland ecological sites, which are highly susceptible to wild fire. Adjacent ponds and Sedge wet meadows may provide some degree of fire protection.

Following a light burn, vegetative succession should lead directly and rather quickly to scrub vegetation dominated by *Betula glandulosa* and ericaceous shrubs. Spruce trees would not likely survive the fire and would be expected to regenerate slowly. See *Riparian or Wetland Site Progressions* in Part B of this site description for additional wild fire impacts.

*7. List of Commonly Associated Sites (number and names):*

a. Upland:

172Xy103AK - Stream Terraces, Frozen

172Xy104AK - Stream Terraces

172Xy106AK - Glaciolacustrine Uplands

172Xy107AK - Glaciolacustrine Uplands, Frozen

b. Riparian or Wetland:

172Xy105AK - Terraces, Wet

172Xy202AK - Shallow Drainages

172Xy501AK - Wet Depressions

8. *List of Competing Sites (number and names):*

## 172Xy111AK - Peat Mounds

### Spruce/shrub birch woodland

#### Part B: Interpretations for Use and Management of the Site

1.a. *Plant Community Characteristics:* see attached summary tables for seral stages and stand characteristics.

1.b. *Riparian or Wetland Site Progressions:*

(1) *Aggradation:* In most places this site occurs in complex with ecological site 172Xy501AK - Wet Depressions and Sedge wet meadow vegetation. In many situations the peat mound development probably is due to an unusually thin cover of snow (Williams and Smith 1989), which allow for deep frost penetration and frost heaving. Heaving ground often forms discrete, irregularly spaced bumps several inches in height. The drier peat near the surface of these slightly elevated areas increases the overall insulating qualities of the peat, maintaining frozen soil conditions throughout the summer and promoting the formation of ice crystals and masses. The developing ice core of the mound is fed by the abundant water from the adjacent wet meadows and ponds. Free water in contact with the frozen core in turn freezes, increasing the size and extent of the frozen core. Peat mounds are usually formed as the core of massive ice enlarges and pushes the surface up and above the surrounding landscape.

All stages of mound development can be observed in the Gulkana River area, from low, small diameter mounds dispersed throughout areas of wet meadow to high, steep sided mounds elevated as much as 30 feet (9.1 m) above adjacent wet meadows and lakes. Small, low relief mounds typically support Low shrub birch/closed sheath cottongrass scrub. *Eriophorum brachyantherum* and other wetland plant species decline in abundance as the mound is further elevated above the surrounding landscape.

The impact of wild fire on ecological site 172Xy111AK - Peat Mounds depends to a large degree on its effects on the thermal balance of the mound and is likely to range from slight to devastating. Following a very light burn, vegetative succession should lead directly and rather quickly to scrub vegetation dominated by *Betula glandulosa* and ericaceous shrubs. Spruce trees would not likely survive the fire and would be expected to regenerate slowly. Moderate to severe burning, on the other hand, could lead to complete destruction of the site. Blackening and partial combustion of the surface organic layers by fire could dramatically effect the insulating capacity of the organic surface and disrupt the thermal balance of the mound. During particularly dry conditions, the fire could possibly consume the organic material to a considerable depth. The blackened surface in combination with the loss of the surface vegetation would result in a significant increase in the amount of solar energy hitting and being absorbed at the mound surface. In the most extreme case, the ice core would melt sufficiently for the peat mound to collapse. In this situation, a portion, if not all, of the mound would likely retrogress to ecological site 172Xy501AK - Wet Depressions and Sedge wet meadow vegetation or to a pond.

1.g. *Recreation and Natural Beauty:* This site, particularly when occurring in complex with ecological site 172Xy501AK - Wet Depressions, provides striking contrast and landscape diversity in extensive areas of otherwise monotonous spruce woodlands characteristic of glaciolacustrine terraces. This site also provides excellent opportunities for viewing wildlife and hunting.

1.k. *Applicable Field Offices:* BLM, Glennallen District Office

Ecological Site: 172Xy111AK - Peat Mounds

Cover type: Spruce/shrub birch woodland

Seral status: PNC

Number of stands: 1

Source of data: Gulkana River Area

Key: Con = % constancy; Avg = average % canopy cover;  
 Min = minimum % canopy cover; Max = maximum %  
 canopy cover; Imp = importance value

Note: Avg, Min, and Max based only on stands in which a  
 taxon occurred; Imp = sq root of (Con \* Avg)  
 : Only taxa with >10% constancy included.

Common_name	Stratum	Con	Avg	Min	Max	Imp
black spruce	T2	100	25	25	25	50
Labrador-tea	SS	100	30	30	30	55
black crowberry	SS	100	7	7	7	26
bog blueberry	SS	100	15	15	15	39
lowbush cranberry	SS	100	10	10	10	32
shrub birch	SS	100	10	10	10	32
arctic dock	F	100	1	1	1	7
arctic sweet coltsfoot	F	100	2	2	2	14
cloudberry	F	100	20	20	20	45
closed-sheath cottongrass	G	100	4	4	4	20
polar grass	G	100	10	10	10	32
spruce-muskeg sedge	G	100	15	15	15	39
Moss layer	M	100	70	70	70	84
Lichen layer	L	100	15	15	15	39
Litter and mulch	B	100	15	15	15	39
Woody litter (>1" dia.)	B	100	1	1	1	7

Salix spp. includes:

Ecological Site: 172Xy111AK - Peat Mounds

Cover type: Low shrub birch scrub

Seral status: early-mid

Number of stands: 2

Source of data: Gulkana River Area

Key: Con = % constancy; Avg = average % canopy cover;  
 Min = minimum % canopy cover; Max = maximum %  
 canopy cover; Imp = importance value

Note: Avg, Min, and Max based only on stands in which a  
 taxon occurred; Imp = sq root of (Con \* Avg)  
 : Only taxa with >10% constancy included.

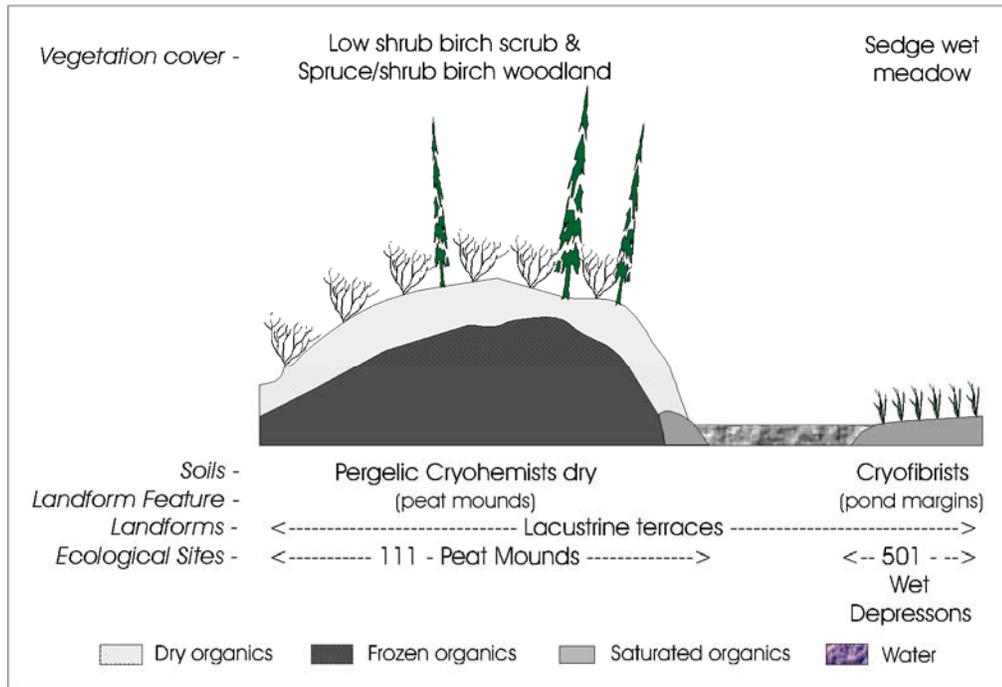
Common_name	Stratum	Con	Avg	Min	Max	Imp
white spruce	T2	100	5	5	5	22
Beauverd spiraea	SS	100	1	1	1	7
Labrador-tea	SS	100	20	15	25	45
black crowberry	SS	100	2	1	2	12
bog blueberry	SS	100	23	20	25	47
lowbush cranberry	SS	50	1	1	1	5
shrub birch	SS	100	33	25	40	57
willow	SS	100	8	5	10	27
Labrador lousewort	F	50	1	1	1	5
arctic sweet coltsfoot	F	100	6	1	10	23
cloudberry	F	100	1	1	1	10
common fireweed	F	50	1	1	1	5
polar grass	G	100	2	1	3	13
sedge	G	100	1	1	1	7
Moss layer	M	100	40	35	45	63
Lichen layer	L	100	2	2	2	14
Litter and mulch	B	100	1	1	1	7
Surface water	B	50	1	1	1	5

Salix spp. includes: SAPL2

Ecological Site: 172Xy111AK - Peat Mounds  
 Cover type: Low shrub birch/closed sheath cottongrass scrub  
 Seral status: early, low relief mounds  
 Number of stands: 2  
 Source of data: Gulkana River Area  
 Key: Con = % constancy; Avg = average % canopy cover;  
 Min = minimum % canopy cover; Max = maximum %  
 canopy cover; Imp = importance value  
 Note: Avg, Min, and Max based only on stands in which a  
 taxon occurred; Imp = sq root of (Con \* Avg)  
 : Only taxa with >10% constancy included.

Common_name	Stratum	Con	Avg	Min	Max	Imp
black spruce	T2	50	1	1	1	7
black spruce	T3	50	1	1	1	5
Labrador-tea	SS	100	20	10	30	45
black crowberry	SS	100	8	1	15	28
bog blueberry	SS	100	18	10	25	42
lowbush cranberry	SS	100	3	1	5	17
shrub birch	SS	100	18	15	20	42
Labrador lousewort	F	100	1	1	1	7
arctic sweet coltsfoot	F	50	1	1	1	7
cloudberry	F	100	9	2	15	29
bluejoint reedgrass	G	50	3	3	3	12
closed-sheath cottongrass	G	100	20	15	25	45
sedge	G	50	10	10	10	22
water sedge	G	50	2	2	2	10
Moss layer	M	100	28	20	35	52
Lichen layer	L	100	21	7	35	46
Litter and mulch	B	100	20	1	40	45
Woody litter (>1" dia.)	B	50	1	1	1	7

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 Salix spp. includes:



Representative cross section in the glaciolacustrine uplands above the upper North Branch.



Typical setting of ecological site 172Xy111AK - Peat Mounds. Peat mounds usually occurs as low, steep sided mounds and ridges in complex with small lakes and ponds and Sedge wet meadows within and along the edges of topographic depressions. The depressions are included in Ecological site 172Xy501AK - Wet Depressions