

# Loamy Frozen Slopes, Ice Cored (131B\_113)

## Ecoregion Classification

**Section:** Yukon-Kuskokwim Bottomlands (131B)

**Subsection(s):** Eolian Lowlands (131B.L1)

## Physiographic Features

**Elevation (meters):** *RV* 342 *Range* 165 to 649

**Slope Gradient (percent):** 20 14 to 33

**Aspect (clockwise direction):** non-influencing

**Landform:** hills

**Landform Positions:** backslopes; shoulders

**Flooding:** *Frequency* None

**Ponding:** None

## Climatic Features

**Annual Precipitation (millimeters):** *RV* 479 *Range* 359 to 651

**Annual Air Temperature (°C):** -2.6 -2.9 to -2.4

**Frost Free Days:** 100 80 to 110

## Soil Features

**Parent Materials:** mossy organic material and/or woody organic material over silty eolian deposits

**Rooting Depth (cm):** *RV*: 38 *Range*: 18 to 96

### Soil Layers and Properties within Representative Rooting Depth:

Layers are described from the surface downward. If more than one texture is listed, the predominant texture is listed first. AWC = available water capacity. CEC = cation exchange capacity.

Thickness (cm)	Texture	Permeability	AWC (cm/cm)	pH	Effective CEC (me/100g)	CEC (me/100g)
23	slightly decomposed plant material	moderately rapid	.34	4.8	30	
4	mucky silt loam	moderate	.26	5.5	12	

**Restrictive Features:** permafrost at 27 cm

**Water Table (May to September):** none

**Drainage Class:** well drained

## Vegetation Features

### Common Vegetation Types:

#### Vegetation Type

Black spruce/green alder/Labrador tea woodland

Paper birch/prickly rose forest<sup>2</sup>

Mixed paper birch-spruce/green alder forest

#### Ecological Status

Climax plant community

Mid stage of fire induced secondary succession

Late stage of fire induced secondary succession

### Ecological Status-Transition Description:

Three plant communities are identified on this fire influenced site including a potential community with black spruce/green alder/Labrador tea woodland, a mid-seral community with paper birch/prickly rose forest<sup>2</sup> and a late-seral community with mixed paper birch-spruce/green alder forest. Fire is considered a transitional pathway between seral communities within this site.

### Vascular Plant Species Richness:

Vascular plant species richness is based on 1999-2002 field season data only. Data from 1997 and 1998 were not used in the calculations.

Vegetation Type	Total	Per Stand			Number of Stands
		Min.	Avg.	Max.	
Black spruce/green alder/Labrador tea woodland	33	11	15	19	6
Paper birch/prickly rose forest2	16	12	13	14	2
Mixed paper birch-spruce/green alder forest	21	16	16	16	2

### Notable Plants:

Notable plants include rare plants, range extensions, and plants little known from Denali National Park and Preserve.

Vegetation Type	Symbol	Scientific Name
Paper birch/prickly rose forest2	GOORE2	Goodyera repens var. ophioides

### Characteristics of Black spruce/green alder/Labrador tea woodland

**Ecological Status:** Climax plant community

### Plant Species Cover, Constancy, and Importance:

Cover, constancy, and importance are based on 1997-2002 field season data. Number of stands sampled = 9. Only those vascular, lichen, and bryophyte species with average cover >=5% and constancy >=15% are listed.

Stratum	Symbol	Scientific Name	Percent Canopy Cover			Percent Constancy	Importance Value
			Min.	Avg.	Max.		
TT	PIMA	Picea mariana	7.0	16	25	22	19
TM	PIMA	Picea mariana	7.0	20	35	67	37
TR	PIMA	Picea mariana	0.1	5	10	44	15
SL-ST	ALVIC	Alnus viridis ssp. crispa	0.1	17	55	89	39
SL-SM	B EGL	Betula glandulosa	0.1	10	25	78	28
SD-SL	LEPAD	Ledum palustre ssp. decumbens	10.0	24	35	78	43
SL	VAUL	Vaccinium uliginosum	0.1	11	20	78	29
SL	LEGR	Ledum groenlandicum	0.1	18	60	44	28
SL	CHCA2	Chamaedaphne calyculata	5.0	5	5	33	13
SD	VAVIM99	Vaccinium vitis-idaea spp. Minus	5.0	15	30	100	39
SD	EMNI	Empetrum nigrum	0.1	8	15	22	13
GM	CABI5	Carex bigelowii	0.1	5	15	33	13
GM	ERBR6	Eriophorum brachyantherum	1.0	6	10	22	11
L	LICHEN	total lichens	0.0	8	30	100	28
L1	NEAR60	Nephroma arcticum	0.1	5	10	33	13
M	MOSS	total bryophytes-mosses and liverworts	70.0	85	95	100	92
M1	SPHAG2	Sphagnum	0.1	49	90	100	70
M1	PLSC70	Pleurozium schreberi	30.0	34	40	56	44
M1	HYSP70	Hylocomium splendens	5.0	18	55	56	32
M1	ZZMOSS	unknown-mosses	0.1	6	15	67	20
M1	THRE7	Thuidium recognitum	5.0	5	5	22	10
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	0.1	11	35	100	33
B	ROCK	mineral-surface rock fragments	0.0	1	5	100	10
B	LITTER2	litter-woody debris >2.5 cm	0.0	0	2	100	0
B	SOIL	mineral-bare soil	0.0	0	0	100	0
B	WATER	water	0.0	0	2	100	0

### Stratum Height:

Stratum height is based on 1997-2002 field season data. All plant species and ground layer records from all stands are included in the calculations.

Stratum Name	Included Strata	Height			Units	Number of Records
		Min.	Avg.	Max.		
Trees	TT, TM, TS	2.0	7.3	15.0	m	11
Tree regeneration	TR	1.0	1.5	2.0	m	5
Tall shrubs	ST	3.5	4.1	4.5	m	3
Medium shrubs	SM	1.2	1.9	3.0	m	4
Low shrubs	SL	20.0	54.7	100.0	cm	19
Dwarf shrubs	SD	4.0	9.1	12.0	cm	9
Tall and medium grasses and grass-likes	GT, GM	40.0	45.0	50.0	cm	2
Tall and medium forbs	FT, FM	20.0	52.0	100.0	cm	5

Dwarf herbs, lichens, and bryophytes                      GD, FD, L, M                      2.0    5.5    10.0    cm            13

**Site Tree Measurements:**

Only dominant, codominant, and open grown trees were measured. Height of Measurements = height above ground at which age and diameter was measured. G = ground level, B = breast height (ca 1.5 m).

Tree Species	Age (years)	Diameter (cm)	Height (m)		Number of Trees	Height of Measurements
Picea mariana	128	10.4	5.8	Min.	2	G
	128	11.9	5.9	Avg		
	129	13.5	6.1	Max.		

**Characteristics of Paper birch/prickly rose forest2**

**Ecological Status:** Mid stage of fire induced secondary succession

**Plant Species Cover, Constancy, and Importance:**

Cover, constancy, and importance are based on 1997-2002 field season data. Number of stands sampled = 5. Only those vascular, lichen, and bryophyte species with average cover >=5% and constancy >=15% are listed.

Stratum	Symbol	Scientific Name	Percent Canopy Cover			Percent Constancy	Importance Value
			Min.	Avg.	Max.		
TT	BENE4	Betula neoalaskana	85.0	88	90	40	59
TT	PIMA	Picea mariana	20.0	20	20	20	20
TM	BENE4	Betula neoalaskana	70.0	77	80	60	68
ST	ALVIC	Alnus viridis ssp. crispa	10.0	12	15	40	22
ST	SABE2	Salix bebbiana	3.0	6	10	60	19
SL-SM	ROAC	Rosa acicularis	5.0	35	65	100	59
SD	VAVIM99	Vaccinium vitis-idaea spp. Minus	0.1	5	10	80	20
GM-GT	CACA4	Calamagrostis canadensis	4.0	12	20	80	31
GM	ZZGRASS	unknown-grasses	5.0	12	20	40	22
FD-FM	EQSY	Equisetum sylvaticum	0.1	15	60	100	39
FD	COCA13	Cornus canadensis	0.1	9	25	100	30
L	LICHEN	total lichens	0.0	0	0	100	0
M	MOSS	total bryophytes-mosses and liverworts	0.0	8	20	100	28
M1	HYSP70	Hylocomium splendens	7.0	11	15	40	21
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	60.0	73	85	100	85
B	LITTER2	litter-woody debris >2.5 cm	5.0	8	15	100	28
B	SOIL	mineral-bare soil	0.0	0	0	100	0
B	ROCK	mineral-surface rock fragments	0.0	0	0	100	0
B	WATER	water	0.0	0	0	100	0

**Stratum Height:**

Stratum height is based on 1997-2002 field season data. All plant species and ground layer records from all stands are included in the calculations.

Stratum Name	Included Strata	Height			Units	Number of Records
		Min.	Avg.	Max.		
Trees	TT, TM, TS	5.0	12.1	24.0	m	9
Tree regeneration	TR	2.5	2.5	2.5	m	1
Tall shrubs	ST	4.0	4.7	5.5	m	5
Medium shrubs	SM	1.0	1.2	1.5	m	3
Low shrubs	SL	30.0	50.0	100.0	cm	10
Dwarf shrubs	SD	10.0	13.2	18.0	cm	4
Tall and medium grasses and grass-likes	GT, GM	30.0	70.0	130.0	cm	4
Tall and medium forbs	FT, FM	10.0	47.5	100.0	cm	8
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	3.0	7.4	10.0	cm	7

**Site Tree Measurements:**

Only dominant, codominant, and open grown trees were measured. Height of Measurements = height above ground at which age and diameter was measured. G = ground level, B = breast height (ca 1.5 m).

Tree Species	Age (years)	Diameter (cm)	Height (m)		Number of Trees	Height of Measurements
Picea glauca	68	22.6	16.5	Min.	2	B
	71	29.5	18.6	Avg		
	74	36.3	20.7	Max.		

**Tree Basal Area (all trees >1.5 m tall):**

Min.	Avg.	Max.	Number of Stands
4.6	4.6	4.6	1

**Characteristics of Mixed paper birch-spruce/green alder forest**

**Ecological Status:** Late stage of fire induced secondary succession

**Plant Species Cover, Constancy, and Importance:**

Cover, constancy, and importance are based on 1997-2002 field season data. Number of stands sampled = 6. Only those vascular, lichen, and bryophyte species with average cover >=5% and constancy >=15% are listed.

Stratum	Symbol	Scientific Name	Percent Canopy Cover			Percent Constancy	Importance Value
			Min.	Avg.	Max.		
TT	PIGL	Picea glauca	0.1	15	30	67	32
TT	BENE4	Betula neoalaskana	10.0	22	35	33	27
TT	PIMA	Picea mariana	20.0	20	20	17	18
TM	BENE4	Betula neoalaskana	15.0	20	25	67	37
TM	PIMA	Picea mariana	10.0	17	20	50	29
TS	PIGL	Picea glauca	5.0	5	5	33	13
TR	PIMA	Picea mariana	5.0	8	10	33	16
SM-ST	ALVIC	Alnus viridis ssp. crispa	5.0	24	60	100	49
SL	LEGR	Ledum groenlandicum	1.0	11	15	83	30
SL	ROAC	Rosa acicularis	0.1	9	15	100	30
SL	SPST3	Spiraea stevenii	5.0	8	10	50	20
SD	VAVIM99	Vaccinium vitis-idaea spp. Minus	3.0	10	20	100	32
GT	CACA4	Calamagrostis canadensis	10.0	10	10	17	13
FM	EQSY	Equisetum sylvaticum	5.0	11	20	83	30
FM	EQAR	Equisetum arvense	5.0	5	5	33	13
L	LICHEN	total lichens	0.0	0	0	100	0
M	MOSS	total bryophytes-mosses and liverworts	5.0	37	85	100	61
M1	SPHAG2	Sphagnum	0.1	32	85	50	40
M1	HYSP70	Hylocomium splendens	15.0	28	40	33	30
M1	PLSC70	Pleurozium schreberi	5.0	5	5	17	9
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	10.0	53	85	100	73
B	LITTER2	litter-woody debris >2.5 cm	0.0	5	10	100	22
B	SOIL	mineral-bare soil	0.0	0	0	100	0
B	ROCK	mineral-surface rock fragments	0.0	0	0	100	0
B	WATER	water	0.0	0	0	100	0

**Stratum Height:**

Stratum height is based on 1997-2002 field season data. All plant species and ground layer records from all stands are included in the calculations.

Stratum Name	Included Strata	Height			Units	Number of Records
		Min.	Avg.	Max.		
Trees	TT, TM, TS	2.0	9.9	16.0	m	15
Tree regeneration	TR	2.0	2.5	3.0	m	2
Tall shrubs	ST	4.0	5.1	8.0	m	7
Medium shrubs	SM	1.5	1.5	1.5	m	1
Low shrubs	SL	20.0	57.5	100.0	cm	12
Dwarf shrubs	SD	10.0	10.0	10.0	cm	4
Tall and medium grasses and grass-likes	GT, GM	50.0	90.0	130.0	cm	2
Tall and medium forbs	FT, FM	20.0	39.2	100.0	cm	12
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	3.0	8.6	10.0	cm	9

### Site Tree Measurements:

Only dominant, codominant, and open grown trees were measured. Height of Measurements = height above ground at which age and diameter was measured. G = ground level, B = breast height (ca 1.5 m).

Tree Species	Age (years)	Diameter (cm)	Height (m)		Number of Trees	Height of Measurements
Picea glauca	60	18.3	13.7	Min.	1	B
	60	18.3	13.7	Avg.		
	60	18.3	13.7	Max.		
Picea mariana	54	17.8	13.4	Min.	2	B
	54	18.3	13.4	Avg.		
	54	18.8	13.4	Max.		

### Tree Basal Area (all trees >1.5 m tall):

Min.	Avg.	Max.	Number of Stands
17.2	17.2	17.2	1

### Mapunit Components

#### Common Name (Soils Name):

Boreal-taiga silty loess hills, frozen (Typic Umbrorthels, coarse-silty)

#### Soil Map Units

Only those map units in which the landtype is a major component are listed. The landtype also may occur as a minor component in other map units.

#### Symbol: Common Name (Soils Name):

3FU4	Boreal Loess Plains, Hills, and Drains with Continuous Permafrost (Typic Historthels, coarse-silty-Typic Umbrorthels, coarse-silty Association, 2 to 35 percent slopes)
3Y	Boreal Ice Cored Loess Hills and Plains with Continuous Permafrost (Typic Historthels, coarse-silty-Typic Histoturbels, coarse-silty-Typic Umbrorthels, coarse-silty Association, 0 to 26 percent slopes)

### Geographically Associated Landtypes

#### 131B\_400—Loamy Frozen Slopes:

This site occurs on more gentle slopes with wetter soils that have permafrost at moderate depths. The climax plant community is "Black spruce/Labrador tea woodland."

#### 131B\_402—Loamy Frozen Slopes, Wet:

This site occurs on loess plains and hills with wetter, moderately deep soils over permafrost. The climax plant community is "Black spruce/tussock cottongrass woodland."

#### 131B\_530—Depressions, Bogs:

This site occurs on bogs with very deep and wetter soils. The climax plant community is "Sedge/sphagnum moss bog."

### Similar Landtypes

#### 131B\_104—Loamy Frozen Terraces:

This site occurs on wetter soils on terraces. The climax plant community is "Black spruce-tamarack/Labrador tea

#### 131B\_108—Gravelly and Sandy Terraces:

This site occurs on very deep soils that are very shallow to sand and gravel. The climax plant community is "Spruce/ericaceous woodland."

#### 131B\_400—Loamy Frozen Slopes:

This site occurs on more gentle slopes with wetter soils that have permafrost at moderate depths. The climax plant community is "Black spruce/Labrador tea woodland."

#### 131B\_505—Loamy Channels:

This site occurs on wetter soils in flooded channels. The climax plant community is "Tamarack-black spruce/leatherleaf woodland."