Loamy Frozen Slopes (M135A_400)

Ecoregion Classification

Section: Alaska Mountains (M135A)

Subsection(s): Teklanika Boreal Mountains & Plateaus (M135A.M6L)
Teklanika Alpine Mountains & Plateaus (M135A.M6)
Boreal Mountains (M135A.M2L)
Boreal Outer Range & Kantishna Hills (M135A.M1L)
Alpine Outer Range & Kantishna Hills (M135A.M1)
Glaciated Lowlands (M135A.G1L)

Physiographic Features

	RV	*Range*
Elevation (meters):	619	333 to 1,050
Slope Gradient (percent):	10	0 to 30

Aspect (clockwise direction): non-influencing

Landform: escarpments on plateaus; hills; mountain slopes; mountains; outwash plains; plateaus; till plains

Landform Positions: backslopes; footslopes; summits; toeslopes

	Frequency
Flooding:	None
Ponding:	None

Climatic Features

	RV	*Range*
Annual Precipitation (millimeters):	529	358 to 783
Annual Air Temperature (°C):	-2.8	-5.7 to -2.2
Frost Free Days:	70	60 to 80

Soil Features

Parent Materials: mossy organic material and/or woody organic material over silty eolian deposits
mossy organic material and/or woody organic material over silty eolian deposits over gravelly colluvium derived from schist
mossy organic material and/or woody organic material over silty eolian deposits over gravelly residuum
mossy organic material and/or woody organic material over silty eolian deposits over gravelly till
mossy organic material and/or woody organic material over silty eolian deposits over loamy drift

Rooting Depth (cm): *RV:* 34 *Range:* 12 to 72

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)
21 to 29	peat	moderately rapid	.34	3.7 to 4.8	30	
4 to 9	mucky silt loam	moderate	.26 to .40	5.1 to 5.8	15	20

Restrictive Features: bedrock (paralithic) at 84 to 150 cm or more
permafrost at 35 to 58 cm
strongly contrasting textural stratification at 33 to 35 cm

Water Table (May to September): 0 to 50 cm

Drainage Class: poorly drained

Vegetation Features

Common Vegetation Types:

Vegetation Type	Ecological Status
Black spruce/bog blueberry-Labrador tea woodland	Climax plant community
Shrub birch-Labrador tea-bog blueberry scrub	Early stage of fire induced secondary succession
White spruce-black spruce/shrub birch woodland	Late stage of fire induced secondary succession

Ecological Status-Transition Description:

Three plant communities are identified within this fire influenced site including a potential community with black spruce/bog blueberry-Labrador tea woodland, an early-seral community with shrub birch-Labrador tea-bog blueberry scrub and a late-seral community with spruce/shrub birch woodland. 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.

		Per Stand			Number of
Vegetation Type	Total	*Min.*	*Avg.*	*Max.*	Stands
Black spruce/bog blueberry-Labrador tea woodland	67	10	17	29	22
Shrub birch-Labrador tea-bog blueberry scrub	45	19	22	24	4
White spruce-black spruce/shrub birch woodland	49	19	21	22	4

Characteristics of Black spruce/bog blueberry-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 = 34. Only those vascular, lichen, and bryophyte species with average cover >=5% and constancy >=15% are listed.

			Percent Canopy Cover			Percent Constancy	Importance Value
Stratum	Symbol	Scientific Name	*Min.*	*Avg.*	*Max.*		
TM	PIMA	Picea mariana	5.0	20	50	68	37
TS	PIMA	Picea mariana	10.0	22	50	26	24
TR	PIMA	Picea mariana	4.0	11	20	35	20
SM-ST	ALVIC	Alnus viridis ssp. crispa	0.1	10	20	38	19
SL-SM	BEGL	Betula glandulosa	0.1	8	35	100	28
SL-SM	SAPU15	Salix pulchra	0.1	8	25	59	22
SD-SL	VAUL	Vaccinium uliginosum	5.0	22	75	100	47
SD-SL	LEPAD	Ledum palustre ssp. decumbens	2.0	14	25	88	35
SD	EMNI	Empetrum nigrum	0.1	10	40	97	31
SD	VAVIM99	Vaccinium vitis-idaea spp. Minus	0.1	8	35	100	28
GM	CABI5	Carex bigelowii	0.1	13	60	59	28
GM	CAREX	Carex	0.1	23	35	26	24
FD-FM	EQSY	Equisetum sylvaticum	0.1	7	25	47	18
FD	RUCH	Rubus chamaemorus	0.1	6	45	85	23
L	LICHEN	total lichens	0.0	13	50	100	36
L1	CLMI61	Cladina mitis group	0.1	6	20	47	17
M	MOSS	total bryophytes-mosses and liverworts	50.0	82	95	100	91
M1	SPHAG2	Sphagnum	0.1	32	60	68	47
M1	PLSC70	Pleurozium schreberi	5.0	24	60	68	40
M1	HYSP70	Hylocomium splendens	0.1	22	80	53	34
M1	ZZMOSS	unknown-mosses	0.1	8	20	65	23
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	0.0	11	65	100	33
B	LITTER2	litter-woody debris >2.5 cm	0.0	1	15	100	10
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	5	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				Number of Records
		Min.	*Avg.*	*Max.*	*Units*	
Trees	TT, TM, TS	2.3	5.8	20.0	m	37
Tree regeneration	TR	1.0	1.7	3.0	m	12
Tall shrubs	ST	3.0	3.0	3.0	m	3
Medium shrubs	SM	1.0	1.8	3.0	m	28
Low shrubs	SL	20.0	49.5	100.0	cm	55
Dwarf shrubs	SD	2.0	9.0	20.0	cm	44
Tall and medium grasses and grass-likes	GT, GM	20.0	39.4	90.0	cm	17
Tall and medium forbs	FT, FM	15.0	24.1	40.0	cm	16
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	2.0	5.5	10.0	cm	67

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	113	20.6	7.9	*Min.*	1	B
	113	20.6	7.9	*Avg*		
	113	20.6	7.9	*Max.*		
Picea mariana	45	6.1	3.0	*Min.*	4	G
	97	9.6	4.5	*Avg*		
	138	11.7	5.5	*Max.*		

Characteristics of Shrub birch-Labrador tea-bog blueberry scrub

Ecological Status: Early 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 = 16. 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.*		
TM	PIGL	Picea glauca	3.0	5	7	25	11
SL-SM	BEGL	Betula glandulosa	0.1	31	80	100	56
SM	ALVIC	Alnus viridis ssp. crispa	5.0	20	55	62	35
SL-SM	SAPU15	Salix pulchra	0.1	9	40	75	26
SD-SL	LEPAD	Ledum palustre ssp. decumbens	3.0	21	40	94	44
SD-SL	VAUL	Vaccinium uliginosum	5.0	17	40	100	41
SD	VAVIM99	Vaccinium vitis-idaea spp. Minus	0.1	11	35	94	32
SD	EMNI	Empetrum nigrum	0.1	6	20	44	16
GM-GT	CACA4	Calamagrostis canadensis	5.0	8	10	19	12
GM	CAREX	Carex	0.1	16	40	62	31
GM	CABI5	Carex bigelowii	1.0	15	30	38	24
GM	ZZGRASS	unknown-grasses	5.0	10	15	31	18
FM	EQSY	Equisetum sylvaticum	0.1	6	15	19	11
L	LICHEN	total lichens	0.0	6	40	100	24
M	MOSS	total bryophytes-mosses and liverworts	40.0	60	80	100	77
M1	HYSP70	Hylocomium splendens	2.0	21	40	19	20
M1	PLSC70	Pleurozium schreberi	0.1	16	30	25	20
M1	ZZMOSS	unknown-mosses	10.0	10	10	25	16
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	10.0	39	65	100	62
B	LITTER2	litter-woody debris >2.5 cm	0.0	2	7	100	14
B	SOIL	mineral-bare soil	0.0	1	10	100	10
B	ROCK	mineral-surface rock fragments	0.0	0	1	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				Number of Records
		Min.	*Avg.*	*Max.*	*Units*	
Trees	TT, TM, TS	2.2	5.4	10.0	m	8
Tree regeneration	TR	0.4	1.1	2.0	m	7
Medium shrubs	SM	1.0	1.5	2.5	m	24
Low shrubs	SL	20.0	52.3	100.0	cm	26
Dwarf shrubs	SD	3.0	12.6	20.0	cm	16
Tall and medium grasses and grass-likes	GT, GM	30.0	48.3	110.0	cm	6
Tall and medium forbs	FT, FM	30.0	52.9	100.0	cm	7
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	1.0	5.8	10.0	cm	9

Characteristics of White spruce-black spruce/shrub birch woodland

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 = 21. 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.*		
TM	PIGL	Picea glauca	5.0	12	35	57	26
TM	PIMA	Picea mariana	2.0	10	20	33	18
TR	PIGL	Picea glauca	0.1	7	15	57	20
TR	PIMA	Picea mariana	5.0	5	5	19	10
SL-SM	BEGL	Betula glandulosa	0.1	25	75	100	50
SL-SM	SAGL	Salix glauca	0.1	6	30	62	19
SL-SM	SAPU15	Salix pulchra	0.1	5	15	76	19
SL-SM	ALVIC	Alnus viridis ssp. crispa	0.1	5	15	43	15
SD-SL	VAUL	Vaccinium uliginosum	3.0	19	45	90	41
SD-SL	LEPAD	Ledum palustre ssp. decumbens	5.0	17	30	90	39
SD-SL	VAVIM99	Vaccinium vitis-idaea spp. Minus	0.1	8	40	95	28
SD	EMNI	Empetrum nigrum	0.1	10	25	48	22
GM-GT	CACA4	Calamagrostis canadensis	0.1	12	50	33	20
GM	CAREX	Carex	5.0	27	75	57	39
FD-FM	EQSY	Equisetum sylvaticum	0.1	8	20	29	15
L	LICHEN	total lichens	0.0	7	20	100	26
M	MOSS	total bryophytes-mosses and liverworts	30.0	75	95	100	87
M1	SPHAG2	Sphagnum	1.0	50	95	33	41
M1	PLSC70	Pleurozium schreberi	5.0	40	85	24	31
M1	HYSP70	Hylocomium splendens	0.1	26	60	29	27
M1	ZZMOSS	unknown-mosses	5.0	9	15	19	13
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	0.0	18	80	100	42
B	LITTER2	litter-woody debris >2.5 cm	0.0	1	5	100	10
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				Number of Records
		Min.	*Avg.*	*Max.*	*Units*	
Trees	TT, TM, TS	2.0	6.1	12.0	m	25
Tree regeneration	TR	0.5	2.0	3.0	m	18
Medium shrubs	SM	1.0	1.5	2.0	m	28
Low shrubs	SL	20.0	55.0	100.0	cm	46
Dwarf shrubs	SD	7.0	14.6	20.0	cm	19
Tall and medium grasses and grass-likes	GT, GM	20.0	45.6	130.0	cm	18
Tall and medium forbs	FT, FM	20.0	21.7	30.0	cm	6
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	2.0	6.3	10.0	cm	12

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	93	22.4	9.1	*Min.*	2	B
	122	27.9	13.9	*Avg*		
	150	33.5	18.6	*Max.*		
Picea mariana	51	13.5	6.4	*Min.*	2	B
	54	13.6	6.6	*Avg*		
	58	13.7	6.7	*Max.*		

Mapunit Components

Common Name (Soils Name):

Boreal-taiga gravelly schist slopes, frozen (Typic Historthels, loamy-skeletal)

Boreal-taiga gravelly slopes, frozen (Typic Historthels, loamy-skeletal)

Boreal-taiga gravelly till slopes, frozen (Typic Historthels, loamy-skeletal)

Boreal-taiga high elevation silty loess slopes, frozen (Typic Historthels, coarse-silty)

Boreal-taiga loamy drift slopes, frozen (Typic Historthels, coarse-loamy)

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):*
10ES1	Boreal Terrace Escarpments with Discontinuous Permafrost (Typic Eutrocryepts, coarse-loamy-Typic Historthels, coarse-silty-Typic Historthels, loamy-skeletal Complex, 5 to 70 percent slopes)
10P3	Boreal Dissected Plateaus with Discontinuous Permafrost (Typic Historthels, coarse-silty-Typic Histoturbels, coarse-silty-Typic Umbrorthels, coarse-silty Association, 0 to 20 percent slopes)
10TS	Boreal Plateaus with Continuous Permafrost (Typic Historthels, coarse-silty-Typic Histoturbels, coarse-silty Association, 0 to 20 percent slopes)
10TS1	Boreal Mountain Toeslopes with Discontinuous Permafrost, Nenana Gravels (Typic Historthels, loamy-skeletal-Typic Histoturbels, coarse-silty Association, 0 to 14 percent slopes)
5MS21	Boreal and Subalpine Schist Mountains with Discontinuous Permafrost (Humic Cryaquepts, loamy-skeletal-Typic Dystrocrepts, loamy-skeletal-Typic Historthels, loamy-skeletal Association, 10 to 50 percent slopes)
7MS4	Boreal Lower Mountain Slopes with Continuous Permafrost (Typic Historthels, coarse-loamy, 10 to 22 percent slopes)
7P4	Boreal Glaciated Plains and Hills with Discontinuous Permafrost (Typic Haplocryods, loamy-skeletal-Typic Historthels, coarse-loamy-Typic Eutrocryepts, sandy-skeletal Association, 0 to 20 percent slopes)
7TP3	Boreal and Alpine Hills with Discontinuous Permafrost (Typic Haplogelods, loamy-skeletal-Oxyaquic Eutrocryepts, coarse-loamy-Typic Historthels, loamy-skeletal Association, 0 to 35 percent slopes)
7TP4	Boreal and Alpine Till Plains with Continuous Permafrost (Typic Historthels, loamy-skeletal Association 0 to 12 percent slopes)
7TP5	Boreal and Alpine Till Plains and Hills with Discontinuous Permafrost (Typic Historthels, loamy-skeletal-Typic Haplogelods, loamy-skeletal Association, 2 to 24 percent slopes)
8MFS1	Boreal Schist Lower Mountain Slopes with Continuous Permafrost (Typic Historthels, loamy-skeletal-Typic Historthels, coarse-loamy-Typic Histoturbels, loamy-skeletal Association, 8 to 25 percent slopes)

Geographically Associated Landtypes

M135A_105—Loamy Frozen Terraces, Wet:

This site occurs on terraces with wetter soils. The climax plant community is "Black spruce/tussock cottongrass woodland."

M135A_303—Gravelly Mountains, Acid:

This site occurs on higher slopes and adjacent ridges. The climax plant community is "Green alder/red current/bluejoint scrub."

M135A_354—Loamy Slopes, Wet:

This site occurs on moderately deep to deep soils over bedrock. The climax plant community is "White spruce/willow woodland, wet."

M135A_358—Gravelly Slopes:

This site occurs on slightly higher slopes and well drained soils with gravelly surface textures. The climax plant community is "Shrub birch-bog blueberry scrub."

Similar Landtypes

M135A_105—Loamy Frozen Terraces, Wet:

This site has wetter soils. The climax plant community is "Black spruce/tussock cottongrass woodland."

M135A_113—Loamy Frozen Slopes, Ice Cored:

This site has well drained soils and occurs on steeper slopes. The climax plant community is "Black spruce/green alder woodland."