

## Gravelly Frozen Slopes, Ruptic (M135A\_182)

### Ecoregion Classification

**Section:** Alaska Mountains (M135A)

**Subsection(s):** Teklanika Alpine Mountains & Plateaus (M135A.M6)

Alpine Mountains (M135A.M2)

Alpine Outer Range & Kantishna Hills (M135A.M1)

Glaciated Uplands (M135A.G1)

### Physiographic Features

**Elevation (meters):** *RV* 872 *Range* 275 to 1,546

**Slope Gradient (percent):** 10 0 to 25

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

**Landform:** nonsorted circles on hills; nonsorted circles on mountains; nonsorted circles on plains; nonsorted circles on plateaus; nonsorted circles on till plains

**Landform Positions:** backslopes; footslopes; shoulders; summits; toeslopes

*Frequency*

**Flooding:** None

**Ponding:** None

### Climatic Features

**Annual Precipitation (millimeters):** *RV* 690 *Range* 426 to 2,466

**Annual Air Temperature (°C):** -3.6 -10.7 to -2.0

**Frost Free Days:** 60 50 to 70

### Soil Features

**Parent Materials:** silty eolian deposits over gravelly cryoturbate  
silty eolian deposits over gravelly cryoturbate derived from schist

**Rooting Depth (cm):** *RV:* 34 *Range:* 3 to 83

#### 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)
1	moderately decomposed plant material; slightly decomposed plant material	moderately rapid	.34	4.6 to 4.8	30	
2 to 4	silt loam	moderate	.26 to .40	4.4 to 5.6	12	
8 to 23	very channery silt loam; gravelly loam	moderately rapid	.10 to .12	4.5 to 6.4	5 to 6	6

**Restrictive Features:** bedrock (paralithic) at 88 to 150 cm or more  
permafrost at 120 to 150 cm or more  
strongly contrasting textural stratification at 3 to 5 cm

**Water Table (May to September):** 80 to 120 cm

**Drainage Class:** moderately well drained

## Vegetation Features

### Common Vegetation Types:

#### Vegetation Type

Shrub birch/sedge scrub mosaic  
Lichen/dwarf scrub mosaic

#### Ecological Status

Climax plant community  
Climax plant community on drier microsites

### Ecological Status-Transition Description:

Two intricately associated but distinct plant communities occur as a complex mosaic on this site. A potential plant community with shrub birch/sedge scrub mosaic is described for the typical site and a second potential with lichen/dwarf scrub mosaic is described for a dry micro-site. No transitional pathways between these two vegetation types or other plant communities have been identified for 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.	
Shrub birch/sedge scrub mosaic	62	15	22	30	7
Lichen/dwarf scrub mosaic	52	11	22	30	5

### Notable Plants:

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

#### Vegetation Type

Shrub birch/sedge scrub mosaic

#### Symbol

CAWI3 Carex williamsii  
DEBR2 Deschampsia brevifolia  
PIRO60 Pilophorus robustus

#### Scientific Name

## Characteristics of Shrub birch/sedge scrub mosaic

**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 = 24. Only those vascular, lichen, and bryophyte species with average cover  $\geq 5\%$  and constancy  $\geq 15\%$  are listed.

Stratum	Symbol	Scientific Name	Percent Canopy Cover			Percent Constancy	Importance Value
			Min.	Avg.	Max.		
SL-ST	SAGL	Salix glauca	0.1	6	25	33	14
SL-SM	B EGL	Betula glandulosa	0.1	41	80	96	63
SL-SM	SAPU15	Salix pulchra	0.1	11	50	88	31
SD-SL	LEPAD	Ledum palustre ssp. decumbens	0.1	17	50	75	36
SD-SL	VAUL	Vaccinium uliginosum	0.1	16	35	83	36
SD	EMNI	Empetrum nigrum	0.1	10	30	67	26
SD	VAVIM99	Vaccinium vitis-idaea spp. Minus	0.1	6	15	67	20
SD	DROC	Dryas octopetala	0.1	7	25	17	11
SD	SARE2	Salix reticulata	0.1	6	20	21	11
GM	CAREX	Carex	7.0	28	60	38	33
GM	CABI5	Carex bigelowii	10.0	27	70	38	32
GM	CAPO	Carex podocarpa	0.1	17	35	21	19
L	LICHEN	total lichens	0.0	11	70	100	33
M	MOSS	total bryophytes-mosses and liverworts	10.0	62	95	100	79
M1	PLSC70	Pleurozium schreberi	0.1	17	40	33	24
M1	ZZMOSS	unknown-mosses	0.1	13	35	38	22
M1	SPHAG2	Sphagnum	0.1	8	20	42	18
M1	HYSP70	Hylocomium splendens	0.1	8	15	29	15
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	0.0	18	60	100	42
B	SOIL	mineral-bare soil	0.0	2	10	100	14
B	ROCK	mineral-surface rock fragments	0.0	1	10	100	10
B	WATER	water	0.0	1	7	100	10
B	LITTER2	litter-woody debris >2.5 cm	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	1.0	1.4	2.0	m	3
Tree regeneration	TR	1.0	1.0	1.0	m	1
Tall shrubs	ST	3.5	3.5	3.5	m	1
Medium shrubs	SM	1.0	1.3	1.8	m	7
Low shrubs	SL	20.0	46.2	100.0	cm	49
Dwarf shrubs	SD	2.0	9.8	20.0	cm	24
Tall and medium grasses and grass-likes	GT, GM	20.0	49.6	120.0	cm	12
Tall and medium forbs	FT, FM	15.0	41.2	100.0	cm	4
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	1.0	5.1	10.0	cm	20

### Characteristics of Lichen/dwarf scrub mosaic

**Ecological Status:** Climax plant community on drier microsites

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

Cover, constancy, and importance are based on 1997-2002 field season data. Number of stands sampled = 17. 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.		
SD-SM	B EGL	Betula glandulosa	0.1	5	20	100	22
SD-SL	VAUL	Vaccinium uliginosum	0.1	9	25	82	27
SD	ARAL13	Arctous alpina	5.0	15	50	71	33
SD	EMNI	Empetrum nigrum	0.1	7	25	59	20
SD	DROC	Dryas octopetala	0.1	8	30	41	18
SD	SAAR4	Salix arctica	0.1	5	20	59	17
SD	DILA	Diapensia lapponica	0.1	5	15	53	16
SD	LOPR	Loiseleuria procumbens	2.0	6	15	41	16
SD	SARE2	Salix reticulata	0.1	7	20	18	11
GM	CAPO	Carex podocarpa	1.0	8	20	18	12
L	LICHEN	total lichens	15.0	64	90	100	80
L1	CLADI3	Cladina	0.1	13	50	29	19
L1	STERE2	Stereocaulon	0.1	9	20	41	19
L1	FLNI	Flavocetraria nivalis	0.1	13	30	24	18
L1	CLMI61	Cladina mitis group	5.0	12	20	24	17
L1	FLCU	Flavocetraria cucullata	5.0	10	25	24	15
M	MOSS	total bryophytes-mosses and liverworts	0.0	10	20	100	32
M1	ZZMOSS	unknown-mosses	0.1	7	15	29	14
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	0.0	5	25	100	22
B	ROCK	mineral-surface rock fragments	0.0	5	30	100	22
B	SOIL	mineral-bare soil	0.0	4	35	100	20
B	LITTER2	litter-woody debris >2.5 cm	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	0.5	0.5	0.5	m	1
Medium shrubs	SM	1.5	1.5	1.5	m	1
Low shrubs	SL	40.0	62.5	100.0	cm	8
Dwarf shrubs	SD	1.0	10.0	20.0	cm	43
Tall and medium grasses and grass-likes	GT, GM	30.0	43.3	60.0	cm	3
Tall and medium forbs	FT, FM	10.0	15.0	20.0	cm	2
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	0.5	6.5	10.0	cm	24

## Mapunit Components

### Common Name (Soils Name):

- Alpine-scrub gravelly circles, frozen (Ruptic-Histic Aquiturbels, coarse-loamy)
- Alpine-scrub gravelly schist circles, frozen (Ruptic-Histic Aquiturbels, loamy-skeletal)
- Alpine-scrub gravelly till circles, frozen (Ruptic-Histic Aquiturbels, 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):

- 10P1 Alpine Plateaus and Mountain Summits with Discontinuous Permafrost, Nenana Gravels  
(Ruptic-Histic Aquiturbels, coarse-loamy-Typic Historthels, loamy-skeletal Association, 0 to 15 percent slopes)
- 10P4 Alpine and Subalpine Plateau Summits  
(Ruptic-Histic Aquiturbels, coarse-loamy-Typic Eutrogelepts, loamy skeletal-Typic Historthels, loamy-skeletal Association, 0 to 16 percent slopes)
- 5P1 Alpine Schist Mountain Summits with Discontinuous Permafrost  
(Ruptic Histic Aquiturbels, loamy-skeletal-Typic Dystrogelepts, loamy-skeletal-Tpic Aquiturbels, loamy-skeletal Association, 0 to 25 percent slopes)
- 5SA2 Alpine and Subalpine Schist Lower Mountain Slopes with Discontinuous Permafrost, Cool  
(Ruptic-Histic Aquiturbels, loamy-skeletal-Oxyaquic Eutrocryepts, loamy-skeletal-Typic Histoturbels, loamy-skeletal Association, 12 to 36 percent slopes)
- 5TS1 Alpine Schist Lower Mountain Slopes with Discontinuous Permafrost, Warm  
(Ruptic-Histic-Aquiturbels, loamy-skeletal-Typic Dystrogelepts, loamy-skeletal-Typic Histoturbels, loamy-skeletal Association, 5 to 45 percent slopes)
- 7MS3 Alpine Glaciated Mountains with Discontinuous Permafrost  
(Typic Historthels, loamy-skeletal-Ruptic-Histic Aquiturbels, coarse-loamy-Oxyaquic Eutrocryepts, coarse-loamy Association, 8 to 25 percent slopes)
- 7NG Alpine Plains and Hills with Discontinuous Permafrost, Nenana Gravels  
(Typic Eutrogelepts, loamy-skeletal-Typic Historthels, loamy-skeletal-Ruptic-Histic Aquiturbels, coarse-loamy Association, 0 to 25 percent slopes)
- 7TM Alpine Glaciated Low Mountains with Discontinuous Permafrost  
(Typic Eutrogelepts, loamy-skeletal-Ruptic-Histic Aquiturbels, coarse-loamy-Typic Historthels, loamy-skeletal Association, 2 to 42 percent slopes)
- 7TP Alpine Till Plains with Discontinuous Permafrost  
(Typic Historthels, loamy-skeletal-Oxyaquic Eutrogelepts, coarse-loamy-Ruptic-Histic Aquiturbels, coarse-loamy Association, 0 to 16 percent slopes)
- 8LM Alpine Low Loess Mountains with Discontinuous Permafrost  
(Typic Histoturbels, coarse-silty-Ruptic-Histic Aquiturbels, loamy-skeletal Association, 5 to 25 percent slopes)
- 8LM1 Alpine Low Schist Mountains with Discontinuous Permafrost  
(Typic Histoturbels, loamy-skeletal-Ruptic-Histic Aquiturbels, loamy-skeletal Association, 0 to 20 percent slopes)

### Geographically Associated Landtypes

#### M135A\_180—Gravelly Frozen Slopes:

This site lacks significant micro-relief and has relatively uniform vegetation cover and moderate depth to permafrost. The climax plant community is "Shrub birch-mixed ericaceous shrub/sedge scrub."

#### M135A\_183—Gravelly Frozen Slopes, Cold:

This site occurs on slightly higher elevations. The climax plant community is "Sedge/dwarf willow-white mountain avens wet meadow."

#### M135A\_405—Swales:

This site occurs on very deep, seasonally wet soils in swales. The climax plant community is "Green alder scrub mosaic."

### ***Similar Landtypes***

#### ***M135A\_177—Loamy Frozen Slopes, High Elevation:***

This site occurs on thick loamy surface layered soils. The climax plant community is "Shrub birch-bog blueberry/moss scrub."

#### ***M135A\_180—Gravelly Frozen Slopes:***

This site lacks significant micro-relief and has a relatively uniform vegetation. The climax plant community is "Shrub birch-mixed ericaceous shrub/sedge scrub."