

## Gravelly Slopes, High Elevation (M135A\_356)

### Ecoregion Classification

**Section:** Alaska Mountains (M135A)

**Subsection(s):** Alpine Flood Plains & Terraces & Fans (M135A.V1)

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* *Range*  
 848                      261 to 1,536

**Slope Gradient (percent):**    13                      0 to 50

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

**Landform:** fan terraces on alluvial fans on mountains; hills; hills on plateaus; mountains; pitted outwash plains; ridges on mountains; stream terraces

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

*Frequency*

**Flooding:**    None

**Ponding:**    None

### Climatic Features

**Annual Precipitation (millimeters):** *RV* *Range*  
 701                      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:** gravelly colluvium derived from schist  
 silty eolian deposits over gravelly residuum  
 silty eolian deposits over gravelly till  
 silty eolian deposits over sandy and gravelly alluvium derived from diorite  
 silty eolian deposits over sandy and gravelly outwash

**Rooting Depth (cm):** *RV*: 29    *Range*: 3 to 62

#### 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)
2 to 8	moderately decomposed plant material; slightly decomposed plant material	moderately rapid	.34	4.0 to 4.5	30	
2 to 26	silt loam	moderate or moderately rapid	.12 to .40	4.0 to 5.2	6 to 12	
1 to 26	silt loam; very gravelly sandy loam; extremely gravelly coarse sand	moderate to rapid	.03 to .19	4.0 to 5.8	2 to 12	2 to 6

**Restrictive Features:** bedrock (paralithic) at 86 to 150 cm or more  
 strongly contrasting textural stratification at 8 to 15 cm in some components

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

**Drainage Class:** somewhat excessively drained or well drained

### Vegetation Features

#### Common Vegetation Types:

Vegetation Type	Ecological Status
Shrub birch-dwarf ericaceous scrub mosaic	Climax plant community
Lichen/white mountain avens-alpine bearberry dwarf scrub mosaic	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-dwarf ericaceous scrub mosaic is described for the typical site and a second potential with lichen/white mountain avens-alpine bearberry 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-dwarf ericaceous scrub mosaic	71	9	26	50	5
Lichen/white mountain avens-alpine bearberry dwarf scrub mosaic	89	17	26	36	10

#### Notable Plants:

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

Vegetation Type	Symbol	Scientific Name
Shrub birch-dwarf ericaceous scrub mosaic	ASAB	Astragalus aboriginorum
	CASTS	Calamagrostis stricta ssp. stricta
	DOGO	Douglasia gormanii
	FEBR2	Festuca brevissima
	SESI	Selaginella sibirica
Lichen/white mountain avens-alpine bearberry dwarf scrub mosaic	FEBR2	Festuca brevissima
	STDI4	Stellaria dicranoides

### Characteristics of Shrub birch-dwarf ericaceous 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 = 25. 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	BEGL	Betula glandulosa	0.1	41	90	100	64
SD-SL	VAUL	Vaccinium uliginosum	0.1	22	40	96	46
SD-SL	LEPAD	Ledum palustre ssp. decumbens	0.1	11	40	88	31
SD	ARAL13	Arctous alpina	0.1	16	75	56	30
SD	EMNI	Empetrum nigrum	0.1	8	20	84	26
SD	VAVIM99	Vaccinium vitis-idaea spp. Minus	0.1	6	20	72	21
SD	DROC	Dryas octopetala	0.1	15	75	28	20
SD	ARRU6	Arctous rubra	0.1	5	15	20	10
GM	CAREX	Carex	0.1	5	20	40	14
L	LICHEN	total lichens	0.1	25	60	100	50
L1	STERE2	Stereocaulon	0.1	7	20	44	18
L1	CLADI3	Cladina	0.1	5	25	48	15
L1	CLMI61	Cladina mitis group	3.0	11	20	16	13
M	MOSS	total bryophytes-mosses and liverworts	0.0	38	90	100	62
M1	HYSP70	Hylocomium splendens	3.0	35	90	24	29
M1	PLSC70	Pleurozium schreberi	2.0	21	45	32	26
M1	ZZMOSS	unknown-mosses	0.1	8	20	28	15
M1	PTCR70	Ptilium crista-castrensis	0.1	7	20	16	11

Stratum	Symbol	Scientific Name	Percent Canopy Cover			Percent Constancy	Importance Value
			Min.	Avg.	Max.		
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	0.0	6	30	100	24
B	ROCK	mineral-surface rock fragments	0.0	3	20	100	17
B	SOIL	mineral-bare soil	0.0	1	15	100	10
B	LITTER2	litter-woody debris >2.5 cm	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			Units	Number of Records
		Min.	Avg.	Max.		
Trees	TT, TM, TS	0.6	1.9	4.5	m	7
Tree regeneration	TR	1.0	2.6	4.2	m	2
Medium shrubs	SM	1.0	1.6	2.5	m	9
Low shrubs	SL	10.0	51.7	100.0	cm	50
Dwarf shrubs	SD	1.0	10.8	20.0	cm	86
Tall and medium grasses and grass-likes	GT, GM	20.0	37.0	120.0	cm	10
Tall and medium forbs	FT, FM	10.0	16.4	30.0	cm	11
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	1.0	8.6	10.0	cm	68

### Characteristics of Lichen/white mountain avens-alpine bearberry 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 = 25. 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.		
SL-ST	ALVIC	Alnus viridis ssp. crispa	0.1	10	75	32	18
SD-SM	BEGL	Betula glandulosa	0.1	11	50	100	33
SD-SL	VAUL	Vaccinium uliginosum	0.1	11	35	80	30
SD-SL	LEPAD	Ledum palustre ssp. decumbens	0.1	9	25	60	23
SD	ARAL13	Arctous alpina	0.1	18	35	68	35
SD	DROC	Dryas octopetala	0.1	16	80	60	31
SD	EMNI	Empetrum nigrum	0.1	12	30	64	28
SD	VAVIM99	Vaccinium vitis-idaea spp. Minus	0.1	6	15	60	19
SD	SARE2	Salix reticulata	0.1	5	20	20	10
L	LICHEN	total lichens	0.0	40	90	100	63
L1	CLMI61	Cladina mitis group	1.0	15	40	32	22
L1	STERE2	Stereocaulon	0.1	5	25	60	17
L1	FLNI	Flavocetraria nivalis	0.1	5	20	28	12
L1	CETRA2	Cetraria	0.1	8	30	16	11
L1	CLRA61	Cladina rangiferina group	1.0	5	10	16	9
L1	CLST60	Cladina stellaris	1.0	5	10	16	9
L2	L2ALL	total lichens-crustose and soil crust	0.1	8	30	24	14
M	MOSS	total bryophytes-mosses and liverworts	0.0	19	65	100	44
M1	ZZMOSS	unknown-mosses	0.1	7	15	40	17
M1	PLSC70	Pleurozium schreberi	1.0	13	25	16	14
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	0.0	18	90	100	42
B	ROCK	mineral-surface rock fragments	0.0	11	55	100	33
B	SOIL	mineral-bare soil	0.0	3	10	100	17
B	LITTER2	litter-woody debris >2.5 cm	0.0	0	3	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	2.5	8.0	m	8
Tree regeneration	TR	0.5	0.7	0.8	m	2
Tall shrubs	ST	3.0	3.0	3.0	m	1
Medium shrubs	SM	1.2	1.5	2.0	m	7
Low shrubs	SL	20.0	54.8	100.0	cm	25
Dwarf shrubs	SD	2.0	9.2	20.0	cm	69
Tall and medium grasses and grass-likes	GT, GM	20.0	26.7	30.0	cm	3
Tall and medium forbs	FT, FM	10.0	20.0	30.0	cm	10
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	1.0	7.3	10.0	cm	48

### Mapunit Components

#### Common Name (Soils Name):

- Alpine-scrub gravelly outwash slopes (Typic Haplogelods, sandy-skeletal)
- Alpine-scrub mosaic gravelly colluvial schist slopes (Typic Dystrogelepts, loamy-skeletal)
- Alpine-scrub mosaic gravelly diorite terraces (Typic Haplogelods, sandy-skeletal)
- Alpine-scrub mosaic gravelly slopes (Typic Eutrogelepts, loamy-skeletal)
- Alpine-scrub mosaic gravelly till slopes (Typic Eutrogelepts, loamy-skeletal)

### 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):

10LM	Alpine Low Mountains with Discontinuous Permafrost, Nenana Gravels (Typic Historthels, loamy-skeletal-Typic Eutrogelepts, loamy-skeletal Association, 2 to 30 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)
5SA11	Alpine and Subalpine Schist Mountains (Typic Dystrogelepts, loamy-skeletal-Oxyaquic Eutrocryepts, loamy-skeletal Association, 5 to 40 percent slopes)
7FP21	Alpine Diorite Terraces and Flood Plains (Typic Haplogelods, sandy-skeletal-Oxyaquic Gelorthents, sandy-skeletal-Typic Haplogelods, coarse-loamy over sandy-skeletal Complex)
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)
7P1	Alpine Glaciated Plains and Hills with Discontinuous Permafrost (Typic Haplogelods, sandy-skeletal-Typic Historthels, coarse-loamy over sandy-skeletal-Oxyaquic Eutrocryepts, coarse-loamy Association, 0 to 25 percent slopes)
7TP2	Alpine Till Plains and Hills with Discontinuous Permafrost (Typic Haplogelods, loamy-skeletal-Typic Eutrogelepts, loamy-skeletal-Typic Historthels, loamy-skeletal Association, 2 to 50 percent slopes)
7V1A	Alpine Diorite Fans (Typic Dystrogelepts, loamy-skeletal-Typic Haplogelods, sandy-skeletal Association, 0 to 6 percent slopes)
7V1B	Alpine and Subalpine Diorite Fans and Flood Plains with Discontinuous Permafrost (Typic Haplogelods, sandy-skeletal-Typic Historthels, coarse-loamy over sandy-skeletal-Typic Cryorthents, sandy-skeletal Association, 3 to 15 percent slopes)
8MBS	Alpine Schist Mountains with Discontinuous Permafrost (Typic Dystrogelepts, loamy-skeletal-Typic Historthels, loamy-skeletal Association, 14 to 50 percent slopes)

### Geographically Associated Landtypes

#### M135A\_358—Gravelly Slopes:

This site occurs on slightly lower elevations. The climax plant community is "Shrub birch-bog blueberry scrub."

#### M135A\_405—Swales:

This site occurs on swales with seasonally wet soils. The climax plant community is "Green alder scrub mosaic."

### ***Similar Landtypes***

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

This site has soils that are moderately deep over permafrost. The climax plant community is "Shrub birch-bog blueberry/moss scrub."

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

This site occurs on wetter soils with permafrost at moderate depths. The climax plant community is "Shrub birch-mixed ericaceous shrub/sedge scrub."

#### ***M135A\_352—Gravelly and Sandy Terraces, High Elevation:***

This site occurs at lower elevation. The climax plant community is "Shrub birch-bog blueberry/lichen scrub."

#### ***M135A\_358—Gravelly Slopes:***

This site occurs at lower elevation. The climax plant community is "Shrub birch-bog blueberry scrub."