

Gravelly Mountains, High Elevation (M135A_310)

Ecoregion Classification

Section: Alaska Mountains (M135A)

Subsection(s): Alpine Mountains (M135A.M2)

Alpine Outer Range & Kantishna Hills (M135A.M1)

Glaciated Uplands (M135A.G1)

Nonvegetated Alpine Mountains (M135A.B1)

Physiographic Features

Elevation (meters): *RV* 1,070 *Range* 301 to 2,053

Slope Gradient (percent): 29 0 to 70

Aspect (clockwise direction): non-influencing

Landform: fan terraces on alluvial fans on mountains; hills; hummocks on mountains; mountains; ridges on mountains; solifluction lobes on cirque floors; solifluction lobes on mountains; solifluction lobes on ridges on mountains

Landform Positions: backslopes; footslopes; shoulders; summits

Frequency

Flooding: None

Ponding: None

Climatic Features

Annual Precipitation (millimeters): *RV* 966 *Range* 446 to 3,285

Annual Air Temperature (°C): -5.1 -11.4 to -1.7

Frost Free Days: 60 50 to 70

Soil Features

Parent Materials: gravelly colluvium derived from diorite
 gravelly colluvium derived from schist
 gravelly cryoturbate derived from schist
 gravelly drift derived from diorite
 gravelly till
 gravelly till derived from diorite
 silty eolian deposits over gravelly colluvium derived from diorite
 silty eolian deposits over gravelly colluvium derived from shale
 silty eolian deposits over gravelly colluvium derived from volcanic and sedimentary rock
 silty eolian deposits over gravelly till
 silty eolian deposits over sandy and gravelly alluvium

Rooting Depth (cm): *RV:* 38 *Range:* 2 to 92

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 to 5	slightly decomposed plant material	moderately rapid	.34	4.0 to 6.0	30	80
2 to 9	silt loam; gravelly silt loam	moderate to moderately rapid	.10 to .40	4.2 to 7.1	6 to 12	16 to 20
4 to 35	very channery silt loam	moderately rapid to rapid	.03 to .12	4.2 to 7.8	6	2 to 16

Restrictive Features: bedrock (paralithic) at 72 to 150 cm or more
 strongly contrasting textural stratification at 6 to 12 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
White mountain avens-mixed ericaceous shrub dwarf alpine scrub	Climax plant community

Ecological Status-Transition Description:

A single plant community with white mountain avens-mixed ericaceous shrub dwarf scrub is identified on this site. No transitional pathways to other 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.	
White mountain avens-mixed ericaceous shrub dwarf alpine scrub	271	14	34	72	71

Notable Plants:

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

Vegetation Type	Symbol	Scientific Name
White mountain avens-mixed ericaceous shrub dwarf alpine scrub	BOMI	Botrychium minganense
	CAWI3	Carex williamsii
	DOAL2	Douglasia alaskana
	DOGO	Douglasia gormanii
	DRLOL	Draba lonchocarpa var. lonchocarpa
	DRMA7	Draba macounii
	DRRU	Draba ruaxes
	DRST3	Draba stenopetala
	ERER8	Erigeron eriocephalus
	FEBA	Festuca baffinensis
	FEBR2	Festuca brevissima
	MIBI9	Minuartia biflora
	STAL3	Stellaria alaskana
	STDI4	Stellaria dicranoides

Characteristics of White mountain avens-mixed ericaceous shrub dwarf alpine scrub

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 = 139. 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	VAUL	Vaccinium uliginosum	0.1	13	60	58	27
SD	DROC	Dryas octopetala	0.1	35	80	91	56
SD	SARE2	Salix reticulata	0.1	9	50	56	22
SD	ARAL13	Arctous alpina	0.1	10	50	37	19
SD	CATE11	Cassiope tetragona	0.1	6	35	54	18
SD	SAAR4	Salix arctica	0.1	5	40	60	17
SD	EMNI	Empetrum nigrum	0.1	6	30	44	16
SD	SAPO	Salix polaris	0.1	5	25	24	11
GM-GT	FEAL	Festuca altaica	0.1	5	30	42	14
GM	CAREX	Carex	0.1	5	55	21	10
L	LICHEN	total lichens	0.0	26	85	100	51
L1	CLMI61	Cladina mitis group	0.1	11	45	30	18
L1	STERE2	Stereocaulon	0.1	6	40	53	18
L1	ALOC60	Alectoria ochroleuca	0.1	5	20	26	11
L1	FLNI	Flavocetraria nivalis	0.1	6	30	22	11
L1	CLADI3	Cladina	0.1	5	45	18	9
L2	L2ALL	total lichens-crustose and soil crust	0.1	11	35	17	14

Stratum	Symbol	Scientific Name	Percent Canopy Cover			Percent Constancy	Importance Value
			Min.	Avg.	Max.		
L2	ZZCRUST	unknown-crustose and soil crust lichens	0.1	5	50	29	12
M	MOSS	total bryophytes-mosses and liverworts	0.0	22	90	100	47
M1	ZZMOSS	unknown-mosses	0.1	15	55	48	27
M1	RHRU70	Rhytidium rugosum	0.1	7	30	17	11
M1	RACOM	Racomitrium	0.1	6	15	16	10
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	0.0	19	95	100	44
B	ROCK	mineral-surface rock fragments	0.0	14	65	100	37
B	SOIL	mineral-bare soil	0.0	4	50	100	20
B	LITTER2	litter-woody debris >2.5 cm	0.0	0	2	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	0.3	1.0	2.0	m	4
Tree regeneration	TR	0.3	0.3	0.3	m	1
Medium shrubs	SM	1.2	1.7	2.5	m	10
Low shrubs	SL	10.0	51.5	110.0	cm	36
Dwarf shrubs	SD	1.0	9.3	20.0	cm	309
Tall and medium grasses and grass-likes	GT, GM	4.0	26.6	90.0	cm	42
Tall and medium forbs	FT, FM	10.0	19.9	30.0	cm	34
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	0.1	7.0	10.0	cm	424

Mapunit Components

Common Name (Soils Name):

- Alpine-dwarf scrub dark gravelly colluvial slopes (Typic Haplogelolls, loamy-skeletal)
- Alpine-dwarf scrub gravelly colluvial slopes (Typic Eutrogelepts, loamy-skeletal)
- Alpine-dwarf scrub gravelly diorite colluvial slopes (Typic Dystrogelepts, loamy-skeletal)
- Alpine-dwarf scrub gravelly diorite fans (Typic Dystrogelepts, loamy-skeletal)
- Alpine-dwarf scrub gravelly diorite till hummocks and lobes (Typic Eutrogelepts, loamy-skeletal)
- Alpine-dwarf scrub gravelly diorite till slopes (Typic Dystrogelepts, sandy-skeletal)
- Alpine-dwarf scrub gravelly fan terraces (Typic Eutrogelepts, sandy-skeletal)
- Alpine-dwarf scrub gravelly schist colluvial slopes (Typic Dystrogelepts, loamy-skeletal)
- Alpine-dwarf scrub gravelly schist steps and lobes (Typic Dystrogelepts, loamy-skeletal)
- Alpine-dwarf scrub gravelly till slopes (Typic Eutrogelepts, loamy-skeletal)
- Alpine-dwarf scrub gravelly till steps and lobes (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):

- 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)
- 5SA1 Alpine Schist Mountains
(Typic Dystrogelepts, loamy-skeletal-Rock Outcrop Association, 12 to 55 percent slopes)
- 7MFA Alpine Schist Lower Mountain Slopes with Discontinuous Permafrost
(Typic Historthels, loamy-skeletal-Oxyaquic Eutrogelepts, loamy-skeletal-Typic Dystrogelepts, loamy-skeletal Association, 0 to 36 percent slopes)
- 7MS1D Alpine Dark Sedimentary Mountains
(Typic Haplogelolls, loamy-skeletal-Rock Outcrop-Typic Eutrogelepts, loamy skeletal Association, 25 to 70 percent slopes)
- 7MS1L Alpine Mixed Lithology Mountains
(Rock Outcrop-Typic Eutrogelepts, loamy skeletal Association, 25 to 70 percent slopes)

- 7MS31 Alpine Glaciated Mountain Summits and Benches with Discontinuous Permafrost
(Typic Eutrogelepts, loamy-skeletal-Typic Historthels, loamy-skeletal-Oxyaquic Eutrogelepts, coarse-loamy Association, 2 to 20 percent slopes)
- 7MSA Alpine Diorite Mountains, Interior
(Typic Dystrogelepts, loamy-skeletal-Rock Outcrop Association, 20 to 150 percent slopes)
- 7MSC Alpine Mountain Fans
(Typic Eutrogelepts, sandy-skeletal-Typic Gelorthents, sandy-skeletal-Typic Eutrogelepts, loamy-skeletal Association, 15 to 70 percent slopes)
- 7MSHD Alpine Dark Sedimentary Mountains, High Elevation
(Rock Outcrop-Typic Haplogelolls, loamy-skeletal Association, 25 to 150 percent slopes)
- 7MSHL Alpine Mixed Lithology Mountains, High Elevation
(Rock Outcrop-Typic Eutrogelepts, loamy-skeletal Association, 25 to 70 percent slopes)
- 7MSHS Alpine Schist Mountains, High Elevation
(Rock Outcrop-Typic Dystrogelepts, loamy-skeletal Association, 0 to 150 percent slopes)
- 7SA1 Alpine and Subalpine Mountains
(Rock Outcrop-Typic Haplogelolls, loamy-skeletal-Typic Eutrogelepts, loamy-skeletal Association, 25 to 85 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)
- 7TM1 Alpine Glaciated Mountains with Discontinuous Permafrost, High Elevation
(Typic Eutrogelepts, loamy-skeletal-Typic Historthels, loamy-skeletal-Oxyaquic Eutrogelepts, coarse-loamy Association, 2 to 50 percent slopes)
- 7TM2 Alpine Glaciated Mountains with Discontinuous Permafrost, Cool
(Typic Historthels, loamy-skeletal-Typic Eutrogelepts, loamy-skeletal-Oxyaquic Eutrocryepts, coarse-loamy Association, 10 to 50 percent slopes)
- 7TM21 Alpine Glaciated Low Diorite Mountains with Discontinuous Permafrost
(Typic Dystrogelepts, sandy-skeletal-Typic Eutrogelepts, loamy-skeletal-Typic Haplogelods, loamy-skeletal Association, 8 to 40 percent slopes)
- 7TM24 Alpine Diorite Mountains with Discontinuous Permafrost
(Typic Dystrogelepts, loamy-skeletal Association, 14 to 65 percent slopes)
- 7TMS Alpine Glaciated Low Mountain Summits
(Typic Eutrogelepts, loamy-skeletal Association, 0 to 48 percent slopes)
- 7TP8 Alpine Glaciated Diorite Plains and Hills
(Typic Haplogelods, loamy-skeletal-Typic Dystrogelepts, sandy-skeletal-Oxyaquic Eutrogelepts, loamy-skeletal Association, 2 to 35 percent slopes)
- 7V1A Alpine Diorite Fans
(Typic Dystrogelepts, loamy-skeletal-Typic Haplogelods, sandy-skeletal Association, 0 to 6 percent slopes)
- 7V5 Alpine Fans with Discontinuous Permafrost
(Typic Eutrogelepts, sandy-skeletal-Typic Historthels, coarse-loamy over sandy-skeletal-Typic Gelorthents, sandy-skeletal Association, 2 to 20 percent slopes)
- 8LMV Alpine and Subalpine Schist Mountain Valleys
(Typic Dystrogelepts, loamy-skeletal Association, 8 to 60 percent slopes)
- 8MS Alpine Schist Mountain Ridges with Discontinuous Permafrost
(Typic Dystrogelepts, loamy-skeletal-Rock Outcrop-Typic Aquiturbels, loamy-skeletal Association, 8 to 45 percent slopes)
- 9V12 Alpine Fans and Flood Plains, High Elevation
(Typic Eutrocryepts, sandy-skeletal-Riverwash-Typic Eutrogelepts, sandy-skeletal Complex, 0 to 30 percent slopes)

Geographically Associated Landtypes

M135A_306—Gravelly Mountains, Moist:

This site occurs on colder more northerly slopes. The climax plant community is "Cassiope-polar willow-mountain avens dwarf alpine scrub."

M135A_420—Swales, High Elevation:

This site occurs on swales. The climax plant community is "Diamondleaf willow-mixed willow scrub mosaic."

M135A_ROC—Rock and Ice, Nonvegetated:

This site is interspersed with the others and is more prevalent at higher elevations. The climax plant community is "Sparsely vegetated mountain slopes, Interior."