

Moraines, Ice Cored (M135A_802)

Ecoregion Classification

Section: Alaska Mountains (M135A)

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

Physiographic Features

Elevation (meters): *RV* 1,126 *Range* 758 to 1,683

Slope Gradient (percent): 26 10 to 45

Aspect (clockwise direction): non-influencing

Landform: moraines

Flooding: *Frequency* None

Ponding: None

Climatic Features

Annual Precipitation (millimeters): *RV* 1,024 *Range* 552 to 2,466

Annual Air Temperature (°C): -5.6 -10.7 to -2.5

Frost Free Days: 60 50 to 70

Soil Features

Parent Materials: gravelly drift derived from diorite
gravelly till

Rooting Depth (cm): *RV:* 31 *Range:* 8 to 68

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	moderately rapid	.34	4.2 to 7.6	30	80
6 to 8	very cobbly sandy loam; silt loam	moderately rapid	.10	6.2 to 7.7		6 to 8
22 to 24	extremely cobbly loamy coarse sand; extremely cobbly loam	moderately rapid or rapid	.04 to .10	6.6 to 8.5		6

Water Table (May to September): none

Drainage Class: excessively drained to well drained

Vegetation Features

Common Vegetation Types:

Vegetation Type

Moraine mountain avens dwarf scrub
Moraine poplar forest
Moraine mixed forb meadow
Moraine soapberry-barrenground willow-grayleaf willow scrub

Ecological Status

Climax plant community
Post climax plant community
Early stage of primary succession on moraines
Mid stage of primary succession on moraines

Ecological Status-Transition Description:

Three plant communities are identified on this site including a potential community with mountain avens dwarf scrub, moraine on more extensive meta-stable moraines, a mid-successional community with mixed forb meadow, moraine on recent, unstable moraine deposits, and a post potential community with poplar forest, moraine on extensive and relatively stable moraines.

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.	
Moraine mountain avens dwarf scrub	93	20	32	45	5
Moraine poplar forest	18	18	18	18	1
Moraine mixed forb meadow	12	12	12	12	1
Moraine soapberry-barrenground willow-grayleaf willow scrub	81	16	26	36	5

Alien Plants:

Alien plants include plants on Alaska Exotic Plant Information Clearinghouse Weed List, 2002.

Vegetation Type	Symbol	Scientific Name
Moraine soapberry-barrenground willow-grayleaf willow scrub	POPA2	Poa palustris

Notable Plants:

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

Vegetation Type	Symbol	Scientific Name
Moraine mountain avens dwarf scrub	CAAL6	Carex albonigra
Moraine soapberry-barrenground willow-grayleaf willow scrub	FEBR2	Festuca brevissima
	SASE4	Salix setchelliana

Characteristics of Moraine mountain avens dwarf 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 = 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.		
SD-SL	VAUL	Vaccinium uliginosum	0.1	10	30	50	22
SL	SANI10	Salix niphoclada	5.0	5	5	17	9
SD	DROC	Dryas octopetala	10.0	35	50	83	54
SD	DRIN4	Dryas integrifolia	0.1	22	60	50	33
SD	CATE11	Cassiope tetragona	10.0	12	15	33	20
SD	DRAL7	Dryas alaskensis	0.1	8	15	33	16
GM	FEAL	Festuca altaica	1.0	6	10	33	14
GM	KOMY	Kobresia myosuroides	5.0	5	5	17	9
L	LICHEN	total lichens	10.0	26	45	100	51
L1	STERE2	Stereocaulon	0.1	5	10	83	20
L1	CLMI61	Cladina mitis group	3.0	7	10	50	19
L1	CLADO3	Cladonia	0.1	6	15	50	17
L2	L2ALL	total lichens-crustose and soil crust	20.0	25	30	33	29
L2	ZZCRUST	unknown-crustose and soil crust lichens	2.0	5	7	50	16
M	MOSS	total bryophytes-mosses and liverworts	5.0	28	55	100	53
M1	ZZMOSS	unknown-mosses	7.0	13	25	83	33
M1	RACOM	Racomitrium	5.0	13	30	50	25
M1	PLSC70	Pleurozium schreberi	15.0	15	15	17	16
M1	POJU70	Polytrichum juniperinum	5.0	5	5	33	13
M1	RALA70	Racomitrium lanuginosum	0.1	5	10	33	13
B	ROCK	mineral-surface rock fragments	10.0	24	40	100	49
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	0.1	21	50	100	46
B	SOIL	mineral-bare soil	0.0	3	10	100	17
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.		
Low shrubs	SL	10.0	64.0	110.0	cm	5
Dwarf shrubs	SD	1.0	4.6	10.0	cm	6
Tall and medium grasses and grass-likes	GT, GM	17.0	29.0	40.0	cm	3

Stratum Name	Included Strata	Height			Units	Number of Records
		Min.	Avg.	Max.		
Tall and medium forbs	FT, FM	15.0	23.8	40.0	cm	4
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	0.1	5.0	10.0	cm	23

Characteristics of Moraine poplar forest

Ecological Status: Post 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 = 1. 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	POBA2	Populus balsamifera	65.0	65	65	100	81
SD	VAVIM99	Vaccinium vitis-idaea spp. Minus	15.0	15	15	100	39
FM	HEAL	Hedysarum alpinum	40.0	40	40	100	63
L	LICHEN	total lichens	0.1	0	0	100	0
M	MOSS	total bryophytes-mosses and liverworts	40.0	40	40	100	63
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	60.0	60	60	100	77
B	LITTER2	litter-woody debris >2.5 cm	5.0	5	5	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	10.0	10.0	10.0	m	1
Low shrubs	SL	100.0	100.0	100.0	cm	1
Dwarf shrubs	SD	9.0	9.0	9.0	cm	1
Tall and medium forbs	FT, FM	40.0	40.0	40.0	cm	1
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	2.0	2.0	2.0	cm	1

Characteristics of Moraine mixed forb meadow

Ecological Status: Early stage of primary succession on moraines

Plant Species Cover, Constancy, and Importance:

Cover, constancy, and importance are based on 1997-2002 field season data. Number of stands sampled = 2. 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	DROC	Dryas octopetala	2.0	16	30	100	40
GM	ZZGRAM	unknown-graminoids	15.0	15	15	50	27
FD	ANPA	Anemone parviflora	10.0	10	10	50	22
FD	ARAR9	Artemisia arctica	5.0	5	5	50	16
L	LICHEN	total lichens	2.0	4	5	100	20
M	MOSS	total bryophytes-mosses and liverworts	30.0	35	40	100	59
M1	POJU70	Polytrichum juniperinum	40.0	40	40	50	45
M1	ZZMOSS	unknown-mosses	25.0	25	25	50	35
M1	RACOM	Racomitrium	5.0	5	5	50	16
B	ROCK	mineral-surface rock fragments	10.0	30	50	100	55
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	5.0	18	30	100	42
B	LITTER2	litter-woody debris >2.5 cm	0.0	0	0	100	0
B	SOIL	mineral-bare soil	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.		
Dwarf shrubs	SD	3.0	7.7	10.0	cm	3
Tall and medium forbs	FT, FM	20.0	20.0	20.0	cm	1
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	1.0	9.3	10.0	cm	12

Characteristics of Moraine soapberry-barrenground willow-grayleaf willow scrub

Ecological Status: Mid stage of primary succession on moraines

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.		
TS	POBA2	Populus balsamifera	7.0	7	7	17	11
SL-ST	SAAL	Salix alaxensis	5.0	9	15	83	27
SL-SM	SHCA	Shepherdia canadensis	15.0	22	30	67	38
SL-SM	SANI10	Salix niphoclada	10.0	15	20	50	27
SL-SM	SAGL	Salix glauca	5.0	10	15	67	26
SM	SARI4	Salix richardsonii	0.1	15	30	33	22
SM	SAPS	Salix pseudomonticola	5.0	5	5	17	9
SL	PEFL15	Pentaphylloides floribunda	0.1	5	10	33	13
SL	BEGL	Betula glandulosa	5.0	5	5	17	9
SD	DRIN4	Dryas integrifolia	10.0	18	30	50	30
SD	EMNI	Empetrum nigrum	0.1	13	35	50	25
SD	ARRU6	Arctous rubra	15.0	15	15	17	16
SD	DROC	Dryas octopetala	5.0	8	10	33	16
SD	VAVIM99	Vaccinium vitis-idaea spp. Minus	0.1	8	15	33	16
GM	ZZGRAM	unknown-graminoids	30.0	30	30	17	23
L	LICHEN	total lichens	0.0	8	20	100	28
L2	L2ALL	total lichens-crustose and soil crust	10.0	15	20	33	22
M	MOSS	total bryophytes-mosses and liverworts	5.0	48	80	100	69
M1	PLSC70	Pleurozium schreberi	10.0	19	30	67	36
M1	ZZMOSS	unknown-mosses	10.0	15	20	83	35
M1	HYSP70	Hylocomium splendens	20.0	25	30	33	29
M1	RALA70	Racomitrium lanuginosum	0.1	12	30	50	24
M1	RACOM	Racomitrium	0.1	5	10	50	16
M1	THRE7	Thuidium recognitum	15.0	15	15	17	16
M1	DICRA8	Dicranum	5.0	5	5	17	9
B	ROCK	mineral-surface rock fragments	3.0	17	60	100	41
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	2.0	16	35	100	40
B	SOIL	mineral-bare soil	0.0	7	15	100	26
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	2.0	2.0	2.0	m	1
Tree regeneration	TR	5.0	5.0	5.0	m	1
Tall shrubs	ST	4.0	4.0	4.0	m	1
Medium shrubs	SM	1.0	1.8	2.5	m	6
Low shrubs	SL	20.0	78.8	110.0	cm	8
Dwarf shrubs	SD	1.0	5.5	10.0	cm	4
Tall and medium grasses and grass-likes	GT, GM	17.0	28.5	40.0	cm	2
Tall and medium forbs	FT, FM	20.0	37.5	90.0	cm	4
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	0.1	5.3	10.0	cm	18

Mapunit Components

Common Name (Soils Name):

Alpine-dwarf scrub gravelly diorite moraines (Typic Gelorthents, sandy-skeletal)

Alpine-scrub gravelly moraines, calcareous (Typic Gelorthents, 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):

- 7CE Alpine Recent Moraines
(Typic Gelorthents, loamy-skeletal-Nonvegetated Drift Association 10 to 45 percent slopes)
- 7CEF Alpine Recent Moraines, Diorite
(Typic Gelorthents, sandy-skeletal-Nonvegetated Drift Association, 0 to 45 percent slopes)

Geographically Associated Landtypes

M135A_551—Loamy Depressions, High Elevation:

This site occurs in depressions with soils with thick dark surface horizons. The climax plant community is "Netleaf willow-mountain avens/herbaceous dwarf alpine scrub."

M135A_ROC—Rock and Ice, Nonvegetated:

This site occurs on recent nonvegetated moraines. The climax plant community is "Sparsely vegetated mountain slopes, Interior."