Swales (M135A_405)

Ecoregion Classification

Section: Alaska Mountains (M135A)

Subsection(s): Teklanika Alpine Mountains & Plateaus (M135A.M6)
Alpine Mountains (M135A.M2)
Boreal Outer Range & Kantishna Hills (M135A.M1L)
Alpine Outer Range & Kantishna Hills (M135A.M1)
Glaciated Uplands (M135A.G1)

Physiographic Features

	RV	*Range*
Elevation (meters):	853	273 to 1,554
Slope Gradient (percent):	26	5 to 55

Aspect (clockwise direction): south to southwest

Landform: depressions on outwash plains; swales on escarpments; swales on hills; swales on mountains; swales on till plains

Landform Positions: backslopes; footslopes; summits

	Frequency
Flooding:	None
Ponding:	None

Climatic Features

	RV	*Range*
Annual Precipitation (millimeters):	796	358 to 2,466
Annual Air Temperature (°C):	-4.2	-10.7 to -2.4
Frost Free Days:	61	50 to 80

Soil Features

Parent Materials: silty eolian deposits over gravelly colluvium derived from schist
silty eolian deposits over gravelly colluvium derived from shale
silty eolian deposits over gravelly residuum
silty eolian deposits over gravelly till
silty eolian deposits over loamy drift

Rooting Depth (cm): *RV:* 36 *Range:* 9 to 112

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)
3 to 8	slightly decomposed plant material	moderately rapid	.34	5.2 to 6.6	30	80
6 to 32	mucky silt loam; channery loam	moderate	.18 to .40	5.6 to 6.3		16 to 20
8 to 27	very channery loam	moderately rapid	.10 to .12	5.4 to 6.1	6	6

Restrictive Features: bedrock (paralithic) at 124 to 150 cm or more
strongly contrasting textural stratification at 9 to 41 cm

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

Drainage Class: somewhat poorly drained

Vegetation Features

Common Vegetation Types:

Vegetation Type	Ecological Status
Green alder scrub mosaic	Climax plant community
Bluejoint-forb meadow mosaic	Climax plant community on wetter 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 green alder scrub mosaic is described for the typical site and a second potential with bluejoint-forb meadow mosaic is described for a moist micro-site. No transitional pathways between these two vegetation types or other plant communities have been identified for this site. The concave surface relief typical of this site favors snow drifting during winter followed by temporary saturation of soils during early summer from snow melt.

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
Green alder scrub mosaic	91	10	20	45	13
Bluejoint-forb meadow mosaic	68	33	40	46	2

Notable Plants:

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

Vegetation Type	Symbol	Scientific Name
Green alder scrub mosaic	CYMO3	Cystopteris montana
	HUMI	Huperzia miyoshiana
Bluejoint-forb meadow mosaic	BOMI	Botrychium minganense

Characteristics of Green alder 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 = 49. Only those vascular, lichen, and bryophyte species with average cover >=5% and constancy >=15% are listed.

			Percent Canopy Cover			Percent	Importance
Stratum	Symbol	Scientific Name	*Min.*	*Avg.*	*Max.*	Constancy	Value
SM-ST	ALVIC	Alnus viridis ssp. crispa	0.1	66	100	94	79
SL-ST	SAPU15	Salix pulchra	0.1	21	95	71	39
SM-ST	SAAL	Salix alaxensis	0.1	24	70	22	23
SM-ST	SARI4	Salix richardsonii	0.1	7	20	16	11
SL-SM	SPST3	Spiraea stevenii	0.1	10	30	71	27
SL-SM	RITR	Ribes triste	0.1	5	25	55	17
GM-GT	CACA4	Calamagrostis canadensis	0.1	43	80	84	60
GM	CAREX	Carex	0.1	7	25	18	11
FD-FM	EQSY	Equisetum sylvaticum	0.1	18	60	27	22
FD-FM	EQAR	Equisetum arvense	0.1	7	40	27	14
FD-FM	BORI2	Boykinia richardsonii	0.1	7	15	16	11
L	LICHEN	total lichens	0.0	0	5	100	0
M	MOSS	total bryophytes-mosses and liverworts	0.0	14	80	100	37
M1	HYSP70	Hylocomium splendens	0.1	20	45	22	21
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	15.0	68	95	100	82
B	LITTER2	litter-woody debris >2.5 cm	0.0	4	25	100	20
B	SOIL	mineral-bare soil	0.0	1	15	100	10
B	ROCK	mineral-surface rock fragments	0.0	0	5	100	0
B	WATER	water	0.0	0	10	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.

		Height				Number
Stratum Name	Included Strata	*Min.*	*Avg.*	*Max.*	*Units*	of Records
Trees	TT, TM, TS	1.0	6.7	15.0	m	8
Tree regeneration	TR	0.5	0.5	0.5	m	2

Stratum Name	Included Strata	Height				Number of Records
		Min.	Avg.	Max.	Units	
Tall shrubs	ST	3.0	3.3	5.0	m	40
Medium shrubs	SM	1.0	2.0	3.0	m	54
Low shrubs	SL	20.0	62.1	100.0	cm	72
Dwarf shrubs	SD	1.0	9.9	20.0	cm	18
Tall and medium grasses and grass-likes	GT, GM	20.0	74.3	160.0	cm	30
Tall and medium forbs	FT, FM	9.0	35.8	100.0	cm	102
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	1.0	8.2	10.0	cm	70

Characteristics of Bluejoint-forb meadow mosaic

Ecological Status: Climax plant community on wetter microsites

Plant Species Cover, Constancy, and Importance:

Cover, constancy, and importance are based on 1997-2002 field season data. Number of stands sampled = 3. 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-SM	BEGL	Betula glandulosa	1.0	11	20	67	27
SM	SABA3	Salix barclayi	5.0	5	5	33	13
SL	PEFL15	Pentaphylloides floribunda	6.0	6	6	33	14
SD	SARE2	Salix reticulata	5.0	13	20	67	30
SD	DRAL7	Dryas alaskensis	20.0	20	20	33	26
GT	CACA4	Calamagrostis canadensis	35.0	45	60	100	67
GM-GT	FEAL	Festuca altaica	0.1	5	10	67	18
GM	CAPO	Carex podocarpa	10.0	10	10	33	18
GM	CAREX	Carex	5.0	5	5	33	13
GM	POAR2	Poa arctica	5.0	5	5	33	13
FT	EPAN2	Epilobium angustifolium	15.0	18	20	67	35
FT	VEVIE2	Veratrum viride ssp. eschscholtzii	15.0	15	15	33	22
FT	ANLU	Angelica lucida	5.0	5	5	33	13
FT	BORI2	Boykinia richardsonii	5.0	5	5	33	13
FM	SAST11	Sanguisorba stipulata	20.0	20	20	33	26
FM	GEER2	Geranium erianthum	15.0	15	15	33	22
FD	RUAR	Rubus arcticus	10.0	10	10	33	18
FD	DOFR	Dodecatheon frigidum	5.0	5	5	33	13
FD	VILA6	Viola langsdorfii	5.0	5	5	33	13
L	LICHEN	total lichens	0.0	0	1	100	0
M	MOSS	total bryophytes-mosses and liverworts	5.0	20	40	100	45
M1	ZZMOSS	unknown-mosses	0.1	18	35	67	35
M1	POCO38	Polytrichum commune	5.0	5	5	33	13
B	LITTER	litter-herbaceous, mulch, and woody debris <2.5 cm	5.0	60	95	100	77
B	LITTER2	litter-woody debris >2.5 cm	0.0	1	2	100	10
B	WATER	water	0.0	1	3	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

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	7.5	7.5	7.5	m	1
Medium shrubs	SM	1.2	1.7	2.7	m	4
Low shrubs	SL	30.0	30.0	30.0	cm	1
Dwarf shrubs	SD	15.0	15.0	15.0	cm	1
Tall and medium grasses and grass-likes	GT, GM	60.0	90.0	120.0	cm	2
Tall and medium forbs	FT, FM	60.0	60.0	60.0	cm	1
Dwarf herbs, lichens, and bryophytes	GD, FD, L, M	1.0	2.5	4.0	cm	2

Mapunit Components

Common Name (Soils Name):

Subalpine-scrub-meadow mosaic dark gravelly swales (Oxyaquic Haplocryolls, coarse-loamy)

Subalpine-scrub-meadow mosaic gravelly schist swales (Oxyaquic Eutrocryepts, loamy-skeletal)

Subalpine-scrub-meadow mosaic gravelly swales, Nenana Gravels (Oxyaquic Eutrocryepts, coarse-loamy)

Subalpine-scrub-meadow mosaic gravelly till swales (Oxyaquic Eutrocryepts, 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):*
5SA11	Alpine and Subalpine Schist Mountains (Typic Dystrogelepts, loamy-skeletal-Oxyaquic Eutrocryepts, loamy-skeletal Association, 5 to 40 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)
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)
7NG2	Alpine Backslopes on Hills, Nenana Gravels (Typic Haplogelods, loamy-skeletal-Oxyaquic Eutrocryepts, coarse-loamy-Oxyaquic Eutrogelepts, coarse- loamy Association, 12 to 45 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)
7SA3	Alpine and Subalpine Glaciated Mountains with Discontinuous Permafrost (Oxyaquic Eutrocryepts, coarse-loamy-Typic Historthels, loamy-skeletal-Typic Haplogelods, loamy-skeletal Association, 20 to 55 percent slopes)
7SA31	Subalpine Mountains (Typic Dystrocryepts, loamy-skeletal-Oxyaquic Eutrocryepts, coarse-loamy-Typic Haplogelods, loamy- skeletal Association, 8 to 70 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)
8MFS	Alpine and Subalpine Schist Lower Mountain Slopes with Discontinuous Permafrost (Typic Historthels, coarse-loamy-Typic Dystrogelepts, loamy-skeletal-Oxyaquic Eutrocryepts, loamy-skeletal Association, 10 to 45 percent slopes)
8MVF	Boreal and Subalpine Schist Mountain Valleys (Humic Cryaquepts, loamy-skeletal-Oxyaquic Eutrocryepts, loamy-skeletal-Typic Dystrocryepts, loamy-skeletal Association, 12 to 50 percent slopes)

Geographically Associated Landtypes

M135A_180—Gravelly Frozen Slopes:

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

M135A_356—Gravelly Slopes, High Elevation:

This site occurs on adjacent mountain ridges with moderately deep to deep well drained soils. The climax plant community is "Shrub birch-dwarf ericaceous scrub mosaic."

M135A_358—Gravelly Slopes:

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

Similar Landtypes

M135A_204—Gravelly Flood Plains:

This site occurs on flood plains and has soils that are very shallow to sand and gravel. The climax plant community is "White spruce-poplar/soapberry forest."

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."