Gravelly Flood Plains (M135A_204)

Ecoregion Classification

Section: Alaska Mountains (M135A)

Subsection(s): Lowland Flood Plains & Terraces & Fans (M135A.V1L)
Boreal Mountains (M135A.M2L)

Physiographic Features

RV Range

Elevation (meters): 510 333 to 960

Slope Gradient (percent): 1 0 to 2

Aspect (clockwise direction): non-influencing

Landform: channels on flood plains; flood plains; flood plains on alluvial fans on mountains

Landform Positions: backslopes

Frequency Duration Beginning Month Ending Month

Flooding: Frequent Long May Sep

Ponding: None

Climatic Features

RV Range

Annual Precipitation (millimeters): 589 344 to 923

Annual Air Temperature (°C): -3.1 -6.0 to -2.1

Frost Free Days: 70 60 to 80
Denali National Park Area, Alaska 483

Soil Features

Parent Materials: gravelly alluvium
sandy and silty alluvium over sandy and gravelly alluvium

Rooting Depth (cm): *RV:* 28 *Range:* 9 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 Texture Permeability AWC pH Effective CEC CEC
(cm) (cm/cm) (me/100g) (me/100g)
2 to 8 slightly decomposed plant material moderately rapid .34 5.2 to 7.2 30 80
8 to 20 stratified sand to silt; stratified fine moderate .08 to .17 5.8 to 7.8 6 to 20
sand to silt
16 to 18 extremely cobbly coarse sand rapid .06 7.6 to 8.3 2

Restrictive Features: strongly contrasting textural stratification at 10 to 12 cm in some components

Water Table (May to September): 50 to 70 cm

Drainage Class: excessively drained to somewhat poorly drained

Vegetation Features

Common Vegetation Types:

Vegetation Type Ecological Status
White spruce-poplar/soapberry forest Climax plant community
Beaver dam water horsetail-beaked sedge wet meadow Beaver impacted site and vegetation
Forb meadow Mid stage of primary succession on flood plains
Poplar/soapberry woodland Late stage of primary succession on flood plains

Ecological Status-Transition Description:

Four plant communities are identified on this flood prone site including a potential community with white sprucepoplar/
soapberry forest, late-seral community with poplar/soapberry woodland, and mid-seral community with forb
meadow on successively lower and more flood prone positions. A community associated with beaver activity with
water horsetail-beaked sedge wet meadow, beaver dam in which the site conditions have been significantly altered
and are now wetter due to beaver dam construction. Flooding and beaver activity are considered transitional
pathways between community types.

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**

White spruce-poplar/soapberry forest 93 27 34 46 5
Beaver dam water horsetail-beaked sedge wet meadow 46 46 46 46 1
Forb meadow 42 42 42 42 1
Poplar/soapberry woodland 86 22 34 51 3

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 spruce-poplar/soapberry forest ASRO Astragalus robbinsii
ASSE13 Astragalus sealei
CASTS Calamagrostis stricta ssp. stricta
CAEB2 Carex eburnea
ELCO Elaeagnus commutata
ERGLP Erigeron glabellus ssp. pubescens
Beaver dam water horsetail-beaked sedge wet meadow BOMI Botrychium minganense
CAEB2 Carex eburnea
GOREO2 Goodyera repens var. ophioides
Forb meadow ASRO Astragalus robbinsii
ELCO Elaeagnus commutata
Poplar/soapberry woodland ELCO Elaeagnus commutata

Characteristics of White spruce-poplar/soapberry forest

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 = 14. Only those vascular, lichen, and bryophyte
species with average cover >=5% and constancy >=15% are listed. **Percent Percent Importance**
Stratum Symbol Scientific Name Canopy Cover Constancy Value
Min. Avg. Max.

TT POBA2 Populus balsamifera 10.0 33 75 21 26
TM POBA2 Populus balsamifera 5.0 25 65 29 27
TM PIGL Picea glauca 5.0 20 45 21 20
TR POBA2 Populus balsamifera 0.1 9 35 43 20
TR PIGL Picea glauca 0.1 5 20 64 18
SL-ST SAAL Salix alaxensis 0.1 15 75 57 29
SL-SM SHCA Shepherdia canadensis 0.1 16 70 86 37
SL-SM SALIX Salix 0.1 36 75 29 32
SL-SM PEFL15 Pentaphylloides floribunda 0.1 9 35 64 24
SL-SM SAPU15 Salix pulchra 1.0 6 15 29 13
SL-SM SAPS Salix pseudomonticola 2.0 6 10 21 11
SD ARRU6 Arctous rubra 0.1 6 20 43 16
GT CACA4 Calamagrostis canadensis 0.1 10 30 29 17
GM-GT ZZGRASS unknown-grasses 0.1 7 20 36 16
FD-FT HEAL Hedysarum alpinum 0.1 7 25 86 25
FD-FM MEPA Mertensia paniculata 0.1 5 10 29 12
L LICHEN total lichens 0.0 7 35 100 26
L1 STERE2 Stereocaulon 0.1 9 25 36 18
L1 CLADO3 Cladonia 0.1 7 20 29 14
M MOSS total bryophytes-mosses and liverworts 0.1 33 90 100 57
M1 HYSP70 Hylocomium splendens 3.0 45 85 36 40
M1 ZZMOSS unknown-mosses 5.0 12 20 36 21
B LITTER litter-herbaceous, mulch, and woody debris <2.5 cm 5.0 24 75 100 49
B SOIL mineral-bare soil 0.0 14 80 100 37
B ROCK mineral-surface rock fragments 0.0 13 65 100 36
B LITTER2 litter-woody debris >2.5 cm 0.1 6 20 100 24
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 Number
Min. Avg. Max. Units **of Records**
Trees TT, TM, TS 2.0 9.2 18.0 m 9
Tree regeneration TR 0.1 1.8 5.0 m 12
Tall shrubs ST 4.0 4.0 4.0 m 1
Medium shrubs SM 1.0 1.8 3.0 m 16
Low shrubs SL 30.0 73.5 100.0 cm 17
Dwarf shrubs SD 2.0 11.0 20.0 cm 7
Tall and medium grasses and grass-likes GT, GM 70.0 80.0 100.0 cm 3
Tall and medium forbs FT, FM 10.0 33.1 100.0 cm 16
Dwarf herbs, lichens, and bryophytes GD, FD, L, M 1.0 6.5 10.0 cm 22

Site Tree Measurements:

Only dominant, codominant, and open grown trees were measured. Height of Measurements = height above ground at which age and diameter was
measured. G = ground level, B = breast height (ca 1.5 m).

Tree Species Age Diameter Height Number Height of
(years) (cm) (m) **of Trees Measurements**
Picea glauca 49 16.3 9.4 *Min.* 4 B
124 20.0 12.0 *Avg*
266 25.4 14.3 *Max.*
Denali National Park Area, Alaska 485

Tree Basal Area (all trees >1.5 m tall):

Min. Avg. Max. Number
------ *m2 / ha* ------ **of Stands**
20.7 20.7 20.7 2

Characteristics of Beaver dam water horsetail-beaked sedge wet meadow

Ecological Status: Beaver impacted site and vegetation

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. **Percent Percent Importance**
Stratum Symbol Scientific Name Canopy Cover Constancy Value
Min. Avg. Max.
TT POBA2 Populus balsamifera 25.0 25 25 100 50
TR POBA2 Populus balsamifera 5.0 5 5 100 22
ST ALTE2 Alnus tenuifolia 45.0 45 45 100 67
SM VIED Viburnum edule 35.0 35 35 100 59
SM ROAC Rosa acicularis 15.0 15 15 100 39
SD LIBO3 Linnaea borealis 15.0 15 15 100 39
GT CACA4 Calamagrostis canadensis 25.0 25 25 100 50
GT ARLA2 Arctagrostis latifolia 5.0 5 5 100 22
GM CACO10 Carex concinna 6.0 6 6 100 24
FT EPAN2 Epilobium angustifolium 15.0 15 15 100 39
FT MEPA Mertensia paniculata 5.0 5 5 100 22
FD LYAN2 Lycopodium annotinum 15.0 15 15 100 39
FD PYAS Pyrola asarifolia 15.0 15 15 100 39
FD COCA13 Cornus canadensis 10.0 10 10 100 32
FD GELI2 Geocaulon lividum 5.0 5 5 100 22
L LICHEN total lichens 0.1 0 0 100 0
M MOSS total bryophytes-mosses and liverworts 20.0 20 20 100 45
M1 ZZMOSS unknown-mosses 10.0 10 10 100 32
M1 HYSP70 Hylocomium splendens 5.0 5 5 100 22
M1 PLSC70 Pleurozium schreberi 5.0 5 5 100 22
B LITTER litter-herbaceous, mulch, and woody debris <2.5 cm 70.0 70 70 100 84
B LITTER2 litter-woody debris >2.5 cm 30.0 30 30 100 55
B SOIL mineral-bare soil 0.1 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 Number
Min. Avg. Max. Units **of Records**

Trees TT, TM, TS 17.0 17.0 17.0 m 2
Tree regeneration TR 2.5 2.8 3.0 m 2
Tall shrubs ST 4.0 4.0 4.0 m 1
Medium shrubs SM 1.3 1.3 1.3 m 1
Dwarf shrubs SD 1.0 1.0 1.0 cm 1
Tall and medium grasses and grass-likes GT, GM 10.0 65.0 120.0 cm 2
Tall and medium forbs FT, FM 90.0 90.0 90.0 cm 1
Dwarf herbs, lichens, and bryophytes GD, FD, L, M 1.0 3.7 8.0 cm 3

Characteristics of Forb meadow

Ecological Status: Mid stage of primary succession on flood plains

486 Soil Survey of

Plant Species Cover, Constancy, and Importance:

Cover, constancy, and importance are based on 1997-2002 field season data. Number of stands sampled = 5. Only those vascular, lichen, and bryophyte
species with average cover >=5% and constancy >=15% are listed. **Percent Percent Importance**

Stratum Symbol Scientific Name Canopy Cover Constancy Value
Min. Avg. Max.

SL-SM SAGL Salix glauca 0.1 7 15 60 20
SM SAAL Salix alaxensis 5.0 5 5 40 14
SM SALIX Salix 5.0 5 5 20 10
SL SHCA Shepherdia canadensis 0.1 12 30 60 27
SL ELCO Elaeagnus commutata 10.0 10 10 20 14
SD DRDR Dryas drummondii 0.1 5 10 40 14
SD ARUV Arctostaphylos uva-ursi 5.0 5 5 20 10
GM ZZGRASS unknown-grasses 0.1 5 10 40 14
GM ZZGRAM unknown-graminoids 5.0 5 5 20 10
FM EPLA Epilobium latifolium 2.0 14 30 60 29
FM ARTI Artemisia tilesii 0.1 8 15 40 18
FM HEAL Hedysarum alpinum 5.0 8 10 40 18
FM OXCA4 Oxytropis campestris 5.0 8 10 40 18
FM EQVA Equisetum variegatum 5.0 5 5 20 10
FM HEMA Hedysarum mackenziei 5.0 5 5 20 10
L LICHEN total lichens 0.0 8 40 100 28
L1 STERE2 Stereocaulon 40.0 40 40 20 28
M MOSS total bryophytes-mosses and liverworts 0.0 4 20 100 20
B ROCK mineral-surface rock fragments 10.0 49 80 100 70
B SOIL mineral-bare soil 5.0 22 40 100 47
B LITTER litter-herbaceous, mulch, and woody debris <2.5 cm 0.0 7 15 100 26
B LITTER2 litter-woody debris >2.5 cm 0.0 2 10 100 14
B WATER water 0.0 1 5 100 10

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
Min. Avg. Max. Units **of Records**

Trees TT, TM, TS 1.0 1.2 1.5 m 3
Tree regeneration TR 1.3 1.3 1.3 m 1
Medium shrubs SM 1.2 2.3 3.0 m 6
Low shrubs SL 60.0 83.3 100.0 cm 6
Dwarf shrubs SD 10.0 10.0 10.0 cm 1
Tall and medium grasses and grass-likes GT, GM 30.0 30.0 30.0 cm 1
Tall and medium forbs FT, FM 20.0 28.0 30.0 cm 10
Dwarf herbs, lichens, and bryophytes GD, FD, L, M 0.5 0.5 0.5 cm 1

Characteristics of Poplar/soapberry woodland

Ecological Status: Late stage of primary succession on flood plains

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. **Percent Percent Importance**
Stratum Symbol Scientific Name Canopy Cover Constancy Value
Min. Avg. Max.
TT POBA2 Populus balsamifera 15.0 15 15 17 16
TM POBA2 Populus balsamifera 20.0 20 20 17 18
TR POBA2 Populus balsamifera 0.1 15 40 83 35
SM-ST SAAL Salix alaxensis 5.0 8 15 67 23
SL-SM SHCA Shepherdia canadensis 3.0 22 60 100 47
SM SAGL Salix glauca 20.0 20 20 17 18
SM SABA3 Salix barclayi 15.0 15 15 17 16
SM SARI4 Salix richardsonii 15.0 15 15 17 16
SM ELCO Elaeagnus commutata 7.0 7 7 17 11
SM SANI10 Salix niphoclada 5.0 5 5 17 9
SL SAPU15 Salix pulchra 6.0 8 10 33 16

Percent Percent Importance
Stratum Symbol Scientific Name Canopy Cover Constancy Value
Min. Avg. Max.
SL VIED Viburnum edule 10.0 10 10 17 13
SL PEFL15 Pentaphylloides floribunda 5.0 5 5 17 9
SL SABA4 Salix barrattiana 5.0 5 5 17 9
SD DRDR Dryas drummondii 0.1 30 60 33 31
SD DRIN4 Dryas integrifolia 5.0 5 5 17 9
SD LIBO3 Linnaea borealis 5.0 5 5 17 9
SD SARE2 Salix reticulata 5.0 5 5 17 9
GT FEAL Festuca altaica 15.0 15 15 17 16
GT CACA4 Calamagrostis canadensis 10.0 10 10 17 13
GM ZZGRAM unknown-graminoids 10.0 12 15 33 20
GM ZZGRASS unknown-grasses 5.0 5 5 17 9
FT EPAN2 Epilobium angustifolium 5.0 5 5 17 9
FD-FM OXCA4 Oxytropis campestris 0.1 5 15 67 18
FM MEPA Mertensia paniculata 7.0 7 7 17 11
FM GABO2 Galium boreale 5.0 5 5 17 9
FM GEER2 Geranium erianthum 5.0 5 5 17 9
FM HEDYS Hedysarum 5.0 5 5 17 9
FM SAST11 Sanguisorba stipulata 5.0 5 5 17 9
FD PYAS Pyrola asarifolia 40.0 40 40 17 26
FD EQAR Equisetum arvense 5.0 5 5 17 9
L LICHEN total lichens 0.0 7 15 100 26
L1 STERE2 Stereocaulon 10.0 10 10 33 18
L1 ZZLICHEN unknown-foliose and fruticose lichens 5.0 5 5 17 9
M MOSS total bryophytes-mosses and liverworts 5.0 22 50 100 47
M1 RACOM Racomitrium 15.0 15 15 17 16
M1 PTCR70 Ptilium crista-castrensis 10.0 10 10 17 13
M1 THRE7 Thuidium recognitum 10.0 10 10 17 13
M1 ZZMOSS unknown-mosses 5.0 5 5 17 9
B LITTER litter-herbaceous, mulch, and woody debris <2.5 cm 5.0 49 80 100 70
B ROCK mineral-surface rock fragments 0.0 18 75 100 42
B LITTER2 litter-woody debris >2.5 cm 0.0 3 5 100 17
B SOIL mineral-bare soil 0.0 2 5 100 14
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 Number
Min. Avg. Max. Units **of Records**
Trees TT, TM, TS 4.0 9.3 18.0 m 3
Tree regeneration TR 0.3 1.6 3.5 m 7
Medium shrubs SM 1.5 1.6 2.0 m 5

Low shrubs SL 100.0 102.0 110.0 cm 5
Dwarf shrubs SD 8.0 11.5 15.0 cm 2
Tall and medium forbs FT, FM 20.0 44.0 100.0 cm 5
Dwarf herbs, lichens, and bryophytes GD, FD, L, M 1.0 7.8 15.0 cm 13

Map Unit Components

Common Name (Soils Name):

Boreal-riparian forested gravelly fans (Typic Cryorthents, loamy-skeletal)
Boreal-riparian scrub gravelly flood plains (Typic Cryorthents, sandy-skeletal)
Boreal-riparian scrub gravelly flood plains, moderately wet (Oxyaquic Cryorthents, sandy-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):

10V2 Boreal Terraces and Plateau Toeslopes with Continuous Permafrost
(Typic Histoturbels, coarse-silty-Typic Historthels, coarse-loamy Association, 0 to 2 percent slopes)
11FP Boreal Flood Plains, High Elevation
(Typic Cryofluvents, coarse-loamy over sandy-skeletal-Oxyaquic Cryorthents, sandy-skeletal-Typic Cryorthents, sandy-skeletal Association, 0 to 3 percent slopes)
7FP1 Boreal Flood Plains and Terraces
(Typic Cryofluvents, coarse-loamy over sandy-skeletal-Oxyaquic Cryorthents, sandy-skeletal Complex)

Geographically Associated Landtypes

M135A_156—Loamy Wet High Flood Plains:

This site occurs on higher positions with less frequent flooding and have wetter soils with a thick loamy surface.
mantle The climax plant community is "White spruce/Richardson willow/horsetail woodland."

M135A_203—Gravelly Low Flood Plains, Wet:

This site occurs on wetter soils. The climax plant community is "Entire mountain avens/sedge wet dwarf scrub."

Riverwash—Alluvium, Nonvegetated:

This site occurs on barren alluvium. The climax plant community is "Sparsely vegetated alluvium."

Similar Landtypes

M135A_100—Loamy Flood Plains:

This site occurs on well drained soils with loam surface mantles. The climax plant community is "Poplar-feltleaf willow
scrub."

M135A_405—Swales:

This site occurs in upland swales and is not flooded. The climax plant community is "Green alder scrub mosaic."