

Moraines, Ice Cored (135A_803)

Ecoregion Classification

Section: Cook Inlet Lowlands (135A)

Subsection(s): Lowland Flood Plains & Terraces & Fans (135A.V1)

Physiographic Features

Elevation (meters): *RV* 562 *Range* 183 to 1,320

Slope Gradient (percent): 26 10 to 45

Aspect (clockwise direction): non-influencing

Landform: moraines

Frequency

Flooding: None

Ponding: None

Climatic Features

Annual Precipitation (millimeters): *RV* 1,403 *Range* 408 to 3,051

Annual Air Temperature (°C): -3.4 -6.9 to 0.7

Frost Free Days: 70 60 to 90

Soil Features

Parent Materials: gravelly ablation till
silty eolian deposits over gravelly ablation till

Rooting Depth (cm): *RV*: 35 *Range*: 9 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 5 | slightly decomposed plant material | moderately rapid | .34 | 3.0 to 7.6 | 30 | 80 |
| 4 to 23 | very cobbly sandy loam; silt loam | moderate or moderately rapid | .10 to .40 | 3.2 to 7.8 | 12 | 6 |
| 10 to 23 | very cobbly sandy loam | moderately rapid | .10 | 4.7 to 7.8 | 6 | 6 |

Restrictive Features: strongly contrasting textural stratification at 9 cm in some components

Water Table (May to September): none

Drainage Class: well drained

Vegetation Features

Common Vegetation Types:

Vegetation Type

Moraine poplar/alder woodland

Moraine forest

Sitka alder-feltleaf willow scrub

Ecological Status

Climax plant community

Post climax plant community

Mid stage of primary succession on moraines

Ecological Status-Transition Description:

Three plant communities are identified on this site including a potential community with poplar/alder woodland, moraine on more extensive meta-stable moraines, a mid-successional community with Sitka alder-feltleaf willow scrub on recent, unstable moraine deposits, and a post potential community with 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 poplar/alder woodland | 22 | 15 | 15 | 15 | 2 |
| Moraine forest | 46 | 20 | 24 | 32 | 3 |
| Sitka alder-feltleaf willow scrub | 63 | 12 | 24 | 34 | 4 |

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 forest | OSDE | Osmorhiza depauperata |
| | WISE2 | Viola selkirkii |
| Sitka alder-feltleaf willow scrub | PHAL4 | Phyllodoce aleutica |

Characteristics of Moraine poplar/alder woodland

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 = 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. | | |
| TM | POBA2 | Populus balsamifera | 10.0 | 38 | 65 | 100 | 62 |
| ST | ALS13 | Alnus sinuata | 60.0 | 62 | 65 | 100 | 79 |
| SM | OPHO | Oplopanax horridus | 35.0 | 35 | 35 | 50 | 42 |
| SL-SM | RITR | Ribes triste | 10.0 | 12 | 15 | 100 | 35 |
| SM | SAPU15 | Salix pulchra | 10.0 | 10 | 10 | 50 | 22 |
| SM | VIED | Viburnum edule | 10.0 | 10 | 10 | 50 | 22 |
| SM | SHCA | Shepherdia canadensis | 5.0 | 5 | 5 | 50 | 16 |
| SL | RILA3 | Ribes laxiflorum | 20.0 | 20 | 20 | 50 | 32 |
| SL | RUID | Rubus idaeus | 7.0 | 7 | 7 | 50 | 19 |
| GT | CACA4 | Calamagrostis canadensis | 5.0 | 5 | 5 | 50 | 16 |
| FT | DRDI2 | Dryopteris dilatata | 5.0 | 6 | 7 | 100 | 24 |
| L | LICHEN | total lichens | 0.1 | 1 | 1 | 100 | 10 |
| M | MOSS | total bryophytes-mosses and liverworts | 20.0 | 22 | 25 | 100 | 47 |
| M1 | ZZMOSS | unknown-mosses | 15.0 | 18 | 20 | 100 | 42 |
| M1 | DICRA8 | Dicranum | 5.0 | 5 | 5 | 50 | 16 |
| B | LITTER | litter-herbaceous, mulch, and woody debris <2.5 cm | 80.0 | 80 | 80 | 100 | 89 |
| B | LITTER2 | litter-woody debris >2.5 cm | 6.0 | 8 | 10 | 100 | 28 |
| B | ROCK | mineral-surface rock fragments | 0.1 | 3 | 6 | 100 | 17 |
| B | SOIL | mineral-bare soil | 0.1 | 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 | 10.5 | 11.0 | m | 2 |
| Tall shrubs | ST | 4.0 | 4.2 | 4.5 | m | 2 |
| Medium shrubs | SM | 1.0 | 1.2 | 1.5 | m | 2 |
| Low shrubs | SL | 100.0 | 100.0 | 100.0 | cm | 1 |
| Tall and medium grasses and grass-likes | GT, GM | 130.0 | 130.0 | 130.0 | cm | 1 |
| Tall and medium forbs | FT, FM | 12.0 | 74.0 | 110.0 | cm | 3 |
| Dwarf herbs, lichens, and bryophytes | GD, FD, L, M | 2.0 | 3.7 | 6.0 | cm | 3 |

Characteristics of Moraine 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 = 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. | | |
| TT | POBA2 | Populus balsamifera | 45.0 | 52 | 60 | 67 | 59 |
| TT | PIGL | Picea glauca | 20.0 | 20 | 20 | 33 | 26 |
| ST | ALSI3 | Alnus sinuata | 20.0 | 52 | 70 | 100 | 72 |
| SM | OPHO | Oplopanax horridus | 1.0 | 13 | 35 | 100 | 36 |
| SM | SAPU15 | Salix pulchra | 5.0 | 5 | 5 | 33 | 13 |
| SL | RILA3 | Ribes laxiflorum | 5.0 | 5 | 5 | 33 | 13 |
| FT | STAM2 | Streptopus amplexifolius | 10.0 | 10 | 10 | 33 | 18 |
| FD | LYAN2 | Lycopodium annotinum | 5.0 | 5 | 5 | 33 | 13 |
| L | LICHEN | total lichens | 0.1 | 2 | 5 | 100 | 14 |
| M | MOSS | total bryophytes-mosses and liverworts | 5.0 | 38 | 85 | 100 | 62 |
| M1 | PLSC70 | Pleurozium schreberi | 50.0 | 50 | 50 | 33 | 41 |
| M1 | ZZMOSS | unknown-mosses | 10.0 | 18 | 25 | 67 | 35 |
| M1 | HYSP70 | Hylocomium splendens | 1.0 | 6 | 10 | 67 | 20 |
| M1 | POCO38 | Polytrichum commune | 0.1 | 5 | 10 | 67 | 18 |
| B | LITTER | litter-herbaceous, mulch, and woody debris <2.5 cm | 20.0 | 65 | 95 | 100 | 81 |
| B | LITTER2 | litter-woody debris >2.5 cm | 4.0 | 7 | 10 | 100 | 26 |
| B | ROCK | mineral-surface rock fragments | 0.1 | 1 | 1 | 100 | 10 |
| 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. | | |
| Trees | TT, TM, TS | 15.0 | 18.3 | 22.0 | m | 3 |
| Tree regeneration | TR | 4.5 | 4.5 | 4.5 | m | 1 |
| Tall shrubs | ST | 3.0 | 4.5 | 6.0 | m | 3 |
| Medium shrubs | SM | 1.5 | 1.6 | 1.8 | m | 2 |
| Low shrubs | SL | 80.0 | 80.0 | 80.0 | cm | 1 |
| Dwarf shrubs | SD | 2.0 | 2.0 | 2.0 | cm | 1 |
| Tall and medium grasses and grass-likes | GT, GM | 100.0 | 115.0 | 130.0 | cm | 2 |
| Tall and medium forbs | FT, FM | 80.0 | 95.0 | 110.0 | cm | 2 |
| Dwarf herbs, lichens, and bryophytes | GD, FD, L, M | 1.0 | 3.8 | 8.0 | cm | 5 |

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 (years) | Diameter (cm) | Height (m) | Number of Trees | Height of Measurements |
|--------------|-------------|---------------|------------|-----------------|------------------------|
| | | | | | |
| | 100 | 31.8 | 16.8 | | |
| | 131 | 35.3 | 19.2 | | |

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

| Min. | Avg. | Max. | Number of Stands |
|--------------------------------|------|------|------------------|
| ----- m ² /ha ----- | | | |
| 9.2 | 9.2 | 9.2 | 1 |

Characteristics of Sitka alder-feltleaf 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 = 4. 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 | 5.0 | 10 | 15 | 50 | 22 |
| ST | ALSI3 | Alnus sinuata | 45.0 | 75 | 90 | 75 | 75 |
| SM-ST | SAAL | Salix alaxensis | 0.1 | 11 | 25 | 100 | 33 |
| SM | SHCA | Shepherdia canadensis | 30.0 | 30 | 30 | 25 | 27 |
| SL | SPST3 | Spiraea stevenii | 0.1 | 5 | 10 | 50 | 16 |
| SL | VAOV | Vaccinium ovalifolium | 10.0 | 10 | 10 | 25 | 16 |
| SD | DRDR | Dryas drummondii | 5.0 | 5 | 5 | 25 | 11 |
| FD | GYDR | Gymnocarpium dryopteris | 5.0 | 5 | 5 | 25 | 11 |
| L | LICHEN | total lichens | 0.1 | 20 | 50 | 100 | 45 |
| L2 | ZZCRUST | unknown-crustose and soil crust lichens | 0.1 | 22 | 40 | 75 | 41 |
| M | MOSS | total bryophytes-mosses and liverworts | 3.0 | 8 | 15 | 100 | 28 |
| M1 | ZZMOSS | unknown-mosses | 2.0 | 6 | 10 | 75 | 21 |
| M1 | RACOM | Racomitrium | 1.0 | 5 | 10 | 75 | 19 |
| M1 | POCO38 | Polytrichum commune | 5.0 | 5 | 5 | 25 | 11 |
| B | LITTER | litter-herbaceous, mulch, and woody debris <2.5 cm | 5.0 | 55 | 85 | 100 | 74 |
| B | ROCK | mineral-surface rock fragments | 5.0 | 38 | 80 | 100 | 62 |
| B | LITTER2 | litter-woody debris >2.5 cm | 0.1 | 3 | 7 | 100 | 17 |
| B | SOIL | mineral-bare soil | 0.0 | 3 | 10 | 100 | 17 |
| 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 | 5.0 | 6.5 | 8.0 | m | 2 |
| Tall shrubs | ST | 3.0 | 3.8 | 5.0 | m | 6 |
| Medium shrubs | SM | 1.2 | 2.1 | 3.0 | m | 2 |
| Low shrubs | SL | 70.0 | 70.0 | 70.0 | cm | 1 |
| Tall and medium grasses and grass-likes | GT, GM | 120.0 | 120.0 | 120.0 | cm | 1 |
| Tall and medium forbs | FT, FM | 100.0 | 110.0 | 120.0 | cm | 2 |
| Dwarf herbs, lichens, and bryophytes | GD, FD, L, M | 0.5 | 1.4 | 4.0 | cm | 8 |

Mapunit Components

Common Name (Soils Name):

Boreal-woodland gravelly moraines (Typic Eutrocrypts, loamy-skeletal)

Subalpine-scrub gravelly moraines (Typic Cryorthents, 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):

9CE Alpine, Subalpine, and Boreal Recent Moraines

(Typic Cryorthents-Nonvegetated Drift-Typic Eutrocrypts, loamy-skeletal Association, 0 to 65 percent slopes)

Geographically Associated Landtypes

M135S_ROC -- South Central Rock and Ice, Nonvegetated:

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

Riverwash -- Alluvium, Nonvegetated:

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

Similar Landtypes

135A_200 -- Gravelly Low Flood Plains:

This site is on flood plains. The climax plant community is "Sitka alder-Barclay willow-Sitka willow scrub."

135A_500 -- Loamy Wet Flood Plains:

This site occurs on flood plains and soils have a thick loamy surface mantle. The climax plant community is "Thinleaf alder-mixed willow scrub."