

# Sandy Hills (131B\_185)

## Ecoregion Classification

**Section:** Yukon-Kuskokwim Bottomlands (131B)

**Subsection(s):** Eolian Lowlands (131B.L1)

## Physiographic Features

**Elevation (meters):** *RV* 234 *Range* 170 to 320

**Slope Gradient (percent):** 19 5 to 38

**Aspect (clockwise direction):** non-influencing

**Landform:** hills

### *Frequency*

**Flooding:** None

**Ponding:** None

## Climatic Features

**Annual Precipitation (millimeters):** *RV* 479 *Range* 359 to 651

**Annual Air Temperature (°C):** -2.6 -2.9 to -2.4

**Frost Free Days:** 100 80 to 110

## Soil Features

**Parent Materials:** silty eolian deposits over sandy eolian deposits

**Rooting Depth (cm):** *RV:* 29 *Range:* 9 to 52

### 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) |
|----------------|------------------------------------|-------------------|-------------|------------|-------------------------|---------------|
| 7              | slightly decomposed plant material | moderately rapid  | .34         | 3.9        | 30                      |               |
| 2 to 7         | silt loam                          | moderate          | .31         | 5.3 to 5.6 |                         | 16            |
| 2 to 13        | silt loam; fine sand               | moderate to rapid | .06 to .31  | 5.3 to 6.1 |                         | 6 to 16       |

**Restrictive Features:** strongly contrasting textural stratification at 16 cm

**Water Table (May to September):** none

**Drainage Class:** somewhat excessively drained

## Vegetation Features

### Common Vegetation Types:

#### Vegetation Type

Black spruce/lingonberry/lichen woodland  
Broadleaf hardwood woodland  
Black spruce-mixed broadleaf hardwood forest

#### Ecological Status

Climax plant community  
Early stage of fire induced secondary succession  
Late stage of fire induced secondary succession

### Ecological Status-Transition Description:

Three plant communities are identified within this fire influenced site, including a potential community with black spruce/lingonberry/lichen woodland, an early-seral community with broadleaf hardwood forest, and a late-seral community with black spruce-mixed broadleaf forest. Fire is considered a transitional pathway between seral communities within 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. |                  |
| Black spruce/lingonberry/lichen woodland     | 24    | 9         | 12   | 16   | 6                |
| Broadleaf hardwood woodland                  | 22    | 13        | 16   | 18   | 2                |
| Black spruce-mixed broadleaf hardwood forest | 42    | 13        | 16   | 18   | 6                |

### Notable Plants:

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

| Vegetation Type                              | Symbol | Scientific Name                |
|--|--------|--------------------------------|
| Black spruce-mixed broadleaf hardwood forest | GOREO2 | Goodyera repens var. ophioides |

### Characteristics of Black spruce/lingonberry/lichen 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 = 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. |                   |                  |
| TM      | PIMA    | Picea mariana                                      | 25.0                 | 25   | 25   | 83                | 46               |
| TS      | PIMA    | Picea mariana                                      | 6.0                  | 6    | 6    | 17                | 10               |
| SM      | ALVIC   | Alnus viridis ssp. crispa                          | 5.0                  | 5    | 5    | 17                | 9                |
| SL      | LEGR    | Ledum groenlandicum                                | 1.0                  | 12   | 25   | 67                | 28               |
| SD      | VAVIM99 | Vaccinium vitis-idaea spp. Minus                   | 10.0                 | 24   | 35   | 100               | 49               |
| SD      | EMNI    | Empetrum nigrum                                    | 0.1                  | 11   | 25   | 100               | 33               |
| SD      | ARUV    | Arctostaphylos uva-ursi                            | 2.0                  | 11   | 20   | 50                | 23               |
| L       | LICHEN  | total lichens                                      | 3.0                  | 50   | 80   | 100               | 71               |
| L1      | STERE2  | Stereocaulon                                       | 1.0                  | 23   | 50   | 67                | 39               |
| L1      | CLADI3  | Cladina  | 0.1                  | 12   | 20   | 50                | 24               |
| L1      | CLST60  | Cladina stellaris                                  | 1.0                  | 7    | 15   | 83                | 24               |
| L1      | NEAR60  | Nephroma arcticum                                  | 0.1                  | 6    | 15   | 100               | 24               |
| L1      | CLMI61  | Cladina mitis group                                | 0.1                  | 7    | 15   | 50                | 19               |
| L1      | CLADO3  | Cladonia   | 0.1                  | 5    | 10   | 67                | 18               |
| L1      | CLRA61  | Cladina rangiferina group                          | 0.1                  | 5    | 10   | 50                | 16               |
| L1      | CLMU60  | Cladonia multiformis                               | 5.0                  | 5    | 5    | 50                | 16               |
| M       | MOSS    | total bryophytes-mosses and liverworts             | 7.0                  | 45   | 80   | 100               | 67               |
| M1      | HYSP70  | Hylocomium splendens                               | 3.0                  | 28   | 55   | 67                | 43               |
| M1      | ZZMOSS  | unknown-mosses                                     | 2.0                  | 13   | 50   | 100               | 36               |
| M1      | POCO38  | Polytrichum commune                                | 0.1                  | 11   | 30   | 50                | 23               |
| M1      | PLSC70  | Pleurozium schreberi                               | 5.0                  | 8    | 10   | 50                | 20               |
| M1      | AUTU70  | Aulacomnium turgidum                               | 5.0                  | 5    | 5    | 17                | 9                |
| M1      | PTCR70  | Ptilium crista-castrensis                          | 5.0                  | 5    | 5    | 17                | 9                |
| B       | LITTER  | litter-herbaceous, mulch, and woody debris <2.5 cm | 0.1                  | 18   | 35   | 100               | 42               |
| B       | LITTER2 | litter-woody debris >2.5 cm                        | 0.0                  | 4    | 15   | 100               | 20               |
| B       | SOIL    | mineral-bare soil                                  | 0.0                  | 0    | 1    | 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      | 3.0    | 5.4  | 8.0   | m     | 8                 |
| Tree regeneration                    | TR              | 0.1    | 0.7  | 1.1   | m     | 3                 |
| Medium shrubs                        | SM              | 1.3    | 1.6  | 2.0   | m     | 2                 |
| Low shrubs                           | SL              | 70.0   | 80.0 | 90.0  | cm    | 3                 |
| Dwarf shrubs                         | SD              | 3.0    | 10.3 | 20.0  | cm    | 4                 |
| Tall and medium forbs                | FT, FM          | 20.0   | 60.0 | 130.0 | cm    | 3                 |
| Dwarf herbs, lichens, and bryophytes | GD, FD, L, M    | 0.5    | 3.6  | 8.0   | cm    | 15                |

### Characteristics of Broadleaf hardwood woodland

**Ecological Status:** Early stage of fire induced secondary succession

#### 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. |                   |                  |
| TR      | BENE4   | Betula neoalaskana                                 | 5.0                  | 10   | 15   | 100               | 32               |
| TR      | POTR5   | Populus tremuloides                                | 7.0                  | 7    | 7    | 50                | 19               |
| SM      | SABE2   | Salix bebbiana                                     | 5.0                  | 5    | 5    | 50                | 16               |
| SM      | SAGL    | Salix glauca                                       | 5.0                  | 5    | 5    | 50                | 16               |
| SD      | ARUV    | Arctostaphylos uva-ursi                            | 15.0                 | 20   | 25   | 100               | 45               |
| SD      | VAVIM99 | Vaccinium vitis-idaea spp. Minus                   | 15.0                 | 18   | 20   | 100               | 42               |
| SD      | LIBO3   | Linnaea borealis                                   | 5.0                  | 5    | 5    | 50                | 16               |
| FD-FM   | GELI2   | Geocaulon lividum                                  | 3.0                  | 6    | 10   | 100               | 24               |
| FD      | EQPR    | Equisetum pratense                                 | 5.0                  | 5    | 5    | 50                | 16               |
| L       | LICHEN  | total lichens                                      | 5.0                  | 18   | 30   | 100               | 42               |
| L1      | CLADO3  | Cladonia   | 2.0                  | 11   | 20   | 100               | 33               |
| L2      | ZZCRUST | unknown-crustose and soil crust lichens            | 10.0                 | 10   | 10   | 50                | 22               |
| M       | MOSS    | total bryophytes-mosses and liverworts             | 20.0                 | 30   | 40   | 100               | 55               |
| M1      | POLYT5  | Polytrichum  | 7.0                  | 21   | 35   | 100               | 46               |
| M1      | ZZMOSS  | unknown-mosses                                     | 5.0                  | 8    | 10   | 100               | 28               |
| B       | LITTER  | litter-herbaceous, mulch, and woody debris <2.5 cm | 40.0                 | 62   | 85   | 100               | 79               |
| B       | LITTER2 | litter-woody debris >2.5 cm                        | 7.0                  | 16   | 25   | 100               | 40               |
| B       | SOIL    | mineral-bare soil                                  | 0.1                  | 3    | 5    | 100               | 17               |
| 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      | 0.3    | 7.1   | 14.0  | m     | 4                 |
| Tree regeneration                       | TR              | 0.3    | 2.4   | 4.0   | m     | 3                 |
| Medium shrubs                           | SM              | 1.8    | 1.8   | 1.8   | m     | 1                 |
| Low shrubs                              | SL              | 20.0   | 20.0  | 20.0  | cm    | 1                 |
| Dwarf shrubs                            | SD              | 6.0    | 6.0   | 6.0   | cm    | 2                 |
| Tall and medium grasses and grass-likes | GT, GM          | 130.0  | 130.0 | 130.0 | cm    | 1                 |
| Tall and medium forbs                   | FT, FM          | 15.0   | 63.8  | 110.0 | cm    | 4                 |
| Dwarf herbs, lichens, and bryophytes    | GD, FD, L, M    | 2.0    | 3.8   | 10.0  | cm    | 5                 |

### Characteristics of Black spruce-mixed broadleaf hardwood forest

**Ecological Status:** Late stage of fire induced secondary succession

#### 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. |                   |                  |
| TT      | PIMA   | Picea mariana             | 10.0                 | 22   | 30   | 50                | 33               |
| TT      | POTR5  | Populus tremuloides       | 5.0                  | 32   | 60   | 33                | 32               |
| TT      | BENE4  | Betula neoalaskana        | 5.0                  | 10   | 20   | 83                | 29               |
| TT      | PIGL   | Picea glauca              | 5.0                  | 5    | 5    | 17                | 9                |
| TT      | POBA2  | Populus balsamifera       | 5.0                  | 5    | 5    | 17                | 9                |
| TM      | PIMA   | Picea mariana             | 0.1                  | 5    | 10   | 33                | 13               |
| TM      | PIGL   | Picea glauca              | 7.0                  | 7    | 7    | 17                | 11               |
| TR      | BENE4  | Betula neoalaskana        | 0.1                  | 7    | 20   | 50                | 19               |
| TR      | POTR5  | Populus tremuloides       | 1.0                  | 6    | 15   | 50                | 17               |
| ST      | ALVIC  | Alnus viridis ssp. crispa | 5.0                  | 5    | 5    | 33                | 13               |

| Stratum | Symbol  | Scientific Name                                    | Percent Canopy Cover |      |      | Percent Constancy | Importance Value |
|---------|---------|--|----------------------|------|------|-------------------|------------------|
|         |         |  | Min.                 | Avg. | Max. |                   |                  |
| SL      | LEGR    | Ledum groenlandicum                                | 0.1                  | 7    | 20   | 83                | 24               |
| SD-SL   | VAUL    | Vaccinium uliginosum                               | 0.1                  | 7    | 20   | 83                | 24               |
| SL      | LEPAD   | Ledum palustre ssp. decumbens                      | 5.0                  | 5    | 5    | 17                | 9                |
| SL      | VIED    | Viburnum edule                                     | 5.0                  | 5    | 5    | 17                | 9                |
| SD      | VAVIM99 | Vaccinium vitis-idaea spp. Minus                   | 6.0                  | 37   | 75   | 100               | 61               |
| SD      | ARUV    | Arctostaphylos uva-ursi                            | 20.0                 | 20   | 20   | 17                | 18               |
| SD      | EMNI    | Empetrum nigrum                                    | 0.1                  | 5    | 20   | 67                | 18               |
| GT      | CACA4   | Calamagrostis canadensis                           | 0.1                  | 7    | 20   | 67                | 22               |
| GM      | CAREX   | Carex  | 10.0                 | 10   | 10   | 17                | 13               |
| FM      | EQPR    | Equisetum pratense                                 | 60.0                 | 60   | 60   | 17                | 32               |
| FD-FM   | EQSY    | Equisetum sylvaticum                               | 0.1                  | 8    | 20   | 67                | 23               |
| FD      | COCA13  | Cornus canadensis                                  | 1.0                  | 27   | 80   | 50                | 37               |
| L       | LICHEN  | total lichens                                      | 0.0                  | 15   | 60   | 100               | 39               |
| L1      | CLADI3  | Cladina  | 3.0                  | 9    | 15   | 33                | 17               |
| L1      | STERE2  | Stereocaulon                                       | 0.1                  | 8    | 15   | 33                | 16               |
| M       | MOSS    | total bryophytes-mosses and liverworts             | 2.0                  | 48   | 85   | 100               | 69               |
| M1      | HYSP70  | Hylocomium splendens                               | 1.0                  | 26   | 80   | 100               | 51               |
| M1      | PLSC70  | Pleurozium schreberi                               | 1.0                  | 13   | 35   | 67                | 30               |
| M1      | ZZMOSS  | unknown-mosses                                     | 1.0                  | 7    | 15   | 100               | 26               |
| M1      | PTCR70  | Ptilium crista-castrensis                          | 0.1                  | 5    | 10   | 33                | 13               |
| B       | LITTER  | litter-herbaceous, mulch, and woody debris <2.5 cm | 10.0                 | 40   | 100  | 100               | 63               |
| B       | LITTER2 | litter-woody debris >2.5 cm                        | 1.0                  | 7    | 20   | 100               | 26               |
| 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      | 5.5    | 11.4 | 17.0  | m     | 12                |
| Tree regeneration                       | TR              | 0.5    | 2.2  | 4.0   | m     | 7                 |
| Tall shrubs                             | ST              | 4.0    | 4.5  | 5.0   | m     | 2                 |
| Medium shrubs                           | SM              | 1.5    | 1.7  | 2.0   | m     | 3                 |
| Low shrubs                              | SL              | 50.0   | 81.7 | 100.0 | cm    | 6                 |
| Dwarf shrubs                            | SD              | 5.0    | 10.4 | 15.0  | cm    | 5                 |
| Tall and medium grasses and grass-likes | GT, GM          | 40.0   | 40.0 | 40.0  | cm    | 1                 |
| Tall and medium forbs                   | FT, FM          | 20.0   | 43.3 | 60.0  | cm    | 3                 |
| Dwarf herbs, lichens, and bryophytes    | GD, FD, L, M    | 2.0    | 4.5  | 10.0  | cm    | 13                |

### 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 |
|---------------|-------------|---------------|------------|-----------------|------------------------|
| Picea mariana | 38          | 12.2          | 7.9        | 4               | B                      |
|               | 74          | 15.0          | 11.0       |                 |                        |
|               | 109         | 17.5          | 13.4       |                 |                        |
| Picea mariana | 102         | 9.1           | 4.6        | 1               | G                      |
|               | 102         | 9.1           | 4.6        |                 |                        |
|               | 102         | 9.1           | 4.6        |                 |                        |

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

| Min.                | Avg. | Max. | Number of Stands |
|---------------------|------|------|------------------|
| m <sup>2</sup> / ha |      |      |                  |
| 13.8                | 21.8 | 29.9 | 2                |

## **Mapunit Components**

### **Common Name (Soils Name):**

Boreal-forested sandy hills (Typic Haplocryods, sandy)

### **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):**

3FU3 Boreal Eolian Plains and Dunes with Discontinuous Permafrost  
(Typic Historthels, coarse-loamy-Typic Histoturbels, coarse-loamy-Typic Haplocryods, sandy Association, 0 to 38 percent slopes)

## **Geographically Associated Landtypes**

### **131B\_105 — Loamy Frozen Terraces, Wet:**

This site occurs on nearly level areas between dunes with wetter, moderately deep soils over permafrost. The climax plant community is "Black spruce-tamarack/tussock cottongrass woodland."

### **131B\_400 — Loamy Frozen Slopes:**

This site occurs on nearly level areas between dunes with wetter soils that have permafrost at moderate depths. The climax plant community is "Black spruce/Labrador tea woodland."

## **Similar Landtypes**

### **131B\_111 — Peat Plateaus:**

This site occurs on soils that are moderately deep over permafrost. The climax plant community is "Black spruce-tamarack/lichen woodland."