

Foothills Low Shrub Tundra



Stratum code: FLST

Number of plots sampled: 15

Physiography: subalpine (Brooks Range Foothills physiographic unit)

Geomorphology: hill, lowland valley

Landform: convex slope, draw (water tracks, beaded stream), depression

Hydrology: mesic to hydric, moderately drained

Classification: A subalpine to arctic, upland shrub type. Average shrub cover is 85.5%. Average cover of obligate wetland plants is 16.7%. Mosses are abundant with species in the *Sphagnum* genus contributes an average cover of 15.3% and N-fixing feathermosses (e.g., *Hylocomium splendens*) averaging 12.1% cover.

Site characteristics: Occurs at mid elevation, on gentle slopes, often associated with areas of ground or surface water flow, thus the pattern is somewhat linear. Permafrost is relatively ice-rich with a moderate depth of seasonal thaw averaging 30.4 cm.

Soil characteristics: The mean thickness of moss and duff combined is 7.4 cm. Moss and duff is consistently underlain by an organic soil horizon averaging 13.1 cm thick; a silty mineral horizon typically extends to depth. Average soil water pH measured at 10 cm depth is 5.6.

Vegetation: Shrub cover is high with *Betula nana* and *Salix pulchra* dominating the upper canopy and indicating and differentiating the type. The herbs, *Petasites frigidus*, and *Arctagrostis latifolia* further differentiate the stratum from other tundra types. Foothills low shrub tundra differs from Foothills Tussock Tundra in the dominance

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of shrub. The understory shrubs *Rhododendron tomentosum* ssp. *decumbens*, *Vaccinium vitis-idaea*, and *Empetrum nigrum* occur at lower average cover but show high constancy. The wetland sedges, *Eriophorum angustifolium* and *Carex aquatilis* often occur in the wettest portion of the water track. Mosses are more abundant than lichens with mosses in the *Hylocomium*, *Sphagnum*, *Aluocomium* and *Dicranum* genera showing relatively high cover and constancy. Mean vascular plant richness is 20 taxa.

Dominant species (greater than 25% average cover):

- *Betula nana*
- *Salix pulchra*

Indicator species Taxa with significant potential ($p < 0.0002$) to indicate tundra (listed in decreasing order of indication) include:

- *Eriophorum vaginatum*
- *Rhododendron tomentosum* ssp. *decumbens*
- *Vaccinium vitis-idaea*
- *Betula nana*
- *Salix pulchra*
- *Aulacomnium* moss
- *Dicranum* moss
- *Cladonia* lichen
- *Rubus chamaemorus*

Differential Species Taxa with significant potential to differentiate the Foothills Low Shrub Tundra from other tundra strata include:

- *Betula nana*
- *Salix pulchra*
- *Petasites frigidus*
- *Arctagrostis latifolia*

Succession and disturbance: A mid-successional type where riparian and permafrost dynamics provide rare disturbance. Water flow near or at surface, but generally not sufficient for sediment transport; occasional thermokarst failure.

Indicators of change: Change in structure (height of dominant shrubs) or composition; change in hydrologic regime (more or less run off); change in active layer; change in thermokarst area (thermokarst failure), establishment of tall shrub species (alder, poplar).



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Table 6. Cover and constancy of plant taxa occurring in the Foothills Low Shrub stratum. Species listed by habit, in decreasing order of percent cover.

Habit	Scientific Name	Average Cover (%)	Standard Deviation (%)	Minimum Cover (%)	Maximum Cover (%)	Constancy (%)
tall shrub	<i>Betula nana</i>	39.8	14.5	13.3	66.4	100
	<i>Salix pulchra</i>	28.6	17.2	5.4	60.0	100
	<i>Salix glauca</i>	15.3	na	15.3	15.3	7
	<i>Salix richardsonii</i>	3.3	na	3.3	3.3	7
	<i>Ribes triste</i>	2.0	na	2.0	2.0	7
	<i>Spiraea stevenii</i>	2.0	na	2.0	2.0	7
low shrub	<i>Rhododendron tomentosum ssp. decumbens</i>	6.7	5.3	2.0	18.7	73
	<i>Vaccinium uliginosum</i>	2.0	na	2.0	2.0	7
	<i>Salix fuscescens</i>	1.3	0.0	1.3	1.3	13
dwarf shrub	<i>Vaccinium vitis-idaea</i>	10.1	6.6	2.0	24.7	87
	<i>Empetrum nigrum</i>	3.0	1.6	1.3	5.3	47
	<i>Cassiope tetragona</i>	1.3	na	1.3	1.3	7
graminoid	<i>Poa pratensis ssp. alpigena</i>	14.0	10.0	4.0	24.0	20
	<i>Eriophorum angustifolium</i>	12.0	9.1	1.3	28.0	67
	<i>Carex aquatilis</i>	11.7	7.8	2.7	26.0	60
	<i>Eriophorum vaginatum</i>	8.1	6.6	1.3	24.0	67
	<i>Calamagrostis neglecta</i>	6.7	6.6	2.0	11.3	13
	<i>Arctagrostis latifolia</i>	5.9	3.7	1.3	12.0	60
	<i>Carex bigelowii ssp. ensifolia</i>	5.0	2.1	2.0	6.7	27
	<i>Eriophorum scheuchzeri</i>	5.0	0.4	4.7	5.3	13
	<i>Poa arctica</i>	3.5	2.4	1.3	6.0	20
	<i>Calamagrostis</i>	1.3	na	1.3	1.3	7
forb	<i>Pyrola asarifolia</i>	10.7	5.7	6.7	14.7	13
	<i>Petasites frigidus</i>	9.0	8.1	1.3	24.0	60
	<i>Rubus chamaemorus</i>	6.8	4.1	1.3	14.7	47
	<i>Polemonium acutiflorum</i>	2.7	na	2.7	2.7	7

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Habit	Scientific Name	Average Cover (%)	Standard Deviation (%)	Minimum Cover (%)	Maximum Cover (%)	Constancy (%)
	<i>Saussurea angustifolia</i>	2.7	na	2.7	2.7	7
	<i>Comarum palustre</i>	2.7	1.9	1.3	4.0	13
	<i>Pyrola grandiflora</i>	2.5	1.2	1.3	4.7	40
	<i>Coptidium lapponicum</i>	2.0	0.0	2.0	2.0	20
	<i>Anemone parviflora</i>	1.3	0.0	1.3	1.3	13
	<i>Valeriana capitata</i>	1.3	na	1.3	1.3	7
spore-bearing	<i>Equisetum arvense</i>	6.2	2.6	2.7	8.7	27
moss	<i>Hylocomium</i>	14.7	10.8	2.7	36.7	80
	<i>Sphagnum</i>	9.1	9.5	1.3	40.0	100
	<i>Oncophorus</i>	7.3	na	7.3	7.3	7
	<i>Aulacomnium</i>	6.9	5.7	1.3	26.2	100
	<i>Dicranum</i>	6.4	5.7	1.3	18.8	67
	<i>Rhytidium</i>	5.3	na	5.3	5.3	7
	<i>Calliergon</i>	4.4	3.3	2.0	6.7	13
	<i>Ptilium</i>	4.0	na	4.0	4.0	7
	<i>Sanionia</i>	4.0	na	4.0	4.0	7
	<i>Polytrichum</i>	3.1	2.0	1.3	6.7	47
	<i>Tomentypnum</i>	2.7	2.3	1.3	6.7	33
	<i>Campylium</i>	2.7	0.9	2.0	3.3	13
	<i>Pleurozium</i>	2.3	1.4	1.3	3.3	13
	<i>Brachythecium</i>	1.3	na	1.3	1.3	7
lichen	<i>Peltigera</i>	2.4	2.0	1.3	4.7	20
	<i>Flavocetraria</i>	2.0	1.0	1.3	2.7	13
	<i>Cladonia</i>	1.8	0.4	1.3	2.0	20
liverwort	<i>Barbilophozia</i>	14.8	na	14.8	14.8	7
	<i>Ptilidium</i>	3.3	na	3.3	3.3	7
	liverwort	2.9	2.2	1.3	6.0	40