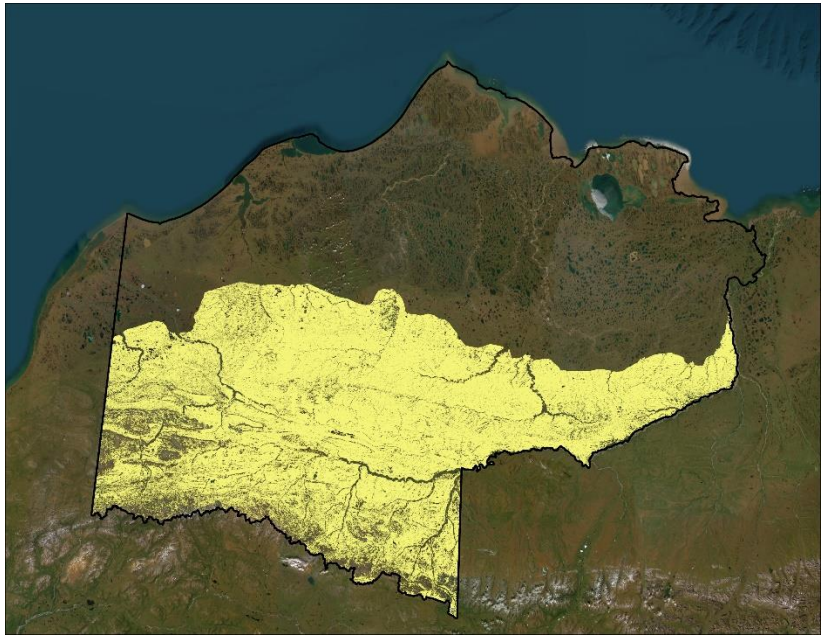
Foothills Tussock Tundra



Stratum code: FMTT

Number of plots sampled: 15

Physiography: subalpine (Brooks Range Foothills physiographic unit)

Geomorphology: hill, valley

Landform: planoconvex slope, non-patterned tundra

Hydrology: mesic, moderately drained

Classification: A subalpine to arctic tundra type. Tussock forming sedges have an average cover of 44.2%. Shrub cover averages 73.0%.

Site characteristics: Occurs at mid-elevations on gentle slopes. Permafrost is relatively ice-rich with the depth of seasonal thaw varying between tussock (shallow) and inter-tussock (deep). Active layer thickness averages 31 cm with a range from 18 to 40 cm. A non-patterned, homogenous, and large-patch type.

Soil characteristics: The average thickness of moss and duff combined is 6.3 cm. Moss and duff is consistently underlain by an organic soil horizon averaging 11.5 cm. A silty mineral soil horizon typically extends to depth. A B horizon may develop at the transition from organic to mineral soils. Gleyed horizons occur on some sites. Average soil water pH measured at 10 cm is 5.8.

Vegetation: *Eriophorum vaginatum* is the dominant tussock forming sedge and characterizes the type. The relative abundance and frequency of *Eriophorum vaginatum* along with the dwarf to low shrubs *Rhododendron tomentosum* ssp. *decumbens* and *Vaccinium vitis-idaea* differentiates the stratum from other tundra types. Woody species, including *Betula nana*, *Salix pulchra*, and the subshrub, *Rubus chamaemorus*, tend to dominate the inter-tussock

areas. Non-vascular species with high constancy include mosses in the *Sphagnum, Dicranum,* and *Aulocomium* genera and lichens in the *Peltigera* and *Cladonia* genera. Mean vascular plant richness is 20 taxa.

Dominant Species (greater than 25% average cover):

- *Eriophorum vaginatum*
- *Vaccinium vitis-idaea* (only 21%)

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 Tussock Tundra from other tundra strata include:

- *Eriophorum vaginatum*
- *Rhododendron tomentosum* ssp. *decumbens*
- *Vaccinium vitis-idaea*

Succession and disturbance: A late successional type where permafrost dynamics and fire provide rare disturbance. Fairly stable; cryoturbation and occasional thermokarst failure.

Indicators of change: change in structure (height of dominant shrubs) or composition; change in active layer; change in permafrost features (polygonal tundra and thermokarst).

Note: The dominance of *Eriophorum angustifolium* appears to be very localized based on low constancy (13%).

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Table 7. Cover and constancy of plant taxa occurring in the Foothills Tussock Tundra 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	*Betula nana*	14.7	5.9	3.3	28.0	100
	Salix pulchra	13.3	8.3	2.7	28.7	87
	Betula glandulosa	3.3	na	3.3	3.3	7
	Salix richardsonii	2.3	1.2	1.0	3.3	20
	Salix glauca	2.3	na	2.3	2.3	7
low shrub	*Rhododendron tomentosum* ssp. *decumbens*	18.0	8.3	1.3	29.3	100
	Salix fuscescens	1.7	0.5	1.3	2.0	13
	Vaccinium uliginosum	1.3	na	1.3	1.3	7
dwarf shrub	*Vaccinium vitis-idaea*	21.4	8.0	2.0	35.3	93
	Cassiope tetragona	8.0	5.6	1.4	14.7	53
	Empetrum nigrum	7.5	1.4	5.3	8.7	33
	Arctous alpina	3.3	2.8	1.3	5.3	13
	Andromeda polifolia	2.0	na	2.0	2.0	7
	Salix reticulata	1.3	na	1.3	1.3	7
graminoid	*Eriophorum vaginatum*	44.2	19.0	6.0	70.7	100
	Eriophorum angustifolium	29.7	36.3	4.0	55.3	13
	Carex aquatilis	13.7	13.4	4.0	33.3	27
	Carex bigelowii ssp. *ensifolia*	10.4	3.4	5.3	14.7	47
	Arctagrostis latifolia	5.3	na	5.3	5.3	7
	Poa arctica	2.4	0.5	2.0	2.7	13
	Calamagrostis inexpansa	2.0	na	2.0	2.0	7
forb	*Rubus chamaemorus*	3.4	2.5	1.3	8.0	60
	Pyrola grandiflora	2.9	1.6	2.0	4.7	20
	Petasites frigidus	2.7	0.7	2.0	3.4	47
	Bistorta plumosa	1.5	0.4	1.3	2.0	20
	Dodecatheon frigidum	1.3	na	1.3	1.3	7

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Habit	Scientific Name	Average Cover (%)	Standard Deviation (%)	Minimum Cover (%)	Maximum Cover (%)	Constancy (%)
	Polemonium acutiflorum	1.3	na	1.3	1.3	7
	Saussurea angustifolia	1.3	na	1.3	1.3	7
moss	*Sphagnum*	12.0	12.2	1.0	36.0	100
	Hylocomium	11.1	5.7	2.7	20.7	93
	Dicranum	5.6	4.5	1.3	14.7	100
	Polytrichum	5.5	6.1	1.3	16.7	53
	Aulacomnium	5.4	4.4	1.3	18.7	100
	Hamatocaulis	5.3	na	5.3	5.3	7
	Tomentypnum	4.0	2.4	1.3	7.3	33
	Sanionia	3.3	na	3.3	3.3	7
	Racomitrium	2.7	na	2.7	2.7	7
	Scorpidium	2.7	na	2.7	2.7	7
	Calliergon	2.4	0.5	2.0	2.7	13
	Pleurozium	2.3	1.5	1.3	4.0	20
	Ptilium	2.0	1.0	1.3	2.7	13
	Hypnum	1.7	0.5	1.3	2.0	13
	Abietinella	1.3	na	1.3	1.3	7
	Brachythecium	1.3	na	1.3	1.3	7
	Campylium	1.3	na	1.3	1.3	7
lichen	*Peltigera*	3.5	1.9	1.3	6.7	67
	Flavocetraria	2.8	1.0	1.3	4.0	33
	Thamnolia	2.5	0.3	2.3	2.7	13
	Cladonia	2.3	2.1	1.0	9.5	100
	Dactylina	1.8	0.6	1.3	2.7	40
	Nephroma	1.3	na	1.3	1.3	7
	Cetraria	1.0	na	1.0	1.0	7
liverwort	*Ptilidium*	6.0	5.0	1.3	11.3	20
	liverwort	6.0	2.4	2.7	9.3	53

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Habit	Scientific Name	Average Cover (%)	Standard Deviation (%)	Minimum Cover (%)	Maximum Cover (%)	Constancy (%)
	Cephalozia	2.0	na	2.0	2.0	7
	Fuscocephaloziopsis	1.3	na	1.3	1.3	7