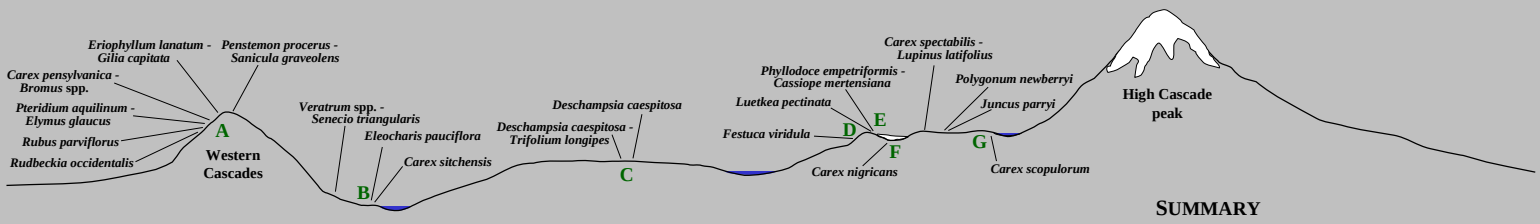


SUMMARY

The Three Sisters Wilderness hosts a floristically and physiognomically diverse array of meadow communities. Broad gradients in elevation, landform, and topography give rise to a diversity of climatic and edaphic conditions. In the montane zone, steep south- and west-facing slopes (**A**, **above**) support a mosaic of graminoid-, forb-, and shrub-dominated communities in forest openings created and historically maintained by fire. Species composition varies with topographic position and with associated changes in soil moisture availability and depth. Montane basins (**B**) and broad areas of poorly drained topography (**C**) support mesic to hydric communities dominated by graminoids; here community composition and distribution reflect variation in the depth and seasonal movement of the water table. In the subalpine zone, soils are younger, topography is more gentle, and climatic conditions are more extreme. Community patterns reflect subtle changes in microtopography that influence depth and duration of winter snowpack (**D, E and F**) or seasonal availability of soil moisture (**G**).

Global warming and associated changes in the amount or form of precipitation (snow vs. rain) may alter the composition and spatial distribution of communities through effects on soil moisture availability, snow accumulation, or length of the growing season. The current classification and gradient analysis document existing patterns and relationships and provide a baseline for assessing future changes.

Festuca viridula community

Total plant cover (%)	80
No. species/plot	13.3

Characteristic species	Con(%)	Cov(%)
Festuca viridula	100	47
Carex pensylvanica	75	6
Calochortus subalpinus	75	2
Microseris alpestris	75	2
Lupinus latifolius	63	9

Elevational range 1580 - 2020 m

Bunchgrass-dominated community of upper montane hillslopes and gentle south- to west-facing slopes in the subalpine; soils deep silty loams to loamy sands.

Pteridium aquilinum - Elymus glaucus community

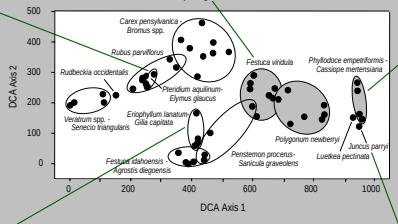
Total plant cover (%)	145
No. species/plot	29.5

Characteristic species	Con(%)	Cov(%)
Pteridium aquilinum	100	80
Elymus glaucus	100	20
Bromus spp.	100	14
Lathyrus nevadensis	100	4

Elevational range 1550 - 1580 m

Lush, herb-rich community of mesic montane slopes; southeast- to southwest-facing midslope positions; soils moderately deep to shallow, fine sandy to silty loams.

Sloping Landforms



Heath-shrub community of gentle north- and east-facing subalpine slopes; soils loamy sands to sands often with abundant cobbles or boulders.

Phyllodoce empetriformis - Cassiope mertensiana community

Total plant cover (%)	103
No. species/plot	15.8

Characteristic species	Con(%)	Cov(%)
Phyllodoce empetriformis	100	39
Cassiope mertensiana	75	30
Aster alpigenus	100	5
Juncus parryi	100	5
Ligusticum grayi	75	6
Luetkea pectinata	75	5

Elevational range 1880 - 2020 m

Eriophyllum lanatum - Gilia capitata community

Total plant cover (%)	76
No. species/plot	29.0

Characteristic species	Con(%)	Cov(%)
Gilia capitata	100	14
Eriophyllum lanatum	75	16
Achillea millefolium	100	6
Castilleja hispida	100	2
Eriogonum compositum	75	4
Sedum oreganum	75	2

Elevational range 1500 - 1700 m

Herb-rich community of xeric montane sites; south- to southwest-facing upper-slope and ridge-top positions; shallow lithosolic soils.

Sparsely vegetated and species-poor “pumice barren” community; flat to gently sloping topography in the subalpine zone; coarse sandy soils.

Juncus parryi community

Total plant cover (%)	27
No. species/plot	8.0

Characteristic species	Con(%)	Cov(%)
Juncus parryi	100	25
Carex breweri	100	1

Elevational range 2000 m (*n* = 1)

Eleocharis pauciflora community

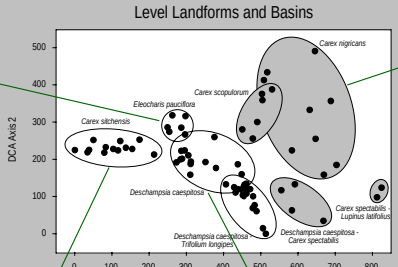
Total plant cover (%)	148
No. species/plot	24.5

Characteristic species	Con(%)	Cov(%)
Eleocharis pauciflora	100	58
Dodecatheon jeffreyi	71	8
Pedicularis groenlandica	57	3
Vaccinium occidentale	83	8
Hypericum anagalloides	83	4
Muhlenbergia filiformis	83	4
Tofieldia glutinosa	83	2
Carex sitchensis	67	11
Carex luzulina	67	7

Elevational range 1340 - 1550 m

Species-rich, spike rush community with abundant moss cover; water table at or above the ground-surface; montane basins and flats, soils organic silty clay loams.

Level Landforms and Basins



Short, sedge-dominated turf community of late snow-melt basins in the subalpine zone; species composition varies with depth of water table and soil texture; sandy to loamy and organic soils.

Carex nigricans community

Total plant cover (%)	115
No. species/plot	11.2

Characteristic species	Con(%)	Cov(%)
Carex nigricans	100	39
Aster alpigenus	70	10

Elevational range 1830 - 2200 m

Carex sitchensis community

Total plant cover (%)	115
No. species/plot	14.5

Characteristic species	Con(%)	Cov(%)
Carex sitchensis	100	74
Dodecatheon jeffreyi	71	4
Polygonum bistortoides	57	3
Salix geyeriana	43	9
Salix myrtillifolia	43	8
Carex utriculata	36	8

Elevational range 1290 - 1660 m

Tall sedge community of hydric montane basins and lakesides; ground-surface to highly elevated water table; soils organic silty loams to silty clay loams.

Tall, montane bunchgrass community of broad flats and basins; water table from below to above the ground surface (species composition varies accordingly); soils loams to organic silty clay loams.

Deschampsia caespitosa community

Total plant cover (%)	161
No. species/plot	16.4

Characteristic species	Con(%)	Cov(%)
Deschampsia caespitosa	100	51
Dodecatheon jeffreyi	60	4
Muhlenbergia filiformis	65	6
Hypericum anagalloides	55	5

Elevational range 1240 - 1530 m