

Intermontane Shrub-Steppe



General Description

The *Intermontane Shrub-Steppe* zone covers an area of approximately 2500 km² at the lowest elevations of several major river valleys (e.g., in the Fraser, Thompson and Okanagan drainages) in south-central British Columbia (BC). It occurs as several disjunct subunits surrounded by the *Cordilleran Dry Forest* zone at higher elevations. The *Intermontane Shrub-Steppe* represents the northern tip of sagebrush shrub-steppe that is widespread in the climatically dry and semi-arid western United States. The climate is one of the driest in Canada. The majority of the contemporary landscape supports livestock grazing and irrigated crop cultivation.

Vegetation

Natural upland vegetation is dominated by widely spaced clumps of drought tolerant bunchgrasses and xerophytic shrubs, usually with a well-developed cryptogamic crust of lichens and cyanobacteria as the ground layer. Shrubs are typically cold-deciduous broad-leaved or evergreen microphyllous species. Vegetation patterns reflect relatively small changes in local topography and site-scale aspect and drainage. Scattered occurrences of trees are mostly confined to moist sites, cooler slope aspects or higher elevations. Livestock grazing has altered the species composition of most of these communities.

Bluebunch wheatgrass (*Pseudoroegneria spicata*) is the characteristic grass species, often occurring in association with big sagebrush (*Artemisia tridentata* var. *tridentata*). Needle-and-thread grass (*Hesperostipa comata*), mountain rough fescue

(*Festuca campestris*), Idaho fescue (*F. idahoensis*), prairie junegrass (*Koeleria macrantha*), Sandberg's bluegrass (*Poa secunda* ssp. *secunda*), Great Basin lymegrass (*Leymus cinereus*), brittle prickly-pear cactus (*Opuntia fragilis*), antelope-brush (*Purshia tridentata*), large-fruited desert-parsley (*Lomatium macrocarpum*), low pussytoes (*Antennaria dimorpha*), slender hawksbeard (*Crepis atriobarba*) and prairie spikemoss (*Selaginella densa*) are also common species. The ground surface is often encrusted by cyanobacteria and numerous lichen species (especially clad [*Cladonia* spp.] and reindeer [*Cladina* spp.] lichens). Stands with a history of heavy grazing often include non-native species such as Kentucky bluegrass (*Poa pratensis*), downy brome (*Bromus tectorum*) and knapweeds (*Centaurea* spp.).

Rocky Mountain Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) and ponderosa pine (*Pinus ponderosa*) occur in small stands or as scattered individuals on cooler slopes or wherever subterranean moisture is available. Trembling aspen (*Populus tremuloides*) occurs on wetter sites, often associated with western snowberry (*Symphoricarpos occidentalis*) and a variety of forb species. Alluvial forests dominated by black cottonwood (*Populus trichocarpa*) occur on some stable floodplain terraces.

Wetlands occur in poorly drained locations, but are rarely extensive. They often dry up during the summer, and alkali wetlands are relatively common. Riparian shrub communities dominated by willows (e.g., coyote willow [*Salix exigua*]) or water birch (*Betula occidentalis*) often line small watercourses

and margins of waterbodies where water tables remain near the surface throughout the year. Broad-leaved cattail (*Typha latifolia*) and hard-stemmed bulrush (*Schoenoplectus acutus*) marshes occur on the margins of shallow water bodies. Saline wet meadows dominated by alkali saltgrass (*Distichlis stricta* var. *stricta*) or clustered field sedge (*Carex praegracilis*) occur on seasonally flooded sites where evaporation concentrates salts.

Climate

The *Intermontane Shrub-Steppe* zone occurs at the lowest valley elevations in southern BC in the lee of the Coast and Cascade Mountains. Within the continental temperate macroclimate, rain shadow effects on Pacific air masses are most intense, and temperatures highest, in the deeper valleys. In general, summers are warm to hot and winters are moderately cold; annual precipitation is low.

Mean annual precipitation is typically <380 mm, with the wettest months being December and January. Mean annual temperature is approximately 8°C. A growing season moisture deficit, exacerbated by warm summer temperatures, is the main factor restricting tree growth and promoting graminoid and shrub vegetation. The growing season averages >2000 growing degree days above 5°C.

Physiography, Geology, Topography and Soils

This zone occurs at elevations between approximately 700 and 1000 mASL in the major river valleys of the southern Interior Plateau of BC. Specifically, portions of the middle Fraser, lower Chilcotin, lower Thompson, Nicola, Okanagan and Similkameen River valleys contain subunits of this zone. The Interior Plateau is mostly underlain by geologically recent lava deposits, and soils are reasonably rich in basic cations.

The entire area was affected by late Pleistocene glaciation. The valleys where this zone occurs are relicts of post-glacial meltwater drainage and inundation. Predominant surficial materials are of fluvial, glaciofluvial and lacustrine origins. Soils are primarily Chernozems.

Notes

The *Intermontane Shrub-Steppe* zone is surrounded at higher elevations by the *Cordilleran Dry Forest*. To the south, it continues into the United States.