

## Cypress Hills

### General Description

The Cypress Hills is a landscape feature that contains multiple vegetation zones that cannot be mapped at the scale of the *Vegetation Zones of Canada*. The *Cypress Hills* map unit covers approximately 6000 km<sup>2</sup> at elevations >1000 mASL, spanning the provincial border in southeastern Alberta and southwestern Saskatchewan. The prevailing dry climate is modified by elevation effects that generate a gradient of vegetation characteristics similar to those found in four nearby vegetation zones: *Great Plains Mixedgrass Grassland*, *Great Plains Fescue Grassland*, *Rocky Mountains Foothills Fescue Grassland* and *Cordilleran Montane Forest*. The majority of the contemporary landscape supports crop cultivation and grazing.

### Vegetation

Natural vegetation for most of the Cypress Hills is mixedgrass and fescue grassland. At lower elevations, the main mixedgrass species are needle-and-thread grass (*Hesperostipa comata*), northern porcupine grass (*H. curtisetata*), thick-spike wildrye (*Elymus lanceolatus* ssp. *lanceolatus*), prairie junegrass (*Koeleria macrantha*), western wheat grass (*Pascopyrum smithii*), blue grama (*Bouteloua gracilis*) and a number of upland sedges (*Carex* spp.). At mid-elevations, because of a slightly moister climate, plains rough fescue (*Festuca hallii*) becomes prominent in the species mixture.

At the highest elevations, on the Cypress Hills plateau (approximately >1300 mASL), mountain rough fescue (*Festuca campestris*) dominates natural grassland communities, together with northern porcupine grass, Idaho fescue (*F. idahoensis*), timber oatgrass (*Danthonia intermedia*) and shrubby cinquefoil (*Dasiphora fruticosa*).

Above approximately 1150 mASL, conditions are cool and moist enough to support upland forest and woodland communities, mostly on northerly aspects and in sheltered ravines. Forests are dominated by lodgepole pine (*Pinus contorta* var. *latifolia*), trembling aspen (*Populus tremuloides*) and white spruce (*Picea glauca*), with understories that are floristically similar to those in the montane forests of

the Rocky Mountain foothills, approximately 300 km to the west. Understories include snowberries (*Symphoricarpos albus*, *S. occidentalis*), prickly rose (*Rosa acicularis*), white meadowsweet (*Spiraea lucida*), pinegrass (*Calamagrostis rubescens*), rough-leaved mountain rice (*Oryzopsis asperifolia*) and a variety of forb species. Balsam poplar (*Populus balsamifera*) occurs in riparian areas, moist ravines and near waterbodies.

Wetlands are relatively rare and not extensive. They are mainly confined to lake margins, riparian valleys, and northerly aspects near springs and streams. Shrub communities dominated by willows (e.g., *Salix bebbiana*) and/or silverberry (*Elaeagnus commutata*) often line small watercourses, swales and margins of waterbodies where additional moisture is available throughout the year. Extensive hawthorn (*Crateagus* spp.) shrublands are unique to the lower and mid slopes of the Cypress Hills, usually along minor draws and seepages or on some mesic sites. Marshes dominated by common cattail (*Typha latifolia*) and hard-stemmed bulrush (*Schoenoplectus acutus*) occur on the margins of shallow water bodies on the plateau. Wet meadows and shallow marshes, mostly at lower elevations, are floristically similar to those described for the *Great Plains Mixedgrass Grassland*.

### Climate

The Cypress Hills occur in the dry continental temperate macroclimate of southeastern Alberta and southwestern Saskatchewan. Winters are cold and summers are warm. On average, because of orographic effects, temperatures are cooler and precipitation higher than on the surrounding plains. Pronounced microclimate variation occurs in relation to abrupt topographic changes.

At mid-elevations on the hills (1200 mASL), mean annual temperature is about 3°C and growing degree days above 5°C are a little less than 1300. Mean annual precipitation averages between 500 and 600 mm, with approximately 50% occurring in the growing season.

## Physiography, Geology, Topography and Soils

The Cypress Hills is an isolated group of hills that rises approximately 600 m above the mostly level terrain of the surrounding Alberta Plain, reaching a maximum elevation of 1466 mASL. This is the highest point of elevation in southern Canada between the Rocky Mountains and Labrador.

The Cypress Hills is a complex of eroded bedrock hills with a flat plateau at the uppermost elevations. On the north and west sides of the plateau are steep escarpments, while on the southern and eastern sides the hills slope gently down to the plain. The Cypress Hills are underlain by Mesozoic and Tertiary marine and non-marine sedimentary rocks. A cap of Tertiary gravels and conglomerate is characteristic of the uppermost plateau surface. The hills resulted from differential erosion of the surrounding areas, creating a raised feature on the plains. Local relief is provided by river valleys, rolling hills, hummocky moraines and steep escarpments.

Most of the area was affected by late Pleistocene glaciation, but during this period the highest elevation on the Cypress Hills plateau was an ice-free nunatak (an isolated peak protruding from its surrounding ice sheet). The predominant surficial material is moderately calcareous glacial till, except on the plateau where ancient gravelly deposits prevail. These paleosols ("fossil" soils) are, in some places, covered by a veneer of post-glacial loess up to 1.5 m thick. Soils are primarily loamy Chernozems, wherever grassland vegetation has historically predominated, and Brunisols and Luvisols, where forest vegetation has previously developed.

### Notes

The Cypress Hills zone is surrounded at lower elevations by the *Great Plains Mixedgrass Grassland*.

### Photo



**Commented [BK1]:** I'm looking for a good landscape photo image of the Cypress Hills, if anybody has any ideas.

**Photo 11.** This photo is typical of the mosaic of plant communities found in the Cypress Hills. (from Willoughby)



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