

Cordilleran Subboreal Forest



General Description

The *Cordilleran Subboreal Forest* zone covers an area of approximately 132,000 km², primarily in the intermontane plateaux of central British Columbia (BC). Orographic effects of the Coast, Cariboo and Rocky Mountains create a climate that varies from subhumid to humid. Landcover is dominated by evergreen coniferous forests, but several major rivers and large lakes dissect the landscape.

Vegetation

Productive closed forests dominate most upland sites, although open forests and woodlands are commonly associated with very dry sites or very dry local climates. Forest canopies are typically dominated by evergreen coniferous species. Cold-deciduous broad-leaved species often intermingle with, and occasionally dominate, the conifers. Understory structure varies from dense to sparse, and is usually dominated by cold-deciduous broad-leaved shrubs, conifer regeneration and perennial herbs. The moss layer is typically well developed, especially under conifer canopies.

Stand-replacing fires and insect outbreaks are the most widespread forms of natural disturbance, creating a diverse landscape mosaic comprising forest stands of varying age and composition. Post-fire stand structure is simple, but in the prolonged absence of fire multi-storied structure can develop over time. Forest harvesting is a significant disturbance factor in many areas, but agriculture and

other human modification of the landscape is relatively minor overall, and mostly confined to some river valleys.

The dominant tree species are interior spruce (*Picea engelmannii* x *glauca*) and lodgepole pine (*Pinus contorta* var. *latifolia*). Subalpine fir (*Abies lasiocarpa*) occurs in fire-sheltered locations throughout the zone, but is most common in more humid (typically snowy) areas where fire cycles are longer. Rocky Mountain Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) occurs in warmer locations, with old trees often persisting in stands for hundreds of years. Black spruce (*Picea mariana*) is sometimes present, primarily on poor sites with cold soils. Trembling aspen (*Populus tremuloides*) and paper birch (*Betula papyrifera*) commonly occur following disturbance and often dominate near settlements and in agricultural areas. Alluvial forests dominated by black cottonwood (*Populus trichocarpa*) occur on stable floodplain terraces.

Understories vary from dense, species-rich shrub and herb conditions to a continuous feathermoss ground cover with only a few erect vascular plants. Understory species diversity is generally high. Common shrubs include prickly rose (*Rosa acicularis*), shiny-leaved meadowsweet (*Spiraea lucida*), bracted honeysuckle (*Lonicera involucrata*), mountain huckleberry (*Vaccinium membranaceum*), squashberry (*Viburnum edule*), bristly black currant (*Ribes lacustre*) and soapberry (*Shepherdia canadensis*). Typical herb/dwarf shrub species

include bunchberry (*Cornus canadensis*), twinflower (*Linnaea borealis*), one-sided wintergreen (*Orthilia secunda*), fireweed (*Chamaenerion angustifolium*) and arnicas (*Arnica* spp.). The most common moss species are red-stemmed feathermoss (*Pleurozium schreberi*), knight's plume moss (*Ptilium crista-castrensis*) and stairstep moss (*Hylocomium splendens*). On dry sites, especially under open canopies, ground lichens are prevalent.

Wetlands are relatively common on the landscape in poorly drained locations, but are rarely extensive. Swamps, marshes and fens are the predominant wetland classes. Treed wetlands are mostly dominated by spruces.

Shallow marshes and wetter fens usually are dominated by sedges (often water sedge [*Carex aquatilis*] or northern beaked sedge [*C. utriculata*]), common spikerush (*Eleocharis palustris*), water horsetail (*Equisetum fluviatile*) or broad-leaved cattail (*Typha latifolia*). Shrub swamps, annually active floodplains and hummocky fens include arctic dwarf birch (*Betula nana*), mountain alder (*Alnus incana* ssp. *tenuifolia*), willows (e.g., Bebb's willow [*Salix bebbiana*], Drummond's willow [*S. drummondiana*]), bluejoint reedgrass (*Calamagrostis canadensis*) and field horsetail (*Equisetum arvense*). Stunted black spruce is typically present in nutrient-poor fens along with arctic dwarf birch, common Labrador tea (*Rhododendron groenlandicum*), water sedge, ribbed bog moss (*Aulacomium palustre*), golden fuzzy fen moss (*Tomentypnum nitens*) and abundant peat mosses (*Sphagnum* spp.).

Upland grasslands and shrublands are rare on the landscape, other than immediately following forest removal and on some warm, dry sites in river valleys.

Climate

The *Cordilleran Subboreal Forest* zone occupies the intermontane plateau areas of central BC in the lee of the Coast Mountains, where rain shadow effects on Pacific air masses create relatively dry to subhumid conditions within the continental temperate macroclimate of interior BC. Temperatures are generally more moderate than those of the *West-Central Boreal Forest* zone to the north. Some areas are more humid and some slightly less continental, depending on orographic effects and prevailing westerly air flows. Overall, summers

are relatively short but warm, and winters are cool and snowy.

Mean annual temperatures vary from approximately 2°C to 5°C. The growing season varies between approximately 1000 and >1300 growing degree days above 5°C. Mean annual precipitation is highly variable throughout the range, from about 600 mm to almost 2000 mm, depending on local orographic effects. Up to half of the annual precipitation falls as snow. Drier areas receive summer (May – September) precipitation of 250-350 mm, and most well-drained sites experience a slight soil moisture deficit. In the moister portions of the zone, few sites experience a growing season soil moisture deficit.

Physiography, Geology, Topography and Soils

This zone occurs within the southern Interior System of the Cordilleran physiographic region of Canada, between the Coast Mountains and the Rocky and Columbia mountain ranges in BC. This area is dominated by the northern Interior Plateau, Fraser Basin and the northern Columbia (Shuswap) Highlands, and is characterized by a series of plateaux and lowlands. This zone also occurs in the central portion of the Rocky Mountain Trench and fingers into valleys of the surrounding mountain ranges, particularly the Rocky Mountains, Cariboo Mountains, southern Omineca Mountains and northern Shuswap Highlands. There are some disjunct occurrences in the Stikine and Taku River valleys on the Stikine Plateau in northwestern BC where the transition from maritime to boreal climates is abrupt. Depending on the location, elevations range from valley bottoms (as low as 450 mASL) to mid-elevations (as high as 1500 mASL) in mountainous terrain.

The Coast and Omineca Mountains consist predominantly of crystalline igneous and metamorphic rocks, while the Rockies and Columbia Mountains comprise faulted and folded Paleozoic, Mesozoic or Tertiary sedimentary, and often carbonate-rich, rocks. The plateaux of central BC are mostly underlain by geologically recent lava deposits. The gently rolling terrain is incised by several large river valleys.

The entire zone was affected by late Pleistocene glaciation. The predominant surficial material is

glacial till derived from basaltic bedrock, thus reasonably rich in basic cations. Also found on the plateaux are eskers of coarse-textured glaciofluvial materials and bedrock knobs with shallow soils. In the mountain valleys, fluvial and glaciofluvial materials occur on the valley bottoms, and thin till and colluvial materials on steeper slopes. Several areas were inundated by large lakes at the time of glacial retreat and are now overlain by fine-textured glaciolacustrine materials. Mineral soils are mostly Luvisols and Brunisols, although Podzols develop in wetter climates. Gleysols occur on moist, poorly drained sites.

Notes

The *Cordilleran Subboreal Forest* zone borders the *West-Central Boreal Forest* to the north, the *Cordilleran Rainforest* in wetter climates to the northwest and east, and the *Cordilleran Dry Forest* to the south. At higher elevations, the adjoining zone is the *Cordilleran Montane Forest*.

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