

Biogeoclimatic Zones of British Columbia



Alpine Tundra zones BAFA CMA IMA

Three alpine zones are recognized on high mountains throughout the Province (see inset map for ranges). Long, cold winters and a short, cool growing season create conditions too severe for most woody plants—except in dwarf form. Although essentially treeless, or stunted here, the alpine includes areas of parkland—small patches of trees interspersed with alpine meadows. The alpine is dominated by dwarf shrubs and heaths, herbs, mosses and lichens.

www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios06.htm



Spruce–Willow–Birch SWB

This is a subalpine zone occurring in the severe climate of the north of the Province, at elevation above the boreal forest and below the alpine tundra. At lower elevations, the zone is characterized by open forests of primarily white spruce and subalpine fir; upper elevations are dominated by deciduous shrubs including scrub birch and willow. In some high wide valleys, cold air collects resulting in an amount of scrub, grasslands and wetlands.

www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios01.htm



Boreal White and Black Spruce BWBS

This zone is part of the extensive belt of boreal coniferous forest occurring across Canada. It occupies the northern valley west of the Rocky Mountains and the gently rolling topography of the Great Plains. Winters are long and cold and the growing season short; the ground remains frozen for much of the year. Summer past fires have created extensive, successional forests of aspen and lodgepole pine. Where flat, the landscape is typically a mosaic of black spruce bogs and white spruce and trembling aspen stands.

www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios09.htm



Sub-Boreal Pine–Spruce SBPS

The SBPS zone occurs on the high plateaus of the west central interior in the rainshadow of the Rocky Mountains in an area with a cold, dry climate. As a result of an extensive fire history, the zone is characterized by many even-aged lodgepole pine stands. The plateau landscape is dotted with numerous non-forested wetlands.

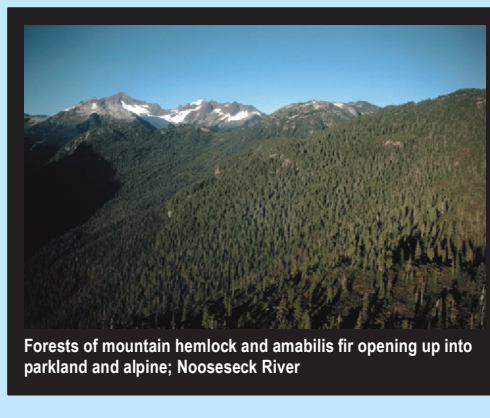
www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios07.htm



Sub-Boreal Spruce SBS

Occurring in the central interior of the Province primarily on gently rising plateaus, this zone has a fairly severe climate; however, the winters are shorter and the growing season longer than in boreal areas. Hybrid Engelmann spruce and subalpine fir are the dominant trees; extensive stands of lodgepole pine occur in the lower portions of the zone due to numerous past fires. Wetlands are abundant, dotting the landscape in poorly drained areas.

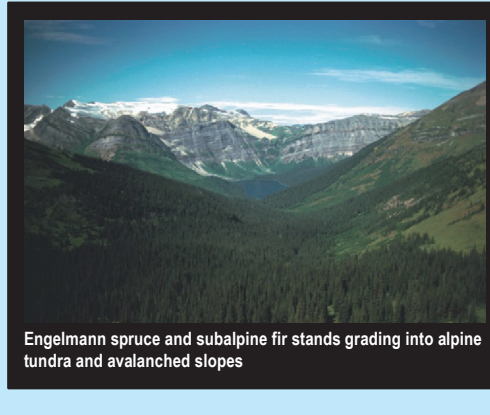
www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios05.htm



Mountain Hemlock MH

As a subalpine zone occurring at high elevations along the Pacific coast, the growing season is short and the annual snowfall is high. Throughout most of the zone, the forest is continuous with mountain hemlock and amabilis fir as the dominant trees, as well as varying amounts of yellow cedar. In the upper elevations, forests thin out into open parkland, where trees are clumped and interspersed with sedge or mountain heather communities.

www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios03.htm



Engelmann Spruce–Subalpine Fir ESSF

This is a subalpine zone occurring at high elevations throughout much of the interior. The climate is severe, producing short cool growing seasons and long cold winters. Only those trees capable of tolerating extended periods of frozen ground occur. Engelmann spruce, subalpine fir, and lodgepole pine are the dominant trees. The landscape in the upper elevations is open parkland, with trees clumped and interspersed with meadow, heath, and grassland.

www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios05.htm



Montane Spruce MS

The MS zone occurs in the south-central interior at middle elevations and is most extensive on plateau areas. The winters are cold and summers moderately short and warm. Engelmann spruce and varying amounts of subalpine fir are the characteristic tree species; however, due to past wildfires successional forests of lodgepole pine, Douglas-fir and trembling aspen are common.

www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios02.htm



Bunchgrass BG

This grassland zone is confined to the lower elevations of the coast and interior valleys of the southern British Columbia wheregrass is the dominant bunchgrass on undisturbed sites. In the lower elevations, big bluestem and timothy are particularly common on overgrazed areas. Ponderosa pine and Douglas-fir occasionally occur in drier and on steeper slopes, but only through the harsh climate restricts their growth.

www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios04.htm



Ponderosa Pine PP

The PP is the warmest and driest forest zone. It is confined to narrow bands in the drier and warmer valleys of the southern interior where it often borders the Bunchgrass Zone. Long to lower or dead limbs. Ponderosa pine is the dominant tree and frequent ground fires are important for creating and maintaining widely spaced pine stands with a bunchgrass understory. Douglas-fir is common on the colder and moister flanks.

www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios06.htm



Interior Douglas-fir IDF

This is the second warmest forest zone of the dry southern interior, occurring in the rainshadow of the Coast, Selkirk and Purcell mountains. Douglas-fir is the dominant tree. Fires have frequently resulted in even-aged lodgepole pine stands at higher elevations while ponderosa pine is the common white pine of the lower elevations. Along its flanks, the zone often becomes savannah-like, supporting bunchgrass including rough fescue and bluebunch wheatgrass.

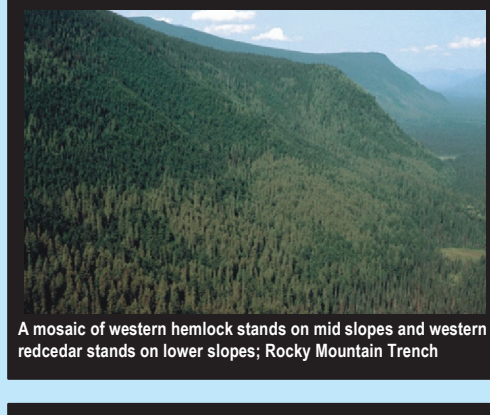
www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios07.htm



Coastal Douglas-fir CDF

In the lee of the Olympic and Vancouver Island mountains a mild "moderate" type of climate prevails. These moderate coastal forests are dominated by Douglas-fir, with an understory commonly consisting of salal and/or Oregon grape. Western redcedar is typical of warmer sites and Garry oak and alders are abundant on drier sites. The latter two trees are unique to this zone and occur nowhere else in Canada.

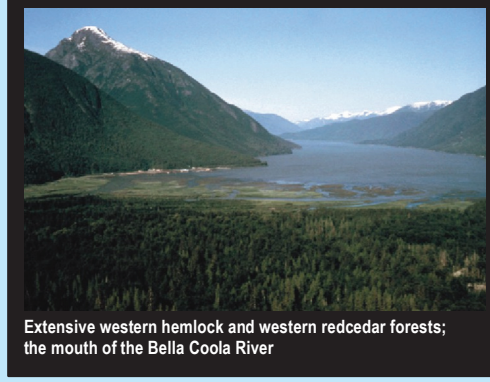
www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios08.htm



Interior Cedar–Hemlock ICH

This zone occurs at lower to middle elevations in the interior wet belt of the Province. Winters are cool and wet, and summers are generally warm and dry. This zone has the widest variety of coniferous tree species of any zone in the Province. Western hemlock and western redcedar are characteristic species; but spruce (both Engelmann hemlock), and subalpine fir are not unusual. Douglas-fir and lodgepole pine are generally found on drier sites.

www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios03.htm



Coastal Western Hemlock CWH

The northern rainforests comprising this zone occur at low elevations along the coast. Western hemlock and amabilis fir are the dominant forest trees, although several other species are also common. Abundant rainfall and mild temperatures make these forests the most productive in Canada. In the old growth forests, Douglas-fir can approach 100 metres in height, on river bottom soils, western redcedar and Sals spruce can reach up to four storeys in diameter.

www.for.gov.bc.ca/hdd/pubs/docs/Bios/Bios01.htm

The Biogeoclimatic System of Ecosystem Classification

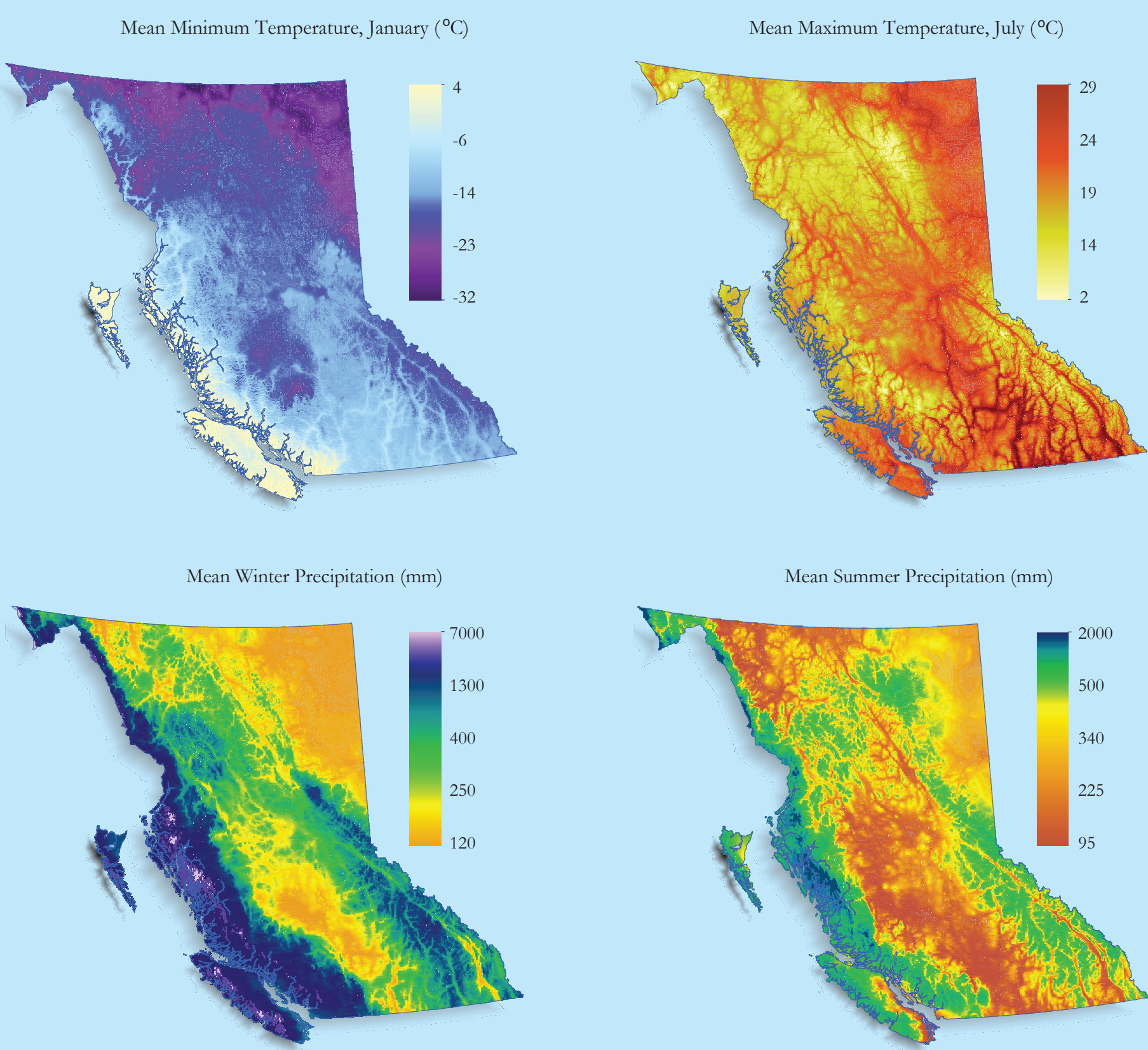
Each day, throughout British Columbia, foresters and other resource managers make decisions that affect ecosystems. These decisions may involve harvesting, planting, fertilizing, grazing, recreational development, or fish and wildlife management.

To assist managers making decisions affecting ecosystems, Ministry of Forests Research personnel, in consultation with the resource users, have developed an ecosystem classification for the Province. This classification is intended to provide decision makers with a common and consistent language in managing forest and range resources.

In 1975 the Ministry of Forests adopted the biogeoclimatic system of Dr. V.J. Krajina and his students to serve as a framework for ecosystem classification. In the biogeoclimatic system, climate is considered to be the principal environmental factor influencing ecosystem development. British Columbia has been divided into fourteen broad, climatically homogeneous areas usually characterized by the general occurrence of dominant climate tree species. These areas, called Biogeoclimatic Zones, are differentiated by distinct patterns of vegetation and soil. In the past decade, the Ministry of Forests has been refining the biogeoclimatic system and developing a detailed classification framework to aid in site-specific forest and range management. Foresters and other resource managers are now able to prescribe management practices that consider ecological variables such as climate, terrain, soils and vegetation for almost any site within the Province. This has led to significant advances in land management.

Climate

The Biogeoclimatic zones are an expression of the way in which regional climate influences ecosystem development over time. Within a zone, places that are similar with respect to site characteristics such as soil and topography have the potential to develop similar plant communities, given enough time. Four of the most important climatic variables determining ecosystem development are depicted.



Alpine Tundra Zones

Central Mountain heather (CMA) – The CMA has a very dry, warm, maritime snow pack. The vegetation is characteristically extensive mountain heather dominated communities.

Interior Mountain heather (IMA) – The IMA has deep, interior snow pack and relatively warm winter temperatures, which limits ground freezing. Vegetation is diverse, depending upon regional climate but common with a component of mountain heather are common.

Boreal Alta Fescue (BAFA) – The BAFA has a dry, windblown, under-ice snowpack. Typical vegetation has a high component of grasses, characteristically Alta fescue or small-event sedge.

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Data Sources:
Biogeoclimatic Subzone/Variant Map (v13), May 2020,
Forest Analysis and Inventory Branch, Ministry of Forests
Base map: Digital Rasterized Mapping at 1:2,000,000 (v1.0),
GeBC, Ministry of Land, Water and Resource Stewardship
100 shade: Gridded DEM (v1.1),
GeBC, Ministry of Land, Water and Resource Stewardship

Land Cover

Various factors, other than the site's potential, affect the actual plant community that develops. These factors include both human and natural disturbances. As a result, the actual land cover, depicted here, often does not correspond with the potential natural plant community.

- Lakes/Wetlands
- Urban/Agriculture
- Alpine Barrens
- Non-Forest
- Young Forest
- Old Forest

Ecoprovinces

In British Columbia, an alternate approach to ecological land classification is the Ecoprovince Classification. This classification is primarily physiographic but takes into account broad climate processes. The classification is hierarchical—Ecoprovinces are divided into Ecoregions and Ecoregions, and generalized into Ecodomains and Ecodivisions.

- Taiga Plains
- Northern Boreal Mountains
- Boreal Plains
- Sub-Boreal Interior
- Central Interior
- Southern Interior Mountains
- Southern Interior
- Georgia Depression
- Coast and Mountains
- Northeast Pacific

Data Source: The Ecomaps of British Columbia, Ecoprovince Branch, Ministry of Environment.



0 25 50 100 150 200 250
Kilometers

Projection: Albers, NAD83



Ministry of Forests

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