

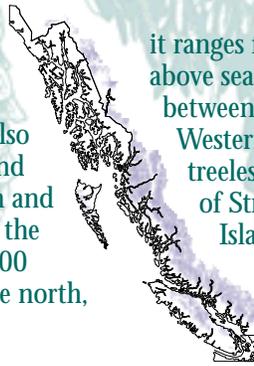
The Ecology of the Mountain Hemlock Zone

British Columbia's coastal subalpine lands lie within the Mountain Hemlock Zone. Dense, closed-canopy forests are characteristic of the lower part of this ecological zone; but at higher elevations forests thin out to open parkland, heath and meadow. Here the growing season is shorter because the climate is colder and the snowpacks are deeper. The Mountain Hemlock Zone provides wildlife habitat for many species, especially during the warmer summer months.

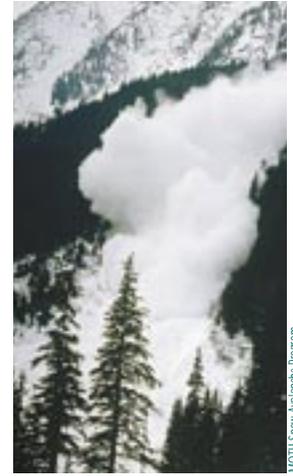


Location

The Mountain Hemlock Zone occupies subalpine elevations along the entire British Columbia coast. It also extends north into Alaska and south along the Washington and Oregon coast. In the south, the zone ranges from 900 to 1800 meters above sea level; in the north,



it ranges from 400 to 1000 meters above sea level. The zone is located between the densely forested Coastal Western Hemlock Zone and the treeless Alpine Tundra Zone. Much of Strathcona Park on Vancouver Island and Garibaldi Park on the south coast mainland lie within the Mountain Hemlock Zone.



MOTH Snow Avalanche Program

Climate



The Mountain Hemlock Zone has short, cool summers and long, cool, and wet winters, which are typical of a maritime mountain climate. This is one of Canada's wettest ecological zones. It receives up to 5000 mm of precipitation every year from the numerous Pacific weather systems that

sweep over the coastal mountains. With up to 70 percent of this precipitation falling as snow, the area has a deep snow cover for many months of the year. Because the deep snowpack melts so slowly, the zone has a relatively short growing season.

Photo: MOTH Snow Avalanche Program

Forest Ecosystems

Vegetation within the Mountain Hemlock Zone is strongly influenced by elevation. Because at higher elevations temperatures are colder, the growing season is shorter, and snows are deeper, trees grow better at the lower elevations. Mountain

hemlock, amabilis fir, and sometimes yellow-cedar are typical of lower-elevation forests.

Western hemlock and western redcedar are less common but often form an important part of the tree canopy. In the southern part of the zone, Douglas-fir and western white pine may also occur in lower-

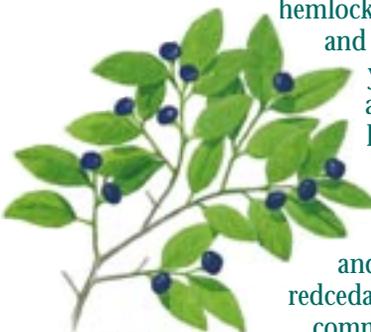
elevation forests; in the north, Sitka spruce is often present.

These forests often have dense shrub growth under the tree canopy. Oval-leaved blueberry, Alaska blueberry, black huckleberry, false azalea, and white-flowered rhododendron are the most common shrubs. Typically, these forests also have abundant regeneration of amabilis fir in the understory. The forest floor is usually covered with a thick and diverse carpet of mosses.

Dry forests occur intermittently at low elevations, and tend to have a more open tree canopy dominated by mountain hemlock. On these dry sites, copperbush is a common shrub. Occasionally, lodgepole pine grows on very dry sites, but it can also grow on wet sites.

On wetter and richer sites, amabilis fir and yellow-cedar

are dominant. Bog forests inhabit very wet sites at lower elevations within the zone. Yellow-cedar and mountain hemlock form an irregular and open canopy in these bogs, while skunk cabbage and Indian hellebore are characteristic understory plants.



alaska blueberry

Illustration of Alaska blueberry, *Vaccinium alaskaense*: Soren Henrich
Cover photo: Alex Inselberg



Pipecleaner moss
Rhytidiopsis robusta



Moss: F. Boas, Understorey MOF

Subalpine Wetlands and Meadows

A few lush wetland and herb meadow ecosystems occur along streams and in parkland areas with plentiful seepage. A few of the many species living here are Indian hellebore, Sitka valerian, arrow-leaved groundsel, sweet coltsfoot, white marsh-marigold, subalpine buttercup, common red paintbrush, and mountain arnica. Black alpine sedge

ecosystems are characteristic of wet areas in subalpine snow basins, where snow lies on the surface for nine or more months of the year. Avalanche tracks are another type of open ecosystem in the subalpine.



Photo below: MCF. White marsh-marigold. Caliba leptosepala
photo above: Arman Mirza

Subalpine Parklands and Heaths



MCF. White mountain-heather
Cassiope mertensiana

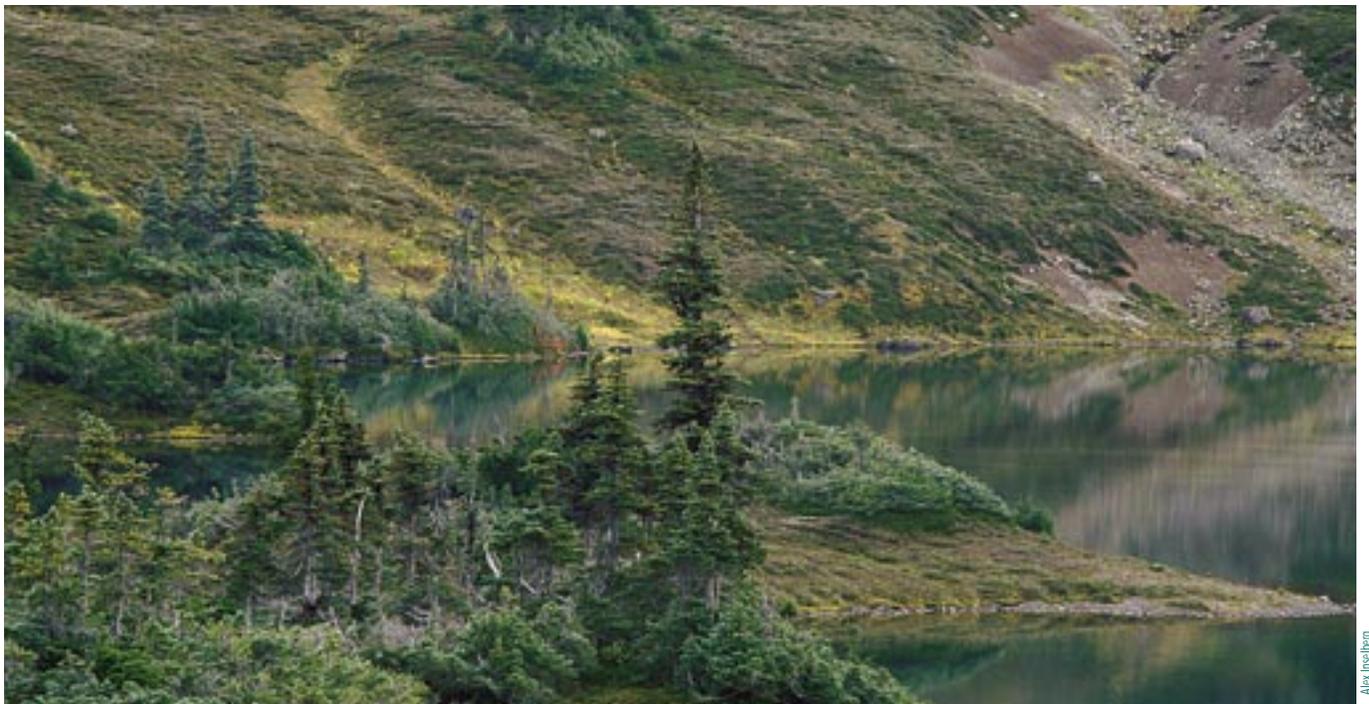
At higher elevations, forests thin out to a mosaic of subalpine

parkland, heath, and meadow ecosystems. Mountain hemlock, subalpine fir, yellow-cedar, and sometimes whitebark pine are common trees

near the timberline. Here they form irregular patches of forest amid an increasing amount of heath and meadow. This combination of clumped forest and open areas forms the subalpine parkland.

Heath ecosystems become common in the upper elevations. Trees are sparse and stunted, and dwarf evergreen shrubs are the dominant

plants. In the heath ecosystems in the southern part of the zone, white mountain-heather and pink mountain-heather are common. Alaska mountain-heather, clubmoss mountain-heather, and yellow mountain-heather are more typical of northern areas. Other characteristic plants of subalpine heaths are partridgefoot, alpine clubmoss, and crowberry.



Alex Inselberg

Wildlife



Despite the long, cool, and wet winters, the heavy snow cover, and the steep rugged terrain, many species of wildlife use the Mountain Hemlock Zone. Large mammals such as black and grizzly bears, Roosevelt elk, and black-tailed deer frequent a wide range of ecosystems within the zone. In the summer, mountain goats range mainly in open areas like rock outcrops and avalanche tracks. Some mountain goats overwinter on steep south-facing slopes, but many migrate to lower elevations. Grizzly bears often build their hibernation den in the Mountain Hemlock Zone.

The zone offers fine habitat for many birds, especially in mature and old forests where they feed on insects, conifer seeds, and small mammals. Some common birds here include the Great Horned Owl, Great Grey Owl,

Clark's Nutcracker, Common Raven, Common Flicker, Three-toed Woodpecker, Pileated Woodpecker, Hairy Woodpecker, Chestnut-backed Chickadee, Red-breasted Nuthatch, and Golden-crowned Kinglet. Species that use parkland meadows, heath, or other ecosystems include the Vancouver Island marmot, Willow Ptarmigan, and Blue Grouse.



Photo: MOF



Willow Ptarmigan
Lagopus lagopus
Photo: Ken Bowen



Avalanches

The deep snows of the Mountain Hemlock Zone attract many skiers to winter resorts located in the area. The deep snow pack also gives rise to avalanches, which are a common source of natural disturbance in the zone. Since avalanches occur repeatedly in the same places,

they support different kinds of vegetation than adjacent forests. Avalanches leave linear patterns called avalanche tracks on the sides of mountains.

Avalanche tracks provide habitat for mountain goat, Roosevelt elk, black-tailed deer, black bear, and grizzly bear.

Photo: MOTH Snow Avalanche Program



Yellow-cedar

Yellow-cedar is a coastal tree species that grows from Oregon to Alaska. In British Columbia it occurs at higher elevations of the Coastal Western Hemlock Zone and along the outer coast, as well as in the Mountain Hemlock Zone. It often grows with amabilis fir and mountain hemlock

and may attain its greatest size in the lower elevations of the Mountain Hemlock Zone.

Yellow-cedar is sometimes difficult to distinguish from western redcedar. In general, yellow-cedar is a smaller tree with a more scaly bark than western redcedar. Yellow-cedar leaves are more prickly and squarer than those of redcedar. Also, the smell of red- and yellow-cedar trees is different. Yellow-cedar gets its name from

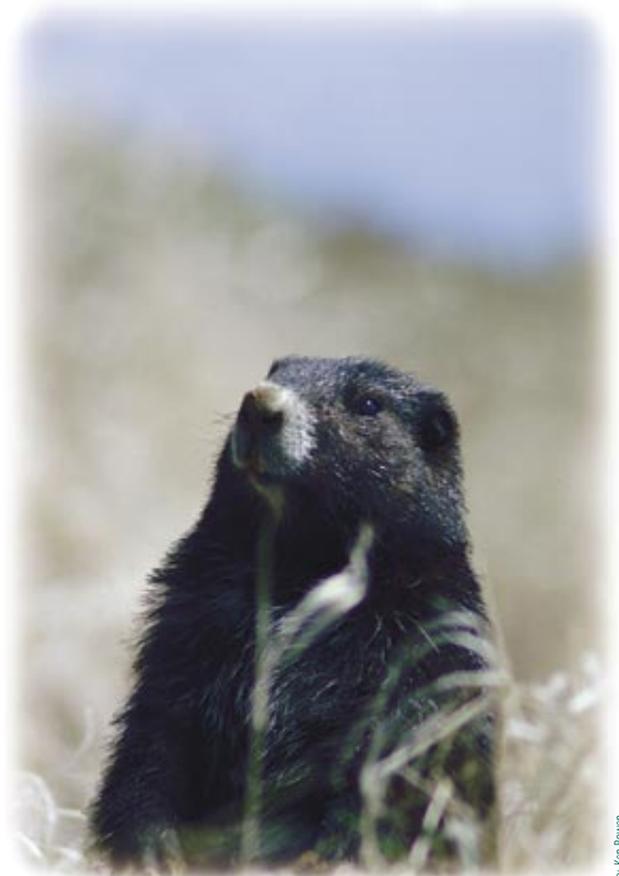
the yellowish colour of its foliage and wood.

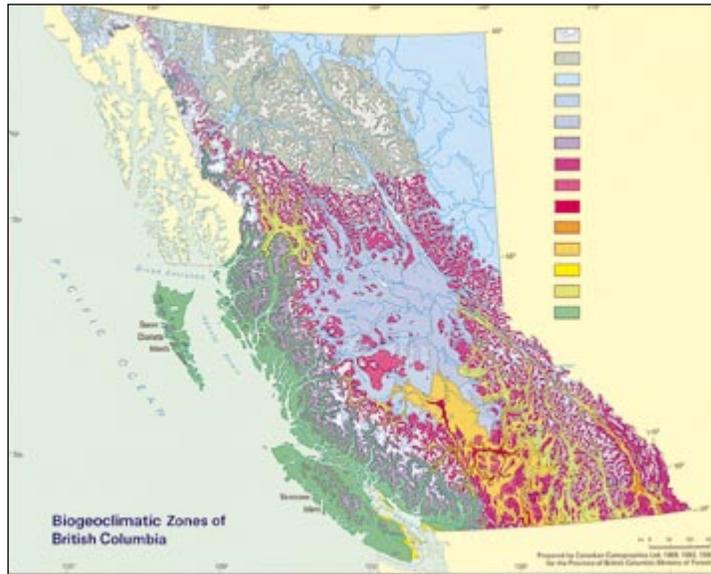
Yellow-cedar produces a very fine straight-grain yellow wood that coastal native people have used for thousands of years for carving masks, paddles, and bowls. They used the bark to weave clothing and blankets. Today, we value this tree for its beauty in the forest as well as for the timber, artwork, and other products made from its wood.



Vancouver Island Marmot

With a known population of only about 150 animals, the Vancouver Island marmot is one of the world's rarest mammals. A member of the rodent family and closely related to the hoary marmot found on the British Columbia mainland, the Vancouver Island marmot lives only in steep subalpine meadows of Vancouver Island. It hibernates for seven to eight months of the year under deep snow. Unlike other marmots that have large habitat areas and large populations, the Vancouver Island marmot is restricted to very small habitat patches and consequently has very small populations. Most Vancouver Island marmot colonies have 6 - 8 individuals; the largest may have 12 - 15. Recent inventories indicate populations of Vancouver Island marmot colonies appear to be unstable, so the species remains on the province's endangered list.





The Mountain Hemlock Zone is one of 14 biogeoclimatic or ecological zones within British Columbia. These zones are large geographic areas that share a similar climate within the province. Brochures in this series explore each zone.



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Yellow-cedar carving photos: Royal Museum of British Columbia