

## Ecosystems of BC

### Montane Forest



Ponderosa pine stand, L. Scott

### What is a montane forest?

In British Columbia, montane forests are in the southern part of the province from the Cariboo region south to the border with the United States. The forests begin at the edge of the grasslands and extend all the way to the mountain tops. The lower valley slopes are dry so trees like Douglas-fir and ponderosa pine grow there, often with open areas around them. Above the valley, the mountains are covered in a dense forest with many different kinds of trees including western larch, subalpine fir, spruce, and lodgepole pine. These forests support a variety of different plants and animals.

The forests on the lower valley slope used to have frequent, low intensity wildfires which helped to keep the ecosystem healthy. The fires were usually started by lightning and would rarely kill big older trees which provide important habitat for birds, bats, and other animals. When a wildfire occurs, it fills the soil with nutrients and burns some of the small trees and shrubs allowing grass and other plants to grow. This process is called a fire-maintained ecosystem. Climate change is changing this dynamic, with hotter and more intense, and more frequent wildfires that often kill older trees.

### What is the climate?

The climate of the montane forest varies depending on elevation up the mountain. It is mild and dry in the southern valleys and cold and humid higher up the mountains and farther north. Total rainfall each year can vary from 0.3 metres in the hot dry valleys to 1.2 metres on the mountain ridges.

## What are some of the plants found in montane forests?

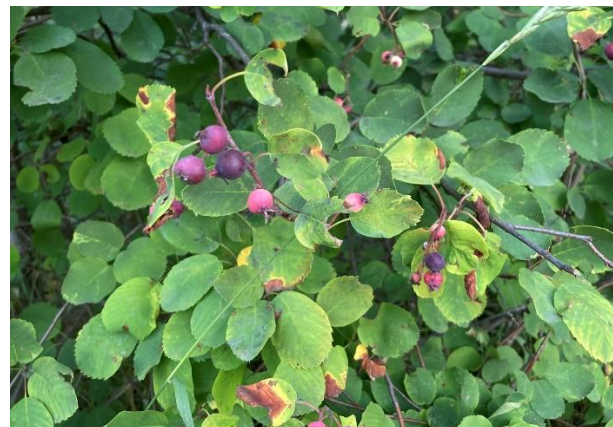
The montane forest has a variety of trees, wildflowers, and shrubs supporting many different kinds of wildlife. In the open forest, large, old ponderosa pine and larch trees provide nesting sites for woodpeckers and perching sites for hawks and owls. Squirrels make their homes in Douglas-fir and ponderosa pine trees and harvest seeds from the cones to store for winter.

Common shrubs include saskatoon berry, prickly rose, red-osier dogwood, snowberry, and elderberry. Rocky mountain juniper and common juniper often grow in forest openings. Labrador tea often grows near moist areas near wetlands or in the forest. Saskatoon berries and wild raspberries are used for food by many species including songbirds and black bears, while mule deer eat the leaves and stems in winter when other food is hard to find. Birds often eat snowberry berries in the fall and winter when other berries are hard to find. Black bears like to eat cow-parsnip, while grouse enjoy soopolallie berries.

Common wildflowers in open areas include arrow-leaved balsamroot, silky lupin, and pussytoes. Higher up the mountain, plants include fireweed, twinflower, bunchberry and bracken fern. Grasses include bunchgrasses in forest openings and pinegrass in areas with lots of trees. These grasses are important food for mule deer, elk and cattle and provide food and shelter for many other animals, including insects.



Red-osier dogwood, A. Noringseth, iNaturalist.ca



E. Lamb, Saskatoon berry, iNaturalist.ca

## How do invasive species affect the montane forest?

Along the edge of the grassland, big standing dead trees, called wildlife trees, provide nesting sites for Lewis's woodpeckers, a species at risk in BC. European starlings, introduced from

Europe, are known to take over ("parasitize") woodpecker nests by laying their eggs in the nest so the woodpecker will raise the baby starlings unknowingly. Often the baby woodpeckers do not survive but the baby starlings do. Even without laying eggs, starlings can affect woodpeckers by using the woodpecker nest and pooping in it. Since woodpeckers will not nest in a cavity that starlings have been in, they have to find new homes. Pecking out a new nest cavity is a lot of work for a woodpecker. Many invasive plants also cause problems in the montane forest. Invasive plants are introduced through logging roads which have been built to harvest timber. Invasive plant seeds often hitch-hike on trucks and equipment up these roads. The new invasive plants grow quickly and make more seeds, spreading along the roads and into the forest openings so there is less space for native plants to grow.

Invasive **orange hawkweed** and **yellow hawkweeds** take up all the water and nutrients in the soil that native plants normally need to grow. Hawkweeds not only spread by seed but also spread by runners above the ground so they can form dense patches, preventing native plants from growing. Since animals do not like to eat them, hawkweeds reduce food for deer, elk and cows.

**Leafy spurge** is another invasive plant that often takes over grasslands and forest openings. It has a big network of roots under the ground so it can suck up water and nutrients making it harder for the native plants to grow. Its stems have a white milky liquid in them that irritates the throat of grazing animals making them sick if they eat it. Dense patches of leafy spurge reduce the amount of grass and native wildflowers for elk, deer and cows to eat so these animals have to find new places to find food. Fortunately, some sheep and goats can eat leafy spurge so some land managers are using them to control leafy spurge.

**Diffuse knapweed** grows in forest openings and releases a chemical that prevents native grasses and wildflowers growing around it. Over time, the forest opening will be nothing but diffuse knapweed and because it is not very good food for elk and mule deer, these animals have to find new areas to eat grass. Over the last decades a program has been going on to introduce insect predators to control knapweed from countries where knapweed is native. These insects are carefully tested to make sure they will only attack knapweed and no other plants in the ecosystem. This program has been very successful for diffuse knapweed. The insects have prevented growth of diffuse knapweed to the point where it no longer dominates grasslands in southern BC. This process of bringing in insect predators to control an invasive plant is called biological control or "biocontrol". Learn more from this article: [How Biocontrol Took Down Diffuse Knapweed](#) (ISCBC).

**Hound's-tongue** grows along roads and forest openings and does well on sites that have been logged. Animals that eat the leaves of hounds-tongue get sick since the leaves are poisonous. The burred seeds get stuck to the faces and fur of animals which can be uncomfortable and weakens the animal. Because the seeds hitchhike on animals and people, it is important to always 'Bag the Burrs' and put them in the garbage. The biocontrol program has also been very successful on hounds-tongue. A small little beetle called *Mogulones crucifer* was released in southern BC in 1997 as a biocontrol insect and has been busy chewing on hound's-tongue ever since. This beetle has eaten so much hound's-tongue now that it is bringing this invasive plant



under control throughout southern BC. For more information on biocontrol in BC see [Biological Control Agents and Host Plants](#) (Government of BC)

**Scotch thistle** is the largest invasive thistle in BC. Growing two metres tall, it creates dense thickets that are painful to walk through. With leaves and stems covered in spiny thorns, this thistle really is a nightmare. Not only do people have trouble hiking through it, but so do coyotes, cougars, and other large animals. Fortunately, the flowers of thistle have lots of nectar making a little extra food for honeybees.

**Hoary alyssum** and **hoary cress** are invasive plants that are a particular problem in hay fields, pastures, and crop land. Hoary alyssum is toxic to horses even when it is dried in hay so it is a huge problem in hayfields and pastures. These species also spread by hitchhiking on animals and vehicles to natural grasslands so it's important to take care to check clothes, vehicles, and equipment and remove plant parts when travelling in our forests.



Orange hawkweed, J. Leekie



Scotch thistle, R. Mueller

## Other invasive plants that impact montane forests

Baby's breath, blueweed, common burdock, common bugloss, common tansy, dalmatian toadflax, field scabious, Japanese knotweed, mountain bluet, nodding thistle, oxeye daisy, plumeless thistle, scentless chamomile, St. John's wort, spotted knapweed, sulphur cinquefoil, tansy ragwort, and yellow toadflax.

For more information on the species mentioned, visit [ISCBC's website](#).