



Trees of BC

British Columbia's
Native Trees

Volume 1 • Needles & Scaled Leaves

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Parts of a conifer tree: USFWS Mountain-Prairie, Thayne Tuason

What are conifers?: Dru!

What are cones?: (top to bottom) Pete Morris, Matt Lavin, Peter Stevens, The Tree Library

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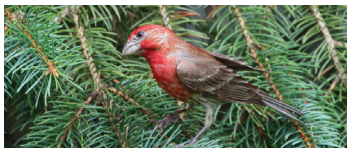
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Back cover: Ponderosa pine bark Charles (Chuck) Peterson



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Conifer characteristics

cone features



bracts



fused



fleshy



aril

cone shapes



round



egg-shaped



cylindrical



conical

leaf grouping



bundled



single



stalked bundle



scales

needles features



flat



fine



triangular



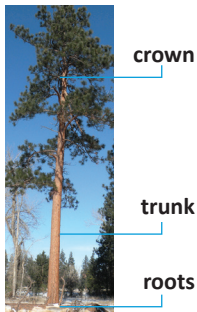
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Parts of a conifer tree

Generally speaking, trees are plants with **roots**, a woody central **trunk**, and a **crown** of branches covered in leaves.

All conifer trees native to BC have waxy leaves in the form of needles or scales. Most are *evergreen*, with the exception of the larches (*Larix*), who lose their needles in the autumn.

They are also members of a group of plants called *gymnosperms*, which produce unenclosed seeds, in cones rather than fruits.



Why do conifers have needles and scales?

While needles and scales don't offer as much surface area for *photosynthesis* as broader leaves, they have other benefits.

Needles and scales have thick, waxy coatings that retain water in dry conditions and offers protection from frost and insect damage. Their sleek shape has lower wind resistance to reduce storm damage.

With the exception of the larches, conifer trees keep their needles and scales year-round allowing them to continually capture sunlight and photosynthesize.



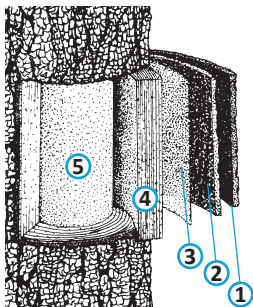
Leaves are where *photosynthesis* occurs. In this process, energy from the sun, carbon dioxide from the air, and water are converted into oxygen and sugars to fuel the tree.

Trunks have several layers:

① **Outer bark** protects the tree from fire, insects, extreme temperatures, and other external threats.

② **Inner bark (phloem)** is the layer that carries sugars from the leaves to the rest of the tree.

③ **Cambium** is the growing part of the trunk. Each year, the cambium produces new layers. Because less growing happens in winter, the difference between winter and summer growth can be seen in the tree's growth rings and shows the tree's age.



④ **Sapwood (xylem)** carries water and mineral nutrients from the roots up to the leaves.

⑤ **Heartwood** is dead wood at the center of the trunk which gives the tree strength.

Roots anchor the tree to the earth. They absorb water and, with the help of fungi, extract nutrients from the soil. Trees also use their roots to interact with other trees; exchanging nutrients and communicating signals, such as a distress warning in the case of disease or insect attack.

What are conifers?

Conifers are trees that produce their seeds and pollen in cones. All the conifers native to BC have needles or scale-like leaves.

The earliest conifers appear in the fossil record over 300 million years ago, whereas the first evidence of flowering, broad-leaved plants are only 125 million years old.

There are around 25 species of conifers native to BC. While this number is small compared to the number of broad-leaved species, conifers are very ecologically important. They are the dominant plants over large areas of the province – from the snowy boreal forests of the north, to the towering old-growth coastal rainforests, to the mountainous alpine regions of the Interior. Globally, conifer forests represent the largest terrestrial *carbon sink*.

Conifers provide much of the lumber used for building and paper production. They also have many traditional uses among the Indigenous peoples of BC including shelter materials, tools, clothing, transportation, food, and medicines.



What are cones?

Cones contain the reproductive structures of conifers, producing seeds that will grow into the next generation of trees.

Male pollen cones produce pollen and tend to be smaller and less conspicuous.

Female seed cones are fertilized by pollen and produce the seeds. Structure varies much between species.

Among the conifers native to BC, there are three conifer families that can be identified by the structure of the female cones.

Pine (pines, spruces, firs, larches) Woody cones with scales overlapping, with *bract* and seed scales. Cones are pointed, cylindrical or egg-shaped, and small to very large.

Cypress (cypresses, cedars, junipers, redwoods) Woody cones with bract and seed scales fully fused. Cones are usually small and often spherical. In junipers, the cones are fleshy and berry-like.

Yew (yews) A highly modified cone with only one scale in the female structure. It develops into a soft, brightly coloured, *aril* which partly encloses the seed.



Male pine cone



Female pine cone



Female cedar cone



Female yew cone





Western Redcedar

Thuja plicata

Where found: Common along the coast of BC. Also grows in wetter areas of the south to central Interior. Habitat is moist to wet soils in shady forests, river terraces, and slopes in the lowland and montane zones.

Description: This large, coniferous evergreen grows to 60 m tall. Branches spread and droop slightly, upturning at the ends. **Bark:** Grey to reddish brown, fraying vertically in aromatic, fibrous strips. **Leaves:** Yellow-green and scale-like. **Seed cones:** Small, brown, egg-shaped, opening with age.

Notes:

- Western redcedar has been called ‘the cornerstone of Northwest coast [Indigenous] culture’ because of its multitude of traditional uses including: canoes, totem poles and other carvings, bentwood boxes, houses, ropes, baskets, hats, clothing, and fuel.
- Western redcedar wood contains chemical substances such as *thujaplicins* that are natural fungicides and can prevent rot for up to a century after a tree is felled.
- Western redcedar is BC’s official tree.
- These trees can grow to become ancient giants: the oldest verified specimen is 1,460 years old. The largest currently living has a height of 53 m and a diameter of 6 m.





Yellow-cedar

Chamaecyparis nootkatensis



Where found: Common along the coast of BC, rarely occurring east of the Coast and Cascade ranges. Habitat is boggy acidic soils, often in rocky areas. Ranging from sea level on the coast, to mid and high elevations.

Description: A large, coniferous evergreen up to 60 m tall. Branches spread out and droop. **Bark:** Greyish-brown, fraying vertically in strips exposing yellow inner bark. **Leaves:** Blueish-green and scale-like with sharp-pointed spreading tips. **Seed cones:** Round and blueish when young, yellowing with age to brown and becoming woody.

Notes:

- Traditional Indigenous uses of yellow-cedar include the making of hats, baskets, clothing, ropes, canoes, paddles, fish hooks, spears, and fishing floats.
- Yellow-cedar wood is used extensively in boat building because it is resistant to decay.
- When fresh-cut, the wood and crushed leaves of yellow-cedar have a somewhat unpleasant bitter scent, unlike Western redcedar which has a pleasing, spicy aroma.
- The oldest known specimen is 1,834 years old and is located in BC on the Sechelt Peninsula.





Rocky Mountain Juniper

Juniperus scopulorum



Where found: Widespread throughout the southern Interior on dry, rocky or sandy soils at low to mid elevations.

Description: A shrubby evergreen with a twisting trunk and irregular branches. Height to 13 m. **Bark:** Reddish-brown, weathering to grey. Flat ridges dividing into fibrous strips. **Leaves:** Grey-green scale-like leaves in pairs. Scales barely overlapping, covering the branch in 4 rows. **Seed cones:** Small, rounded, bright to dark blue, and berry-like.

Notes:

- Juniper wood has a strong, spicy aroma. It is burned as a traditional purifier and cleanser especially in connection with sickness.
- The seeds germinate after passing through birds and other animals who eat the fleshy covering and spread the seeds to new locations.
- Berries from certain species of juniper are used to flavour alcohol and as a cooking spice.
- One individual of this species in Utah is believed to be over 1,500 years old. Other specimens suggest that these trees can exceed 2,000 years.





Seaside Juniper

Juniperus maritima



Where found: Found on coastal bluffs as well as on dry mountain ridges in the Salish Sea region of BC's south coast.

Description: A small, often gnarled evergreen up to 15 m tall. **Bark:** Reddish-brown, weathering to grey. Flat ridges dividing into fibrous strips. **Leaves:** Blueish-green and scale-like. Pungent, spicy smell when crushed. **Seed cones:** Pea-sized blueish-green to black, berry-like with a dusty, waxy coating.

Notes:

- Traditionally this juniper is considered an important spiritual and protective tree. In times of sickness the fragrant boughs are hung around the house.
- Until 2007, this tree was classified as Rocky Mountain juniper (*Juniperus scopulorum*). However, studies have shown that coastal-occurring junipers differ genetically and in morphology from junipers in the Interior mountain ranges of BC.
- Unlike some *Juniperus* species, seaside juniper does not interbreed with other types of juniper.







Lodgepole Pine

Pinus contorta var. latifolia

Where found: Lodgepole pine is a highly adaptable species that grows throughout most of BC's Interior, from mid-elevation to subalpine sites. It thrives in all sorts of environments, from wet bogs to dry, sandy soils.

Description: A medium-sized evergreen that can reach 30 m in height. A tall, slender, straight tree, with spreading branches. **Bark:** Thin, orange-brown to grey with fine scales.

Leaves: Needles are dark green and grow in pairs. **Seed**

cones: Egg-shaped, cone scales tipped with sharp prickles.

Notes:

- The pitch is used as the base of many traditional medicines. It can be chewed to relieve sore throats, or boiled and mixed with animal fat to use as a poultice for rheumatic pain or to soothe soreness in muscles and joints.
- Lodgepole pine needs fire to reproduce; the cones must be exposed to high temperatures, such as from wildfires, to release their seeds. It is known as a *pioneer species*, because it is one of the first species to grow in an area cleared by fires.
- The mountain pine beetle is the most severe insect pest of the lodgepole pine. The beetles carry with them bluestain fungi, which can girdle and kill the tree.







Shore Pine

Pinus contorta var. *contorta*

Where found: Common along the coast of BC where it grows in dunes, bogs, rocky hilltops and along the shoreline. It is tolerant of low nutrient conditions and salt spray.

Description: Typically a small, coniferous evergreen growing 6-10 m, but can grow taller in the right conditions. Branches and trunk are often twisted, sometimes shaped by wind. **Bark:** Grey-brown and furrowed. **Leaves:** Long, green needles grow in pairs. **Seed cones:** Short and egg-shaped, frequently clustered.

Notes:

- Shore pines adapt to windy locations by thickening their trunks and growing structural roots to hold them in the ground. They also grow in a spiral grain, which makes them more flexible. Wind blowing predominantly from one direction (such as off the ocean) may damage the growing tips, allowing only those on the sheltered side to grow. The tree adapts by bracing its trunk and roots on the damaged side so that it doesn't fall over from its own lopsided weight.
- Pines have nutritious, oily seeds that are favoured by many birds, including crossbills, grosbeaks, jays, nuthatches, chickadees, and woodpeckers.
- Shore pine sap mixed with tallow (animal fat) is a traditional medicine for skin ailments.







Ponderosa Pine

Pinus ponderosa

Where found: Forms open forests in the hot, dry valleys of the southern Interior. It also grows at higher elevations in well-drained soil.

Description: A large, coniferous evergreen growing to 50 m tall. Trunk is straight with large branches. **Bark:** orange-brown with deep black fissures. Large flat plates of bark flake off easily. **Leaves:** Fine needles, in bundles of 3, are the longest of any native conifer in BC. **Seed cones:** Narrowly oval, becoming broadly conical as they open, 8-14 cm long.

Notes:

- The seeds and inner bark (cambium) are traditional foods of numerous Interior Indigenous Peoples.
- In hot weather the older bark of the ponderosa pine smells like vanilla.
- This tree was named 'ponderosa' for its ponderously large size. It is also known as 'yellow pine' for the colour of its wood.
- Wildfires are common in ponderosa forests. Mature trees are protected by their thick bark, which frequently displays scorch marks from past fires.





Whitebark Pine

Pinus albicaulis



Where found: Found in dry to moderately moist subalpine habitat in the southern half of the province.

Description: Coniferous evergreen growing to 15 m, with twisted branches and a wide crown. **Bark:** Smooth and chalky-white on young stems, developing brown, scaly plates with age. **Leaves:** Stiff, slightly curved, blueish-green needles in bunches of 5. **Seed cones:** Egg-shaped, 4-8 cm in length. Purplish turning brown with age.

Notes:

- Whitebark cones do not release their seeds on their own until the cones decay. Instead, they depend on Clark's nutcrackers to disperse the seeds. These birds have beaks specially shaped to break open cones and extract the seeds. The nutcrackers bury seeds in caches for winter meals. The seeds that are not retrieved will sprout into seedlings.
- Whitebark pine seeds are a food traditionally harvested in fall. The cones are first roasted to open them, then the seeds can be extracted and pounded into a fine flour.
- Many stands of whitebark pine across the species' entire range are infected with white pine blister rust, a fungal disease introduced from Europe. In some areas, mortality exceeds 90%.





Limber Pine

Pinus flexilis



Where found: In BC, the distribution of this tree is limited to the western slopes of the Rocky Mountains in the southeastern part of the province. Most often found on rocky ridges and slopes at higher elevations.

Description: A small, coniferous evergreen, to 15 m tall with a stout trunk and crooked, flexible branches.

Bark: Silvery-grey when young, thickening and darkening to nearly black with age. **Leaves:** Blueish-green needles in bunches of 5, to 9 cm long. Clustered at the ends of twigs. **Seed cones:** Large and cylindrical, to 20 cm long. They are yellow-brown with thick scales.

Notes:

- The Limber pine gets its name from its flexible branches which are able to bend and release themselves from snow.
- An extremely long-lived species of tree, the oldest living specimen, located near Cline River, Alberta, is believed to be approximately 3,000 years old based on a core sample.
- The seeds of this pine are often distributed by Clark's nutcracker. These birds cache them as a winter food but do not recover them all, allowing some to sprout and grow.







Western White Pine

Pinus monticola

Where found: Commonly found in the drier parts of Vancouver Island and the south coast, and in wetter parts of the southern Interior. It can grow from low to subalpine ranges in environments from peat bogs to rocky soil. However it grows best in the rich, moist, well-drained soils of valley habitats.

Description: A large, coniferous evergreen growing to 50 m tall or more. Trunk straight with little taper, often over 1 m in diameter. **Bark:** Thin and silver-grey when young, developing thick purple-grey square plates with age. **Leaves:** Fine, blueish-green needles, in bunches of 5. **Seed cones:** Long, resinous cylinders, turning reddish-brown at maturity.

Notes:

- Like other native 5-needle pine species, Western white pine has been seriously affected by the *white pine blister rust*, a fungus that was accidentally introduced from Europe in the early 1900s. Effects on pines include mortality, top kill, branch die-back, and predisposition to attack by other agents, including bark beetles.
- The rust fungus spends part of its time in currant and gooseberry plants. It requires these plants and the pines to complete its life cycle.







Western Larch

Larix occidentalis

Where found: In the southern Interior, in valleys and on lower mountain slopes. Often in mixed forests but can be found in pure stands after severe wildfires. Shade intolerant.

Description: A large, deciduous conifer to 55 m tall or more. Branches are short. **Bark:** Thin and scaly when young, becoming thick, grooved, cinnamon-coloured plates with age. **Leaves:** Needles are green, turning golden yellow before dropping in autumn. Triangular in cross-section. In circular clusters of 15-30. **Seed cones:** Oval to egg-shaped on a short stalk with long, slender bract tips.

Notes:

- The tree produces a sweet-tasting gum which is traditionally chewed for flavour and medicinal properties.
- The wood is one of the strongest of trees found in Canada. It is often used in heavy construction, pilings, railroad cross ties, and mine timbers
- Western larch grows in ecosystems with frequent wildfires. Its thick bark and self-pruning of lower branches protects the tree from fire. It grows well on fire-blackened soil and thrives in full sunlight.







Tamarack

Larix laricina

Where found: Tamarack is a northern species. In BC it grows mainly east of the Rockies in the north of the province. It grows most commonly in the poorly drained soils of bogs and swamps.

Description: A small to medium-sized, deciduous conifer, rarely growing to more than 15 m. **Bark:** Flaky, thin, and reddish-brown. **Leaves:** Needles are three-sided and blueish-green, turning bright yellow before falling in autumn. In clusters of 15-25 on short, woody projections from the twig. **Seed cones:** Small, round cones. Bright red, turning brown at maturity.

Notes:

- “Tamarack” comes from *akemantak*, an Algonquian name for the species meaning “wood used for snowshoes”.
- Tamarack is known as a *pioneer species* because it is the first tree species to establish in boggy areas that were once lakes but have filled with vegetation.
- The tree is used by wildlife for food and shelter. Snowshoe hares feed on tamarack seedlings, porcupines consume the inner bark, and red squirrels eat the seeds.







Alpine Larch

Larix lyallii

Where found: In BC, it is found in subalpine areas of the Rocky Mountains, and the Purcell and Selkirk ranges. It is also found in Manning Park and adjacent areas of the Cascades. Locally common on high, cold, exposed slopes with rocky soils.

Description: A small, deciduous conifer to 15 m tall. Branches are often gnarled and irregular. **Bark:** Thin, grooved bark flakes into reddish-brown scales. **Leaves:** Needles are soft, and four-sided. Blueish-green, turning yellow in the fall before dropping. Needles form clusters of 30-40 on short woody spurs. **Seed cones:** Egg-shaped and upright in the branch. Slender bracts extend beyond the scales of the cone.

Notes:

- Alpine larches grow in environments too cold for most other trees. Having deciduous needles helps to prevent snow damage. It is more difficult for snow to build up on bare branches, weighing them down and breaking them.
- One of the longest lived tree species. There is record of a specimen in Kananaskis, Alberta which has been estimated to be around 2000 years old.







White Spruce

Picea glauca

Where found: Found throughout the Interior of BC from low to mid elevations. It prefers wetter areas and is shade tolerant.

Description: A large, coniferous evergreen with a narrow crown up to 40 m tall. **Bark:** Light greyish-brown with irregular flaky scales. **Leaves:** Needles stiff, sharp, and four-sided. Whitish-green with a skunk-like odour when crushed. **Seed cones:** Cylindrical and light brown, scales have rounded edges.

Notes:

- White spruce frequently hybridizes with Engelmann spruce with the result being known as *Interior spruce*. As a pure species, white spruce is generally only found north of Dawson Creek.
- With shallow roots, this tree is susceptible to being blown over. Large areas of blown-down spruce are prime breeding sites for the spruce beetle. This can lead to population irruptions of the beetles, which can then infest and kill thousands of hectares of standing spruce.
- It has many traditional uses including the construction of shelter, as fuel, bedding, twine, and medicine.







Engelmann Spruce

Picea engelmannii

Where found: Common at mid to subalpine elevations throughout the Interior and the east slope of the Coast Range. Cold-hardy, growing best in rich, moist soils.

Description: A large, narrow, coniferous evergreen up to 50 m tall. Branches near the ground tend to droop.

Bark: Thin, purplish-grey with large, loose scales.

Leaves: Four-sided, pointed, blueish-green needles arranged in all directions on the twigs. **Seed cones:** Oblong, light brown to purple with narrowed, papery thin scales.

Notes:

- A tree of many uses including traditional canoe and basket making, as a material for paper fiber, and as construction lumber and plywood.
- Wood from slow-growing specimens at high elevations is sought after for making musical instruments such as pianos, guitars, harps, and violins.
- This spruce is quite long-lived, with the oldest known specimen over 850 years old.
- At the northern end of its range, Engelmann's spruce regularly hybridizes with white spruce. The resulting trees are known as *Interior spruce*.







Sitka Spruce

Picea sitchensis

Where found: Sitka spruce grows in a narrow band along BC's coast. It is rarely more than 80 km inland and is most common along the coastal fog belt and on river and stream floodplains. The species grows in pure stands on the Pacific Coast as it tolerates salt spray better than many plants.

Description: A large conifer growing to a height of 70 m.

Bark: Very thin, brown or purplish-grey, and breaks up into small scales.

Leaves: Needles are blueish-green, stiff and sharp.

Seed cones: Reddish-brown. The seed scales are thin, wavy, and irregularly toothed. Pollen cones are red.

Notes:

- Sitka spruce is traditionally used in winter dance ceremonies and for medicinal purposes. The roots are used to create water-tight hats, baskets, and ropes.
- Because it is stronger than the same weight component made of steel, Sitka spruce has been used to build airplane framework. The original flying plane built by the Wright Brothers and British Second World War Mosquito bombers were made with Sitka spruce.
- The wood also has excellent acoustic properties and is used to make sounding boards in pianos and other musical instruments such as violins and guitars.







Black Spruce

Picea mariana

Where found: Grows throughout the northern region of BC and down into the central Interior. It tolerates the cold and damp conditions of bogs and swamps.

Description: A small, narrow, spire-like evergreen growing to 15 m tall. Drooping branches and twigs are blackish and hairy. **Bark:** Thin, scaly, dark brown to olive.

Leaves: Short, stiff, pointed needles, dark blueish-green.

Seed cones: Small, round purplish-brown in dense clusters. Scale edges have small, irregular teeth.

Notes:

- The needles are used to make a traditional spruce beer.
- The long fibers of the wood make it desirable for making paper products.
- The lower branches of the black spruce will often droop to the ground and put out roots, creating a circle of small trees growing around a large one.
- Black spruce has *semiserotinous* cones that generally do not open to release their seeds until a wax layer is melted by the heat of fire. This is beneficial as black spruce stands are vulnerable to wildfire. With needles and branches that are highly resinous, the trees are flammable. Fire carries easily from low branches to crowns, engulfing the trees.







Grand Fir

Abies grandis

Where found: Grows from sea level to mid elevations along the southern coast, the east side of Vancouver Island, and around the interior temperate rainforests of the Kootenay and Columbia river regions.

Description: A large, coniferous evergreen growing to 80 m tall with a conical crown. **Bark:** Smooth, grey with white blotches and resin blisters when young. Deeply furrowed with reddish-brown scales as it matures.

Leaves: Needles are flat with rounded and notched tips. Dark green on top, lighter underneath, lying in two rows down the twig. Pleasant citrus smell when crushed.

Seed cones: Barrel-shaped green to brown cones grow upright on the branches and disintegrate when mature.

Notes:

- Traditionally used for canoe building in the Interior. On the coast it is used in ceremonial costume. It is also burned as a purifying incense.
- It is often grown as Christmas trees because of its symmetrical conical shape and pleasant odour.
- The largest known specimen was a grand 81.4 m tall.







Amabilis Fir

Abies amabilis

Where found: Found along the coast of BC and on Vancouver Island. In the south of BC, it is found above 300 m elevation while further north it can be found at sea level. It prefers deep, moist, well-drained soils.

Description: A large, coniferous evergreen up to 70 m tall. Crown is dense and cone-shaped. **Bark:** Smooth and light grey with resin blisters, becoming scaly with age. **Leaves:** Needles are dark green and grooved above, silvery and ridged below. They are flat, blunt and frequently notched at the tip. **Seed cones:** Deep purple and held upright on branches. Cones disintegrate on the tree when mature, leaving the cone's central spike.

Notes:

- Also known as Pacific silver fir because of the silvery underside of its needles. The Latin name *amabilis* means 'lovely'.
- The boughs provide sweet-scented traditional bedding and floor covering and the pitch is chewed as a gum.
- The oldest confirmed age is 725 years for a specimen found in Cypress Provincial Park, BC.







Subalpine Fir

Abies lasiocarpa

Where found: Widespread and common throughout the cool, moist forests of central and northern BC. Found on the coast at higher elevations and in the southern Interior along major rivers. Grows best in colder conditions.

Description: A medium to large conifer usually 20-35 m, but up to 50 m tall. Distinctive long, narrow, spire-like crown.

Bark: Smooth and ash-grey with resin blisters when young, becoming scaly with dark grey fissures with age. **Leaves:** flat, dark green, blunt needles, tending to turn upwards. **Seed cones:** Deep purple, growing upright on branches near the top of the crown. Cones disintegrate on the tree at maturity.

Notes:

- An important traditional medicine for respiratory ailments. The Secwepemc, Okanagan, and St'at'imc Peoples call this tree 'the medicine tree'.
- Despite being called "subalpine fir" or "alpine fir", the range of this tree is determined more by temperature than elevation. In the north of its range, where temperatures are lower, it can be found at sea level.
- In most conifers, if the top of the tree is broken, only the uppermost branch will take its place. In this species however, numerous branches may grow upward and create numerous crowns.







Douglas-fir

Pseudotsuga menziesii

Where found: Common in southern BC, including Vancouver Island, becoming less common through central BC. Grows on moist to dry slopes, river terraces and flats in the lowland and montane zones.

Description: Large evergreen conifer growing to 100 m tall. The largest tree species in BC and able to live to over 1,000 years. **Bark:** Grey-brown to reddish-brown, becoming thick and deeply grooved with age. The thickness of the bark protects it from wildfires. **Leaves:** Needles are green and flat with a pointed tip. The undersides are a paler green. **Seed cones:** Brown when mature, with distinctive three-pointed bracts that protrude from under each scale.

Notes:

- The seasonal wild-harvest of Douglas-fir and other conifers for Christmas decorations is a multi-million dollar commercial activity in BC.
- A Pacific northwest legend tells of a great fire long ago. All the animals fled the flames. The tiny mice were unable to outrun the fire. They asked the trees for help. Other trees ignored their pleas but Douglas-fir offered protection and the mice climbed up into the tree's cones and survived the fire. Still today, you can see the hind legs and tails of mice sticking out from the scales of a Douglas-fir cone.





Pacific Yew

Taxus brevifolia



Where found: Southern to central BC, mostly near the coastal shoreline, but with isolated populations in southeast BC. Grows in moist soil, often with Douglas-fir and Western hemlock in old-growth forests.

Description: A small to medium-sized evergreen 10-15 m tall. Branches tend to droop. Trunk is often twisted. **Bark:** Scaly and reddish. Beneath the outer bark the wood can range from brown to magenta. **Leaves:** Needles are dark green, flat, and sharply pointed. **Seed cones:** Are partially surrounded by a fleshy, red *aril* that is toxic to humans.

Notes:

- The wood of the Pacific yew is durable and traditionally used to make bows and tool handles. The wood of other yew species is also a favoured material for bow making in Europe.
- A compound called *paclitaxel* was originally discovered in the bark of yew trees. It has been used to create the chemotherapy drug Taxol, used in breast, ovarian, pancreatic, and lung cancer treatments.
- The berry-like arils are often called false-fruits. In fact, the red flesh is actually the conifer's cone scale, altered to be an edible food for animals (birds mainly) to eat and pass the seed.







Western Hemlock

Tsuga heterophylla

Where found: Common along both sides of the coast ranges, Vancouver Island and Haida Gwaii. Also grows in the Interior wet belt, west of the Rocky Mountains. Prefers acidic soils with humus and decaying wood. Very shade tolerant.

Description: A large, coniferous evergreen up to 60 m tall. Narrow crown with a drooping top. **Bark:** Scaly, russet to grey brown, gaining deep furrows with age. **Leaves:** Needles short, blunt, flat, and soft. Unequal in length and irregularly spaced. **Seed cones:** Numerous, small, and oblong. Reddish-purple, turning brown with age.

Notes:

- The bark has a high tannin content and is a traditional tanning agent for animal hides, as well as a pigment for dyeing wool and woven bark, and as a cleansing solution.
- The boughs are tied in bundles and submerged in estuaries to collect herring roe during spawning season.
- It is considered one of the best pulpwoods and is a source of cellulose for making paper, cellophane, rayon, and bioplastic.
- Hemlock trees were named for having a similar smell to the poisonous European weed hemlock, but the two species are not related.







Mountain Hemlock

Tsuga mertensiana

Where found: Grows at mid elevations to timberline in the coastal mountains, on Vancouver Island, and on Haida Gwaii. In the Interior, it is found in the Cariboo, Selkirk, and Monashee mountains. Grows best in cool, boggy soil where deep snow falls in winter.

Description: A medium-sized conifer, often 10-25 m tall but can grow to 40 m. Branches sweep upwards at the ends. **Bark:** Reddish-brown to grey with deep furrows developing with age. **Leaves:** Short, flat blue-green needles. Densely covering branches on all sides. **Seed cones:** Cylindrical, purplish-green maturing to brown. Scales thin with rough edges.

Notes:

- This slow-growing conifer can live to over 800 years.
- Mountain hemlock tolerates snow well but not freezing. It grows in areas where the snow-pack can reach 6 m deep and doesn't melt until July. The snow acts as insulation, preventing the ground and the roots of the mountain hemlock from freezing.



Terminology

Aril: A fleshy covering on certain seeds, such as yew and nutmeg.

Bract: A modified or specialized leaf, especially one associated with a reproductive structure such as a flower or cone scale.

Carbon sink: A reservoir that stores a carbon-containing compound and lowers the concentration of carbon dioxide in the atmosphere. In Canada's boreal forests as much as 80% of the total carbon is stored in the soils as dead organic matter.

Cone: Contains the reproductive structures of conifers. Male cones produce pollen, female cones produce seeds.

Conifer: A tree that bears cones and has needle-like or scale-like leaves that are typically evergreen. Sometimes referred to as softwood.

Native plant: A plant occurring naturally in a particular region, ecosystem, or habitat without human introduction.

Needles: The small, waxy leaves of conifers. As they are more waterproof and resilient to wind than the larger leaves found on deciduous trees, they remain on the tree year round.

Photosynthesis: The process by which plants and algae transform light energy into chemical energy. During photosynthesis, light energy is captured by leaves and used to convert water and carbon dioxide into oxygen and energy-rich organic compounds.

Pitch (aka resin): Primarily produced by trees that belong to the Pinaceae family, such as pine, fir, and spruce. It has antibacterial properties that prevent damage to the tree from infection.

Sap: A translucent, thin, watery, slightly amber coloured substance that develops within the conducting tissues of the tree. The sap transports nutrients throughout the tree, including hormones, sugar, and minerals.

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