

Whitebark Pine

BULLETIN

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WHITEBARK PINE – Conserving A Species At Risk

Range and identification

Whitebark pine (*Pinus albicaulis*) is a native conifer that occurs across a wide range of subalpine habitats in southern and central BC.



photo by Jack Woods

Whitebark pine has five needles per bundle, with cones 8 to 10 cm long and 4 to 6 cm wide. The geographic range of whitebark pine often overlaps with the range of lodgepole pine, and sometimes with that of western white pine. While both whitebark pine and western white pine have needles in fives, western white pine has longer and thinner cones that open on maturity while the cones of whitebark stay closed and solid. With only two needles per bundle and much smaller, prickly cones, lodgepole pine is easily distinguished from whitebark pine. Whitebark pine often grows in multi-stemmed clumps, and grows much slower than either lodgepole pine or western white pine.



map by
Nick Ukrainetz

Ecosystem services and values

Whitebark pine is an ecologically important species in subalpine ecosystems. Its key values include:

- **Wildlife:** Seeds are an important source of food for birds, bears, and many small animals.
- **Watershed:** Snow melts more slowly within whitebark pine stands than un-forested openings, moderating and extending headwater flows.
- **Slope stability:** Its dense root system anchors fragile soils on steep and exposed slopes.
- **Forest establishment:** Often the highest and most exposed trees are whitebark pine. They provide shelter for the establishment of other less hardy species such as lodgepole pine and Engelmann spruce, facilitating forest development in subalpine areas.
- **Aesthetic and recreation:** The twisted stems, wind-blown form, and rich green foliage of whitebark pine typify high mountain vistas for visitors to alpine recreation areas.



photo by Don Pigott

Whitebark pine has low commercial timber value due to its generally small log size, poor stem form, and spiral grain. When harvested, it is not usually separated from other species at log sorts.



photo by Jack Woods

Whitebark pine at risk

Whitebark pine populations are rapidly declining. Trees are being killed across much of its range by white pine blister rust, an introduced disease that also attacks western white pine, and the mountain pine beetle.

Recent models of potential climate change impacts suggest that large areas of whitebark pine habitat throughout southern BC are likely to become climatically unsuitable for this species over the next several decades. Under a changing climate, whitebark pine could succumb to drought-induced stress and suffer from increased competition with other tree species that are more vigorous colonizers and grow faster in future warmer climates.

Historically, fire suppression in whitebark pine habitat has also led to more competition from other species, while allowing fuel loads and the chance of catastrophic fires to increase. Whitebark pine is adapted to frequent, light burns that create ideal regeneration conditions. Infrequent, larger fires maintain it across the landscape, but also kill older trees and competing species. This species grows so slowly that it often does not reproduce naturally until age 50 or so.

As a result of these threats and declining populations, the BC Ministry of Environment's Conservation Data Centre has recently adjusted the conservation ranking of whitebark pine, adding it to the *blue-list* (a list of species of special conservation concern in BC, <http://www.env.gov.bc.ca/atrisk/red-blue.htm>). While this status does not confer any legal protection, resource managers and forest professionals can take action to help conserve this species.



photo by Jack Woods

Conserving whitebark pine in harvesting and silviculture operations

Logging in high-elevation spruce-fir and lodgepole pine stands can cause unintended damage to and removal of whitebark pine. Removing whitebark pine trees reduces the seed supply, which is an important, sometimes essential, food source for wildlife and necessary for regeneration. In particular, Clark's nutcracker not only utilize seed as a food source, their habit of caching seed in the ground is the primary means by which whitebark pine regenerates. Harvesting may also remove trees that could be genetically resistant to blister-rust. Retaining stands and individual trees, and promoting natural regeneration of whitebark pine will help conserve this species and the ecosystem services it provides.

Minor amendments to forest stewardship plans at the landscape level, and harvesting and site plans at the stand level, could also help conserve this species. For example, adjustments to cutblock boundaries and locating wildlife tree patches in areas with whitebark pine could protect small stands and individual trees. Identifying whitebark pine as an acceptable species in stocking standards for appropriate sites would also preclude the need to plant another species adjacent to naturally regenerated whitebark pine seedlings and larger residual trees.

Undertaking these actions voluntarily would significantly help with whitebark pine conservation outside of parks.

For more information on whitebark pine, please visit:

Endangered species and ecosystems, Ministry of Environment
<http://www.env.gov.bc.ca/atrisk/red-blue.htm>

UBC Centre for Forest Conservation Genetics
<http://www.genetics.forestry.ubc.ca/cfcg/>

Tree Species Compendium
<http://www.for.gov.bc.ca/hfp/silviculture/Compendium/WhitebarkPine.htm>

Whitebark Pine Ecosystem Foundation
<http://www.whitebarkfound.org/index.html>

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