

# Whitebark Pine (*Pinus albicaulis*)

## A Species At Risk

This is the domain of whitebark pine (*Pinus albicaulis*), a tree species found only in high elevations of western North America. The tree often has a unique crown of upswept branches. Old weather-beaten trees are figures of gnarled stems with twisting branches. Whitebark pine plays very important ecological roles but its future is seriously threatened.



### Ecological Roles

Due to its important ecological role, whitebark pine is classed as both a foundation and a keystone species. Whitebark pine grows in some of the most inhospitable climates, tolerating high wind and snow, with relatively little soil or water. On such sites, it may retain snow and moderate the site to create better conditions for other plant species to establish.

Whitebark pine is very important to wildlife, particularly the Clark's Nutcracker. The nutcracker co-evolved with the pine, relying on its seeds as a nutritious food source for a large part of the year. In turn, the tree is highly dependent on the nutcracker who hides seeds in caches underground during autumn to eat later in the year. The depth at which the seeds are stored is perfect for germination, thus forgotten seeds may germinate to grow into new trees. It is estimated that 99% of all whitebark pine originated from nutcracker seed caches. Other wildlife, including red squirrels, black bears, and grizzly bears, also eat whitebark pine seeds. The seeds contain approximately 10 times more calories than huckleberries, making them a highly desired food source. It is unknown how the decline of whitebark pine populations is impacting high-mountain wildlife in British Columbia.



Clark's Nutcracker  
Photo: Carmen Wong

### Threats

Despite its important ecological role, whitebark pine populations are rapidly declining due to four agents:

- 1) White pine blister rust,
- 2) mountain pine beetle,
- 3) changes to natural fire regimes, and
- 4) global climate change.

White pine blister rust is the agent of greatest concern as the tree has little resistance to this introduced fungus and it is killing trees across the entire range of whitebark pine. At many locations in the Kootenay's, most trees are dying or already dead.



Blister rust fungus  
Photo: Michael Murray

### Health Transects at Sorcerer Lodge

Sorcerer Lodge is home to the endangered whitebark pine. To aid research efforts, health transects were established around the lodge in August 2015. The establishment of health transects is used to monitor blister rust trends over time, identify regional trends in blister rust, and identify priority areas for restoration. Blister rust transects are a critical tool widely used throughout the range of whitebark pine to monitor changes in population health.

Please contact Randy Moody ([whitebarkrandy@gmail.com](mailto:whitebarkrandy@gmail.com)) if you have whitebark pine in your area and would consider hosting some researchers or are interested in learning more about this majestic species.



Health transect at Sorcerer Lodge  
Photo: Randy Moody

Background photo: Tannis Dakin