



# Status of Whitebark Pine on National Forest Lands in Washington and Oregon



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## Olympic National Forest and Olympic National Park

On Washington's rainy Olympic Peninsula, whitebark pine habitat is restricted to the rain-shadow area in the peninsula's mountainous northeast corner. A small population of whitebark pine occurs in a narrow, U-shaped patch of this high-elevation habitat spanning National Forest wilderness and National Park land.



Photo: Melissa LeGardner, USFS  
Whitebark pine habitat, Olympic NP.

### Survey summary:

No. sites surveyed: 6  
No. surveys conducted: 14  
No. trees observed: 1550  
Blister rust incidence – mean (range): 20.0% (3.8 – 39.3)  
Mt pine beetle incidence – mean (range): 0.3% (0.0 – 1.8)  
Overall mortality – mean (range): 17.9% (2.0 – 45.8)  
Site elevations – mean (range): 1785m (1643 – 1864)



Photo: Robin Shoal, USFS  
Blister rust infection on whitebark pine sapling, Olympic NF.

## Mt Baker-Snoqualmie National Forest

Whitebark pine occurrence is patchy on the maritime-influenced Mt Baker-Snoqualmie NF, limited to locally drier areas near the Cascade Crest and Mt Baker. Surveys in 2003 concentrated on the whitebark pine population that occurs near the Crystal Mountain Ski Area. Reconnaissance surveys in several areas north of Mount Baker did not locate any whitebark pine.



Photo: Robin Shoal, USFS  
Blister rust-infected whitebark pine, Mt Baker-Snoqualmie NF. (Mt Rainier in the background.)

### Survey summary:

No. sites surveyed: 5  
No. surveys conducted: 3  
No. trees observed: 752  
Blister rust incidence – mean (range): 62.8% (53.3 – 76.0)  
Mt pine beetle incidence – mean (range): 0.0%  
Overall mortality – mean (range): 37.9% (25.9 – 52.7)  
Site elevations – mean (range): 2025m (1898 – 2093)

## Gifford Pinchot National Forest

Conditions on the Gifford Pinchot National Forest are generally similar to those on the Mt Baker-Snoqualmie NF. Most whitebark pine on the Forest occurs on the flanks of Mt Adams, with additional patches near the Cascade Crest.



**Survey summary:**  
No. sites surveyed: 11  
No. surveys conducted: 14  
No. trees observed: 870  
Blister rust incidence – mean (range): 52.8% (9.7 – 100)  
Mt. pine beetle incidence – 0.0%  
Overall mortality – mean (range): 7.6% (0.0 – 29.4)  
Site elevations – mean (range): 1869m (1714 – 2003)

Photo: Robin Shoal, USFS  
Blister rust infection on a small whitebark pine, Gifford Pinchot NF.

## Mt Hood National Forest

The Mt Hood National Forest is the northernmost national forest in Oregon's Cascade Range. Whitebark pine occurs in the upper montane and subalpine habitat surrounding Mount Hood, and in patches of high-elevation habitat to the east of the mountain.



Photo taken by Gifford Pinchot, August 1901. Original photo caption reads: "Highest timber on Mount Hood – Whitebark Pine." Elevation 7000' (2133m).

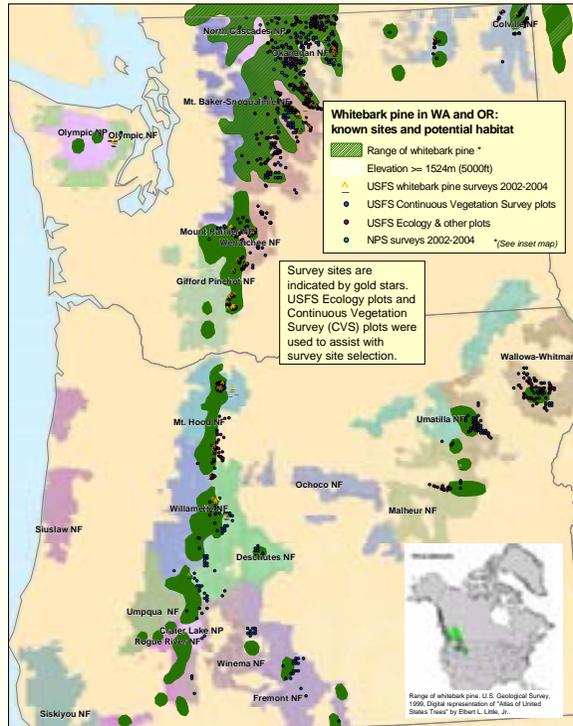
### Survey summary:

No. sites surveyed: 10  
No. surveys conducted: 38  
No. trees observed: 1583  
Blister rust incidence – mean (range): 61.2% (22.8 – 90.0)  
Mt. pine beetle incidence – mean (range): 0.4% (0.0 – 2.4)  
Overall mortality – mean (range): 47.0% (5.4 – 89.4)  
Site elevations – mean (range): 1875m (1729 – 2013)

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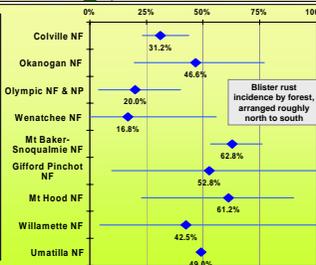
## Introduction

Whitebark pine (*Pinus albicaulis*) is a high-elevation, 5-needle pine that occurs only in western North America. In 2002 to 2004, surveys were conducted in whitebark pine stands on National Forests in USFS Region 6 (Washington and Oregon). The primary objectives of these surveys were to locate and map whitebark pine stands, and to assess the incidence of the damaging agents white pine blister rust (*Cronartium ribicola*) and mountain pine beetle (*Dendroctonus ponderosae*). Additional data collected included total whitebark pine mortality, presence or absence of *Ribes* species (alternate host for white pine blister rust), cone production, regeneration, and overall stand composition. Most surveys consisted of variable-length belt transects, containing a minimum of 50 single- or multiple-stem clumps of whitebark pine. At least 30 of these clumps had to contain live trees. Transect width varied with stand density, from 5 to 10 meters. All whitebark pines encountered in the transects were observed. Blister rust incidence reported is observed infection rate in live trees. Overall mortality is total whitebark pine mortality from all causes.



## Regional Summary

- 69 sites across nine national forests and one national park
- 116 transects and 187 plots
- Over 10500 individual whitebark pine trees observed
- Blister rust incidence – mean (range): 41.5% (0.0 – 100)
- Mountain pine beetle incidence – mean (range): 4.5% (0.0 – 34.3)
- Overall mortality – mean (range): 33.4% (0.0 – 89.4)



## Willamette National Forest

The Willamette National Forest in central Oregon lies to the west of the Cascade Crest. Like the Mt Baker-Snoqualmie NF in Washington, the climate on the Willamette is wetter than it is to the east of the crest. Whitebark pine is limited to the mountainous eastern edge of the Forest.

**Survey summary:**  
No. sites surveyed: 10  
No. surveys conducted: 13  
No. trees observed: 1242  
Blister rust incidence – mean (range): 42.5% (4.5 – 100)  
Mt. pine beetle incidence – mean (range): 11.3% (0.0 – 34.3)  
Overall mortality – mean (range): 35.4% (11.2 – 59.1)  
Site elevations – mean (range): 2021m (1628 – 2356)



Photo: Tom DeSpain, USFS  
Surveying whitebark pine on the Willamette NF.

## Okanogan National Forest

Whitebark pine occurs on many slopes and ridges above 1600 meters on the Okanogan NF, situated in the north end of the Washington Cascades. Much of the whitebark pine habitat on this forest occurs in the extensive Pasayten Wilderness Area, accessible only on foot or by horseback.

### Survey summary:

No. sites surveyed: 10  
No. surveys conducted: 10  
No. trees observed: 1214  
Blister rust incidence – mean (range): 46.6% (19.6 – 76.9)  
Mt pine beetle incidence – mean (range): 5.0% (0.0 – 13.8)  
Overall mortality – mean (range): 18.5% (5.8 – 45.5)  
Site elevations – mean (range): 2070m (1825 – 2267)



Photo: Robin Shoal, USFS  
Mountain pine beetle-infested mature whitebark pine, Chelan-Sawtooth Wilderness, Okanogan NF.

Whitebark pine on North 20-Mile Peak, Okanogan NF.



Photo: Robin Shoal, USFS

## Wenatchee National Forest

Climatic conditions in Washington and Oregon become drier and have more pronounced seasonal differences east of the Cascade Crest. As a result, conditions on the Okanogan, Wenatchee, and Colville NFs are more favorable to whitebark pine than those on forests west of the Cascade Crest.



Photo: Robin Shoal, USFS  
Whitebark pine on Tye Peak, Wenatchee NF.

### Survey summary:

No. sites surveyed: 12  
No. surveys conducted: 19  
No. trees observed: 1833  
Blister rust incidence – mean (range): 16.8% (0.0 – 55.7)  
Mt pine beetle incidence – mean (range): 1.4% (0.0 – 11.5)  
Overall mortality – (not recorded)  
Site elevations – mean (range): 1972m (1816 – 2066)



Photo: Robin Shoal, USFS  
Blister rust-killed whitebark pine sapling, Wenatchee NF.

## Colville National Forest

The Colville NF in Washington's northeast corner lies on the western edge of the Rocky Mountain portion of the range of whitebark pine. Whitebark pine occurs on several of the Forest's highest peaks.



Photo: Robin Shoal, USFS  
Dead mature whitebark pine, Colville NF.

### Survey summary:

No. sites surveyed: 4  
No. surveys conducted: 4  
No. trees observed: 225  
Blister rust incidence – mean (range): 31.2% (23.3 – 43.6)  
Mt. pine beetle incidence – 0.0%  
Overall mortality – mean (range): 23.4% (19.6 – 32.8)  
Site elevations – mean (range): 2035m (1938 – 2144)



Photo: Robin Shoal, USFS  
Whitebark pine is a dominant component of these ridge-top stands, Colville NF.

## Umatilla National Forest – Blue Mountains

In northeastern Oregon, whitebark pine is restricted to high elevation (>2285m) forested plant associations throughout the Blue, Wallowa, Elkhorn, and Strawberry Mountains. In 2002, the Umatilla National Forest conducted surveys in whitebark pine stands in the Indian Rock/Vinegar Hill area in the south central portion of the Blue Mountains.

### Survey protocol:

Stand exam-type surveys: 1/10-acre circular plots in a grid within each surveyed stand to sample whitebark pine over 4" dbh. 1/20-acre plots to sample smaller diameter trees.

### Survey summary:

187 plots established in 31 stands.  
No. trees observed: 987  
Blister rust incidence: 49%  
Overall mortality: 27%



Photo: Tom DeSpain, USFS  
Recent mortality in young whitebark pine, Umatilla NF.