Limber pine with rust-caused branch flagging and sporulating blisters

Monitoring White Pine Blister Rust Spread and Establishment in the Central Rocky Mountains

Jeri Lyn Harris, James T. Hoffman, Kelly F. Sullivan, Meg E. Halford, and Maria Newcomb

Rocky Mountain Region FHP (Lakewood, CO) and Intermountain Region FHP (Boise, ID)

Mature whitebark pine and cone in Western Wyoming

Introduction:

White pine blister rust disease, caused by an introduced fungus (*Cronartium ribicola*), is responsible for significant economic loss and ecological change in most North American white pine forests. Forest health specialists detected the spread of white pine blister rust disease into Colorado in 1998. These forest pathologists studied several databases of FHM, FHP, FIA, and Forest Service/University Research Departments for information about health of white pines in the Central Rocky Mountains, especially pertaining to white pine blister rust occurrence. Forest managers need to know the distribution and severity of white pine blister rust disease in the Central Rocky Mountains to manage sites with white pines in Colorado, Idaho, New Mexico, Utah, and Wyoming.

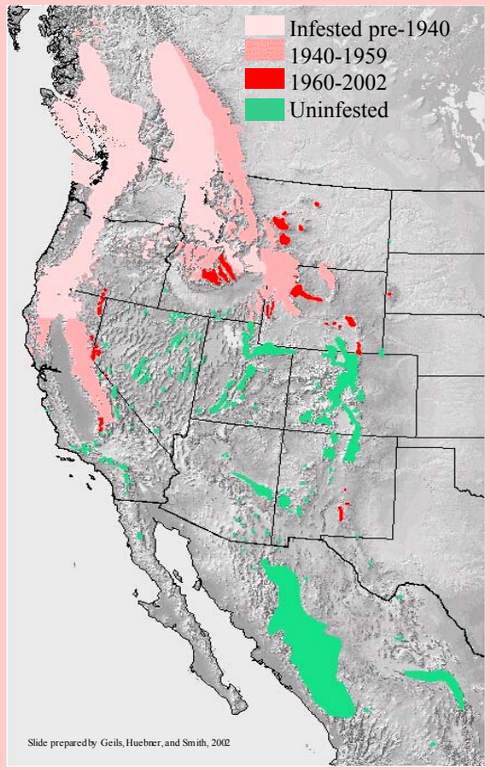
Methods:

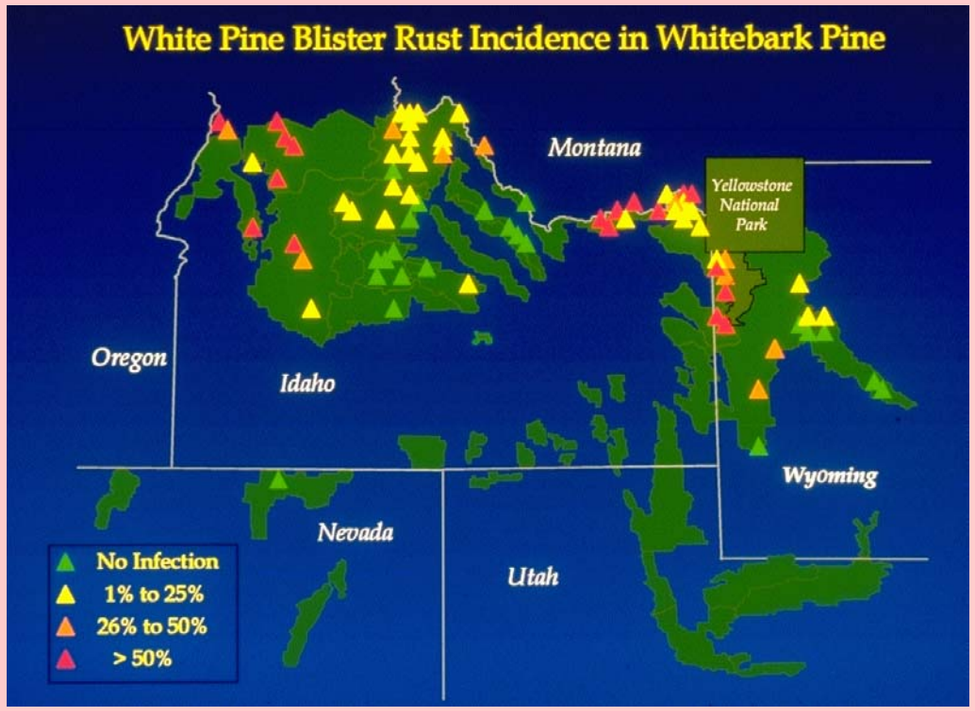
We planned three steps to complete this evaluation-monitoring project of white pine blister rust disease in the Central Rocky Mountains.

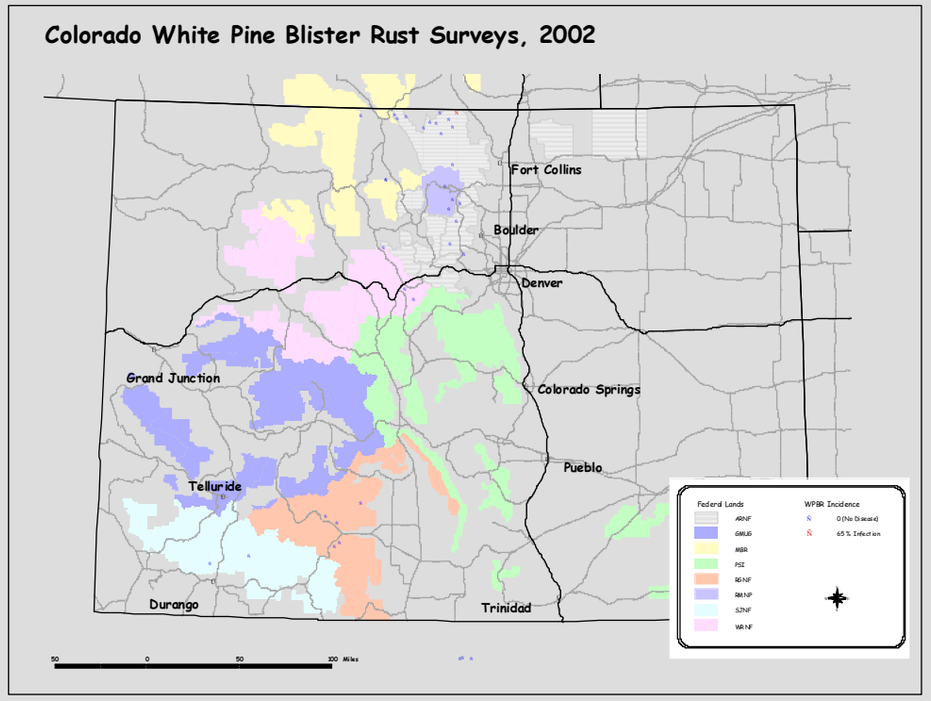
1.Analyze FHM data and forest inventory records for locations and recorded damages to white pines in Colorado, south-eastern Idaho, southern Wyoming, eastern Utah, and northern New Mexico.

2.Survey several accessible sites with white pines (limber and bristlecone pines) in Colorado. Accessible sites are location with a ½ day of hiking from a road. Standard inventory methods were used.

3.Survey several accessible sites in south-eastern Idaho, southern Wyoming, eastern Utah, and northern New Mexico for white pine blister rust disease occurrence in the white pines (limber, bristlecone, south-western white, and whitebark pines. Standard inventory methods were used.







Results Thus Far:

Databases were collected and evaluated for white pine locations in Colorado, Idaho, New Mexico, Utah, and Wyoming.

Survey inventory methods were coordinated between the FHP offices of the Rocky Mountain Region and the Intermountain Region. The FHP crews of these 2 regions surveyed over 70 white pine sites in Colorado, Idaho, New Mexico, and Wyoming. Unfortunately, survey work was limited in the Central Rocky Mountain forests when many sites containing white pines were closed due to wildfire restrictions/considerations.

White pine site descriptions: Percent slopes ranged from 0-45% and most aspects had a western orientation with the majority of slope aspects facing the south-west. Elevations for limber and bristlecone pines ranged from 8000 – 10,800 feet, and the majority of these pines were found on convex slopes and ridge-tops. Colorado white pines of this survey occurred in multi-aged, multi-species stands – most frequently with lodgepole pine, then Douglas-fir, aspen, and blue spruce. White pine tree densities ranged from 100 trees in a 1/10 hectare to 100 trees in a ½ ha. *Ribes cereum* was the most common *Ribes* spp. found in our transects; it occurred approximately on 1/3 of our study sites. *Ribes inerme* was found on only 1 out of 38 study sites.

White pine blister rust disease was found in 29 of 32 study sites in western Wyoming and eastern Idaho and in only 1 of 38 study sites in Colorado. Disease severity was significantly higher in Idaho and Wyoming ranging from 1 – 64% of the white pines infected. The average percent infection incidence on these Idaho and Wyoming study sites was 20%.

Data analysis and further reports of white pine blister rust disease in the Central Rocky Mountains will be written in 2003.

Bristlecone pines and a cone with characteristic bristles and resin

Ribes leaf infected with rust and rodent-chewing on a rust canker

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