



View from Rocky Mountain National Park by JL Harris



Colorado State Tree
Blue Spruce

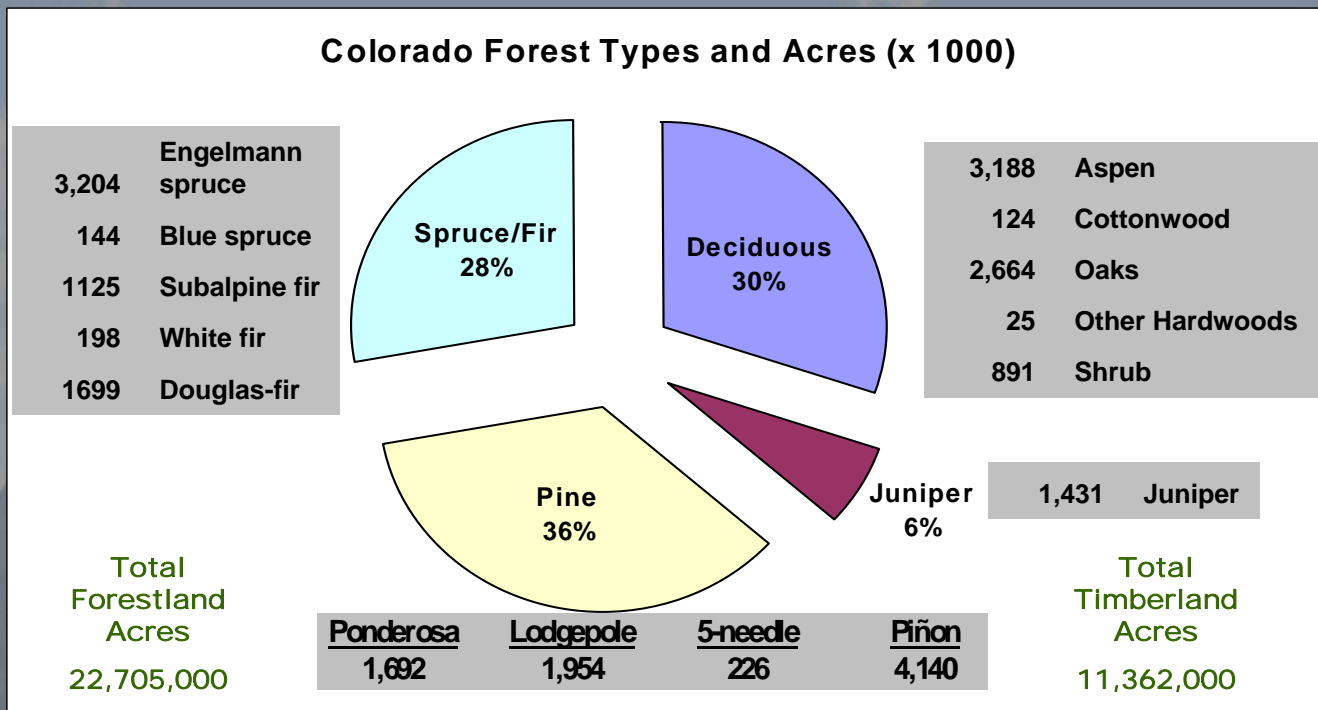
Colorado Forest Health Highlights 2008

The Forest Resource:

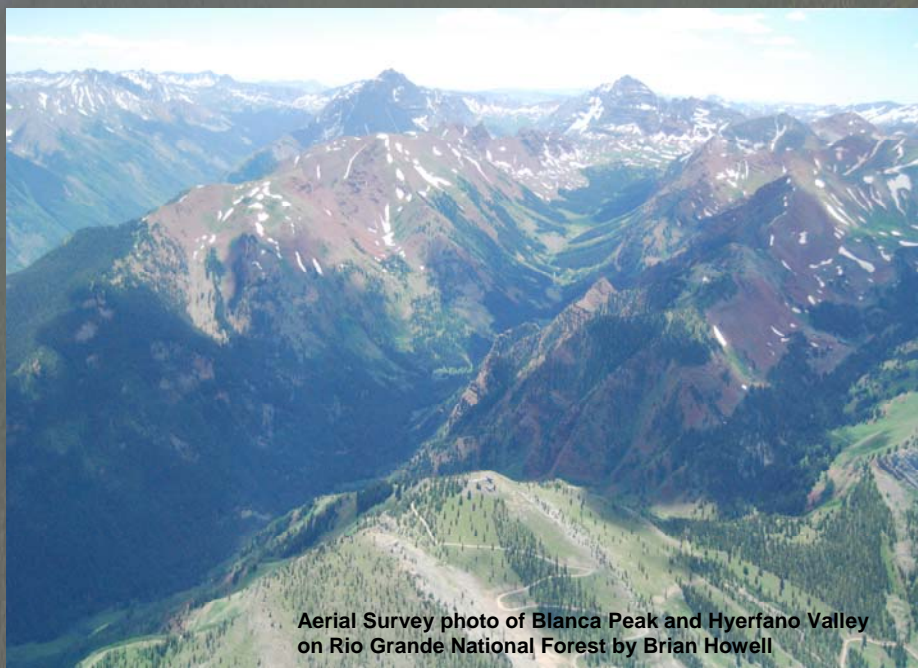
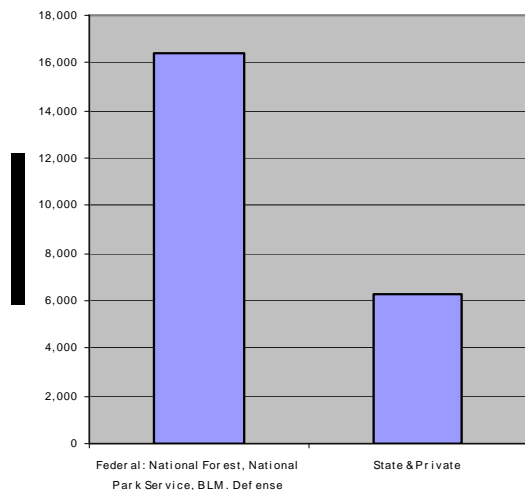
More than 23 million acres in Colorado are forested with several different types of conifers and hardwoods. Additionally, the riparian forests and the woodlands of the plains and prairie in Colorado are highly valued as important forest resources by people of Colorado.

All of these forests undergo harsh winters and are experiencing drought conditions for the past decade. This has led to greater forest health concerns by land managers in Colorado as pest populations have dramatically increased. Tree declines and mortality are more noticeable and complex for forest managers.

Colorado Forest Types and Acres (x 1000)

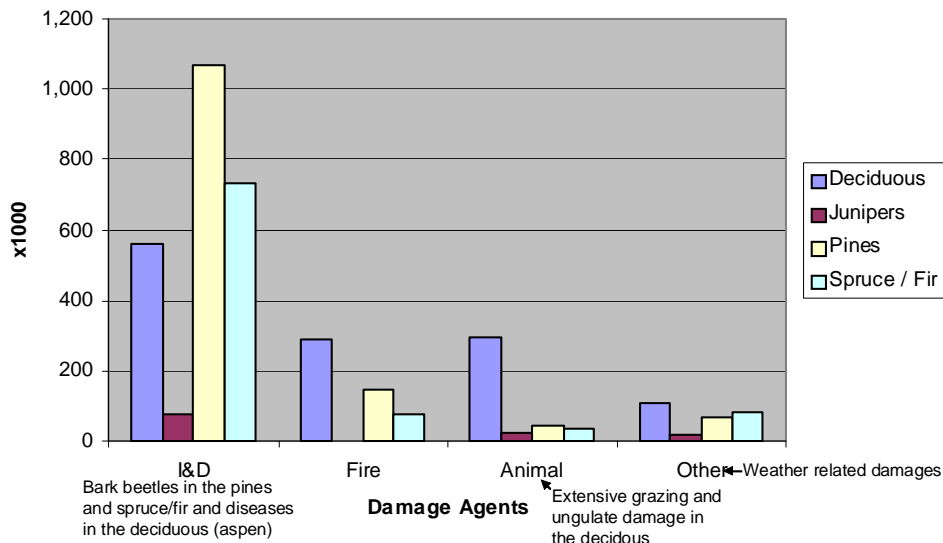


Forestland Ownership in Colorado



Aerial Survey photo of Blanca Peak and Hyerfano Valley on Rio Grande National Forest by Brian Howell

Number of Trees Damaged in CO Forest Types



FIA data: 2002 – 2007;
6,735 plots

Forest Health Issues

Mountain pine beetle has infested millions of trees in Colorado this decade. The outbreaks are mainly in lodgepole pine and limber pine at higher elevations. During 2008, populations of mountain pine beetle were on the rise in Northern Colorado and areas of the Northern Front Range.

Mountain pine beetle infestations intensified throughout lodgepole and limber pine stands on the eastern slopes of the Front Range in 2007. In many areas, the number of newly infested lodgepole and limber pines averaged from 5 to 100 per acre. The largest outbreak areas occurred in creek bottoms or lower elevations with abundant large diameter, thick bark, lodgepole pines. Areas with high levels of damage during 2005-06, intensified in 2007-08 and the majority of the lodgepole pines are dead. Abnormalities of mountain pine beetle behavior have been seen with these ongoing outbreaks in Colorado.

- 1) Mountain pine beetles successfully completed their lifecycle in a single year at elevations in excess of 9,500 feet, where they were expected to take two years to complete development. As a result, we saw unprecedented high levels of lodgepole pine mortality in these high elevation forests.
- 2) This beetle has also been detected in urban areas of Colorado, several miles from the pine forests of the mountains. In these urban areas, the beetle was probably transported in infested firewood. Urban trees affected were exotic ornamental pines, but most of these trees were able to pitch-out the beetle and prevent further infestation.
- 3) Mountain pine beetles infested trees with diameters as low as 3 inches and chemically treated trees above the spray line of the insecticides.
- 4) Some spruce trees were infested due to high beetle pressure and depletion of pines in the area causing a “spill over”.

Dead and dying spruce trees near Wolf Creek Pass, Rio Grande National Forest . Photo taken during aerial survey by Brian Howell



Spruce beetle outbreaks are occurring on the Rio Grand, San Juan, and White River National Forests in southern and central Colorado. In northern Colorado, much of the older spruce has been killed on the Routt National Forest. Spruce beetle activity is also increasing on the Arapaho-Roosevelt National Forests from Rocky Mountain National Park north to the Wyoming border.

Large areas of spruce forests have suffered nearly 100% mortality. Recreational values are currently in grave risk as spruce beetles impact stands near ski areas.

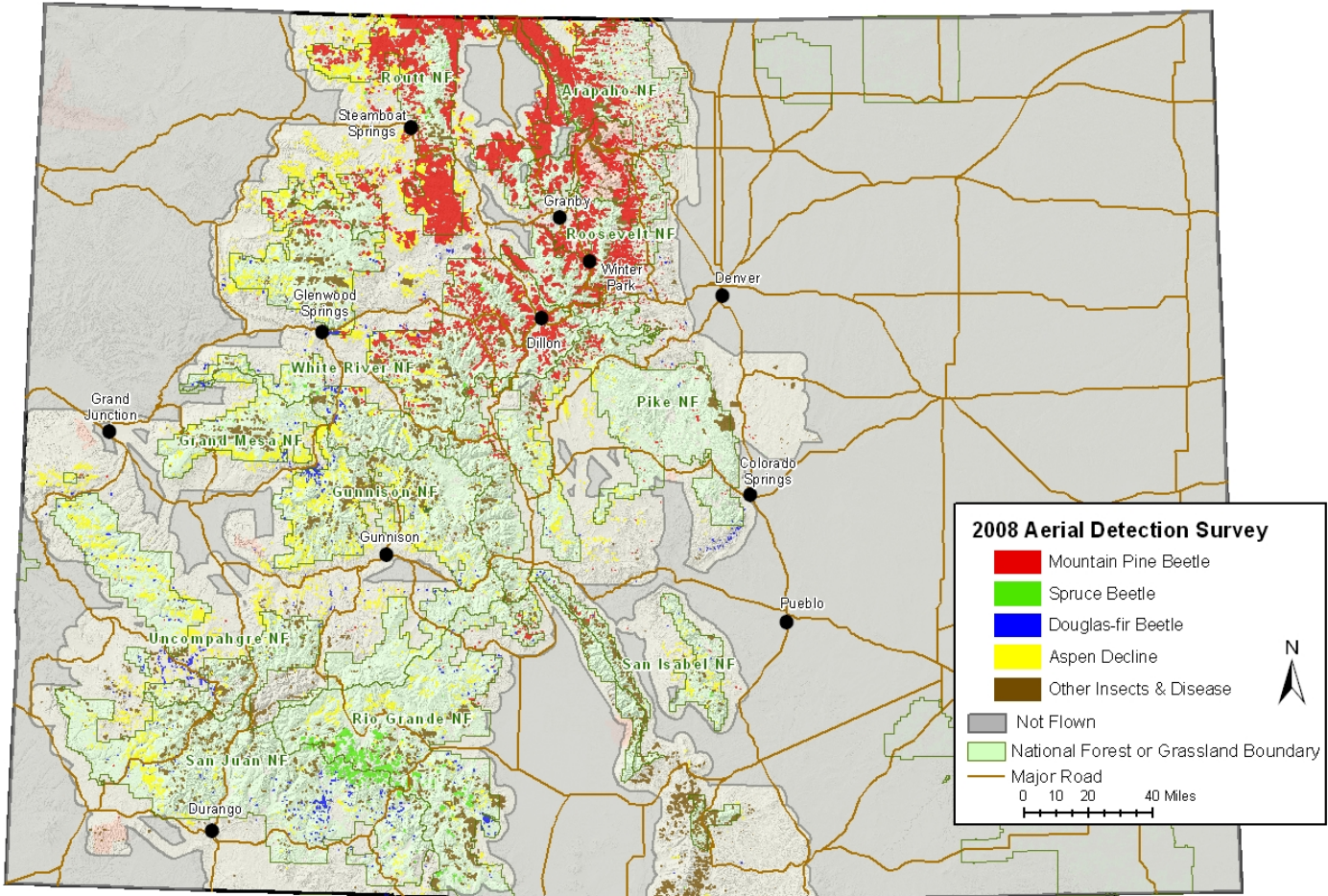
Forest health staff from Colorado State Forest Service and USDA Forest Service perform Aerial Surveys, a type of Detection Monitoring from July to Sept. each year. This table and map show the latest on the large insects and disease outbreaks and epidemics occurring in Colorado. The table below indicates the number of acres surveyed and with tree mortality caused by forest health damage agents.

Aerial Detection Survey in Colorado	28,588,000 acres
Mountain pine beetle damage	1,161,000 acres
Spruce beetle damage	64,000 acres
Aspen decline and mortality	541,600 acres

<http://www.fs.fed.us/r2/news/press-kits/2009/colo-aerial-survey/colo-survey-highlights.pdf>

<http://www.fs.fed.us/r2/resources/fhm/aerialsurvey/>

2008 Aerial Detection Survey



Due to the nature of aerial surveys, the data on this map will only provide rough estimates of location, intensity and the resulting trend information for agents detectable from the air. Many of the most destructive diseases are not represented on this map because these agents are not detectable from aerial surveys. The data presented on this map should only be used as a partial indicator of insect and disease activity, and should be validated on the ground for actual location and causal agent. Shaded areas show locations where tree mortality or defoliation were apparent from the air. Intensity of damage is variable and not all trees in shaded areas are dead or defoliated.



The nonnative disease, **white pine blister rust**, continues to spread and intensify in the central and southern Rocky Mountains. In Colorado, the disease front is now less than 5 miles east of Rocky Mountain National Park. This raises concerns about sustaining white pines in one of our national treasures.

White pine blister rust was discovered in the Sangre de Cristo and Wet Mountain Ranges of southern Colorado in 2003. These outbreaks appear to be isolated and are more than 100 miles from any other known infection zone. The closest outbreak area to the south is in the Jemez Mountains of northern New Mexico. The Sangre de Cristo outbreak includes portions of the San Carlos Ranger District of the San Isabel National Forest, the Great Sand Dunes National Park and Preserve, and other adjacent state and federal lands. Infected limber pines were observed throughout the Wet Mountains. In the Sangre de Cristo Mountains, infections were primarily found on limber pine, but infected Rocky Mountain bristlecone pines were also observed for the first time in their native range within the Great Sand Dunes National Park and Preserve.

The combined impacts of blister rust and bark beetles may be devastating in some areas since bark beetles kill reproductive trees and young trees are particularly susceptible to the rust.

Efforts are underway to identify resistance in limber and bristlecone pine for conservation and future restoration.



Aspen decline and mortality are closely monitored in Colorado. A prominent focus of Colorado foresters has been problem areas at lower elevations or in dry sites near sage brush. At higher elevations, aspen mortality occurs on the West and South facing slopes.

Sometimes the aspen mortality is quite sudden with death occurring shortly after symptoms appear. Many of the Colorado aspen forests have mature trees that are more susceptible to natural stresses and dying due to multiple damage agents of drought, defoliation, and aspen diseases.

Cytospora cankers, poplar borers (*Saperda calcarata*), flatheaded borers (*Agriulus liragus*), and aspen bark beetles (*Trypophloeus populi* and *Procryphalus mucronatus*) are often associated with dying aspens. In other sites, there have been observations of aspens not leafing out for unknown reasons.

For more information:

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