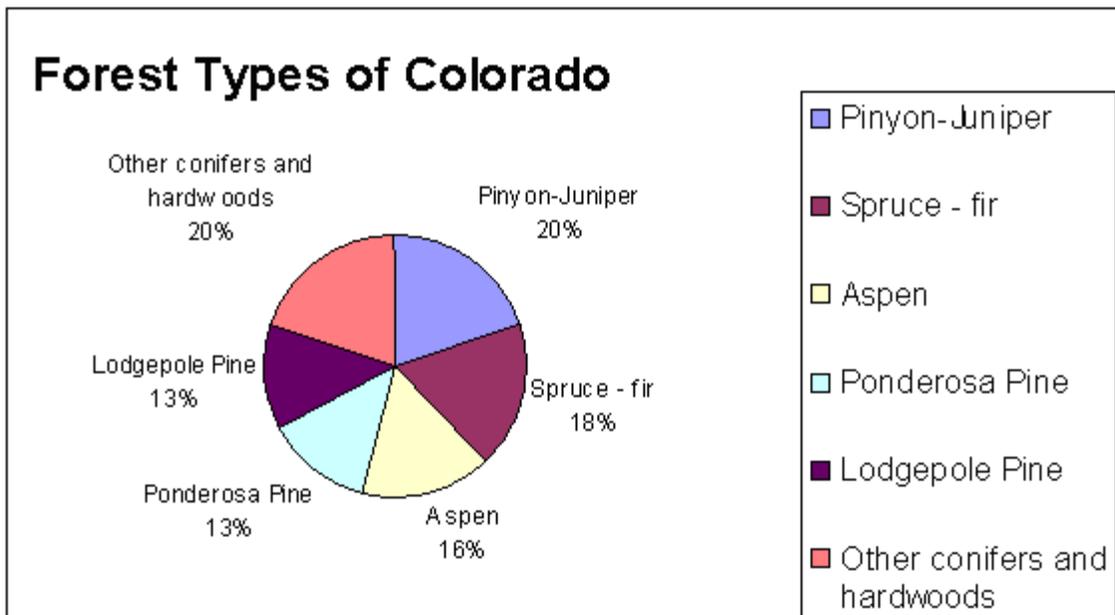


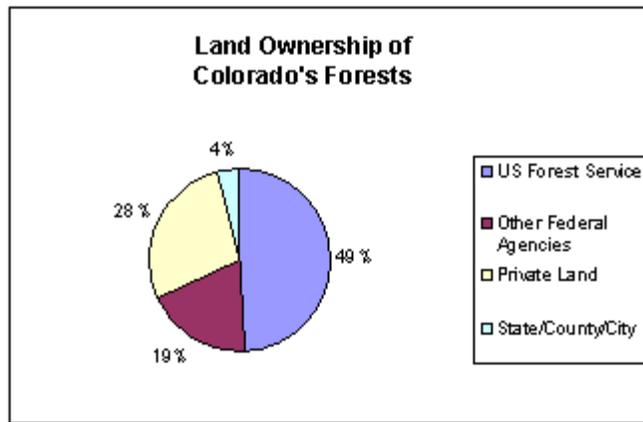
### The Resource

Colorado contains several different types of forests. Conifer forests of spruce and fir are found in high elevations, while pinyon pines and junipers inhabit dryer sites. Ponderosa pines are abundant along the Front Range, and lodgepole pines and Douglas-fir trees are common in mid-elevation mountain sites. Deciduous forests of aspens, cottonwoods, gambel oaks and other hardwoods are also found throughout Colorado.

This variety of forests results from the contrasting landscape features in Colorado. The extensive plains in the east graduate into the central foothills and climb higher into steep, western mountain peaks with deep canyons. Colorado soils and micro-climates are greatly influenced by this vast topography and create the diverse forest resources.



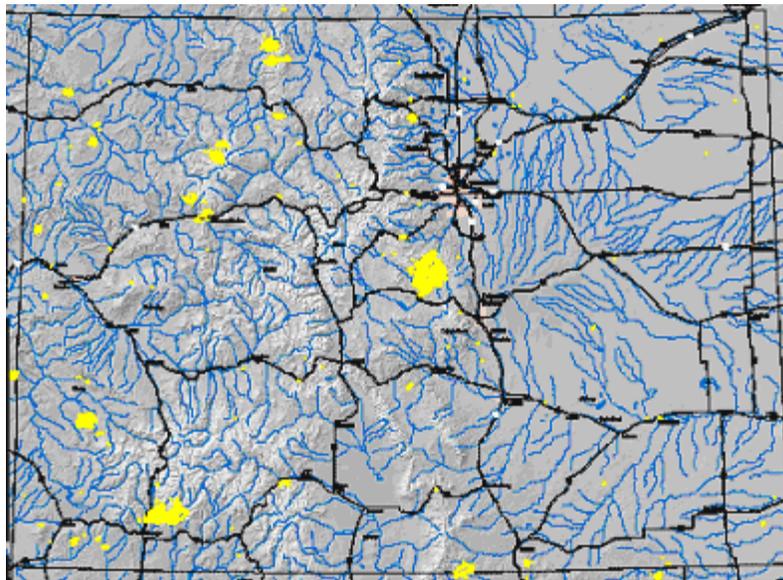
The USDA Forest Service and other federal agencies manage nearly 68% of Colorado's forested lands. Colorado's other forests are managed by over 200,000 private landowners and State, County, and municipal agencies.



## Special Issues

### 2002 Wildfire Season

"All of Colorado is on fire," said Gov. Bill Owens in June 2002 as he summed up the current wildfire season in the state. Indeed, much of Colorado was covered in smoke and haze from wildfires throughout the year as Colorado experienced its worst fire season in recorded history. Four years of drought, strong winds, and heavy fuel loads created ample opportunities for fires in Colorado forests. The wildfire suppression work started on Jan. 1, 2002 and the tiring fire-season finally ended in late September. Colorado experienced 1400 wildfires of which 98% of these were quickly contained. However, the 2% escaping wildfires burned 379,287 acres of Colorado.



Largest Wildfires	Near	Dates Started - Ended	# of acres burned
Hayman	Denver	June 8 - Aug.11	137,760
Missionary Ridge	Durrango	June 9 - July 27	70,485
Trinidad Complex	Trinidad	June 2 - June 16	33,000
Burn Canyon	Dolores	July 9 - July 28	31,300

Mt. Zirkel Complex	Steamboat Springs	Aug.12 - Sep.26	31,016
Big Fish	Yampa	July 19 - Dec.10	17,056
Spring Creek Complex	Gunnison	June 22 - Dec.13	13,490
Coal Seam Fire	Crested Butte	June 8 - Dec.13	12,209

### Links to other websites about wildfires -

<http://www.wildfires.newcwg.gov/>

<http://www.fs.fed.us/r2/psicc/fire/hayman>

To see greater detail or more of the above fire map visit this website:

[www.fs.fed.us/eng/rsac/fire\\_maps.html](http://www.fs.fed.us/eng/rsac/fire_maps.html) (then click on "Active Fire Maps")

### Bark Beetle Outbreaks

**Mountain pine beetle**, *Dendroctonus ponderosae*, attacks lodgepole, ponderosa, limber, and bristlecone pines in Colorado forests. This beetle has increased nearly 2-fold in population size each year in Colorado since the mid 1990's. Listed below are the counties with current outbreak problems of mountain pine beetles:

- ▼ **Grand County** has the largest amount of lodgepole pines dying due to mountain pine beetle. The areas around Lake Granby continue to have increased tree mortality. Other sites in Grand County are diminishing in population due to depletion of the host material for this insect.
- ▼ **Chaffee and Saguach Counties** contains the second largest area of mountain pine beetle activity in Colorado, most notably between Salida and Granite along the eastern foothills of the Saguatch Range. This area of the Upper Arkansas Valley has ongoing damage primarily in ponderosa pines and cause concern on private lands from Nathrop and Poncha Springs to Cochetopa Hills near the Continental Divide. In some cases ponderosa pine firewood brought into town areas with ornamental pinyons appears to be a "source" of reinfestations.
- ▼ **Eagle County** with Vail Valley and Eagle River Valley continue to experience heavy losses from mountain pine beetle in lodgepole pine.
- ▼ **In Jackson County** contains a large outbreak of beetle activity near Rand and along the eastern slope of the Park Range mountains.
- ▼ **Larimer County** lodges another hotspot of increasing mountain pine beetle activity from Rustic to Pingree Park in limber and lodgepole pines.

**Spruce beetle**, *Dendroctonus rufipennis*, occurs in Englemann and blue spruce trees in Colorado. In 2002, tree mortality from spruce beetle increased significantly. Large numbers of spruce were killed in Routt County as the spruce beetle outbreak continues to expand in the area of the Routt Divide Blowdown. Spruce beetle is also increasing in the Routt area in western Jackson County. Particularly impacted are the various drainages of these two counties for the Elk River north of Steamboat Springs.

Nearby in the Flat Tops of **Rio Blanco, Garfield, and Moffat counties, CO**, numbers of spruce beetle killed trees are increasing. Spruce beetle caused mortality from aerial survey estimates about 3,500 spruce trees destroyed.

Aerial surveys also detected dying spruce in the Eagle's Nest Wilderness Area, on the Uncompahgre Plateau, and in the southern San Juan Mountains. The mortality in **Conejos**

**County**, CO on the Rio Grande National Forest declined somewhat in 2002. Preventive spraying appears to be an increasingly wise option for live, high-value trees on private (and public) land in the near future.

**Pine and Spruce engraver beetles**, *Ips* spp., are found in ponderosa pine, pinyon pine, lodgepole pine, and Englemann spruce. The 2002 fire situation greatly increased public willingness and demand for mitigation work and we are seeing *Ips* responding to the great amounts of greenwood cutting at these sites. Greater than normal incidence of *Ips* beetles in lodgepole has been reported from a number of locations near Fraser, Monarch Pass, and Boulder County.

Major pinyon mortality is occurring in the southwest corner of the state around Mancos in Montezuma County. Usually the primary organism in these trees is Pinyon Ips (*Ips confusus*). In some trees, signs of blackstain root disease are found, but this situation appears to be mostly drought and *Ips*. Pinyon mortality in the southwestern part of the state now extends from Pagosa Springs west to Four Corners area and north to Norwood. The counts of faders is close to a million trees and roughly 50% of the pinyon forest is red. No doubt much of the green material is also infested and not yet discolored. Other major areas of pinyon *Ips* mortality occur in the southern Front Range and extend from Pueblo south to Trinidad. "Interior" hotspots of pinyon *Ips* mortality continue in the San Luis Valley near Crestone, and on the east flanks of the Uncompahgre Plateau south of Montrose. Current mortality totals at least 5000 trees.

*Ips* caused tree mortality continues to skyrocket, in combination with dwarf mistletoe infection and drought. It is very difficult to discern faders that result from such complexes from that of mountain pine beetle and other *Dendroctonus* bark beetles. In particular, this increased *Ips* - dwarf mistletoe - drought mortality greatly complicates aerial surveys. Such "complex-caused" mortality is particularly evident in southern and southwestern Colorado.

*Ips* attacks on urban Colorado blue spruces (*Ips hunteri*) continue in Greeley, Denver, and Colorado Springs and grew considerably in 2002. About 40 large Colorado blue spruce were removed because of *I. hunteri* in Fort Collins. A total of 295 trees have been condemned in the City of Denver, with neighboring suburbs such as Wheat Ridge and Aurora reporting similar, serious losses. Colorado Springs and Greeley have also lost over a hundred large spruce. If the drought continues, this *Ips* beetle problem could be a major epidemic since spruce is one of the first species affected by water shortages.

**Douglas-fir bark beetle**, *Dendroctonus pseudotsugae*, activity was low along the Front Range of Colorado and in the previous outbreak of the 1996 Buffalo Creek wildfire area. Forest Health workers anticipate increases of Douglas-fir beetle activity in 2003 in many areas of the Arapaho-Roosevelt, Pike-San Isabel, San Juan, and White River National Forests from the 2002 wildfires that burned in Douglas-fir forest type.

Other Insects, Diseases, and Damaging Agents of Concern in Colorado	
<b>Western spruce budworm - Choristoneura occidentalis (2)</b> Host (s): Douglas-fir, White fir, Sub-alpine fir,	The southern portion of the Uncompahgre Plateau has seen significant levels of western spruce budworm defoliation in Englemann spruce. In 2002 defoliation was light in the Wet and Sangre de Cristo Mountains. There was heavy defoliation in Larimer County near Cherokee Park. Acreages of Douglas-fir with light and moderate defoliation are increasing in the Front Range of El Paso and Douglas Counties.

Engelmann spruce, Blue spruce	
<b>Gypsy moth - Lymantria dispar (Non-native)</b> Host (s): Hardwoods	Over 1000 detection traps and 250 delimitation traps were deployed throughout Colorado in 2002. No moths have been found in any of the traps this year. This negative result is of interest in the Arvada area multiple moths were caught there in 2000 and 2001.
<b>Elm leaf beetle</b> <i>Xanthogaleruca luteola</i> Hosts: American elm, Siberian elm	Elm Leaf Beetle was moderate to locally severe in eastern CO in 2002
<b>Pinyon Needle Scale</b> <i>Matsucoccus acalyptus</i> Host: pinyon pine	Affecting pinyons and causing problems in areas near Nathrop, Buean Vista, Aguilar, and Trinidad in 2002.
<b>Red turpentine beetle</b> <i>Dendroctonus valens</i> Hosts: ponderosa pine	Populations of red turpentine beetle have increased dramatically due to large fires. Many of the heavily fire scorched trees were infested in 2002, particularly in the Black Forest in central Colorado. At this time, there has been little movement from fire scorched trees out into green trees.
<b>Zimmerman pine tip moth</b> <i>Dioryctria ponderosae</i> <i>D. zimmermani</i> Hosts: Austrian pine, Scots pine, ponderosa pine	Zimmerman Pine Moth ( <i>Dioryctria zimmermani</i> ) and relatives continue to increase in impact to ornamental ponderosa, Scots and particularly Austrian pines along the Front Range and eastern plains. This is an increasingly important problem in the state, particularly on transplants near Denver and other growth centers along the Front Range. The drought may greatly reduce the amount of planting we see in 2003.
<b>Dwarf mistletoes,</b> <i>Arceuthobium spp.</i> Hosts lodgepole pine, ponderosa pine, limber pine, pinyon pine, Douglas-fir,	Dwarf mistletoes cause the greatest amounts of disease losses in the Rocky Mountain Region. Program emphasis continues for landscape-scale surveys and resulting suppression projects in developed recreation sites and wood fiber production areas. Dwarf mistletoe presence along with expanding mountain pine beetle populations complicate efforts to meet certain resource management goals. In conjunction with mild winter conditions and a period of drought years, these parasitic plants are contributing to mortality in many areas of the Front Range, including the Red Feather Lakes area; Estes Park; much of the higher elevation portions of Boulder, Clear Creek and Gilpin Counties; the Jarre Canyon area of Douglas County; Park County including South Park; and the foothills west of Colorado Springs in El Paso County. DM is also a continuing problem in the Black Forest northeast of Colorado Springs in ponderosa pine.
<b>Root Diseases - Armillaria</b>	Armillaria, the most common root disease in the Region, was evident in the mixed conifer and spruce-fir cover types. This root-rotting fungus was among the key causal agents of subalpine

<p><i>ostoyae</i>, <b><i>Heterobasidion annosum</i></b>, <b><i>Leptographium wageneri (1)</i></b> Host (s): Engelmann spruce, Colorado blue spruce, Lodgepole pine, Ponderosa pine, Pinyon pine, Douglas-fir, Sub-alpine fir, White fir, Apspen, and Hardwoods</p>	<p>fir decline, which accounts for the most tree mortality in spruce-fir cover type in the Rocky Mountain Region. Armillaria incidence in developed recreation sites in Colorado resulted in past tree failures and numerous tree removal projects.</p> <p>Annosus root disease has scattered distribution within white fir in the mixed conifer type throughout southern Colorado. In campgrounds, the disease creates hazardous conditions by increasing the probability of tree failure.</p> <p>Black stain root disease, in combination with other factors, caused widespread pinyon mortality in southwestern Colorado. This area experienced unprecedented urban development pressure that may be compounding the problem. Black stain has not been identified east of the Continental Divide in Colorado pinyon forests.</p>
<p><b>White pine blister rust disease – <i>Cronartium ribicola</i></b> (non-native) Hosts: Limber and Bristlecone pines, Ribes spp. plants of currants and gooseberries</p>	<p>White pine blister rust occurs at low infection levels in limber pine stands of northern Colorado. Its intensity and spread on the limber pine is closely monitored. Bristlecone pines, which are not infected, yet, are also evaluated since these trees could also be a host of this fungus. Efforts are underway to collect a variety of data on white pines in CO, the distribution of Ribes plants, the alternate host for blister rust, and to hazard rate limber pine stands for the disease.</p>
<p><b>Dutch elm disease - <i>Ophiostoma ulmi</i></b> (Non-native) Host: American elm</p>	<p>Dutch Elm Disease occurs in low numbers in eastern Colorado and continues to be a problem in riparian areas and cities throughout the state. The City of Colorado Springs reports heavier than normal trunk attacks on American elms by Smaller European Elm Bark Beetle and that 33 trees were confirmed with DED and removed. This is a little higher than normal for that metro area. Losses also increased at the Air Force Academy near Colorado Springs.</p>
<p><b>Ponderosa Pine Needlecast – <i>Davisomycella ponderosae</i></b> Host: ponderosa pine</p>	<p>In 2001 and 2002, ponderosa pines across the San Juan, Grand Mesa, Uncompahgree, and Gunnison National Forests showed foliage discoloration caused by this needle cast fungus. Trees of all sizes were discolored and the needles eventually lost, leading to an appearance of thin crowns. Needle casts seldom cause mortality, but when present for several years in a row, will cause reductions in growth. Although it appears likely that the needlecast plays a major role in the damage, forest health specialists are also analyzing climatic and other data to evaluate the potential role of additional factors.</p>
<p><b>Pinyon pine decline</b> Host: Pinyon pine</p>	<p>Areas of widespread decline and death of pinyon include the southeastern plains east of Walsenburg, the west side of the Sangre de Cristo Mountains, south of Montrose, Mesa Verde, and Buena Vista. Many of these sites seemed to have worsening effects of pinyon pine decline in 2002. The widespread nature of these occurrences would seem to indicate a weather-induced cause. Most of these areas now show widespread involvement of <i>Ips confusus</i>.</p>
<p><b>Sub-alpine fir</b></p>	<p>The most widespread damages detected in Colorado were sub-alpine fir decline. Forest Health</p>

<b>decline Host:</b> sub-alpine fir	specialists believe that most of this decline is caused by the western balsam bark beetle, <i>Dryocoetes confusus</i> and <i>Armillaria</i> root disease. Since little is known about this decline, it is not possible to determine how much of the damage occurred this past year. Dead sub-alpine fir holds its red needles longer than most other conifer species, and so it is possible that these totals may be cumulative from the last 2 to 4 years.
<b>Animal Damages –</b> various species	Related to the drought and the reduced amount of food present in the forest, we saw more animal damage to trees than normal, particularly porcupine feeding on ponderosa pine phloem in the Black Forest area. Fox squirrel damages to cottonwoods and other deciduous trees in the riparian forests (Trinidad along the Purgatoire River, for example) and tree browsing by deer were more apparent. Black bears were reported in foothills residential backyards feeding on tree fruits and other non-traditional food sources in lieu of natural food shortages in the mountains. Excessive elk feeding on aspen bark was noted in Larimer County.
<b>Drought</b>	A major issue in 2002 and it looks like this will continue in 2003. Currently, Colorado reservoirs are only 40% of normal levels. Plantings in urban area of Colorado blue spruce, lindens, and maples seemed to be very susceptible to drought. Forest health specialists report seeing a “halo” effect caused by drought in aspen stands surrounded by meadows, where the trees on the edge of the aspen clone show the moisture stress first.
<b>Chemical</b>	Ice and dust-control materials utilizing magnesium chloride are being increasingly applied in the mountain road systems in Colorado, with corresponding increases in tree damage throughout the state. The Air Force Academy near Colorado Springs reports moving 150 trees damaged/killed by salts on their land. Serious problems reported from other areas including Aspen and the Black Forest.

### For Forest Health Assistance in Colorado:

Colorado State Forest Service  
Fort Collins, CO  
Ph: 970-491-6303

**Dave Leathermann**

[dleather@lamar.colostate.edu](mailto:dleather@lamar.colostate.edu)

**Mike Schomaker**

[mschomak@lamar.colostate.edu](mailto:mschomak@lamar.colostate.edu)



US Forest Service - Forest  
Health Management

**Frank Cross**

(Regional Office in Denver)

Ph: 303-275-5061

[fjcross@fs.fed.us](mailto:fjcross@fs.fed.us)

**Jeff Witcosky**

(Lakewood Office)

303-236-9541

[jwitcosky@fs.fed.us](mailto:jwitcosky@fs.fed.us)

**Roy Mask** (Gunnison Office)

970-641-0471 [rmask@fs.fed.us](mailto:rmask@fs.fed.us)



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