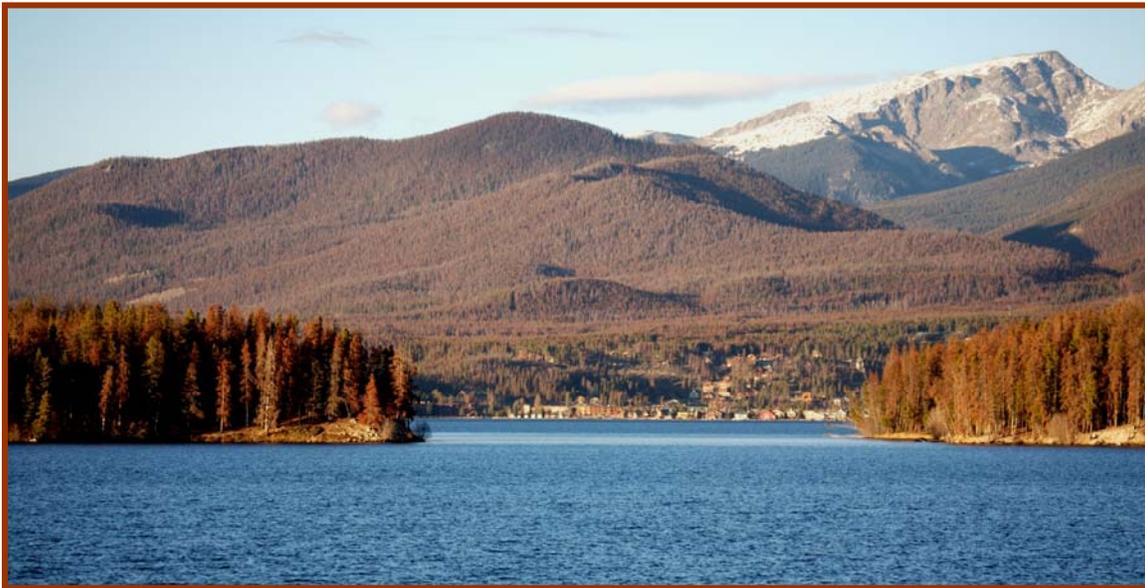




THE FRONT RANGE FUELS TREATMENT PARTNERSHIP

COLORADO STATE FOREST SERVICE • NATIONAL PARK SERVICE • USDA FOREST SERVICE



2007 SUMMARY OF ACCOMPLISHMENTS

The Front Range Fuels Treatment Partnership (FRFTP) has evolved into a dynamic partnership; from the Roundtable, to treatments on the ground, to the people who play a major role in making things happen in science, in communities and in politics. In 2007, Partnership agencies treated 30,777 acres, bringing our four-year total to 117,292 acres. We also continued working with communities to create and implement Community Wildfire Protection Plans and, through the Roundtable, continued to engage more people in our forest health efforts.

In addition to reducing wildland fire risk through sustained fuels treatment, we face an emerging issue on the Front Range, which has left more of Colorado's forests infected with mountain pine beetle (MPB). The 2007 forest health aerial survey results revealed that

about half a million new acres have been affected this year. Since the outbreak began in 1996, this beetle has infested more than 1.5 million forested acres. Now, this epidemic has spread to Front Range areas.

As Colorado's Front Range wildland-urban interface (WUI) continues to grow every year, more people, homes, communities, infrastructure and natural resources in these areas are at significant risk from catastrophic wildfires.

We begin our report by thanking Roundtable members, state and federal employees, Partnership researchers, elected officials, industry members and citizens as we celebrate another successful year and prepare for additional challenges.

PROJECT ACCOMPLISHMENTS: FOUR-YEAR FUELS TREATMENT TOTAL REACHES 117,292 ACRES

In 2007, partnership agencies treated 30,777 acres, bringing our four-year total to 117,292 acres (34,629 acres were treated in 2006; 24,908 in 2005; and 26,978 in 2004). In addition, planning has been completed for treatment on an additional 17,735 acres of U.S. Forest Service land, 11,711 acres on state and private land and 800 acres on National Park Service land for 2008. Following are highlights of accomplishments from 2007.

COLORADO STATE FOREST SERVICE

In 2007, The Colorado State Forest Service (CSFS) treated a total of 11,952 acres on private, state and local government lands.

BOULDER DISTRICT

In 2007, the Boulder District treated a total of 909 acres in numerous projects throughout Boulder and Gilpin counties. Of the project total, 448 acres were completed on private lands, 241 acres on local government lands, 162 acres on state lands and 58 acres on federal lands. In addition, seven Community Wildfire Protection Plans (CWPPs) were completed this year.

BROOMFIELD OFFICE

The Broomfield Office treated 1,156 acres in 2007, primarily on local government lands. In addition, through the Front Range Watershed Wildfire Protection Working Group, much work has been done to develop a strategy and action plan. The plan will guide the successful implementation of goals aimed at protecting critical Front Range watersheds by reducing the threat of high-severity wildfires on key watersheds and their infrastructure.

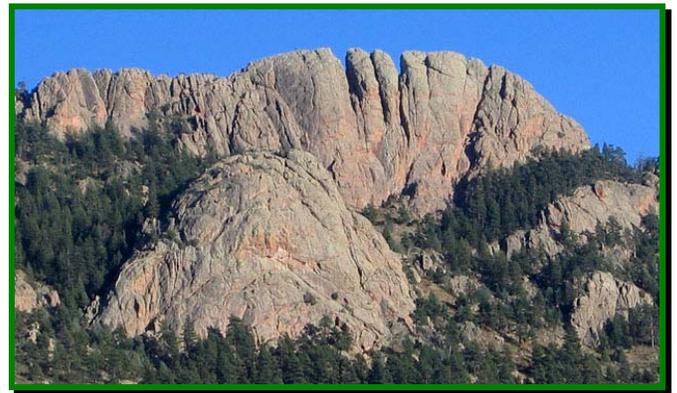
A 2007 report assessed risks and potential impacts of severe wildfires to source watersheds in Boulder, Clear Creek, Douglas, El Paso, Gilpin, Grand, Jefferson, Larimer, Park and Teller counties.

The report on *Protecting Front Range Forest Watersheds from High-Severity Wildfires* is available on the FRFTP website at <http://www.frftp.org/research.htm>.

FORT COLLINS DISTRICT

In 2007, the Fort Collins District treated a total of 987 acres. Of these total acres, 646.5 acres were completed on private lands, 172 acres on state lands and 168.5 acres on local government lands. In addition, eight CWPPs were completed in 2007.

Fuels treatment project accomplishments included Horsetooth Mountain Park. Larimer County Parks and Open Lands and Larimer County Emergency Services were awarded an HB-1130 grant to address forest health and fuels mitigation issues at Horsetooth Mountain Park and help protect Fort Collins' water supply. The park includes the headwaters for Mill and Spring creeks, which flow into Horsetooth Reservoir, the primary water supply for the City of Fort Collins. Matched funds expanded efforts to reduce wildfire threats by treating an additional 130 acres of forest land in the park.



Horsetooth Rock, a popular hiking destination, forms Horsetooth Mountain Park's western border. The 2,886-acre park and its 29 miles of trails are located on the other side of this view of the rock.

FRANKTOWN DISTRICT

The Franktown District treated a total of 663 acres in Douglas County. Of these total acres, 449 acres were treated on private lands and 214 acres on state lands.

GOLDEN DISTRICT

The Golden District treated a total of 1,593 acres in 2007. Of these total acres, 599 acres were treated on private lands, 765 acres on state lands and 229 on local government lands.

In addition, five Community Wildfire Protection Plans were developed on the Golden District, including Clear Creek County, Coal Creek Fire Protection District (FPD), Genesee FPD and Foothills FPD. Fuels treatment project accomplishments included:

- 115 acres of treatment on Denver Mountain Park properties
- 260 acres of prescribed fire and 196 acres of mechanical treatment at Staunton State Park
- 63 acres of prescribed fire at Golden Gate Canyon State Park

GRANBY DISTRICT

In 2007, the Granby District completed fuels reduction and forest health treatments on 2,518 acres. Of the total, 2,345 acres were treated on private lands and 173 on local government lands.



State Forester and CSFS Director Jeff Jahnke assists in firing operations during a prescribed fire on the Granby District.

WOODLAND PARK DISTRICT

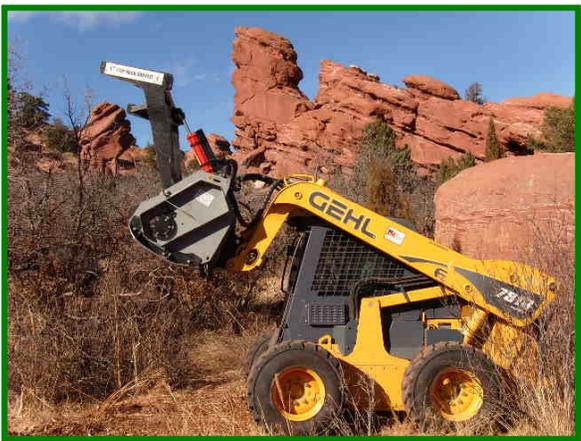
The Woodland Park District completed fuels treatment on 4,126 acres in El Paso, Park and Teller counties in 2007. Of the total, 2,385 acres were on private lands, 1,512 on state lands and 229 on local government lands. In addition, slash and mulch sites in the district contributed to mitigation efforts. In the three counties, users of the slash site reported management work on an additional 8,825 acres.

In Teller County, accomplishments included fuelbreaks at Sturman Industries and the Old Wagon Road Neighborhood in Woodland Park. A fuelbreak is underway in Elk Valley Estates and fuel mitigation is underway in Woodrock. The district also participated in the development of six additional Community Wildfire Protection Plans in 2007. Communities such as Colorado Mountain Estates, Lone Ranger Road and Majestic Park in Teller County completed neighborhood-specific plans. In El Paso County, CWPPs for Ute Pass, the Black Forest and Southwest Highway 115 Fire Protection District were completed. In 2008, plans will be completed in Ridgewood, Palmer Lake, Elk Valley Estates, Woodrock and Highland Lakes.

El Paso County also has participated in unique and highly visible projects. The “Firewise on the Front Range House” was built in the Southwestern Highway 115 CWPP area and demonstrates FireWise concepts inside and out. Fuels mitigation on the property was cost-shared by the Front Range Fuels Treatment Partnership. In 2007, the home was part of the annual Parade of Homes tour and attracted more than 6,000 visitors.



The “FireWise on the Front Range House” is a unique demonstration of FireWise concepts and fuels mitigation practices.



LINKING WILDFIRE AND WATER QUALITY

In 1987, the CSFS, under contract with Colorado Springs Utilities, wrote the Pikes Peak Watershed Forest Management Plan, which covers approximately 13,000 acres of forested land on and around Pikes Peak that is owned by the City of Colorado Springs. The CSFS Woodland Park District has been involved in the implementation of this plan to improve forest health, reduce wildfire risks and protect water quality.

In 2007, the district completed forest restoration and fuels mitigation work on 150 acres of the watershed located on the North Slope unit south of Woodland Park. Thinning out smaller understory trees from overcrowded stands provided a more open, natural forest condition.

In another area of the Pikes Peak Watershed — a unit known as Longs Ranch along Fountain Creek between Cascade and Manitou Springs — the district completed work on a fuelbreak to reduce the movement of fire in the Ute Pass area.

In fall 2007, the district also started work on a 140-acre project on the South Slope unit above Gold Camp Road. Because of administrative and weather delays, this project will not be completed until the spring of 2008. The project consists of mechanical thinning from below to reduce the wildfire risk and promote forest health. In 2008, another 200-300 acres are planned for completion. Much of the work most likely will occur on watershed lands on the South Slope of Pikes Peak.

Fuels mitigation underway in the Garden of the Gods

In addition, Colorado Springs City Forestry undertook the major step to begin fuels mitigation in the crown jewel of city parks, the Garden of the Gods.

In Teller and Park counties, the Coalition for the Upper South Platte (CUSP) sponsored the Teller County Slash and Mulch Program and a neighborhood chipping service. In 2008, CUSP will fund a fuelbreak on Teller County's Catamount Open Space.

In 2007, Park County obtained cost-share funding for its first slash and mulch program. The program was a success, and the county is seeking funds to continue it in 2008. Additionally, a number of community chipping projects were cost-shared in the county.

In 2008, the Woodland Park District will complete several projects and start new projects, such as additional mitigation on Cheyenne Mountain and Mueller State Parks, and further implementation of CWPPs.



Fuels mitigation in process at the Cheyenne Mountain Zoo

NATIONAL PARK SERVICE

ROCKY MOUNTAIN NATIONAL PARK

During 2007, the fire and fuels management crew completed several fuels reduction projects in the wildland-urban interface along the park boundary, including 200 acres of broadcast burning. A total of 588 acres were treated in 2007. Approximately 800 acres of thinning and prescribed fire are planned for 2008.

2007 HAZARDOUS FUELS REDUCTION PROJECTS

- **Horseshoe Valley Broadcast Burn:** 200 acres were burned in the fall.
- **Moraine Park Structure Defense:** 124 acres of thinning and hauling were done around Mill Creek Ranger Station, Moraine Park Museum, Tuxedo Park housing area and Kaley Cottages housing area.
- **Deer Mountain Urban Interface:** 120 acres were thinned and stacked by contractors on the north side of Deer Mountain.
- **Bear Lake Road Corridor Buffer:** 100 acres of thinning and hauling were done along Bear Lake Road.
- **Kawuneeche Visitor Center/Housing Area Structure Defense:** 30 acres of thinning and hauling were done around the Visitor Center and employee housing area.
- **Ashton Cabin Structure Defense:** 10 acres of thinning and hauling were done around the Ashton Cabin.
- **Mill Creek Ranger Station:** 4 acres of piles were burned in the winter.

2008 HAZARDOUS FUELS REDUCTION PROJECTS

Deer Mountain Urban Interface: 439 acres will be treated (thinned, piled, and burned).

- **Moraine Park Broadcast Burn:** 220 acres will be treated.
- **Moraine Park Structure Defense:** 100 acres will be thinned and hauled.
- **Bear Lake Road Corridor Buffer:** 50 acres of piles will be burned.

- **Grand Lake Boundary:** 8 acres of piles will be burned.
- **Ashton Cabin Structure Defense:** 6 acres of piles will be burned.
- **Mill Creek Ranger Station:** 3 acres of piles will be burned.

COMMUNITY FIRE ASSISTANCE GRANTS

Fiscal Year 2007 - \$18,000

- \$10,000 to the Glen Haven Volunteer Fire Department for implementation of a CWPP
- \$4,000 to the Grand Lake Fire Protection District for implementation of a CWPP
- \$2,000 to the Allenspark Fire Protection District to implement a CWPP
- \$2,000 to Estes Park Volunteer Fire Department to implement a CWPP

COMMUNITY OUTREACH AND EDUCATION

The park conducts an active fire education program that seeks to raise awareness among the general public and facilitate collaborative efforts with adjoining private landowners, and local municipal, county and state governments.

U.S. FOREST SERVICE

ARAPAHO AND ROOSEVELT NATIONAL FORESTS

The Arapaho and Roosevelt National Forests (ARNF) treated a total of 11,378 acres; 9,677 acres were treated mechanically and 1,701 acres were treated with prescribed fire. Personnel from the ARNF and the Pike National Forest continued development of a 10-year Long-Term Stewardship Contract Request for Proposals. The purpose of this contract will be to enhance efforts to reduce hazardous fuels. Forest personnel continued to assist local communities and the Colorado State Forest Service in developing Community Wildfire Protection Plans.

The ARNF, along with the White River and Routt National Forests and numerous other cooperators, continued efforts associated with the Northern Colorado Bark Beetle Cooperative to address the mountain pine beetle epidemic occurring in north central Colorado. Treatments on the Sulphur Ranger District are being planned in an integrated manner to support the goals and objectives of both the Front Range Fuels Treatment Partnership and the Northern Colorado Bark Beetle Cooperative.



Fuels treatments on the Sulphur District help mitigate the potential for wildfire due to beetle-infested trees.

SOUTH ZONE FUELS PROGRAM (BOULDER & CLEAR CREEK RANGER DISTRICTS)

In 2007, hazardous fuels reduction treatment was accomplished on 3,599 acres within the wildland-urban interface. Of these acres, 3,099 were accomplished

through mechanical thinning and 500 through prescribed fire. In addition, decisions were made to reduce hazardous fuels on approximately 1,500 acres.

Sugarloaf Fuels Reduction Project — The Sugarloaf Fuels Reduction project covers approximately 5,000 acres. The project decision notice was signed in January of 2004. Located just west of Boulder, the Peak-to-Peak Scenic Byway defines the western boundary of the project area. Crews continued operations in the project area in 2007, and 2,013 acres were treated or are under contract to be treated. Treatments include forest thinning and piling, and prescribed burning.

James Creek Fuels Reduction Project — The decision notice for this project was signed in September 2004 and includes 6,402 acres of treatment. Treatment on more than 430 acres is planned in 2008.

St Vrain Project — This Healthy Forest Restoration Act (HFRA) project decision identified approximately 2,650 acres of proposed treatment. This project gives priority to community and neighborhood protection with some emphasis on wildlife habitat and forest restoration in specific areas. Treatment on approximately 130 acres is planned in 2008.

Yankee Hill Project — The project is an Integrated Landscape Design to Maximize Fuel Treatment Effectiveness Pilot project. The team formulated areas consisting of 1,000-3,000 acres for potential treatment focusing on neighborhood/community protection, with special attention given to watershed and recreation resource protection. The planning effort was completed in 2007 identifying almost 1,500 acres for treatment.

Evergreen Fuels Project — The project decision notice was signed on this 1,000-acre project in 2004. The project is located in the Yankee Creek area within the Elk Creek Fire Protection District near Evergreen. Crews continued operations in the Evergreen project area in 2007, and approximately 370 acres were treated or are under contract to be treated.

CANYON LAKES RANGER DISTRICT

In 2007, hazardous fuels reduction treatment was completed on 4,374 acres, all within the wildland-urban interface. Of these acres, 3,766 were treated through mechanical thinning and 608 acres through prescribed fire. In addition, decisions were made to reduce hazardous fuels on approximately 8,100 acres.

Crystal Lakes Fuels Reduction Project — Located north and west of the community of Red Feather Lakes, the Crystal Lakes subdivision has been recognized as a Firewise Community/USA. The decision document was

signed in 2004, and treatment areas were completely laid out. In 2007, 503 acres were treated or under contract for treatment. Treatments include forest thinning, prescribed burning and biomass removal.

Sheep Creek 2 — The project area plan decision notice was signed in 2004. The project includes mechanical treatment and prescribed fire on 4,200 acres. Only 29 acres of treatments were accomplished in 2007 due to weather. In 2008, more than 675 acres are scheduled to be treated with prescribed fire.

Stringtown West Fuels Reduction Project — At approximately 4,062 acres, this project was analyzed with a categorical exclusion (CE). The project complements previous projects that were completed in the area on National Forest land and extends work being done by the Colorado State Forest Service in conjunction with homeowners in the area. A decision on this project was made in 2006. Treatment on 90 acres is planned in 2008, but may be delayed due to a lawsuit in a California District court challenging the use of categorical exclusions on these types of projects.

Lone Tree Fuels Reduction Project — The project involves approximately 2,400 acres. A decision on this project was made in 2006. Implementation continued in 2007 with treatment on almost 165 acres. Treatment on 210 acres is planned in 2008, but may be delayed due to a lawsuit in a California District court challenging the use of categorical exclusions on these types of projects.

Pingree Hill Fuels Reduction Project — The project involves approximately 2,400 acres. This is a wildland-urban interface project that includes numerous acres of private land. A decision on this project was made in 2007. Implementation began in 2007 with treatment on 46 acres. Treatment on almost 700 acres is planned in 2008, but may be delayed due to a lawsuit in a California District court challenging the use of categorical exclusions on these types of projects.

Estes Valley Fuels Reduction Project — This project, which surrounds the community of Estes Park, is a Healthy Forests Restoration Act (HFRA) project. A decision was made in 2005 to treat more than 7,500 acres to reduce hazardous fuels. This wildland-urban interface project includes numerous acres of private land. Many private landowners currently are engaged in fuels reduction activities guided by the Colorado State Forest Service. Treatment on private land is being integrated into the planning of this project on National Forest lands. In 2007, 2,583 acres were treated. Implementation will continue in 2008 with treatment on approximately 3,000 acres.

Dowdy Lake Prescribed Fire — The Canyon Lakes Ranger District successfully completed a prescribed fire on approximately 440 acres near Dowdy Lake in October 2007. These units were thinned by machine or hand to decrease hazardous fuels and open up Ponderosa pine stands before the prescribed burn was conducted. Prior to burning, a firewood sale was open to the public to gather some of the slash product created from the thinning. The prescribed burn was the final step to reduce slash and help restore natural vegetation to the area, including native grasses.

The community of Red Feather Lakes is in the process of developing a Community Wildfire Protection Plan and was supportive of the U.S. Forest Service effort to reduce the wildfire risk east of their town.

SULFUR RANGER DISTRICT

In 2007, hazardous fuels reduction treatment was accomplished on 3,405 acres, and a substantial portion was in the wildland-urban interface. Of these acres, 602 were accomplished through mechanical treatments, 2,300 acres through timber sales, and 593 through prescribed fire. Decisions also were made to reduce hazardous fuels on nearly 500 acres. The on-going mountain pine beetle epidemic continues to increase the hazardous fuels workload.

Arapaho National Recreation Area Forest Health Project — Located within the Arapaho National Recreation area, the project will reduce hazardous fuels and treat the effects of an ongoing mountain pine beetle epidemic. A record of decision (ROD) addressing areas outside of inventoried roadless areas was signed in 2004. In 2005, a ROD addressing treatment within inventoried roadless areas was signed. A Stewardship Contract to treat more than 1,600 acres was awarded in the fall of 2005. Implementation of the stewardship contract continued in 2007.



Projects in the Arapaho National Recreation area reduce danger of falling dead mountain pine beetle-infested trees.

Upper Fraser Valley Forest Health Project — The project area is located west of the Winter Park Ski area and includes portions of the Fraser Experimental Forest. This project was completed under HFRA authorities. The project will reduce hazardous fuels and treat the effects of an ongoing mountain pine beetle epidemic. A decision was made in fall 2005 to treat almost 3,700 acres. In 2007, approximately 1,340 acres were treated or under contract to treat.

Blue Ridge Salvage / Fuels Reduction Project — The project area, located west of Granby and south of Hot Sulphur Springs, will reduce hazardous fuels and treat the effects of an ongoing mountain pine beetle epidemic. The project, initiated in 2006, analyzed the need for treatment on 30,000 acres. Decision is anticipated in 2008.

PIKE NATIONAL FOREST

The Pike National Forest is collaborating with land managers, fire managers, emergency managers, community groups and private landowners throughout the Front Range. The administrative unit encourages strategic planning to identify the most appropriate methods for reducing wildfire risk and engaging diverse stakeholders within the planning process. In 2007, 6,859 acres were treated on the forest.

PIKES PEAK RANGER DISTRICT

In 2007, the Pikes Peak Ranger District treated 277 acres through prescribed burning and 1,878 acres through mechanical treatment for a total of 2,155 acres, up 150 acres over 2006. The district completed most

acres in the Teller County CWPP Priority Zone #1 and in the urban interface/intermix; completed 277 acres of pile burning on Trout Creek and Monument Fire Center; 300 acres of force-account thinning with the fire crews; and piled 170 acres of residual slash with dozer 10.

The district had 150-acre mastication contract, primarily to treat mountain pine beetle-infested and hazardous fuels at Sunny Glenn on the eastern edge of Woodland Park. Two mastication contracts also were awarded: a 250-acre at Skelton Ridge and 330 acres at Ridgewood North. Following is a summary of the percentage of acres treated on projects within the district: Trout Creek, 95 percent (up 5 percent over 2006); Ridgewood, 70 percent (up 20 percent over 2006); Long John, 70 percent (up 35 percent over 2006); Ryan Quinlan, 50 percent (up 40 percent over 2006); Skelton Ridge, 85 percent (up 70 percent over 2006); and Rampart, 10 percent (up 5 percent up 2006).

In 2008, the district will work on an Environmental Impact Statement (EIS) for Catamount (approximately 122,000 acres). Estimated completion for the Landscape Assessment portion of this EIS is in the summer 2008. In addition, an Environmental Assessment (EA) for Trout West Phase II (approximately 4,000 acres) has an estimated completion date of October 2008.

SOUTH PARK RANGER DISTRICT

The South Park Ranger District treated 2,434 acres in 2007 — 828 acres of prescribed fire (FS crews), 820 mechanically (FS crews) and 393 acres in a short-term stewardship contract. Another 355 acres was offered in a short-term stewardship contract, but was rejected due to high bids. All work was completed in WUI areas in the Sledgehammer project area southwest of Lake George. This project includes a critical South Platte River watershed, one of only two remaining areas in the montane zone on the South Platte River that hasn't been burned over, a heavily used recreation area (Elevenmile Canyon) and numerous subdivisions located throughout the area.

In addition, the district laid out approximately 700 acres for treatment through future stewardship contracts in the Rocky Messenger project area just outside Lake George and on the opposite side of the South Platte River from the Sledgehammer project.

District personnel helped Park County finalize the CWPP and provided significant input for the wildfire portion of the county Hazard Assessment and Risk Identification plan.

District personnel also participated in all other broadcast burns on the Pike and San Isabel National Forests and Cimarron and Commanche National Grasslands.

SOUTH PLATTE RANGER DISTRICT

In 2007, the South Platte Ranger District accomplished 2,270 acres of hazardous fuels reduction treatments, primarily within the wildland-urban interface. Prescribed burning was completed on 1,240 acres and mechanical treatment was completed on 1,030 acres.

Approximately 700 acres of contract administration continued this year for contracts awarded during previous fiscal years. Work, such as road maintenance, progressed for the Long Term Stewardship Contract within the Harris Park Vegetation Management area. The 1,240 acres of prescribed fire were accomplished by Forest Service employees mainly through ignition of large “brush” piles that remained after the cutting of trees allowed in the Nighthawk Service Contract, awarded during fiscal year 2003. The principle objective of the Nighthawk Service Contract was hazardous fuels treatments to reduce crown closure to an average of 10 to 30 percent.

Mechanical treatments included contracts awarded with fiscal year 2007 funds for mastication of 264 acres within the Harris Park Vegetation Management area, and brush beating of 325 acres on Russell Ridge area for watershed restoration within the Upper South Platte Watershed Restoration and Protection project. Both contracts were awarded using the Bureau of Land Management Indefinite Delivery, Indefinite Quantities Contract.



Harris Park Vegetation Management area after fuels treatment

A Pike National Forest dozer mechanically rearranged fuel on 151 acres and 55 acres within the Bennett Mountain Service Contract area. Fuel wood was removed by permit on 48 acres within Brush Creek, which reduced fuel loading for this area.

Three Good Neighbor Agreements (GNA) granted to Colorado State Forest Service helped accomplish mechanical treatment on 176 acres of National Forest Lands within the Upper South Platte Watershed Restoration and Protection project. The lands have complex access issues that the Colorado State Forest Service can address. The three projects included the 125-acre Deckers Good Neighbor Agreement; the eight-acre Trumbull Timber Stand Improvement GNA and the 43-acre Trumbull GNA Fuelbreak.

ROCKY MOUNTAIN RESEARCH STATION

LONG-TERM CONSEQUENCES OF A CONTROLLED SLASH BURN AND SLASH MASTICATION TO SOIL MOISTURE AND CO₂ AT A SOUTHERN COLORADO SITE

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The study examined some long-term consequences of two different fuels reduction treatments on soil temperature, moisture and CO₂ at Manitou Experimental Forest in the Rocky Mountains of southern Colorado. These treatments include the burning and mastication of slash, and the dispersal of the resulting wood chips over the study area. Results indicate that:

- Wood chips insulate the soil so that most of the time it remains cooler than it would without the chips; but there are periods, notably during the fall, when the chips, by impeding heat loss, will keep the soil warmer than the untreated soil.
- Wood chips can impede both infiltration of water into the soil and soil evaporation; but effects on soil moisture depend on the amounts and patterns of rainfall.
- Wood chips impede the efflux of CO₂ from the soil, so that soil CO₂ amounts under the chips tend to exceed the amounts within untreated areas.

Because the mastication experiment did not specifically examine microbial responses to the chip treatment or seek any associations with the measured

soil CO₂, no conclusion can be made about the microbial or root respiration response to the chip treatments.

Soil temperatures over a year and half after the experimental burn tend to be systematically higher than those in the control plots.

Long-term soil moisture at 0.15 m depth tends to be higher in the burn area than in the unburned control areas.

Soil CO₂ amounts within the burned areas can vary significantly from that in the soils of the control plots. For much of the year following the burn, CO₂ amounts in the burned area were well below that within the control area. However, during the dry summer of 2005, the additional soil moisture in the deeper levels of the burn plot allowed microbial activity there to remain high enough so that the CO₂ amounts within the burn area exceeded that within the control for about 2 months.

LONG-TERM EFFECTS OF MECHANICAL TREATMENTS, MANITOU EXPERIMENTAL FOREST, COLORADO: FIRST-YEAR RESULTS

*Peter Marchand, Samuel Johnson & Howard Drossman
Catamount Center for Geography of the Southern Rockies*

The study assessed the long-term ecological effects of mechanical fuel treatments in a mixed Ponderosa pine-Douglas-fir forest following two different thinning strategies: chip-harvesting with all biomass retained on-site and whole-tree harvesting with all thinned material removed from the site. Changes in forest community structure under each of the above treatments are being tracked and compared with unthinned control plots over a 10-year period by monitoring the following parameters:

- Soil chemical properties, including ammonia and nitrate-N pools, net mineralization, nitrification, and total C:N ratios
- Understory plant composition
- Small mammal population dynamics
- Insect emergence patterns

Soil nitrogen levels and mineralization rates in our treatments are in line with values reported for a number of investigations in ponderosa and lodgepole forest types. Typical of other studies, soil NO₃ concentrations in all treatments were low compared to NH₄ concentrations. Net mineralization rates were significantly reduced in thinned treatments one year after harvest, but there were no differences between removal and chipped plots. This suggests to us that the effects of thinning per se, rather than disposition of harvested

biomass, dominated below-ground response during the first year after treatment. Contrary to our expectations, the large mass of wood chips on the surface of the thinned/chipped plot did not affect soil C:N ratios in the first year. This may simply reflect the recalcitrant nature of the wood or it may indicate a functional separation between fungi in the wood chips and the soil beneath.



Long-term ecological effects of mechanical fuels treatments are tested over a 10-year period in the Manitou Experimental Forest.

Biogeochemical processes provided some of the greatest challenges in our data interpretation and prompted considerable thought regarding future studies. Though we observed significant differences in first-year net mineralization rates between thinned plots and unthinned controls, the lack of belowground response to very different fuels reduction strategies (chipping vs. removal) begs several questions related to soil carbon and nitrogen cycling. We propose a 3-tiered approach to soil investigations for the coming field season: (1) a more targeted sampling protocol for C:N analysis; (2) continued monitoring of soil nitrification and mineralization rates; and (3) analysis of soil ergosterol levels as a proxy for determining fungal distribution. We believe these analyses will provide answers to important questions regarding the fate of carbon and its subsequent influence on nitrogen dynamics in thinned and chipped treatments.

Above-ground response to thinning generally was most pronounced in the chipped treatment. While there were no statistical differences in groundcover between removal plots and controls, herbaceous vegetation in the chipped treatment was significantly lower. Grasses were reduced more than 60 percent and forbs were nearly eliminated. Juniper, the most common shrub in our study area, was unaffected by treatment differences, but the

prostrate bearberry was entirely missing from our chipped plots. Douglas-fir seedlings were most abundant in the removal plots where soil disturbance created suitable conditions for germination and seedlings were uninhibited by a layer of wood chips.

Two alien species, cheat grass (*Bromus tectorum*) and common mullein (*Verbascum thapsus*), appeared in both chipped and removal treatment areas – but not in control plots – late in the year following treatment. An unidentified thistle may constitute a third alien. While our initial groundcover survey recorded vegetation only by growth-form, in the coming field season, the presence of invasive plants will be quantified by species.

Small mammal numbers also were dramatically lower in the chipped treatment compared to removal and control plots – a likely result of lower resource levels and the relative scarcity of protective cover in chipped plots. In all treatments, only two species, the least chipmunk (*Tamias minimus*) and deer mouse (*Peromyscus maniculatus*), were captured in a session of 1800 trap nights. The combined population density of *P. maniculatus* and *T. minimus* was similar in control and removal plots, but *T. minimus* numbers in the removal treatment were considerably higher than expected, possibly reflecting displacement of animals from the neighboring chipped treatment.

In contrast to small mammals, insect emergence was significantly greater within the chipped treatment, compared to control plots. A smaller, but still significant increase in emergence occurred within the removal treatment. Fungivorous flies accounted for most of the effect in the chipped treatment, probably in response to a favorable environment for the growth of fungi beneath the wood chips, while an unexplained spike in the emergence of tiny parasitoid wasps accounted in large part for the higher numbers in the removal treatment.

Comparisons of insect community composition based on morphological species showed considerable differences between controls and the two thinning treatments, even though insect richness proved almost identical in all three treatments. These observations indicate that as some species disappeared from plots due to thinning, they were quickly replaced by others. This suggests important alterations in the ecology of the forest floor and raises several questions for future research, including the ecological implications of sudden large numbers of fungivores (that also feed on roots), the unexplained reduction in thinned plots of soil pupating moth species (many of which are important foliar feeders on pines), and the consequences of unusually large numbers of parasitoid wasps in our removal plots.

It is our expectation that continued sampling will provide us with sufficient time-series analyses to factor out natural variation and clarify the effects of our treatments on insect community dynamics and the ponderosa ecosystem as a whole.

HOMEBUYERS AND WILDFIRE RISK: A COLORADO SPRINGS CASE STUDY

*Patty Champ, USDA Forest Service, RMRS
Geoffrey Donovan, USDA Pacific NW Research Station
Chris Barth, City of Colorado Springs Fire Department*

As a follow-up to an earlier stakeholders' utility based (hedonic) study that looked at how wildfire risk affects home purchase decisions in a fire prone area, the Colorado Springs Fire Department conducted a mail survey in November and December 2006 to a random sample of the hedonic study population that had purchased a home in the Colorado Springs WUI after parcel level wildfire risk ratings were posted on a website (July 2002).

The survey included many measures related to wildfire risk and home purchase decisions. The earlier hedonic analysis showed that wood roofs and siding were associated with reduced sale prices of homes while proximity to dangerous topography was associated with an increase in the sale prices. To validate these results, the survey respondents were asked to rate the desirability of house attributes that can affect wildfire risk on a five point scale (1=very undesirable, 5=very desirable).

Consistent with the hedonic analysis, wood roofing and wood siding were rated as undesirable characteristics, whereas proximity to the foothills and location on a ridge were rated as desirable. Dense vegetation was rated more undesirable than desirable. Only 27 percent of the survey respondents realized the house they were purchasing was in an area at risk of wildfire before making an offer on the home.

Furthermore, 67 percent did not realize they purchased in an area at risk of wildfire until after they moved into the home. Very few of the survey respondents (less than 1 percent) had accessed the Colorado Springs Fire Department's FireWise website during the home purchase process. Eventually, more residents accessed the website, as 16 percent of the survey respondents said they had done so.

A comparison of the actual overall wildfire risk ratings on the website to what survey respondents said they thought was their rating (perceived wildfire risk rating) suggests that survey respondents underestimated the overall wildfire risk rating of their home. In particular, 21 percent of the respondents thought they had low ratings when in fact only 1 percent did; only 13

percent thought they had an extreme or very high wildfire risk rating when actually 27 percent had extreme or very high wildfire risk. However, perceived and actual wildfire risk ratings were correlated.

Seventy-five percent of survey respondents said they were not concerned about wildfire risk when they purchased their home. Those who were concerned about wildfire risk when they purchased their home had good reason for concern as they were more likely to purchase homes with extreme or very high wildfire risk ratings.

We might expect previous experience with wildfire to influence homebuyer concern about wildfire risk. Most – 65 percent – of the survey respondents had not owned a home in a fire prone area prior to moving into their current residence in Colorado Springs. Although many – 42 percent – of the survey respondents knew someone who was evacuated from her home due to a wildfire, only 18 percent knew anyone whose home had been damaged or lost due to a wildfire. Survey respondents who had previously owned a house in a location at risk of wildfire were more likely to be concerned about wildfire risk when they purchased their current home. However, knowing someone who was evacuated from her home due to a wildfire or knowing anyone whose home had been lost or damaged due to a wildfire did not have a statistically significant relationship with being concerned about wildfire risk.

The results suggest that personal experience is more strongly related to concern about wildfire risk during the home purchase process than knowledge of others' experiences with wildfire. Perhaps, this is why despite much media coverage of wildfires, so few individuals were aware of or concerned about wildfire risk when they purchased their home in a fire prone area.

FRONT RANGE ROUNDTABLE

The Front Range Roundtable spent 2007 pursuing the implementation of all 10 of its recommendations for improved forest health along the Front Range. Three full group meetings were held over the course of the year, each with more than 40 representatives in attendance. With the bark beetle making its presence felt over the divide, the challenges to forest health remain as pressing as ever.

The Roundtable continues to function as a clearinghouse for fire risk reduction efforts throughout the region. Noteworthy progress includes:

COUNTIES

The Roundtable met individually with all ten Front Range counties in 2007. The objective of these meetings was to connect the Roundtable's forest health and wildfire risk reduction efforts with work being done at the county level, and to assess county needs for support. Each meeting was different; some consisted of a formal presentation by the Roundtable to the commissioners, and some were informal meetings with county staff and local homeowners. One outcome of this effort is the creation of a workshop series to be held in the spring of 2008.

FOREST IMPROVEMENT DISTRICTS

Colorado House Bill 1168 was passed in the 2007 legislative session. This bill authorizes a municipality to propose to its voters the creation of a Forest Improvement District through which the district will tax itself and raise money for forest health projects. The Roundtable was an active supporter of this bill, and has now begun to support its implementation at the county level. Several counties have indicated interest in pursuing this opportunity.

ECOLOGY & MOUNTAIN PINE BEETLE

The ecology work group has turned its attention to lodgepole pine ecosystems in an attempt to build consensus about science and management. Convening prominent ecologists from around the region, the workgroup began to sift through different interpretations of the bark beetle threat and potential responses. Simultaneously, land managers from the northern Front Range have established a task force to address the appearance of the bark beetle on public and private lands.

INSURANCE

The Rocky Mountain Insurance Information Association worked closely with the Roundtable to develop an informational brochure on home safety and fire risk. Over 2,000 brochures have been distributed to new policyholders in the wildland-urban interface, and ongoing demand for the material is strong.

BIO-HEATING

The Colorado Biomass Working Group and Peak to Peak Wood were awarded a \$100,000 Working Partnerships Grant to support forest products and biomass collection, utilization and marketing. Colorado State Parks and the Colorado State Forest Service cooperated on the proposal, and the project will be implemented at the landscape scale over five counties:

Boulder, Clear Creek, Gilpin, Jefferson and Larimer. This project is currently underway. For more information about the program visit the website at: <http://www.peaktopeakwood.org>.

LOOKING AHEAD

The challenges related to forest health, fire risk reduction and the pine beetle epidemic will continue well into 2008 and beyond — as will our endeavor to find solutions. We are confident that the Front Range Fuels Treatment Partnership will continue to tackle the issues and successfully implement projects that will help protect communities and restore forest health on Colorado's Front Range.



THE FRONT RANGE FUELS TREATMENT PARTNERSHIP HAS GAINED A REPUTATION — AND RECOGNITION — FOR ITS COLLABORATIVE SUCCESSES.

FOR MORE INFORMATION, PLEASE VISIT THE WEBSITE AT:

<http://www.frftp.org>