



Fern Lake Fire



Spot fires move ahead of the front, as fire burns through Moraine Park early morning, December 1.

Photo courtesy Ryan White
www.ryanwhitephotoworks.com

The Fern Lake Fire started in Rocky Mountain National Park on Tuesday, October 9, 2012, in steep and rugged Forest Canyon. Firefighters from across the country battled the fire for two months. On the night of November 30, and the early morning of December 1, strong winds pushed the fire more than three miles in thirty-five minutes, prompting evacuation orders. Through careful planning and rapid action, firefighters successfully prevented the fire from progressing across Bear Lake Road and leaving the park. A national Type 1 Incident Management Team was brought in by park officials on Sunday, December 2. The nearly 3,500 acre blaze was temporarily halted by an early December snowstorm. This high-elevation winter fire is unprecedented in park history.

Large fires in high elevations of the Rocky Mountains are different from many other areas of the country. They are infrequent and have the potential for high consequences. Largely inaccessible, Forest Canyon

had been untouched by fire for at least 800 years. A long-term drought had left fuels tinder-dry in a dead and down fuel layer that in some areas exceeds twenty feet deep. Mountain pine beetles had killed half the trees in the canyon, with every compromised tree posing a hazard for firefighters. The typically windy conditions in the canyon only increased the danger.

Park fire managers knew from the beginning this fire was going to be a long-term event. There was limited opportunity to fight the fire directly because of high winds, steep terrain, and beetle-killed trees. Firefighter safety is the park's number one priority. The high winds impacted both air operations and safety of firefighters.

Weather, wind, and the location of the fire also limited our opportunities to drop water. The location of this fire at a high elevation along the Continental Divide, in a steep canyon with strong winds, made direct air and ground attacks challenging and dangerous. When water was

dropped, its effectiveness was often limited without firefighters on the ground. Frozen lakes and the ability of helicopters to carry water at high altitude posed additional challenges.

Despite these challenges, we were able to drop thousands of gallons of water to contain portions of the fire line. Beginning on October 9 through December 6, a total of 248,400 gallons of water were dropped on the fire. Because the fire area serves as a municipal watershed and wind hampered air operations, use of aircraft with retardant was restricted and proved to be an ineffective tool when it was used in early December.

Wildfire experts expect these types of fires to continue at this level unless conditions change. Continued drought will intensify the number of fires in our forests. The trend indicates larger and more rapidly spreading fires. The number of acres burned nationally has been at historic highs for six of the last nine years. There is no indication that this trend will reverse soon. Following are answers to a variety of questions pertaining to the Fern Lake Fire.

Frequently Asked Questions

What was it like the day the fire started on October 9?

When the smoke report initially came in, the fire was burning toward one of the most popular visitor use areas of the park, and two busloads of third-graders were on the Fern Lake Trail. Fire and park staff's first priority was finding the kids and getting them out of harm's way.

School children were not the only ones enjoying a mild fall day in the park. Numerous other hikers were in the area. Several people were camped at the Moraine Park Campground. Park Rangers coordinated with fire staff to ensure the area - including a nearby Livery, campground and multiple trails was safely evacuated.

Within 2 ½ hours of the initial fire report, the area had been evacuated. The fire was steadily growing.

What was the cause of the fire? What is the status of the investigation?

The cause is believed to be an illegal campfire above the Pool, along the Big Thompson River in Forest Canyon. The investigation remains open.

The Fern Lake Fire did not start from a prescribed burn in Rocky Mountain National Park. Prescribed fires must meet certain weather-related and other environmental factors prior to ignition occurring. In addition to notifying the public, park staff prepare the area, have firefighter and equipment resources in place, and monitor weather conditions before a prescribed burn is performed.

Why has the Fern Lake Fire been burning so long?

The fire began in a remote, steep, inaccessible part of the park. Firefighters have had to wait for the fire to burn into places where they can fight it safely. As conditions allowed, firefighters have been working both on the ground and in the air to contain the fire to the interior of the park. It is this combination of water dropping and "boots on the ground" that best ensure a fire can be contained. Just dropping water or retardant is not sufficient to contain a fire, much like just putting water on a campfire is not enough to extinguish it.



What have you done to fight it?

Since the moment the fire was detected, firefighters have safely used every tool available. The most qualified and highly trained firefighters in the nation have worked to contain the fire since day one. Top priorities of park management and fire officials have been the safety of visitors and firefighters, and keeping the fire within park boundaries.

The terrain in most of the areas where the Fern Lake Fire has burned is extremely unsafe for firefighters; it is so steep that it is ineffective to do work with hand tools. Due to the deep dead and down fuel layer in Forest Canyon, it is difficult for firefighters to stand upright in some areas. Water-dropping helicopters have been used when terrain and weather have permitted. Flying at high elevation with high winds is extremely dangerous and the high winds have often precluded flying, even when aircraft were available. Winds also made dropping retardant ineffective.

At the peak of the firefight, over 600 firefighters were aided by up to six helicopters, two airtankers, and twenty engines. As of December 12, the fire has cost over \$6 million.

Why did this fire get so big?

It was the alignment of numerous factors. The fire began in a remote, steep, inaccessible part of the park where there have been no fires in over 800 years. November was the driest November in more than one hundred years in the park combined with 2012 being the warmest on record in the United States. A combination of extremely dry deep forest fuels, high winds, and difficult access contributed to the fire's rapid growth in December. Winds exceeded 70 miles per hour on the night of November 30 and the morning of December 1, when the fire more than doubled its size.

Why didn't you put this fire "out" in October?

All fires in the park are managed in a manner that protects firefighter and public safety. Extreme terrain where firefighters could not work safely, extremely deep, dry fuels that were resistant to control measures and hazardous falling trees prevented firefighters from accessing the areas they needed to in order to extinguish this fire. Ultimately, firefighters on the ground put fires out.



This fire spread rapidly into an area where direct suppression, while providing for firefighter safety, was not an option. Firefighters were successful in containing the fire in Forest and Spruce Canyons and remained ready to construct fire line if the fire burned into more accessible areas. The fire slowly moved up Forest Canyon until moving in to Spruce Canyon and explosively expanding during high winds on November 30 and the early morning of December 1. These winds were forecast, but fire models predicted little fire movement. Fire managers suggested that despite the models, we should be as prepared as possible because their experience suggested the models could be wrong. What was difficult to predict was how fast the fire would spread under these wind conditions and just how wrong the models would be.

In early October, fire managers planned and prepared for numerous scenarios. Firefighters have been preparing and reinforcing indirect fire lines away from the fire perimeter using existing trails as much as possible. What happened on the night of November 30 and early December 1 was one of those scenarios, which is why firefighters were staged along Bear Lake Road and why burn out operations began at 1:30 a.m. This planning and preparation is why firefighters were able to keep the fire from crossing Bear Lake Road and leaving the park.

Why didn't you put firefighters in Forest Canyon in October?

Research has shown that the area of Forest Canyon has not had any fire for at least 800 years. Steep terrain, no exit route to safety, and deep, heavy dry fuels built up over hundreds of years produced an extremely unsafe situation for firefighters. There is more than twenty feet of fuel buildup in many areas of Forest Canyon. Without firefighters being able to access the fire safely, it cannot be effectively fought.

Aren't firefighters supposed to accept risk? Isn't that their job?

Firefighters routinely accept risk when they can stop a fire. Where this fire was burning was not worth the risk of firefighters' lives. We must plan for an evacuation should a firefighter get seriously injured.

Firefighters are also trained to avoid putting their lives at risk when there is low to no probability of successfully stopping a fire. Fuels, inaccessible terrain and wind in Forest Canyon made that decision for fire managers.

Why didn't you put the fire out with air resources?

Air resources were used throughout this firefighting effort when winds and weather allowed. Aircraft, just like Pulaskis or shovels, are tools and need to be used at the right time for the right job. Air resources alone do not put out a fire in heavy fuels and steep terrain, but must be in combination with firefighters on the ground.

Helicopters were used extensively from the beginning. From October 10 through October 23 - 103,700 gallons of water were dropped over three separate days. From November 8 through November 30 - 38,400 gallons of water were dropped over six separate days. From November 27 through November 30 - 6,400 to 9,000 gallons of water were dropped on the fire each day. From December 2 thru December 6 - 106,000 gallons of water were dropped. Overall, a total of 248,400 gallons of water was dropped on the fire from October 9 through December 6.

Weather, wind, and the location of the fire hampered efforts to drop water. The location of this fire at a high elevation along the Continental Divide, in a steep canyon with strong winds, made direct air and ground attacks challenging and dangerous. The ability of helicopters to carry water at high altitude is limited, so air operations were often grounded for safety reasons. The extremely deep and dense fuels in Forest Canyon compounded safety concerns for firefighters on the ground. Without these "boots on the ground" the effectiveness of water drops is limited.

You mention water drops, why didn't you drop retardant on the fire?



Firefighters have had to wait for the fire to burn into places where they can fight it safely. As conditions allowed, firefighters have been working both on the ground and in the air to contain the fire to the interior of the park. It is this combination of water dropping and "boots on the ground" that best ensure a fire can be contained. Just dropping water or retardant is not sufficient to contain a fire.

Single-engine air tankers were part of the initial attack, but because the fire area serves as a municipal watershed, and the winds would have made drops ineffective, use of fire retardant was restricted. Whatever is dropped on this fire will eventually end up in the water supply for downstream communities, so there was considerable concern about using it, especially if it was an ineffective tool.

In early December, one drop of retardant was used, but was ineffective. Excessive wind and constricted terrain prevented delivery of the retardant to the base of the flames, which is where it can be most effective. Retardant does not put a fire out. Retardant only slows a fire down so that firefighters on the ground can construct fire line to contain the fire's perimeter. Delivery of retardant was complicated by the fact that Forest Canyon is very steep and narrow, making it unsafe for a fixed wing aircraft to drop retardant.

Why are you just letting it burn?

This fire has been under a full suppression strategy from the beginning. Every safe effort has been made to suppress and contain the fire. In places, the ground is too steep and the fuels are too heavy for any firefighting to succeed. Wherever firefighters can safely and effectively approach the fire, they have. Firefighters ultimately succeeded in keeping the fire within the park and away from populated areas.

Did the strategy change when different teams came in?

The strategy has always been to suppress the fire wherever safely possible using appropriate tactics and tools to keep the fire within park boundaries. As the fire behavior and fire location changed, different teams were assigned to the fire.

Full suppression has been the mission from the start of this fire. Different tactics have been used throughout the fight in order to accomplish this mission. Tactics have changed as weather, fuels, topography, and the physical location of the fire have changed. Once the fire moved toward Bear Lake Road, more tools could be used.

Fire managers engaged this fire on their terms, when the time was right, where probabilities of success were high, and the risk was acceptable. That meant taking an indirect attack on the fire, scouting and preparing fire lines by using existing trails, and putting fire lines on ridge tops away from hazardous beetle-killed trees.

Firefighters also used existing prescribed fire and hazardous fuels treatment areas in the park. The reduced fuel loading on these treated areas already provided a buffer between the fire and the community. When combined with the fire lines that had already been created, firefighters had confidence they could directly, and safely, attack the fire in places like the Upper Beaver Meadows area.

Were there numerous resources available this time of year?



No, it's rare to have fires burning in the mountains of Colorado in October, November and December. Beginning in September of each year the fire community enters into its 'shoulder season.' During this time, as with many seasonal occupations, staffing begins to reduce dramatically, leaving relatively few resources available by October. Additionally, equipment such as helicopters and planes are less available as they are being serviced and maintained for the next year's season.

Given this, resources were often difficult to secure. For example, equipment had to be reinstalled into a plane in order to acquire infrared imagery that would allow us to determine where heat was present on the landscape. In addition, the Type I Team worked out a novel partnership with the National Guard of Colorado to use one of their helicopters for potential rescue operations of firefighters. While we were pleased and grateful to find so many resources in all, given the short supply, it took much longer than usual.

When will the fire be put out?

The fire has continued to burn even underneath a covering of snow. It will not be called "out" until no smoke or heat is detected. In areas of heavy fuels such as deep in Forest Canyon, this will require heavy precipitation in the form of rain or snow over an extended period of time. It is possible that smoke will still be visible in the late winter and early spring, especially if this winter is as dry as last winter.

Did designated wilderness tie your hands in fighting this fire?

No, it did not tie our hands. Every fire management option was available. In wilderness areas, every effort is made to use as light a hand as possible with fire suppression tactics. It was understood that should lives or property be threatened, then whatever tactic that would be effective could be used with the approval of park managers.

Will this fire have resource benefits?

Certainly there will be resource benefits from this fire. The Forest Canyon ecosystem is fire adapted and has not seen fire in more than 800 years. Consequently, there will be benefits to that area such as new forests and greater plant diversity. The fire has cleaned up the forest floor in areas, which will create better wildlife habitat. However, resource benefits were never the objective of fire managers on this particular fire.

What might the area look like in the spring and next summer?

Fire is a natural part of Rocky Mountain National Park's forest ecosystems. Fires are different in their size, intensity and duration, and the vegetation that grows back will depend upon the seeds available and the amount and timing of the moisture we get from now through the summer.

For example, the lightning caused Cow Creek Fire, which occurred in the park during the summer and fall of 2010, resulted in the growth of grasses and forbs. Abundant aspen shoots in some areas reached three feet tall just two months after the fire burned through.

Park managers will monitor the response of vegetation to the Fern Lake Fire. We are anticipating the need for some control of invasive plant species, such as Cheatgrass, a nonnative exotic plant that is known to occur in the area.

What triggered the evacuation orders?

Early in October, fire management staff collaborated with park rangers, Larimer County Sheriff's Department, Estes Park Fire Protection District and the Estes Park Police Department, and established management action points (MAPs) that would trigger a pre-evacuation, if the fire got established and exhibited active fire behavior on the south side of the Big Thompson drainage. If the fire threatened the Cub Lake area, that would prompt a full evacuation for the Highway 66 corridor, including National Park Service housing and administration sites.

On the night of November 30 and the early hours of December 1 the fire did just that. Fueled by wind gusts over 70 mph and critically dry conditions, the fire ran more than 3 miles in 35 minutes just after 1:00 a.m., moving past both MAPs so quickly that it prompted an immediate evacuation of hundreds of homes. Firefighters took a stand at Moraine Park, lighting fires back from Bear Lake Road to successfully stop the forward progression of the fire.

How did the drought impact this fire?

November was the driest November in more than one hundred years in the park, and this year was the warmest on record in the United States. This drought has created such dry fuels that the fire is actually burning under snow cover. Fifty percent of the trees in Forest Canyon are drought-stressed beetle-killed trees. As a result of last winter's light snows and minimal summer rains, the dead and down fuels are extremely dry, with a measured moisture content of just 13% in the 6 to 12 inch diameter logs. For comparison, kiln dried framing lumber has an average moisture content of 12%.

What can I do to prepare for the next fire?

The best thing you can do to prepare your home for wildfire and to keep our firefighters safe is to utilize FireWise concepts. Go to FireWise.org for assistance or contact your local fire department.

You should also prepare yourself and your family for possible evacuation by pre-planning and preparing what you will take when you have to leave. Visit Ready.gov for further information. Register all your phones and email addresses for emergency notifications at LETA911.org. Connect with friends and neighbors to be each other's backup plan in case there are technical difficulties with phone systems and evacuation orders.



Photo courtesy Richard Hahn

Rocky Mountain National Park staff would like to express our deep gratitude for the interagency support we received from federal, state and local agencies in Colorado and elsewhere. We are also thankful for the support we have received from our neighbors and the community of Estes Park.

The agencies and names are too many to mention, and for that we are grateful.





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Websites for more information

www.nps.gov/romo/nature-science/currentfires.htm

www.firewise.org

www.leta911.org/

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Photo courtesy Justin Calkins
www.justincalkins.net

To stop the fire from crossing Bear Lake Road, firefighters ignite a backfire on the morning of December 1.

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