

Reducing wildfire risk through fuel breaks: Landowner leading by example

Drought conditions and abundant mountain pine beetle dead trees provoked the Mullen Fire to erupt to 20,000 acres in the first seven days after igniting September 17, 2020, in the Savage Run Wilderness in Carbon County.

Efforts to create fuel breaks and treatments on public and private lands helped lessen damage to hundreds of homes and properties during the single largest wildfire recorded in Wyoming, burning over 176,000 acres in Wyoming and Colorado. The fire damaged or destroyed over 60 structures.

Strong southwest winds exceeding 70 miles an hour began September 25 lasting into September 26 burning nearly 50,000 acres in two days. The Mullen Fire moved through the Foxborough community September 26, burning and damaging over 40 structures and outbuildings, including several homes.

There is a bright side to every negative. Several fuel treatments on private and federal lands are credited to saving hundreds of other homes.

Active forest management

The Nichols family bought property adjacent to the Foxborough community in 1999 and built a home shortly thereafter. Most of their property had been logged in the 1990s, leaving a tremendous amount of overstocked forested stands. In 2016, the Nichols completed a defensible space and knew additional management was needed but were skeptical of the idea.

In 2017, they completed a small thinning that encouraged them to have a forest stewardship plan developed for their property. The Nichols had completed roughly 20 acres of projects, creating a healthy, diverse, and resilient forest before the Mullen Fire. The fuel breaks and treatments can be credited for their home and most of their property surviving the fire.

The property experienced areas of high burn severity and killed trees but having most of their property managed

allowed fire behavior to decrease once on their property. The larger the forest management projects the more time and area it gave the fire intensity to reduce. This is direct evidence fuel breaks and treatments decrease the intensity and spread of a wildfire. Hard work completed by the Nichols of removing the dead, downed, and dying trees removed fuel and allowed the fire intensity to decrease as it burned through their property.

Given an increase in wildfire behavior, active forest management is crucial to saving lives, property, and natural resources. Implement fuel breaks to create areas where an advancing flame front can be slowed or even stopped. Features such as roads, driveways, property boundaries, trails, or other natural features such as water or rock will lower the intensity of advancing wildfires and



Before management. Note the forest conditions before the fuel break was implemented. There are continuous ladder fuels and vegetation from the road to the neighboring lands, which is just 20 feet off the left-hand side of the road. This continuous fuel loading can lead to extreme fire behavior.

allow fire managers to potentially slow or stop the wildfire spread while limiting damages.

Fuel breaks should be completed across multiple landowners and take a landscape approach.

Landscape management approach

Management across multiple landowners and a landscape approach is important to reduce the impact of wildfires. Removing dead, downed, and dying trees while spacing the tree canopies of the residual leave trees will greatly reduce the intensity and wildfire spread. Pruning residual trees reduces the potential for the wildfires to get into the canopies, which would lead to increased fire behavior. These management activities also increase nutrients and water to trees, which is crucial during drought years, like 2020.

Select larger, more fire resilient tree species to remain in fuel breaks and remove smaller diameter trees, reducing the stress to the larger diameter trees. Favor pioneer tree species (a tree species that is the first to establish in a forest) like pine and quaking aspen. Successional tree species (a tree species that is trying to succeed and take over a forest) like subalpine fir and Engelmann spruce typically lead to high intensity wildfires. These successional tree species are very competitive against pioneer species, typically stressing them, which can lead to insect and disease outbreaks.

Disposal of the slash created is very crucial but also the most difficult portion of the project. The greatest benefit and easiest method is to pile and burn slash piles during winter; however, this can be difficult with smaller properties, seasonal landowners, and homeowner association rules. Slash piles in central locations for multiple landowners to haul slash to is a great option but finding a close central location for everyone can be difficult.

Chipping, machines that mechanically chew up parts of trees and spread the material out on the ground, should be the last option. Improperly done can lead to several issues. The chips take decades in the Rocky Mountain climate to break down and if the chips are too deep, no vegetation will grow through the layers. Have a plan for the slash before conducting any forest management activities.

Ready! Set! Go! Ideology

More than fuel breaks and treatments are needed to save a home from a wildfire. Preparing and protecting a property is crucial. Conduct yearly maintenance for defensible space and establish a plan in the event a



After management. This fuel break was implemented on both sides of the road, increasing safety for firefighters and allowing fire managers to slow or potentially stop the spread of a wildfire. Notice how the trees are spaced out properly, allowing for less competition and stress for the residual trees, increasing the overall health of the forest. This is crucial during drought years.



Post-fire. Notice the extreme fire behavior and tree mortality in the background versus right along the road where the fuel break had been implemented. This fuel break and various other forest management projects helped save the Nichols home and outbuildings.

wildfire occurs. Manage vegetation by removing dead, dying, or downed trees and complete additional pruning that may be needed on residual trees. It only takes one ember to start a structure fire. Clean the roof and gutters of vegetation, remove firewood away from structures, and clear vegetation and debris from around propane tanks. All these practices are crucial to protecting the home. Follow the yearly maintenance checklist.

Investing in sprinklers to place and run in an event of a wildfire may be beneficial to landowners. Firefighters will install pumps, water tanks, and sprinklers around houses in advance of a fire front if there is time. This has been very successful in previous wildfires and during the Mullen Fire. Sprinklers increase the relative humidity around a home and the fuel moisture in surrounding vegetation.

Landowners should ensure there is adequate space for ingress and egress to their properties and homes—just because an SUV or

pickup can make it to the house doesn't mean a fire engine can or will. Create pullouts along a driveway, turnarounds, and ensure the access road is at least 14 feet tall and 12 feet wide. Make sure these driveways are clearly marked with reflective address signs.

Fire resistant construction material

Building materials within a Wildland Urban Interface (WUI) setting is of crucial importance to protect a home. A property with a home and outbuildings within the Foxborough community withstood the Mullen Fire because the owners used fire resistant building materials including concrete composite house siding. Most of their windows were shattered from the heat and intensity of the fire, but the house siding did not catch fire. Their property and surrounding homes were a total loss. Consider using fire-resilient building materials if planning to remodel or rebuild within a WUI area.

When landscaping, use fire resistant materials and vegetation to reduce fire behavior around structures. Using materials such as rock and gravel instead of mulch and fire-resistant vegetation can make a big difference.

Owning forested property is a large responsibility that takes commitment and dedication as a good steward. Consult with a natural resource professional or a forester for a site visit of your property to begin the conversation of active management, fuel breaks, and preparation of your home for a wildfire.

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After management. Please note the removal of ladder fuels and how the residual "leave" trees are spaced out with no tree crowns touching, decreasing fire intensity within this forested stand.

