



A wildfire can occur at any time. Make sure you are ready by planning ahead and preparing your property. Photo by Daniel Tysdal, Weston County fire warden.

# Mitigate wildfire risk in grassland ecosystems

In 2024, wildfires burned more than 800,000 acres across Wyoming, more than 70% of which was on private or state land—the state’s second largest wildfire season, after the 1988 Yellowstone fires. Four of those fires burned over 448,000 acres of predominantly rangeland.

While grass fires are not uncommon in Wyoming, the magnitude of the 2024 fires brought up many questions about how to protect homes and property in these landscapes. While there is guidance on protecting homes in the wildland urban interface (WUI), the focus is typically on forested areas rather than grass-dominated landscapes.

## Grasslands

While Wyoming is often associated with mountains, more than 85% of the state is considered rangeland. Range landscapes are dominated by mostly native grasses and forbs (broadleaf plants, including wildflowers), and shrubs.

Rangelands are an important part of Wyoming’s history and culture. They also contribute to the economic base in many rural communities by providing grazing and recreational opportunities.

Historically, fire played an important role in shaping these landscapes. Highly combustible vegetation,

combined with rapid fuel accumulation and arid, windy, open landscapes, led to regular fires. This cycle helped maintain the diversity of the plant community (visit <https://bit.ly/wildland-fire> to learn more).

More recently, increases in invasive grasses, woody encroachment, human land modification, and drought have led to altered fire regimes and an increase in the frequency and severity of rangeland wildfires. As a result of these changes, rangeland landscapes have become more homogenous, often dominated by non-native or invasive species.

Grasslands are characterized by fine fuels that burn more quickly than woody fuels and are more affected by factors such as wind speed, wind direction, and relative humidity. These fine fuels are also considered dynamic fuels since they can dry quickly as conditions change.

With a slower-moving forest fire, embers that fly out in front of the fire are the main ignition source for structures. Embers are less common in grass-dominated landscapes, due to the “flashy” fuels, but the fire itself can be very dangerous. Grassland fires average 400–600 feet per minute, but high winds can increase their speed to over 20 miles per hour very quickly.



Quick action by the homeowner and firefighters in creating a fire break with tractors and heavy equipment protected this Wyoming homeowner from disaster. Having equipment on hand and knowing how to use it is crucial when a fire is on the move. Photo by Emily Hartinger.

## Defensible space

When addressing the wildfire risk on your property, consider both the fuel load (amount of fuel present) and fuel continuity (its connectedness and ability to carry a fire). Reducing fuel load and continuity by modifying vegetation close to a structure helps create a defensible space. This keeps the fire away from structures but requires more regular maintenance and long-term management in grass-dominated landscapes than in forested areas. Defensible space can be broken into three zones.

- **Zone 1 (0–5 feet from the house):** Remove all combustible material from this zone. This will help keep the fire from contacting the home directly. Clean up pine needles, leaves, etc. regularly. Use rock or similar non-combustible mulch.
- **Zone 2 (5–30 feet from the house):** Keep grass mowed down to 4 inches or less and keep pine needles, dead leaves, and other combustible organic matter cleaned up.
- **Zone 3 (30–100 feet from the house):** Consider grass a ladder fuel (vegetation and other materials that allow a fire to climb from the ground up into trees or structures) and keep it mowed down to 8 inches or less. In places where property lines are less than 100 feet from the home, such as in a subdivision, treat groups of homes as one defensible space. Consider the first three rows of houses, or about 400 feet, as Zone 3, and the most critical treatment area. Make sure to collaborate with neighbors and neighboring landowners on these efforts.

For more information on creating a defensible space around your home, check out the *Barnyards & Backyards* article “A Homeowners Guide: Understanding Defensible Space and Wildfire Preparedness” at <https://bit.ly/bb-wildfire-prep>.

## Fuel management

Mowing and weed eating, herbicides, grazing, and prescribed fire can all be effective tools in reducing fuel loads and continuity. But use them appropriately. Misuse can lead to an increase in invasive species, woody encroachment, and loss of diversity. Invasives can lead to more frequent fires, while trees and shrubs can increase wildfire severity; both can lead to vegetation shifts and slower recovery. It is helpful to take pictures periodically to monitor changes year to year.

Close to the home, mowing and weed eating can be effective tools to reduce the fuel load in grass-dominated landscapes. But take care not to start a fire from a spark or faulty equipment during dry conditions.

Be aware that over-mowing can also lead to a shift in vegetation, allowing woody or shrub encroachment or invasive species to get a foothold.

Herbicide treatments to reduce invasives can be effective in reducing fuel loads and shifting back to native species. Woody encroachment can be addressed through mechanical removal or thinning.

Grazing can also be utilized to reduce fuel loads and continuity, though a variety of factors—including timing, duration, stocking rate, and vegetation type—can affect its success. Since these factors are subjective and can vary, it is recommended that you rely on local



First sighting of a fire in Weston County. The homeowner only had about 30 minutes before this fire was threatening their home. Grass fires move very quickly, especially in windy conditions. Be prepared ahead of time, have a plan, and be safe. Photo by Emily Hartinger.

experience. Contact a local extension or conservation district office for guidance.

Prescribed fire is another useful tool but is also subject to a variety of variables and is beyond the scope of this article. Some research has shown that a combination of grazing and prescribed fire can be effective in reducing fuel load and connectivity.

### Fuel breaks

Beyond defensible space, creating fuel breaks is another way to protect property and communities from wildfire. A fuel break is a natural or human-made change in fuel characteristics that affects fire behavior such that fires can be more readily controlled.

Fuel breaks are often located along roads, ridgelines, or property boundaries and, while they don't typically stop a wildfire, they can help slow the fire down and provide opportunities for suppression efforts.

In grass-dominated landscapes, fuel breaks are typically a swath of land where the grass has been mowed and other vegetation removed in order to disrupt fuel continuity. The width of a fuel break may vary depending on terrain, vegetation, weather conditions, and value of the property being protected. Typical recommendations from the Colorado State Forest Service are listed in the following table.

### Mowing & weed whacking tips

- **Why?** Healthy grass prevents weed invasions while also providing forage and habitat for wildlife.
- **How?** Mow grass to 4 inches tall or less if using a mower. Trim grass to 6 inches or less if weed whacking. Create a 30-foot perimeter around your home and outbuildings. Also mow along entrance roads to help create a firebreak.
- **When?** Avoid mowing during the driest times of the day. Sparks can ignite a grass fire.

### GENERAL GUIDELINES FOR FUEL BREAKS IN GRASS-DOMINATED LANDSCAPES

Conditions	Fuel break width (feet)
Prescribed fire	Less than 20 ft
Wildfire in average conditions (low to moderate winds)	20–100 ft
Wildfire in extreme conditions (high winds and/or high temps)	100–300 ft

Credit: CSFS/Coston-Malpas, <https://bit.ly/csfs-grassland-fuels>.

Whether in the forest or on the prairie, we can take steps to protect our homes and property from wildfires. But it takes multiple strategies and continued vigilance.

For more information on protecting your home and property in grass-dominated landscapes, visit <https://bit.ly/csfs-grassland-wildfire>.

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