

Different Forest Types, Different Fire Regimes

Fire ecologists know that fire regimes in southwest Colorado have changed and are different today than 100 years ago due to various human impacts. Not all forest types were affected the same; the forests with historically frequent low-intensity fires were impacted the most severely.



Pinyon-Juniper — Historically, fires would burn every 15 to 50 years. Some pinyon-juniper forests would burn less frequently because they did not have a grassy understory to help carry the fire. Fires created openings with patches of grass, shrubs and small bunches of pinyon and juniper trees. Today, because of human impacts, dense stands of pinyon and juniper are encroaching on meadows and burn much more intensely.

Ponderosa Pine — Research indicates that low-intensity fires occurred generally once a decade. These fires usually burned on the ground and did not kill the ponderosa pines. This high-frequency, low-intensity fire regime has been documented for ponderosa pine forests throughout the southwestern United States. Crown fires (up in the tree tops) were extremely rare since ground fuels were light and the crowns of trees were generally widely spaced apart. Today these ponderosa pine forests are more crowded and tree crowns are closer together or touching, increasing the probability of more lethal crown

fires. Grasses and shrubs are more evident and create ladder fuels for fire to climb up from one type of vegetation to another, and then into the crown of ponderosa pine trees.

Mixed-Conifer — This is a complex forest with a complex fire regime. It has dry and wet extremes. The cool, moist mixed-conifer forest historically burned every 35 to 100+ years. Research suggests that suppression of fire has resulted in an increase of white fir in the understory, increasing the ability of wild-fires to spread and intensify.

Spruce-Fir — This forest zone is located at higher elevations. Because of the cool, moist conditions, large fires do not occur frequently (every 200+ years). Fires that start generally remain small due to cooler temperatures, moist soil, and greener vegetation. However, when extremely dry conditions prevail, hot, intense fires in the tree crowns may result. This fire regime has been impacted the least by human influences, but it is not unaffected.

FireWise Southwest Colorado

FireWise Southwest Colorado is a citizen-based council created to promote wildfire preparedness, mitigation, and education. For more information e-mail:

firewiseswcolorado@yahoo.com

Or visit this website:

www.southwestcoloradofires.org

For more information, contact:

- Your local fire department
- Colorado State Forest Service
(970) 247-5250
www.colostate.edu/depts/CSFS/
- Firewise
www.firewise.org/
- Firewise Colorado
www.firewise.org/co/



This brochure funded by San Juan Public Lands and San Juan Mountains Association.



Fire's Natural Role

Fire is not new to southwestern Colorado forests. For centuries it has been a natural, healthy part of the ecosystem. An important distinction of wildland fires is that all forests do not burn in the same way. Tree species vary and each forest type has an historical fire regime, or interval and intensity at which fires occurred. This cycle has been altered over the last 100 years by human uses such as logging, livestock grazing, and fire suppression.

Before Euro-Americans moved west and homesteaded, fire played a positive and natural role in the health of western forests. Research through tree-ring studies shows that fires recurred periodically for thousands of years. Each different forest type, whether ponderosa pine, pinyon-juniper, or mixed-conifer, had fire as a recurring disturbance to the ecosystem. Some fire regimes were typified by frequent fires at low intensity (fire stayed on the ground), while other fire regimes had fires less often but they burned hotter and more intensely, often as crown fires traveling in tree tops.

Fire Behavior and Your Neck of the Woods

Our Changing Forests: Drought and Beetles



Because fire is a natural part of the forest ecosystem in southwest Colorado, it will always be a threat to homes built in the wildland-urban interface where homes meet the forest. Understanding fire behavior will help homeowners determine the best plan of action when creating defensible space. This space provides room for firefighters to do their jobs should a wildfire threaten your home. It also improves the chances of your home surviving.

Heat, Oxygen, Fuel

Fire needs heat, oxygen, and fuel to burn. Take one of those elements away and the fire can't burn. Firefighters concentrate on removing fuels by creating firelines and fuel breaks, and removing oxygen and heat with water and fire retardant. Homeowners can help by removing fuel around their home and creating defensible space

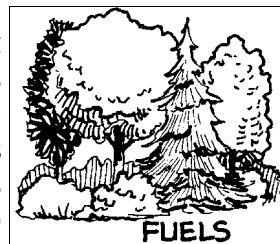
long before a wildfire threatens.

Fire behavior is determined by three main factors: weather, topography, and fuels.

Fuels

Fuels, or burnable vegetation, are arranged horizontally and vertically and come in several forms: trees, shrubs, and grass.

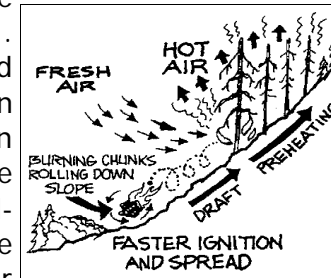
Vegetation that grows in continuous horizontal and vertical arrangements (for example, trees and brush next to each other) are the most hazardous, particularly when they occur on slopes. Heavy fuels, such as brush and trees, produce a more intense and longer lasting fire than light fuels, such as grass. Breaking the chain of continuous



fuels, or vegetation, up to and around a home can serve as a fuel break, slowing a fire and bringing it to the ground where firefighters can stop it. In some cases, defensible space alone can deter fire even if firefighters are not present.

Topography

Topography, or the lay of the land, plays a big role in fire behavior. Homes situated on hillsides, in canyons, and on ridge tops are particularly vulnerable. Fire travels faster



uphill and afternoon winds travel upslope as hot air rises, pushing fire even faster. Homes built in steep terrain need larger areas of defensible space, particularly on the downhill side. Aspect, or the direction the slope faces, is also a factor. South-facing slopes tend to be hotter and drier, north-facing slopes cooler and wetter.

Weather

Weather elements that determine fire behavior are relative humidity (RH), temperature, and wind. Low RH and high temperatures decrease the amount of moisture in the vegetation and increase the chances of a fire starting. Once a fire is started, wind can push it, making it grow quickly out of control before firefighters can arrive on the scene. When developing defensible space, determine the predominate wind direction in the area and factor it into your plans.

In addition to over 100 years of human impacts, our forests are now facing drought and pine beetle infestation. The beetles have always been a part of the forest ecosystem, but the effects of a prolonged drought have weakened trees and increased beetle populations. The trees are stressed from lack of water and nutrients. Brown, dead and dying beetle-infested trees can be seen individually, in small groups, and over acres of land throughout southwest Colorado. Drought and beetle-killed trees increasingly raise the fire danger in this region.

Various species of trees in southwest Colorado are being colonized by beetles. The effects to pinyon and ponderosa pine trees are the most noticeable when traveling throughout the region. For more information on pine beetles go to the following websites: www.southwestcoloradofires.org and www.colostate.edu/depts/CSFS/

