

 UI Extension Forestry Information Series

After the Burn: Assessing and Managing Your Forestland After a Wildfire

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It was the summer the sky turned black. In 2000, 79,880 wildfires burned 6.9 million acres throughout the West. In Idaho alone, 1,541 wildfires burned 1.2 million acres. Whether in the direct path of flames or weeks spent under smoky skies, thousands of people were affected by this summer of fire. And once most of the fires were contained a new challenge emerged – dealing with what is left after the burn.

On public lands, forests and rangelands actually begin healing before most of major fires are controlled. Teams of specialists in hydrology, geology, soils, range management, botany, engineering, archaeology, and forestry assess the damage done by the fire and determine how to prevent one natural disaster being followed by another. But what should private forestland owners be looking for? How do you assess wildfire damage to your forest and plan for the future management of your land?

Assessment. At first it looks so black. If the wildfire was severe it looks like the moon. Some of the trees have bark that looks like burnt marshmallows, others foliage that didn't actually burn, but were flash fried brown and crisp. Shrubs are twisted scorched sticks and grass has been vaporized. Then it begins to rain.

Soil erosion is probably most landowner's first concern after a wildfire. A burned mountainside almost void of vegetation cannot hold back or absorb water. Gully and rill erosion may become common. If the soils have become hydrophobic (water repellent), even less water is absorbed. In the worst case scenario, water mixes with ash and topsoil causing whole hillsides to turn to liquid and flow downhill.

Forest soils are affected in other ways by wildfire. Fire affects physical soil properties primarily by destroying

organic matter, which is essential for maintaining soil structure. Burning organic matter reduces bulk density and porosity, which results in decreased infiltration and increases in runoff and erosion. The magnitude of the change in physical soil properties resulting from a wildfire depends largely on the soil type, severity of the fire, the amount of vegetation destroyed, the degree at which the area burned, and the intervals between fires. The loss of organic matter also affects chemical and biological processes in the soil. Nutrition can be greatly affected, as can soil pH and the types and amounts of microflora and fauna, such as mycorrhizae, bacteria, fungi, and even earthworms and other larger organisms.

What should you look for? Start by making a visual survey of the soil. Is there still duff on the ground? How far does the blackened, sooty layer on the top of the soil extend into the soil profile? Note areas that are differently colored than the surrounding areas. There will often be an area of white ash around the base of badly burned trees, where temperatures were higher. In high-intensity fire conditions you will often see "log ghosts" – an imprinted tan area on the forest floor where a fallen tree used to be. These are also areas that have burned at higher temperatures and may need special attention. Collect soil samples from multiple areas and have them tested separately. This will give you valuable information on the amount and type of available nutrients and organic matter.

A wildfire's effects on the vegetative component of the forest is more dramatic and is usually what grabs at the hearts of landowners. It will be really black. But just because it's black doesn't mean it's dead. Look very

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closely at that blacked ground - is that grass starting to sprout? Are those trees really dead? What about the shrubs? Most native grasses and shrubs will resprout from root systems that were not damaged by wildfire. Others produce huge quantities of seed that actually need fire to germinate. In areas that burned hot, seed will drift or blow in on the wind, be carried in by small mammals and birds, and be deposited by overland flows of water. Even gravity will do its part as cones roll downhill, scattering seed as they go.

There are a few ways to help you determine how many of your trees are truly dead and which ones just don't look so good. Have a look at the crown, how much of it is still green? If at least 50% of the crown still has green foliage there is a good chance it will survive. You can check and see if the cambium layer is still alive. The cambium is the living layer of the tree directly under the surface of the bark. Remove a portion of the bark in several places around the diameter of the tree. The cambium should be almost white, slightly sticky to slippery, and moist. As long as there is sufficient cambium intact from the root system to the crown, moisture and nutrients can cycle and maintain life.

Another thing to look at are the buds. See if they are pliable and have any green under the bud scales. Not all buds that have these signs will actually sprout, but if you have a good portion you will probably have new needles or leaves come spring. For shrubs and smaller deciduous trees you can scratch the bark back close to the soil line. If it is greenish-white and moist the plant is still alive, if it is brown the top is dead, but many deciduous species will resprout from a surviving root system.

Planning. After you have made a visual inventory and reviewed the results from your soil tests, it's time to do your homework and plan for the future. You will need to make individual decisions about a number of things.

- Will your forestland be susceptible to erosion and flooding? If so, how can you minimize the affects of these natural events? What rehabilitation methods would you be willing to spend the time and money on?

- Will you want to seed grass? What kinds?
- Do you want to do some reforestation? Is there sufficient seed source available of the species you desire for natural regeneration? If not, what species do you want to plant and at what stocking levels?
- What about the understory? Do you want to wait and see what comes back or do you want to plant here also?
- What about noxious weeds? If there is a close seed source weeds will happily colonize your newly vacated acres.
- What about wildlife? Many wildlife species have lost food and shelter and will be looking for both on unburned lands this winter.
- Salvage logging – most people who have experienced a wildfire will probably want to remove the dead trees and try and gain at least some monetary return. Who will do the inventory, mark the trees, log them, and deliver them? More importantly, who will buy the trees from you?
- Insect and disease problems. If you don't remove the damaged, stressed trees, what insect or disease problems will they attract?
- What if you chose to do nothing at all? Remember, inaction is also management decision and can have both positive and negative results.

Idaho is part of a large area of the west with fire-based ecosystems. Fire has been a primary factor in shaping the plant, animal, and soil characteristics of the northern Rocky Mountains for centuries and will continue to be. From the 5-15 year fire cycles of the ponderosa pine forests of Idaho to the 200 year stand-replacing cycles of the lodgepole pine forests of Yellowstone country, western ecosystems have adapted to natural periodic wildfire events. The new element is us - our homes, our livelihoods, and our dreams. After the burn can be viewed as the end of a favorite book, or the beginning of a new chapter in the life of your forestland.

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