

WHAT TO DO WITH YOUR TREES FOLLOWING A FIRE?

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Fires are part of the natural ecosystem in the Black Hills and have occurred with some regularity, though varying severity, for thousands of years. This is little comfort when a fire burns through your property. Many people are concerned about what may happen to their trees following a fire, here are the answers to the most common questions.

How do I know if my tree is going to die?

This depends upon the tree species and the amount of injury to the foliage and the trunk. Ponderosa pine is the dominant tree on most land in the Black Hills and will be the first one discussed.

Ponderosa pines are our most common native tree to the Black Hills. It is a pine species well adapted to fire, and the thick insulating bark on mature trees can provide protection from light surface fires. The best way to examine your tree or trees is to begin by looking up into the canopy. If there are no needles remaining, the tree is dead or will die very soon. If the needles are scorched – brown – then the tree may survive depending upon the amount of foliage that has been scorched. A good rule-of-thumb is to determine the extent of the canopy, the distance from the lowest whorls of branches to the top, and compare that total volume to the amount of scorch. If less than one-third of the canopy is scorched, the tree will usually recover. If more than two-thirds of the canopy is scorched, it will generally die. If the amount of scorch is between one- and two-thirds of the canopy, the probability of survival depends on the impact of other stresses that may be further weakening the tree. Since the Black Hills has been experiencing drought for the last several years many trees are already stressed and if more than half the foliage is scorched, the tree will not likely survive.



Ponderosa pine with 2/3 or less canopy scorch will likely survive.

After examining the canopy and determining that it has enough green foliage to survive, examine the trunk, particularly near the base of the tree. A fire may leave the bark slightly blackened but the tissue beneath uninjured. To check, peel a small piece of bark away from the tree, if the underlying tissue is moist and a greenish-white it is still healthy. If instead, the tissue is dry and brown that is an indication that the tissue has been injured and the tree may no longer be able to move food or water through the trunk. Pay close attention to the base of the tree as a fire burning through the duff layer may result in significant injury to the base of the tree.

Spruces are not well adapted to fire and usually are killed by even a surface fire. The thin bark of these trees as well as the lower branching provides little protection from fire.

Bur oaks are common deciduous trees in many areas of the Black Hills, and as with ponderosa pines, are adapted to survive fires due to their thick bark. Many of the oaks in the Black Hills are small trees found growing beneath the canopy of taller pines. These trees do not have significant bark thickness to survive most fires. However, oaks can resprout from the base of the tree (often called suckering) and many trees will send up new shoots the spring following a fire.

Aspen, another common Black Hills species, will often sprout up after a fire, sometimes creating a large thicket in an area where only a few trees previously stood.

What about insects attacking the trees after a fire?

There are a number of insects that attack trees, particularly pines, following a fire. Pines depend upon their ability to produce pitch to forestall successful attacks from many burrowing insects. A tree already weakened by fire is not able to produce its defensive pitch and is vulnerable to attack. Insects are attuned to this vulnerability and some insects have sensors that can detect the heat or smoke of a fire and will quickly move into a fire-damaged stand, sometimes within days of the fire.

The most common insect to attack fire injured, but not dead, ponderosa pines is the pine engraver beetle, frequently referred to by its scientific genus name, *Ips*. These insects typically kill the tops and branches of wind-damaged trees but also will attack fire-damaged trees. These insects burrow into the tree leaving a small dusting of sawdust on the bark beneath the entry holes as well as on the ground beneath the tree. The insects mate and lay eggs beneath the bark and when the eggs hatch the young white legless larvae burrow through the tissue just under the bark severing the movement of food from the foliage to the roots.

The large number of beetles that attack a single tree, in the hundreds, is enough to quickly girdle the trunk and usually the tree dies within a year of the initial attack. The small (3/16-inch) cylindrical reddish-brown adult pine engraver beetles can be found flying from late March to September and trees injured by fire can be attacked anywhere within that time period.

Pines that survived the fire can be treated with several different insecticides to protect the tree from attack by the pine engraver beetles. Generally, it is best to wait until the following spring to begin treatments, particularly following late-season fires, those after the first of August, as the trees may be attacked before the landowner is aware of the problem and no pesticides can kill any beetle that is already in the tree. It is also recommended that landowners contact professional applicators to make these treatments, as they will have the equipment to spray to the tops of the trees as well as the proper certification to buy the commercial pesticide products most effective for controlling the insects.

If the fire killed the trees, they are still attractive to a number of other insects, most importantly the longhorned or sawyer beetles. These insects attack standing dead or down trees and can quickly degrade the wood so that it no longer has any commercial value. The adults are gray, large-bodied (greater than 1-inch long) insects with long antennae that curl alongside the body, hence the name longhorned beetles. The adults leave small diamond-shaped egg notches on the bark and when the larvae hatch, the white, legless insects burrow into the wood. The number of insects that attack a tree as well as the appetite of the larvae – you can actually listen to them feeding - can result into a solid log become nothing more than a shell filled with wood shavings within a month or two following attack. Control of these insects is not by pesticide, but by prompt removal of infested trees. Landowners contemplating the commercial harvest of trees following a fire may want to contact a logging contractor as soon as possible.



Adult sawyer beetle.



Enlarged picture of Ips beetle.
Photo Credit: Forestry Images



Ips boring dust on a scorched ponderosa pine. J. Smith

