

## HANDOUT 1

# Controlled Burning: Principles & Techniques

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## Managing Fuels on Small Tracts - Mixed Conifer

Generally, residents are advised to remove all flammable vegetation within 30 feet of structures. For at least 100 feet from structures and a varying distance from access roads, vegetation needs to be modified and periodically maintained. In many cases it is advisable to treat most or all of small (5 to 40 acre) forest parcels. In SW Oregon this often means you are going to do some thinning. Briefly, the principles to use are as follows:

### **Reduce small-diameter surface fuels.**

The surface material that is less than three inches in diameter (the 0 to 3 inch fuels) is what flames spread through. Thin it, mow it, rake it, chip it, pile and burn it, but reduce its amount however possible.

### **Increase tree canopy base height.**

In forested areas, the distance between the surface fuels and the aerial fuels (vegetation like tree branches that are suspended above the ground surface) is critical. The greater the distance between these two fuel components, the less chance there is for a fire to reach the tree crown. Crown fires kill entire stands of trees and are almost always unstoppable. If you live in a forested place, prune off **dead** conifer branches. Live pruning is not recommended for SW Oregon. You may also want to cut up shrub skeletons (dead and mostly dead manzanita for example) and cut a few of the small scraggly understory trees and get some separation between the tree crowns and the surface fuels.

### **Prudent Pruning**

For conifers, especially Douglas fir, prune dead limbs at least 8 feet above the surface, I prune up to 20 feet on occasion. Vary the height of your pruning from tree to tree and it will look much better. Prune **dead** limbs flush and don't cut into the live bark. Pile the cut limbs away from the trunks and burn them.

### **Separate tree crowns by thinning**

In densely forested areas much of the fuel available to burn is the finely divided leaves and twigs in the crown of the plant. So thin out trees to stop the spread of fire from crown to crown. This has another long-term benefit: well-spaced trees are less susceptible to certain types of bark beetles and other ailments. In brush, you may want to consider cutting corridors

through brush fields, rather than thinning, especially if your local brush species are vulnerable to snow-down or snow-break.

## **Thinning**

Thinning for fuels reduction can take many forms. Here are two methods that work well in combination. Used together these can result in a safer and more esthetically pleasing forest than an un-thinned stand.

1. Thin-from-below – cut the smallest trees, cut trees that are getting so little light that they have less than 25% crown.<sup>i</sup> This not only removes fuels, but increases water and nutrients for the remaining trees. Pile and burn the slash, or if it is near a road consider renting a chipper (please wear ear protection).
2. Ring thinning – Pick a large healthy fire-resistant tree and cut most or all of the trees in the drip line of that leave tree. Or the drip line plus a few feet in really dry forest. This is also a good way to break stagnation in dry forests where lots of Douglas-firs have established at the same time and have formed into ‘dog hair’ stands. As before be sure to pile and burn the slash.

Remember, if you thin in larger trees it is a good idea to leave the larger logs on site. Logs don’t contribute to the flaming front of a wildfire and they are habitat for a variety of creatures. If you thin in a stand with hardwoods, they will re-sprout, but the sprouts may not be very aggressive as they are getting quite a bit of shade. It is a good idea to walk through the stand before you thin, marking interesting trees and shrubs, things you want to keep. For example, thinning will likely stimulate flowering in dogwood, mock orange and other understory denizens. Keep those around, maybe you will be rewarded for your efforts with some flowers.

## **Burn the piles**

Start building your pile with branches, twigs and other fine fuels. Build it tall and skinny and put a 3’ by 3’ sheet of slash paper<sup>ii</sup> in the pile to create a dry spot. Cover the paper with enough branches so the paper or plastic won’t blow away. Light the pile when appropriate and as it burns push the material in toward the center with a Mcleod tool or a rake. This is ‘**chunking**’ and should be done until there is nothing left to shelter a holdover fire. Patrol (check) the burned piles until you are sure they are out. Throw some dirt and forest litter from an unburned area into the center of the pile burn scar. This will help restore the soil organisms that were ‘sterilized’ by the heat.

## **Leave the big trees.**

Generally, leave the largest individual trees of the most fire-resistant species. With crowns high above the ground and thick trunks that are often clad in thick bark, these trees may actually slow the spread and reduce the intensity of a flaming front as it approaches your house. In the long-term, these large trees give your property “fire permeability” or the ability of fire to safely pass through an area without damaging structures or killing the dominant trees. If you do have

a wildfire, the big trees can actually shield your home from some of the radiant heat from the wildfire and are the ones most likely to survive the flames' passage. After the wildfire they will shade your home from solar radiation and keep the brush down while the forest around your home regenerates. Leave the biggest trees standing.

### **Modify the manmade fuels adjacent to the house.**

Decks, fences and other flammable manmade constructions need to be designed or located so they do not "wick" fire into the house. Generally, if you have a choice between a stone or concrete patio and a wood or plastic deck, we suggest you go with the patio. Similarly, a non-flammable fence made of wire and steel T posts is preferable, but if you do need a wooden fence, design it so that you can easily trim grass and weeds growing along its base. (I once watched a fire "walk" along a weedy fence line right into the side of a barn. Fortunately the skin of the barn was made of sheet metal and our fire crew had an inch-and-a-half fire hose handy. But firefighters don't always get there in time...)

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<sup>i</sup> Simply eyeball the tree, measuring roughly what percentage of the tree's length has live needles. That is the crown ratio. If it is less than 25%, consider cutting the tree.

<sup>ii</sup> Kraft paper, available from [terratech.net](http://terratech.net).