

## Tree Mortality in Bear Valley

By Ross Richards - Professional Forester

I have worked as a forester in Calaveras County since the early 70's. During this time tree mortality has been a chronic problem. This year fir engraver beetle, *Scolytus ventralis*, is active. The fir engraver beetle population is elevated due to a mild winter last year and lower soil moisture reducing tree vigor. Red fir mortality has been observed in healthy younger trees and in larger older trees scattered throughout Bear Valley. Other species of bark beetles are also active. Fortunately, bark beetles are species specific. Species that attack firs do not attack pines and vice versa.

### Symptoms:

When you discover fir trees on your property with needles turning red or straw color on pines, beetles are likely the culprit. In addition, pitch is commonly observed oozing from entry holes.

This does not include normal needle dye back. Conifers discard needles to the inside of the limbs during their third year. Needles on beetle damaged conifers change color over one third or more of the tree and normally kill all needles on a limb.

### Prognosis:

Some additional conifers are likely to die before the start of winter. However, wholesale mortality is unlikely. Beetles take six to ten weeks to complete a life cycle.

### Treatment:

Dead and obviously dying smaller trees should be cut and converted to firewood. Larger trees with sound wood should be removed by a California Licensed Timber Operator with appropriate Cal Fire Exemption permits. The objective is to dry out the cambium layer (conductive tissue between the bark and wood). This is where the beetle larva develop. Splitting rounds into fuel wood will commonly separate the bark from the wood. Galleries can be seen on the inside of the bark and frequently beetles in some state of development can be identified. Rounds with "tight" bark and beetles present should be covered with clear plastic to contain emerging beetles. The edges of the plastic should be sealed with dirt.

### Other tree issues:

Trees with "shelf fungi or "conks" have some form of rot and will eventually fall over. Trees with mushrooms growing around the base may have weakened roots. Older red firs commonly have *Cytospora abietis* causing individual limbs to turn red and die. This disease rarely causes red fir mortality.

Fertilizing trees is an option during late fall. Low nitrogen fertilizer spread sparingly under the limb spread can help bolster tree vigor. Fertilizer normally has three numbers <nitrogen - phosphorus - potassium>. Discuss fertilizer selection with a qualified nursery attendant.

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