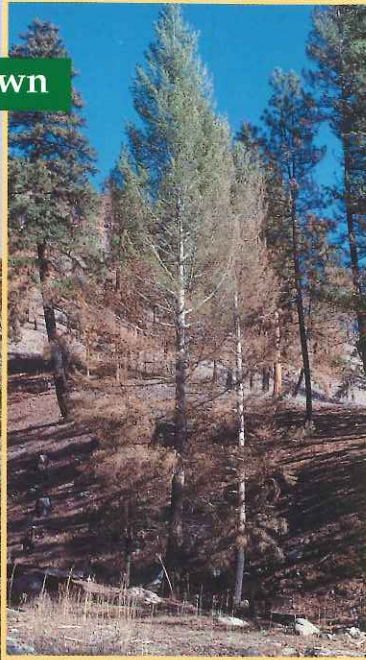


## Douglas Fir Survivability Is Determined By Amount Of Damage To:

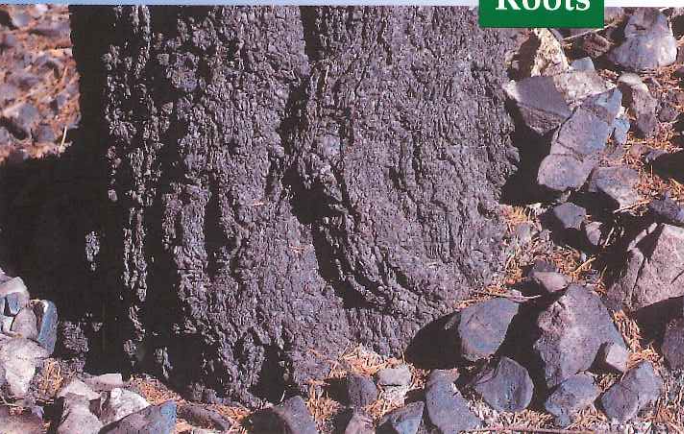
Crown



Bole (Trunk)



Roots



### For More Information:

Additional information  
may be obtained from the  
following sources:

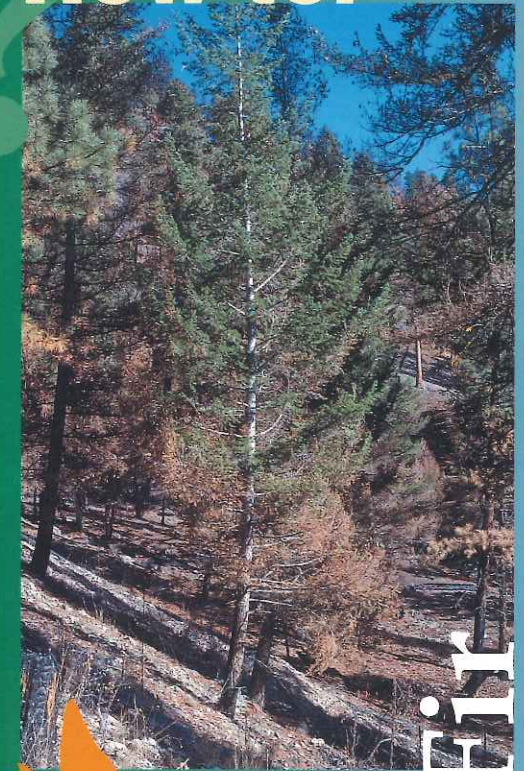
County Extension Offices  
State Forestry Agencies  
USDA Forest Service,  
Forest Health Protection



R1-01-06

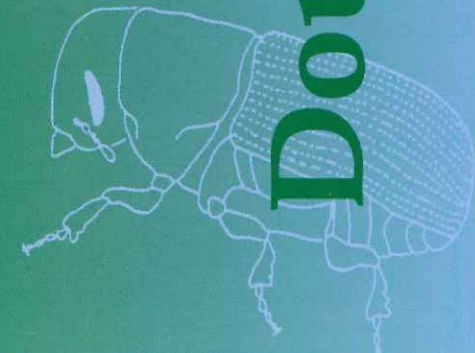
The USDA is an equal opportunity  
provider and employer.

## How to:



- Identify Douglas-fir which will survive fire damage
- Determine amount of fire injury which will kill a Douglas-fir
- Protect fire-weakened Douglas-fir from bark beetle attack

Douglas Fir



## Crown Scorch:

Douglas-fir with more than 50% crown scorch, particularly if developing buds have been destroyed, are less likely to survive.

## Bole Char:

Douglas-fir bark, on mature trees, is less readily damaged by fire; but damage depends on size and vigor of tree. If inner bark is destroyed on more than 50% of bole circumference, survival is unlikely.

## Root Damage:

Damage to roots or root collar, to the extent that inner bark (cambium) is destroyed on more than half of tree's circumference or half of major lateral roots, will usually result in tree's death.



## Assessing Damage

**Crown:** Look for brown, dried, or burned foliage. Estimate amount of foliage burned; be sure to look at all sides of tree. If more than 50% of foliage is dead, the tree likely will not survive.

**Bole:** Remove a small section of bark (about 1-inch square), near the tree's base, down to the sapwood. Determine color and condition of inner bark. If it is pale green and moist, it is still alive and healthy. If it is brown and dry, it has been killed. Check at four sites around tree's circumference. If inner bark at more than two of those sites is dead, tree survival is questionable.

**Roots/Root Collar:** At or below duff layer, check condition of inner bark using the same method as used on bole. If inner bark on more than half of the samples (more than half of tree's circumference, or more than half of large lateral roots) is brown, tree survival is unlikely. Trees with this amount of damage are often attacked and killed by bark beetles.

**Remedial Action:** If more than 50% of crown is burned and three or more bole and/or root samples show dead inner bark, tree will likely die. Because dead Douglas-fir deteriorate rapidly, fire- or beetle-killed trees may become a hazard and should be considered for removal.

**Protective Action:** If half or more of tree's inner bark is healthy, it will probably survive fire effects. It may, however, be susceptible to Douglas-fir beetle attacks—especially if early season weather following the fire is unusually warm and dry. Trees may be protected from beetle attacks by:

1. Attaching bubble capsules containing an anti-aggregating pheromone of the beetle to susceptible trees. Bubble capsules, hand-stapled to trees, are relatively inexpensive and are available through state or federal forestry agencies.
2. Applying a water-based insecticidal spray to tree's bole.

### Note:

1. Preventive treatments must be done in early spring, usually by mid-April, and must be done **before** tree is infested. A beetle-infested tree cannot be saved. Treatments may need to be repeated for 1-2 years.
2. Trees which have been attacked by Douglas-fir beetles (look for reddish-brown boring dust on tree's lower bole) should be removed to prevent emerging beetles from attacking nearby healthy trees.

