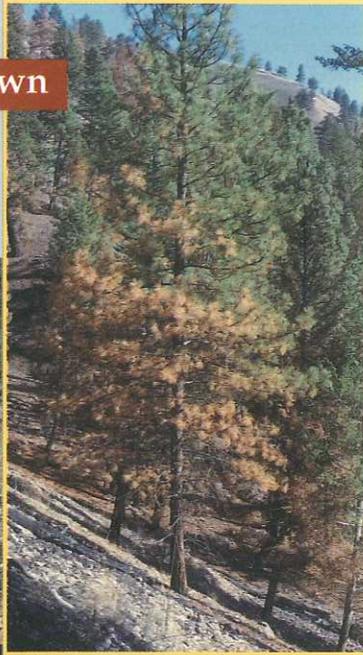
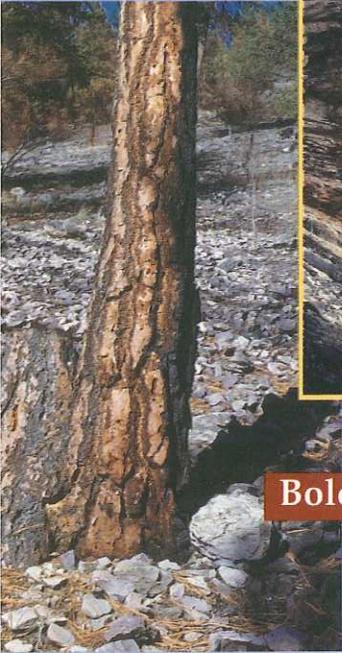


# Ponderosa Pine Survivability Is Determined By Amount Of Damage To:

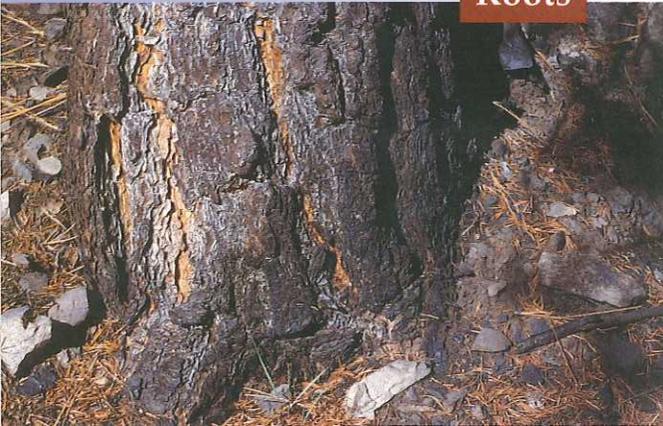
Crown



Bole (Trunk)



Roots



## For More Information:

Additional information  
may be obtained from the  
following sources:

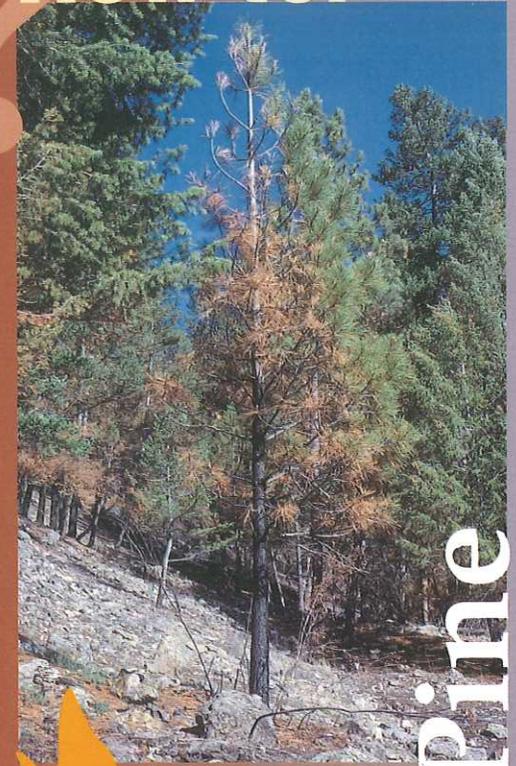
County Extension Offices  
State Forestry Agencies  
USDA Forest Service,  
Forest Health Protection



R1-04-13

The USDA is an equal opportunity  
provider and employer.

## How to:



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

Ponderosa pine



# Ponderosa Pine

## Crown Scorch:

Ponderosa pines may survive up to 75% crown scorch if fire occurs later in the summer, after buds have set for the following year. Long needles provide protection for developing buds.

## Bole Char:

Ponderosa pine bark 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 75% 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 4 sites around tree's circumference. If inner bark at more than 2 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 75% of crown is burned and three or more bole and/or root samples show dead inner bark, tree will likely die. Fire- or beetle-killed trees may become a hazard and should be considered for removal.

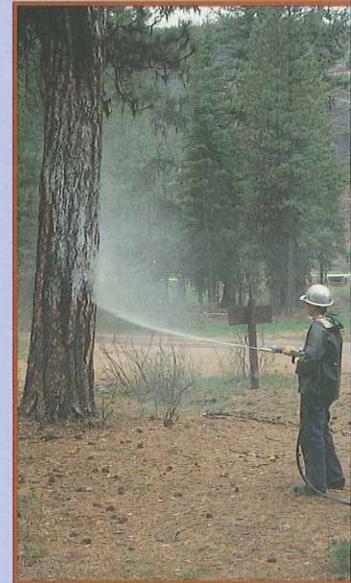
**Protective Action:** If half or more of tree's inner bark is healthy, it will probably survive fire effects. It may, however, be susceptible to bark beetle attacks—especially if early season weather following the fire is unusually warm and dry. Trees may be protected from beetle attacks by:

Applying a water-based insecticidal spray to tree's bole. Carbaryl insecticide is registered as a preventive treatment against mountain pine beetle, western pine beetle, and pine engraver beetles. It is a safe, economical, and efficient means of protecting susceptible trees from beetle attacks. Application information may be obtained from most county, state, or federal forestry agencies.

## 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 bark beetles (look for reddish-brown boring dust on tree's lower bole) should be removed to prevent emerging beetles from attacking nearby healthy trees.



# What to Do?