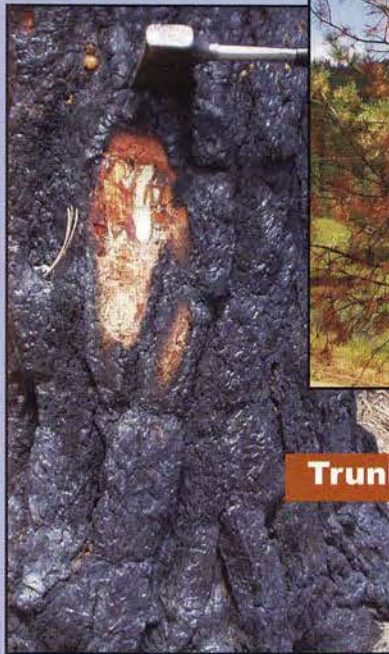


**Ponderosa and Lodgepole Pine
Survivability Is Determined By
Amount of Damage To:**

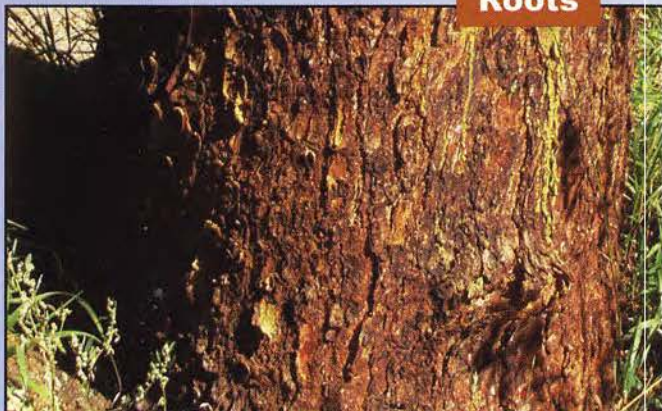
Crown



Trunk



Roots



For More Information:

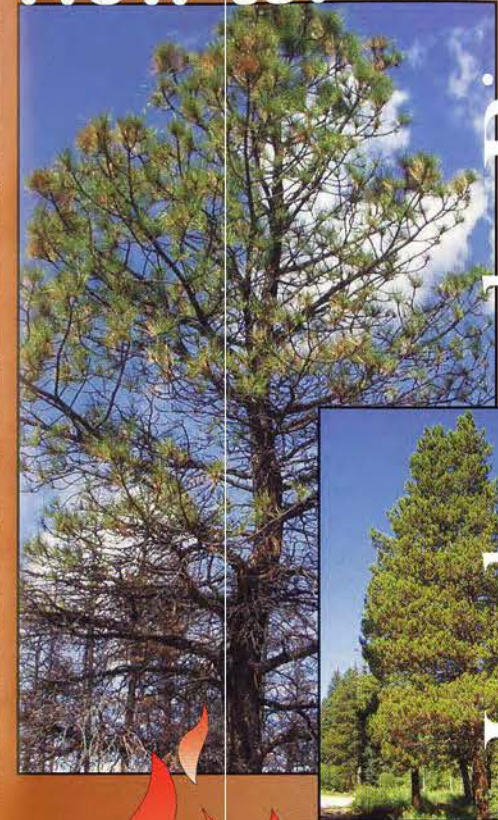
Additional information
may be obtained from the
following sources:

Colorado State Forest Service
www.colostate.edu/Depts/CSFS

USDA Forest Service
www.fs.fed.us



How to:



- Identify ponderosa and lodgepole pine which will survive fire damage
- Determine amount of fire injury which will kill a ponderosa or lodgepole pine
- Make management decisions regarding ponderosa and lodgepole pine after fire

Ponderosa & Lodgepole Pine

Ponderosa Pine & Lodgepole Pine

Ponderosa pine predominately grows at elevations of 6,000 to 8,000 feet in Colorado, and lodgepole pine predominately grows at elevations of 8,000 to 10,000 feet.

Crown Scorch:

Ponderosa pine 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. Lodgepole pines are more susceptible to crown scorch due to their thinner bark.

Trunk Scorch:

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 trunk circumference, survival is unlikely. Lodgepole pine is more damaged by ground fires than thicker barked species such as ponderosa pine. Because its thin bark has poor insulating properties (inset picture), many trees are killed from ground fires as a result.

Root Damage:

Damage to the roots or root collar of ponderosa and lodgepole pine, 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 and twigs. Be sure to look at all sides of the tree. Look at bud development and condition; check the tissue beneath the buds and under the bark of the twigs; if the tissue is brown it is dead, if it is green it may still be alive and viable. If more than 75% of foliage is dead, the tree likely will not survive.

Trunk: Remove a small section of bark (about 1-inch square), near the tree's base, down to the sapwood. Determine the 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 the 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 the condition of inner bark using the same method as used on the trunk. 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:

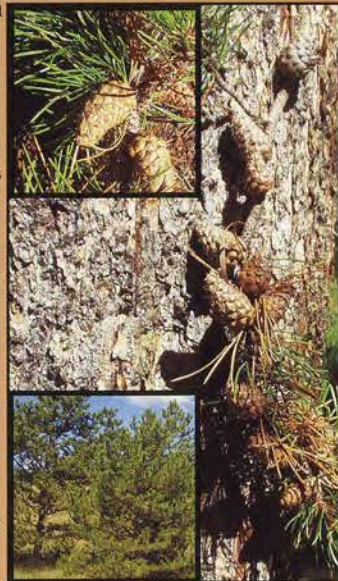
If more than 75% of the crown is burned and three or more trunk and/or root samples show dead inner bark, the tree will likely die. Fire- or beetle-killed trees may become a hazard and should be considered for removal. Note: Although lodgepole pine trees are killed by all but light ground fires, postfire recovery tends to be rapid as new stands quickly establish from seed released by serotinous (closed) cones.

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 the tree's trunk. Carbaryl insecticide is registered as a preventative 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.

Notes:

1. Preventative treatments must be done in early Spring, usually by mid-April, and must be done before the 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 trunk or globs of pitch on the main trunk) should be removed to prevent emerging beetles from attacking nearby healthy trees.



What to Do?