

New Mexico Bark Beetle Epidemics

Fact Sheet and Information Bulletin

Southwestern Region, USDA Forest Service

GENERAL:

Much of New Mexico is experiencing ongoing piñon and ponderosa pine mortality due to outbreaks of several species of *Ips* beetles and the western pine beetle. Low tree vigor caused by several years of drought and excessively dense stands of trees have combined to allow bark beetle populations to reach outbreak levels. These insects are native to piñon-juniper woodlands and ponderosa pine forests of the Southwest, normally attacking only diseased or weakened trees. Healthy trees are usually not susceptible to these beetles.

- The beetles are tiny, roughly 1/8 inch in length, or about the size of a match-head.
- These beetles have multiple generations per year, and when conditions are favorable, they have a tremendous capacity to increase their numbers.
- The beetles attack trees by chewing through the outer bark and laying eggs within. When the eggs hatch, the larvae feed on the soft, nutritious inner bark. The beetles also introduce a “blue-stain” fungus that spreads through and clogs the water and nutrient conducting tissues, hastening tree death. Once the insects mature, they leave the infested tree and travel to a new host. Usually, they travel only a short distance, but are capable of flying a ½ mile or more.
- Tens of millions of piñon trees have already been killed, mostly where piñon and juniper grow together. Juniper is unaffected by the insect attacking the piñons. In some localized areas, up to 80% of the piñons have died, leaving only the smallest seedlings to survive. Even then, small piñons may be vulnerable to another, less aggressive insect, the twig beetle. The large losses of piñon make this worst bark beetle epidemic in New Mexico in almost 50 years. Thus far ponderosa mortality has been more localized, however, if the drought persists, more trees will become vulnerable to bark beetle attack.
- Tree mortality has been heaviest in “stress-zones” such as drier south-facing slopes, the lowest elevation ranges piñon or ponderosa, recent construction sites, and areas heavily infected with dwarf mistletoe. However, slightly higher elevations are now being affected.
- The needles of infested trees will start to turn off-color within a month of attack. Evidence of infestation can include sawdust at the tree’s base or in bark crevices, small pop-corn-like masses of sap called “pitch tubes”, small boring holes, and a “fading” of the needles. If the tree is extremely drought-stressed, it may not produce pitch tubes, which are its natural defense against the beetles.
- Once beetles have left a tree, it no longer poses a threat to other trees as a source of beetles.

TREATMENT:

- There is *nothing* that can be done to save a tree after it has been successfully attacked by bark beetles and infected with the blue-stain fungus. If the goal is to kill the beetles under the bark, then infested trees must be cut-down and treated by one of the following means:
 - o Peel the bark from the logs.
 - o Burn, chip, shred, or bury logs (Note that fresh pine chips can attract *Ips* beetles and should be immediately removed from the site or at least spread out to dry in direct sunlight.)

- o Pile logs in direct sunlight and cover with clear plastic to produce a beetle-lethal high temperature greenhouse effect. The plastic must remain sealed to be effective. Fresh pine debris over 4-inches in diameter, created during tree thinning operations, must be removed from the forest or treated as noted above to prevent it from becoming breeding material for *Ips* beetles.
- There is no effective insecticide treatment for infested trees. Injecting trees or drenching their roots with systemic insecticides is not an effective method of control or prevention due to the feeding location of the beetles within the inner bark.
- Be aware that removal of actively infested trees may not be an effective treatment option during an epidemic because of the difficulty in detecting and removing all green infested trees, the asynchrony and rapidity of beetle reproduction, and the sometimes overwhelming opportunities for re-infestation from adjacent untreated properties.
- Due to the extent of the outbreaks and the tremendous capacity of bark beetles to reproduce, the implementing of effective large-scale control actions to prevent further tree losses is not feasible.

PROTECTING HIGH-VALUE TREES:

- Trees not yet infested can be protected by annual applications of a preventive insecticide. Carbaryl and permethrin-based insecticides are specifically labeled for this purpose, but carbaryl is the preferred material because it provides longer protection. Typical home and garden insecticides should not be used. The entire surface of the trunk and large limbs must be thoroughly sprayed. *Ips* beetles will attack any limb or trunk 3 inches in diameter or larger, so care must be taken to treat material this size and larger.
- Over the long run, reduction of tree density, disposal of the resulting woody debris, and appropriate use of prescribed fire, will not only improve forest health, but also greatly reduce the probability of bark beetle outbreaks and catastrophic wildfire.

For further information contact:

- Federal lands: Debra Allen-Reid, USDA Forest Service, Forest Health New Mexico Zone Leader, at 505-842-3286.
- State or private lands: Stephani Sandoval, New Mexico State Forestry at 505-476-3351 or your local New Mexico State Forestry District Office. Local county extension agents can also provide assistance.

Or go online to:

<http://www.fs.fed.us/r3/resources/health/beetle/index.shtml>

(Forest Service Southwestern Region bark beetle site)

<http://www.emnrd.state.nm.us/forestry/factsheets/barkbeetles/beetles.cfm>

(State of New Mexico Forestry Division bark beetle site)

<http://www.cahe.nmsu.edu/ces/yard/1997/090897.html>

(SW Yard and Garden addresses why systemic insecticides are not effective against engraver bark beetles)