BARK BEETLES

HOMEOWNERS PLEASE TAKE NOTE AS WE ARE HAVING AN INFESTATION IN FOREST TRAILS UNIT 1. PER THE FIRE CHIEF AT OUR ANNUAL MEETING, YOU NEED TO CUT DOWN THE INFECTED TREES AND REMOVE THEM FROM YOUR LOT.

BARK BEETLE BEHAVIOR

Bark beetles are native to northern Arizona, are dormant in winter but begin flying about mid-March.

Magnified Pine Bark Beetle

Size in relation to a quarter

Beetles can identify candidate trees because stressed trees emit volatile compounds (turpenes) which they can detect at appreciable distances. Beetles communicate by releasing pheromones (chemicals compounds that elicit a certain behavior). Once a beetle has located and colonized a susceptible host tree, it emits an aggregation pheromone that attracts other beetles. After sufficient beetles have been attracted to that tree, beetles emit an anti-aggregation pheromone signaling them to locate another host tree promoting further progression into nearby trees.

Recent bark beetle progression behind the Overgaard market

Fading of the needle color is the primary means of identifying colonized trees. The needles fade from dark green to pale green to straw yellow to a rusty red. Other signs are pitch tubes, boring dust, and galleries (tunnels within the bark). Pitch (sap) is the tree's only natural defense against bark beetles. The pitch encapsulates the boring beetle and denies entry if sufficient sap is available and the number of attacking beetles is manageable. In order for the tree to generate enough pitch (sap), the tree must have water.

BEETLE INFESTATION MITIGATION METHODS

Un-colonized trees can be protected by minimizing stress using the following:

A. Irrigation. Using this method, trees should be watered to a depth of 2 feet which requires about 2" of water given most soil types. If the trees appear stressed, water sooner rather than later. In drought conditions, watering is recommended monthly in May, June, and October and perhaps more in extreme drought conditions. The water needs to get deep!

B. Immediate Removal of Infested Trees. Infested trees should be removed immediately and taken off site. The dead and down material (slash) is a refuge for bark beetles, allowing them to breed, and possibly colonize nearby healthy trees.

C. Thinning. Thinning of the stand and removal of some understory growth will help reduce stress on the trees. However, thinning is not recommended during beetle outbreak or drought conditions. Doing so could introduce stress to the remaining trees and additional tree loss.

D. Root Insulation. Avoid removing dead needles from around tree trunks out to the drip edge during beetle outbreaks or drought conditions. The USFS views a 2 – 3" accumulation of packed needles as beneficial. The needles insulate the root network during the hot summer months, aid in moisture retention, and provide valuable nutrition. If needle accumulations are excessive and need to be removed, do so in monsoon season after moisture has returned and temperatures have moderated.

E. Removal of Ladder Fuels. Ladder fuels (dead lower tree branches) should always be removed to a height of 15' or so for fire safety on your lot. However, this fuel source should only be removed when beetles are dormant (winter). Removing this fuel during beetle outbreaks could inadvertently give the beetles an access route into the tree.

F. Pesticides. Pesticides can be used effectively on un-colonized trees to discourage colonization but the process is complicated, requires specialized training and equipment, is quite expensive, and should be left to professionals. With regard to treating colonized trees, there are no proven products for control of beetles found in our local ponderosa or pinyon pine. Beware of any claims otherwise.

Removal of infected trees is essential to containing the beetle outbreak. Presence of dead trees on a lot is a violation of Article 10 of the Forest Trails Unit II Rules and Regulations and more importantly, critical to maintaining and preserving the remaining live trees on your lot.

REFERENCES

The University of Arizona, Arizona Cooperative Extension (Arizona Forest Health)