

For Immediate Release: Status of the Pine Bark Beetle Outbreak in Arizona

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Winter conditions in Arizona's conifer forests have been favorable for overwintering conifer bark beetles, dry with normal to warmer temperatures. Unfortunately these climatic conditions are not favorable for the trees the beetles will be attacking in two short months. The University of Arizona trapped higher numbers of bark beetles in 2005 than 2004, indicating sufficient levels of bark beetles to cause outbreak conditions this spring and summer. What may well determine whether or not there are increases in bark beetle killed trees this year are the weather patterns during February and March. With that in mind, the National Oceanic and Atmospheric Administration has announced the official return of La Niña weather patterns, meaning drier than normal winter weather in Arizona.

After four years of higher than normal bark beetle-caused tree mortality, as detected by U.S. Forest Service and University of Arizona aerial detection survey flights, 2005 showed a return to pre-2001 levels of approximately 5,000 acres of ponderosa pine with mortality. The low levels of mortality in 2005 can most likely be linked to well above normal winter precipitation in 2004/2005. A reduction in tree densities due to the major wildfires & bark beetle mortality experienced in 2002-'03 and fire prevention and forest health restoration thinnings since 2001 may also be a contributing factor.

As we look back at the fall/winter moisture levels compared to bark beetle outbreaks - 2001-2002 was 7.6 inches below normal (average for Flagstaff, Prescott and Show Low) leading to the death of millions of trees in 2002; in 2002/2003 precipitation was 2.9 inches below normal, leading to moderately lower levels of mortality in ponderosa pine but extremely high levels of mortality in piñon pine; and thus far this fall/winter (October thru January) is 4.85 inches below normal and the outlook for late winter precipitation is poor with La Niña conditions predicted to prevail.

“If La Niña conditions hold up throughout the rest of the winter we would recommend that forest managers prepare for another year with above normal bark beetle/drought related tree mortality,” said Tom DeGomez, Forest Health Specialist with University of Arizona. One aspect of a potential outbreak in 2006 is that the 2002/2003 outbreak progressed from the most drought-prone sites (poor site quality, south-facing slopes) to areas of better site quality. Because many of the drought-prone sites have been more or less fully utilized by the beetles in the previous outbreak, these areas will not sustain the high levels of tree mortality that occurred before.

Reducing tree stand density - The best way to avoid having trees attacked by bark beetles is to take preventive measures. First and foremost, lower tree density through thinning. However, benefits from thinning will usually not become evident 1-3 years after thinning has been completed. In addition, the amount of soil moisture available to the residual trees will determine how much trees can respond to thinning. If there no soil moisture is available, trees cannot immediately respond.

Timing of thinning and management of downed material must be well thought-out before thinning due to the Ips bark beetle’s ability to utilize tree remains (slash) greater

than 4 inches in diameter. Winter thinning can avoid increases in bark beetle populations because the beetles will usually not start searching for suitable host material until April, at the higher elevations. If recently cut trees and slash are left on the ground for more than 30 days, after April 1, many species of bark beetles will utilize the green down material and begin to build up high population levels of Ips species. Thinning of pine should be curtailed in February if the slash is not hauled away or chipped.

If the material is hauled off the property to a landfill or if it is chipped within 30 days it will not cause a problem. When chipping on site, don't pile the chips next to live trees as the chips may attract bark beetles. Keep chip piles in the open sun and as far from live trees as possible. If slash removal or chipping is not an option, then it may be best to wait until October to begin thinning.

If the material is larger than 4 inches in diameter and is wanted for its firewood value there are special precautions landowners should take when stacking and storing the wood. Do not stack freshly cut wood against live trees. If beetles colonize the firewood they will eventually emerge and attack the closest live tree. From April to October, fresh wood should be covered with heavy clear plastic sheeting to prevent beetle attack. When beetles have attacked downed wood it is generally quite easy to see the discrete ½ to 1 inch piles of sawdust on the bark surface where the individual beetles bored into the bark. More information on this subject is available in the University of Arizona publication "Firewood and Bark Beetles in the Southwest" it is accessible at county Extension offices or on the web at <http://cals.arizona.edu/pubs/insects/az1370.pdf>.

Many people are unsure as to which trees should be removed. In these cases it may be best to consult with a certified forester or arborist. For a listing of certified

professionals consult the yellow pages, call your local University of Arizona County Extension office, or log on to www.isa-arbor.com to find a certified arborist or www.safnet.org/certifiedforester/index.cfm to find a certified forester.

The small slash (limbs and tops less than 3 inches in diameter) can be used by adult beetles, but brood production will be lower than normal. The small material can be chipped or piled for burning. When piling, put the smallest diameter material in the middle with the largest on the outside.

Improve tree health with irrigation - Often property owners will have several trees that have significant value in their landscape. These trees may be prized for their size or location. These high value trees can be given additional care to prevent infestation. They can be irrigated and/or sprayed with preventative insecticides.

When irrigating native pine trees they should be given enough water to wet the soil two to three feet deep. The water should be applied in a donut shaped pattern at the drip-line or outer edge of the trees branches. It generally takes about 2” of rain to soak 2 feet deep. Check the soil 6 to 8 inches deep just outside the drip-line of the trees monthly. If the soil is dry, then water. Generally, the months that most often warrant watering are May, June, and October. However, depending on weather patterns watering may be needed any month of the year. With the current drought conditions it is recommended that high value trees be watered during February and if the drought persists once monthly until summer rains begin. Keep in mind watering restrictions that may be in effect in your community and follow those guidelines as well. (Check with your local office of the Arizona Department of Water Resources for restrictions in your area.)

Fertilizer will not protect trees - Applications of fertilizers will not help protect trees from the effects of drought, and will not protect against bark beetle attacks.

Fertilizers may even hinder the ability of trees to fight off bark beetles. Fertilizers often cause trees to put on extra growth, this growth will require higher levels of moisture to maintain healthy conditions. Fertilizers may also burn foliage if improperly applied.

Insecticides can protect trees from attack - Un-infested trees can be protected from beetle attacks by spraying with insecticides. When spraying, the entire trunk and base of large branches 4” or more in diameter must be soaked. Spraying large trees is generally not a practice that homeowners can do themselves. To locate a certified pesticide applicator, call the Arizona Structural Pesticide Control Commission at 800-223-0618.

The currently recommended chemicals for this purpose are carbaryl, permethrin and bifenthrin. You must use a product that is especially formulated for bark beetles, such as Sevin SL, Onyx, Dragnet, Premethrin Plus C, or Astro. This is a protective measure only, it will not kill beetles once they enter the tree. Typical home and garden products containing carbaryl, permethrin, or bifenthrin that are not formulated for bark beetles will be ineffective. Correct materials when applied properly can be effective for an entire season.

Spraying should be completed prior to April 1 to ensure a full season of protection. Spraying after April 1 can be effective but you must be sure that the trees have not already been attacked. Trees can be checked for infestations by climbing, with a hydraulic lift, or with high-powered binoculars to inspect the entire trunk of the tree for pitch tubes and boring dust. Also, check the bark crevices and the base of the tree for

fresh boring dust. Spraying trees already infested is ineffective. More information on this subject is available in the University of Arizona publication “Using Insecticides to Prevent Bark Beetle Attacks on Conifers” it is accessible at county Extension offices or on the web at <http://cals.arizona.edu/pubs/insects/az1380.pdf>.

Removing dead trees - The only known direct control method for infested trees is the removal of the infested trees. A good rule to remember is “If the tree is brown cut it down, if in doubt cut it out.” If we leave dead trees standing, we run the risk of the new generation of beetles leaving the tree and attacking more trees. Finding reddish-brown boring dust in the bark crevices of a tree indicates that the tree has been successfully attacked, and the tree should be cut down even if the tree is still green at that point. If dead trees are next to houses or other structures, they can become a hazard tree.

Beware of easy cures - Insecticide injections or systemics have not proven effective against species of bark beetles in studies conducted by U.S. Forest Service, University of Arizona and Canadian Forestry Service researchers. Many trees have been injected with what seemed to be success. What may have happened is that the treated tree successfully pitched out the attacking beetle with resin prior to the treatment. The tree was then injected with insecticide when in fact no beetles were actually in the tree. The tree saved itself! We repeat, studies have shown that injecting chemicals into the tree will not kill bark beetles already in or attacking the tree, and the process injures the tree.

There are various miracle cures being promoted to save trees from bark beetles. These materials may not have gone through extensive research to test their effectiveness. Buyer beware! Often, if what is being marketed sounds “too good to be true” it generally

doesn't live up to its billing. Remember, it is against the law to use unregistered pesticides, and using pesticides for insects not listed on the label is unwise.

Half dead trees - Many trees may only be dead in the top half. During the recent outbreak of 2002-2004 we saw the lower half of the tree died shortly thereafter. Do not cut the top out of the tree hoping that the rest of the tree will recover. It is best to remove such trees to prevent the spread of beetles to other trees and to prevent them from becoming a hazard tree. You need not wait until the entire tree turns brown, many adult beetles may have flown from the tree before turning brown. Dead trees that do not have bark beetles in them and do not pose a safety hazard can be left in the forest to be used by wildlife.

Remember, the most effective method for preventing bark beetle infestations is to thin overly dense stands of trees using correct methods, at the right time of year, and with the right equipment with proper training. If you need more information please contact your local University of Arizona Cooperative Extension office, State Land Department, or your local fire department. Additional information can be found at the following web sites. <http://ag.arizona.edu/extension/fh/>, http://cals.arizona.edu/extension/fh/bb_faq.html, or <http://ag.arizona.edu/yavapai/>

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