Ips Bark Beetles Inhabit Dying Slash Pines

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The canopies of these slash pines in Naples are showing the effects of environmental stresses.

Reddish pitch globules and fine sawdust are evidence of *Ips* bark beetles.

Use fencing to keep heavy equipment away from trees and their root zones during

Adult six-spined *Ips* beetles are about 3/16 inch long and initiate the brood gallery when they deposit eggs. *Photo by: T. Almquist, U.F.*

This fanlike tunneling damage underneath the bark was caused by the boring of the larvae. This feeding severs the water and nutrient pipelines of the pine. *Photo by: T. Tigner, VA. Dept. Forestry* .

It would seem that slash pines appear to be pretty tolerant of environmental fluctuations. One can see natural stands in areas that are under water for months at a time as well as very dry hilly areas. Senior Forester for the Florida Division of Forestry, Tom Williams, reminds us, “Our previous droughty years in 1997-2002 stressed the pines, but they do tolerably well. However, if they are into the final years of their life, around 70 years, weather or man caused events can trigger their demise. Irrigation, fertilization, pesticides, lawns all tend to adversely affect the mycorrhizal fungi that are associated with the roots and needed by the pine to assimilate the nutrients they require.”

Calls about bark beetle attacks are often from new homeowners that didn’t insist that their builders design a construction site that was “tree safe”. Heavy construction equipment running over the root zone and long-term storage of building materials on top of the tree’s root system and, burying or excavating the roots with more than two inches of soil can put the tree on its death bed. That is when the beetles move in. There are reports that the beetles key in on a weak tree by the chemicals that volatilize from wound and stress reactions and some scientists even speculate that the beetles are drawn to trees when they “hear” (antennae pick up the vibrations) the shrinking, creaking wood fibers as the trees start to dry out internally.

Since Hurricane Wilma (Oct. 24, 2005), there has been a steady increase in the number of homeowners contacting the Collier County University Extension office about bark beetles and their declining slash pines or logs. These beetles colonize (not attack!) dying and dead pines. Many stands of pines have sharply declined since Wilma’s winds whipped them around. Externally they may look okay, but internally there may be internal injuries called “shakes”, a separation of vital plant tissues that eventually cause the tree to die.

Also, construction, root disturbance, drought, disease, flooding, or lightning can predispose a slash pine to *Ips* beetle infestations. The *Ips* beetles are related to the southern pine bark beetles (SPB), *Dendroctonus frontalis*, which fortunately does not attack our native south Florida slash pine, *Pinus elliottii* var. *elliotti*. The SPB range extends to central and northern Florida, and it primarily attacks loblolly and shortleaf pines.
Research on pine beetles affecting slash pines at Myakka River State Park in Sarasota County indicates that the six-spined ips pine bark beetle, *Ips*

calligraphus, is probably the predominant beetle infesting stressed pines in our area. The black turpentine beetle, *Dendroctonus terebrans*, may also be present in the base and root flares of trees. They are most active during hot weather.

Symptoms of bark beetle activity mimic root damage or chlorosis (nutrient deficiency) symptoms. Needles of infested trees turn from green to yellow then red to brown. Small, reddish-orange colored masses of resin or white pitch resembling popcorn and small holes with sawdust along the lower ten feet of the trunk. The beetles leave 1/16 to 1/8 inch round holes in the outer bark. Reddish-orange boring dust may be found in the bark crevices or underneath the tree. Adult beetles are small, about 3/16 inch long and are dark brown to black in color and have minute spine-like projections at the end of their wing covers (front wings).

Male beetles initiate the gallery and release pheromones to attract females which deposit eggs and several days later the eggs hatch. The larvae (white, no legs, orange-brown head) eat the inner bark of the host tree. Trees are damaged from the excavation of galleries in the phloem (food conducting cells of the plant). These galleries cut the flow of the phloem and essentially girdle the tree internally. In addition, the adults carry a blue stain fungus into the tree. This fungus eventually plugs the xylem (water conducting cells of the plant) as well. These beetle have many generations each year, so trees can be attacked almost all year.

The six-spined *Ips* beetles don't bother healthy trees, rather they cull the sickly pines. It is almost impossible to know when beetles may attack a particular tree as it is difficult for us to tell when a pine is stressed. So if what appears to be a healthy pine in your eyes is harboring bark beetles, rest assured it is a tree that was already on its way out, the beetles just hastened its demise. The tree death is not related to the bark beetle activity. One forester compared the bark beetle control idea to attempts to eliminate the maggots from a road kill. The dying slash pines are not an insect caused problem. For this reason we do not recommend pesticide applications. Even if you had the perfect remedy to eliminate the beetles, the trees are still going to die.

Frequent scouting and removal of declining trees that could be a hazard to home, property and people is highly recommended.

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