



PINE BARK BEETLES IN URBAN AREAS

Pine trees growing in urban areas are valued for their beauty and for the environmental services they provide. Unfortunately, pines growing in urban conditions are often at increased risk of attack by pine bark beetles. These attacks are normally a result of harsh environmental conditions such as long-term drought, overcrowding, construction damage, and lightning strikes. Under the right conditions, these insects can attack and kill pines within weeks during the summer months. The following information can help protect urban pines from these devastating insects.

Identification: People often don't realize they have a beetle problem until the needles of their trees turn orange/brown. Determining the type of pine beetle involved is crucial in minimizing tree loss. The three kinds of pine bark beetles found in Georgia are the southern pine beetle, the Ips beetle and the black turpentine beetle. The following descriptions help identify each of the three types of pine bark beetles.

- **Southern pine beetle (SPB)** – The most destructive pine beetle, these insects destroy countless urban pine trees during epidemic outbreaks. Loblolly, Virginia and shortleaf pine species are the preferred hosts.

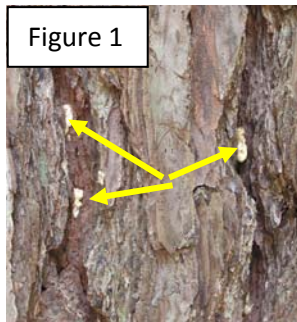


Figure 1

Pitch tubes - Formed as resin runs out the entrance holes, SPB pitch tubes are normally about the size of a number 2 pencil eraser and are white in color. They are usually found in the crevices of the bark at any height on the bole of the tree (Figure 1).

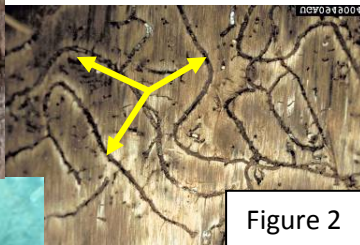


Figure 2

Galleries - These paths are made by the beetles as they feed and lay eggs between the bark and the wood. The galleries are actually grooved into the inner bark. Bark removal is difficult on freshly attacked trees but will aid with identification, since galleries created by SPB have a winding "S" pattern (Figure 2) and are packed with frass (excrement and feeding debris).



Figure 3

The beetle - Southern pine beetles spend most of their time between the wood and bark of a tree, making them difficult to find. Peeling or shaving the bark off to look for galleries may also reveal a beetle. They are very small, approximately 1/8-inch long, and are reddish-brown to black in color (Figure 3). With a magnifying lens, look at the rear of the beetle to see if spines are present. As shown in Figure 3, SPB has no spines.

- **Ips beetles** – This beetle is not as destructive as the southern pine beetle. In an urban setting, Ips beetles normally impact individual or small groups of trees. There are actually three different species of Ips but distinguishing between them is seldom needed.

Pitch tubes - Formed as resin runs out the entrance holes, Ips beetle pitch tubes vary in location and on the species of beetle involved. Attacks high in the tree may not be visible from the ground without binoculars. Because Ips commonly enter through the thicker bark plates and not through bark crevices, as SPB does, their pinkish pitch tubes are normally found directly on the bark plates (Figure 4).

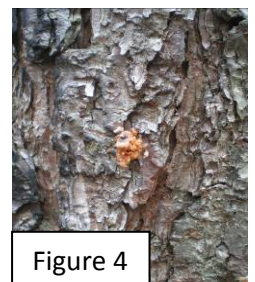


Figure 4



Figure 5

Galleries - These paths are made by the beetles as they feed and lay eggs between the bark and the wood. The galleries are actually grooved into the inner bark. The galleries created by Ips have a linear “Y” or “H” pattern and are mostly free of frass (excrement and feeding debris). The picture at left shows the linear galleries after the outer bark has been shaved away (Figure 5).

The beetle - Ips beetles spend most of their time between the wood and the bark of the tree, making them difficult to find. Peeling or shaving off the bark to look for galleries may reveal a beetle. The size of the beetle ranges from 1/8-inch to 1/4-inch long, while the color varies from reddish-brown to black. The spines on the rear of the beetle are its most distinguishing feature, but a magnifying lens is needed to see them. Figure 6 shows the spines on the beetle’s rear pointing upward.



Figure 6

- **Black turpentine beetle (BTB)** – This beetle is the least destructive of all pine bark beetles. In an urban setting, infested trees do not often survive the attack and tree-to-tree spread can occur. BTB commonly attacks trees stressed by drought, lightning strikes or mechanical damage to the main stem or roots.



Figure 7

Pitch tubes - Formed as resin runs out the entrance holes, BTB pitch tubes range in size from a quarter to a silver dollar (Figure 7). BTB is the largest of the pine bark beetles and creates a larger entrance hole. Because it attacks the lower 10 feet of the tree, their pitch tubes are very easy to see.

Galleries - These paths are made by the beetles as they feed and lay eggs between the bark and the wood. The galleries are actually grooved into the inner bark. BTB galleries can be up to one inch wide and twelve inches long, are usually fan-shaped and extend downward from the entrance hole (Figure 8).

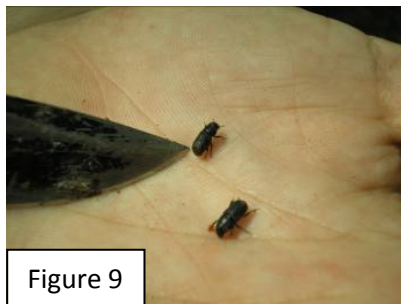


Figure 9

The beetle - Black turpentine beetles spend most of their time between the wood and bark of a tree, making them difficult to find. Peeling or shaving off the bark to look for galleries may reveal a beetle. The black, robust adults range in size from 1/4-inch to 3/8-inches long. They look very similar to a SPB but are significantly larger (Figure 9).



Figure 8

Pine Beetle Prevention:

- Keep pines in a vigorous, healthy condition by mulching, watering, and removing over-crowded trees in the winter.
- Avoid damaging the trunk of the tree or its roots. Damaging the tree causes stress and can produce the smell of resin, which is highly attractive to pine beetles in the area.
- Avoid pruning pines during the spring or summer. Do not allow tree crews to use spikes to climb pines for **pruning**, since the resulting wounds produce the smell of resin and could attract pine beetles to your trees.
- Remove lightning-struck or severely damaged pine trees from your landscape promptly.
- Spray trees with an insecticide as directed below when beetles are active in your area.

Pine Beetle Control:

Southern pine & Ips beetles: Trees infested with SPB or Ips beetles cannot be saved. In addition to the damage caused while feeding, these insects also introduce blue stain fungus into the tree, which clogs water conductive tissue and greatly contributes to mortality. If you have trees infested with SPB or Ips, immediately remove these trees and spray the remaining non-infested trees. If the infested trees can't be removed immediately, spray them either standing or cut, with a recommended insecticide in an effort to kill any emerging adults.

Black turpentine beetles: Black turpentine beetles do not carry blue stain fungus and do not always kill the trees they attack. Trees lightly infested with black turpentine beetles can sometimes survive without pesticide application, but heavily infested trees may be killed by girdling as the beetles feed. At either level of infestation, removal is not recommended until winter. Spray the infested trees with a recommended insecticide to kill emerging adults, and spray the surrounding trees to prevent further attacks. Trees should be sprayed starting at the groundline up to 10-12 feet high.

Insecticide recommendations: The insecticides Onyx™ and Bifen XTS™ (restricted use chemicals at some concentrations) can be used to minimize tree infestation and the number of beetles emerging from infested trees. Preventative treatments should be made when pine bark beetles are on or near your property, with the initial application made when dogwoods in the area begin to bloom. For best success at prevention of SPB and Ips beetles, the insecticide should be applied directly to the main trunk of the un-infested tree from its base to at least halfway into the live crown. University trials showed one application of Onyx™, when properly mixed at the highest labeled rate, prevented pine beetle attacks for six months. If you are using the spray to control emerging beetles from infested trees, the entire tree should be sprayed. A licensed, insured professional should be hired to make applications high into the tree, due to the specialized equipment needed (high pressure sprayer) and the risk associated with chemical drift. Total tree spraying is not generally recommended for small lots in urban settings, due to chemical drift. Care should also be exercised when applying these chemicals near swimming pools, bird baths and other areas. Spraying downed trees or spraying to prevent/control black turpentine beetles does not pose as much risk to the applicator and can be done with a simple garden sprayer. (Be aware that downed trees can also constitute a fire hazard.) Onyx™ and Bifen XTS™ contain the same active ingredient (bifenthrin) at almost identical concentrations, and are labeled for application on ornamental trees but are not registered for use in rural forestry settings. These products should be mixed at a rate of one to two pints per 100 gallons or 1/3 ounce per gallon of water. Normally one to four gallons of spray are used per tree. Consumers should carefully read and follow label instructions for mixing, application, and disposal of this chemical, and adhere to all safety requirements.

Onyx™ information can be found at <http://www.fmcprosolutions.com/ToolKit/LabelsMSDS/tabid/1193/Default.aspx>. Bifen XTS™ information can be found at <http://www.controlsolutionsinc.com/product.asp?id=136>.

“Frequently Asked Questions about Pine Bark Beetles”

How do I know if my trees are currently infested with bark beetles?

Trees that still harbor beetles are usually characterized by green to yellow needles, tight fitting bark (hard to remove from the tree when struck by a hatchet or ax) and soft, gummy pitch tubes, although there are exceptions. Homeowners should seek the advice of a professional forester or certified arborist to be sure trees are still infested.

What are my options for controlling an “active infestation” of Ips or southern pine beetles?

Removal of infested trees is the surest way to get rid of **Ips** and **southern pine beetles**. Other options include complete saturation of the entire tree trunk with an approved insecticide to control emerging beetles. Trees can be sprayed standing or after being cut and sectioned on the ground. The entire bark area must be sprayed to the point of runoff. Spraying standing trees in urban areas must be done with caution so that nearby bird feeders and baths, swimming pools, etc. are not contaminated.

What are my options for controlling black turpentine beetle infestations?

The **black turpentine beetle** is the only pine bark beetle confined to the lower six to ten feet of tree trunk. Except in extreme situations, the beetles do not mass attack trees as do the **Ips** and **southern pine beetles**. Rather, their populations tend to build up over a period of weeks, thus allowing time for control by homeowners. Spraying the lower ten feet of trunk with a recommended insecticide can effectively control **black turpentine beetles**.

Do I need to remove trees that are already dead (i.e. those with brown needles or no needles)?

Dead trees from which bark beetles have emerged may be host to beneficial insects such as the checkered beetle. If dead trees are no threat to property, humans, or pets, they can be left standing to provide homes for checkered beetles and cavity nesting birds. Be sure dead trees are away from property lines, powerlines, houses, cars and children’s play areas. Stay away from dead trees on windy days as branches and upper trunk sections may break.

Can I protect my healthy trees with an insecticide before pine beetles attack?

Healthy trees near an **Ips** or **southern pine beetle** infestation may be temporarily protected by spraying an approved insecticide on the main trunk from the base of the tree to at least halfway into the live crown. This requires expensive equipment capable of spraying the insecticide high into the tree. Caution should be used in urban areas where bird baths and feeders, swimming pools, cars and people are often present. Although spraying can be effective in preventing bark beetle attacks, it is often impractical. Many tree companies offer to spray standing pines up to a height of about ten feet, which is effective against **black turpentine beetles** but not against **Ips** and southern pine beetles. Also, many tree companies advertise the injection of systemic chemicals to control or prevent bark beetles. Research to determine the effectiveness of these compounds is ongoing. Stay with the proven methods, even though they may be costly and labor intensive.

Will chips from recently ground pine trees attract pine beetles to my yard?

Yes! The **black turpentine beetle** is justly named because it is highly attracted to the odor of fresh pine tree resin. Green pine chips may increase the possibility of a black turpentine beetle attack and, to a lesser extent, attacks from the other bark beetles. To be safe, pine chips should be removed.

Must I have the stumps ground when I remove an infested tree?

Black turpentine beetles like the smell of fresh pine resin and a green stump is a prime target for them. Stump grinding is preferred when green pines are cut in the winter. If not, the stumps should be sprayed with a recommended insecticide unless there are no more pines left in the yard.

Does pruning attract pine bark beetles?

Yes. Whenever possible, prune pine trees when bark beetles are inactive. Pruning trees between November and February is preferred to spring and summer pruning. Climbing spurs used by many tree surgeons and arborists when pruning create wounds which can attract pine beetles.

What should I do if my neighbor has trees infested with pine bark beetles?

Be aware of bark beetle activity or tree lightning strikes in your neighborhood. Pine bark beetles can devastate neighborhoods or woodlands and do not respect property lines. Quick action to rid an area of beetles is imperative. Be sure your neighbors are aware of the situation.

What are my responsibilities toward my neighbors if I have an active bark beetle infestation on my property?

Ignoring the danger of your infestation spreading to nearby properties may become a civil issue to determine responsibility. Neighbors need to work together to solve a community problem.

Are there any federal and state tax relief options for homeowners plagued by pine bark beetles?

Yes, but this will generally not be worthwhile for an urban setting. The IRS does recognize the **southern pine beetle** as a casualty agent, but the loss is limited to the diminished property value from the loss of the trees. At best it is a complicated issue often requiring a tax or real estate attorney to identify your cost basis.

What type of assistance does the Georgia Forestry Commission provide to homeowners with pine bark beetles?

During community-wide or statewide beetle outbreaks, the GFC provides citizens with information on the recognition and control of pine bark beetles. GFC can also publicize and coordinate community-wide suppression activities by informing tree companies, arborists and timber harvesters on proper control procedures. As a state agency the GFC does not remove trees nor provide financial assistance to citizens for tree removal. Contact the Georgia Forestry Commission by calling your local county office or 1-800-GA TREES, or go online at GaTrees.org or send your questions to "Ask the Arborist" via www.gfc.state.ga.us/community-forests/ask-the-arborist/index.cfm.