UNIVERSITY OF ILLINOIS EXTENSION
HOME, YARD & GARDEN PEST NEWSLETTER
College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign
Illinois Natural History Survey, Champaign

No. 8 • June 13, 2007

PLANT DISEASES

Bleeding Cankers on Tree Trunks

The U of I Plant Clinic occasionally fields questions about oozing areas on tree trunks. These bleeding cankers are wet-looking, sometimes with watery or sappy material slowing oozing from the cankers. Often the cambium is dead in the cankered area. Bleeding cankers in trees are usually associated with a *Phytophthora* species (a fungal-like organism). In those cases, the inner bark and cambium are affected. Oozing cankers might also result from bacterial wetwood, insect injury (borers or surface-feeding), or other types of mechanical injury to the trunk.

Many tree species may host bleeding cankers caused by *Phytophthora*. Among these are apple, beech, oak, willows, maples, honeylocust, elm, and cottonwoods. Most bleeding cankers appear on the lower trunk and usually begin in bark crevices. In Nevada, a *Phytophthora*-caused bleeding canker problem on silver maples produced cankers as high as 8 feet above the soil line. In some cases, the cankers continue to spread in the trunk. Still, bleeding cankers do not always kill the tree and may appear for only one year. The tree may seal off or callous over the affected areas. *Phytophthora* is thought to live in the soil. It may spread in water, in soil, on plant material, or on tools. Although it is unknown exactly how the bleeding cankers are initiated, wounds are known to allow entry of the fungus. Most organisms involved in canker formation cannot directly infect the bark and cambium. They need to enter wounds, injuries, or weakened areas.

Suspect bleeding cankers are easily spotted on the trunk. Removing the bark from these oozing cankers reveals wood beneath that is dead and darker in color than healthy, surrounding tissue. To confirm the presence of *Phytophthora*, submit a piece of the canker face (bark and underlying wood) to a diagnostic lab. Put the piece in plastic to keep it from drying out before cultures can be prepared from this tissue.

We do not have an effective management scheme for bleeding cankers. Chemical applications are not effective. Additionally, cutting out the cankered areas usually makes the situation worse by causing more wounds to the tree. Cankers often occur on trees weakened or stressed by environmental or site factors. It is probably best to do nothing to the affected area and to concentrate efforts on sound horticultural practices to improve tree health. These include removing dead branches, watering in periods of extended drought, and fertilizing with a balanced fertilizer in early spring or fall.

Bacterial wetwood may look much like bleeding cankers. Refer to *Report on Plant Disease,* no. 656, "Bacterial Wetwood and Slime Flux of Landscape Trees," for more information on this look-alike disease (http://www.ag.uiuc.edu/~vista/horticul.htm). Bacterial wetwood causes liquid to ooze from branch crotches and wounds in the trunk. That disease is caused by bacteria that colonize the wood of the tree, ferment internally, and force liquid to ooze from branch crotches or weak areas on the trunk. Bacterial wetwood stays with the tree for life. The center of the tree eventually decays, but the process may take many years.

The most serious bleeding canker is caused by *Phytophthora ramorum*. The disease, known as sudden oak death, Ramorum blight, or *P. ramorum* decline, has not yet been found in Illinois. It is present in California, Oregon, and Washington and has been shipped to other parts of the United States on susceptible shrubs. If you see oozing cankers on trees and suspect this disease, call the Plant Clinic at (217)333-0519. You will be asked to identify the host, the nearby shrubs, and symptoms on both. It might be helpful to see pictures of the bleeding cankers. Ramorum blight bleeding cankers may start low in the tree but may be found as high as 60 feet aboveground. They are not usually associated with cracks in the bark. Crown dieback and death will be present. Ramorum blight kills shrubs and trees. Refer to *Home, Yard, and Garden Pest News,* issues 1 and 15, 2006, for more about this disease. A poster developed at Purdue shows infected plants and can be viewed at http://www.ppdl.purdue.edu/PPDL/pubs/SODwanted2.pdf. *(Nancy Pataky)*

Stressed Honeylocust

Honeylocust trees have been showing decline and dieback in recent months–enough to generate quite a few inquiries at the Plant Clinic. Two major disease problems that we have seen are Thyronectria (Nectria) canker and Ganoderma root rot. Honeylocust plant bugs have caused some problems on new leaves, and anthracnose may be causing some leaf spots; but neither problem causes the

reported branch dieback. Also keep in mind that honeylocusts are relatively shallow-rooted, so drought stress several years in a row may also be a factor.

Thyronectria canker is a fungal disease that appears on branches and trunks, causing the bark to turn orange–brown and later yellow–orange in the cankered area. The fruiting bodies of the fungus appear in the colored bark area as black, pinhead clusters. Thryonectria cankers are annual or perennial and are usually associated with branch crotches, pruning wounds, or sunburned bark. As with most canker diseases, stressed trees are most susceptible. Sinclair and Lyon, in their book *Diseases of Trees and Shrubs,* state that trees stressed by poor drainage and wet soils are most susceptible to infection. There are differences in varietal susceptibility in honeylocust. One study in Illinois reported the least cankering on Holka, Imperiel, and Shademaster, intermediate cankering on Moraine and Skyline, and the most cankers on Sunburst.

Ganoderma is a root-and-trunk-rotting disease known to invade wounds on roots and the base of the trunk. Environmental stress and wounding predispose trees to infection. The fruiting body of this fungus is readily visible. It is a large shelf fungus growing from the trunk, usually at a wound. Honeylocusts were planted to replace the elms on the U of I Quad when they died of Dutch elm disease in the 1950s. Many of those honeylocust have since died of Ganoderma root rot. Root compaction from foot traffic of thousands of students is thought to have been a stress factor. Most of those trees have been replaced with other tree species.

If you have a stressed honeylocust, do what you can to pamper it. Remove dead or cankered wood (in dry weather). Water the tree in periods of extended drought. Consider mulching over the root zone to maintain soil moisture and to provide more organic matter to the roots. Early-spring or fall fertilization may also help.

For more on canker diseases, refer to *Report on Plant Disease,* no. 636, "Canker and Dieback Diseases of Woody Plants," available on the Web at http://www.ag.uiuc.edu/~vista/horticul.htm. *(Nancy Pataky)*

Hackberry Island Chlorosis

Island chlorosis is a disease that appears on hackberry leaves as blocky, yellow spots. The lesions are delineated by veins, giving them the angular look. Early in the disease progression, the yellow spots are surrounded by green, healthy tissue, like yellow islands in a green sea. Whether for this reason or some other, the disease is aptly named island chlorosis.

This disease may be more appropriately called a disorder. In researching the problem sporadically over the years, I have come across writings that say it is thought to be caused by a virus or to be a physiological abnormality. I have not found anything that qualifies as a replicated research paper (but I have not spent much time at this search), so I can't say either with certainty. As far as we have been able to determine, the disorder is a curiosity but does not cause any damage. In any event, the symptoms occur on hackberry, are certainly less of an eyesore than witches'-brooms found on hackberry, and can become intense enough to give the entire tree a yellowed appearance. For those who know of some scientific writings in this regard, please send references to me at npataky@uiuc.edu. *(Nancy Pataky)*

INSECTS

Beetle Borer Damage in Ash

A number of other borers besides emerald ash borer (EAB) attack ash. Several cause internal damage similar to that of EAB but are readily separated by the trained eye. Others create emergence holes that are sometimes confused with those of EAB. Not only is it useful to determine that the damage is not caused by EAB, but it is also useful to know what caused the injury and what effect it may be having on the tree. The typical response from a client is, If it isn't EAB, what is it? Following are the most common beetle borers in ash in Illinois.

Ash and privet borer is probably the borer most commonly confused with EAB. Like EAB, it tunnels in the cambium; but the tunnels are wider and deeper. Tunnels made by mature larvae are oval and about 3/16 inch across. Unlike EAB, ash and privet borer tunnels significantly into the sapwood. The white, legless larva is oval in cross-section. The tunnels are packed with frass, a combination of wood chips and fecal material produced by the larva.

The larva pupates in the tunnel, and the resulting adult chews its way out through an oval, 3/16-inch-diameter hole. Although the hole is half again wider than that of the EAB and does not have the flat side of the D-shape, many convince themselves that it must be EAB. The adult is a longhorned borer, dark in color, with four tan spots on the elytra. It has long antennae. Most longhorned borers, also known as roundheaded borers, eat round emergence holes through the bark; but this insect makes oval holes.

Ash and privet borer attacks dead and dying trees and parts of trees. It is commonly associated with storm damage, poor pruning wounds, and partial trunk dieback due to girdling roots. It does not attack healthy areas of the tree.

Flatheaded appletree borer causes damage to ash, maple, serviceberry, hawthorn, crabapple, and other trees similar in appearance to that of ash and privet borer. It creates tunnels up to 3/16 inch in diameter in the cambium. These tunnels are oval in cross-section. The white, legless larvae grow to about 1-1/4 inches long. They have broad, flat heads that create the oval tunnels. The larva pupates in the tunnel, and the resulting adult

chews it way out of the bark, creating a 3/16-inch-diameter, oval hole in the process. The adult is about 3/4 inch long, dark-colored, with small, indistinct light spots on its roughly textured back.

Flatheaded appletree borer is a serious pest of young maple trees, commonly creating helical tunnels under the bark (just above the soil line) that extend completely around the tree, girdling it. Young maple transplants commonly die from this pest's attack. On rose family hosts, including serviceberry, hawthorn, and crabapple, it attacks and hastens the demise of older trees but is typically not a threat to healthy trees. It is similar in its attack of ash, being found in trees dying from other causes, as well as dead and dying tissue associated with storm damage and girdling roots.

Redheaded ash borer is very common in dead and dying trees and portions of trees. It attacks not only ash but many other trees as well. The white, legless larva grows to about 1 inch long, eating oval, frass-filled tunnels through the sapwood. Pupation occurs in the tunnels, with the adult eating a round, 1/8-inch-diameter emergence hole through the bark, characteristic of the roundheaded borer that it is.

The adult is a longhorned beetle, having long antennae approaching half the body length. It is a slender beetle, ranging from 1/2 to 3/4 inch long. As with many longhorned beetles, the males are shorter and have longer antennae than the females. The pronotum, the broad area behind the head, is reddish, which is probably responsible for its common name. The wing covers are reddish brown, as are the legs and antennae. Four obvious yellow bands across the wing covers range from almost straight across to an inverted V-shape.

Adult redheaded ash borers are very active on the outside of affected trees. They run rapidly up and down the trunk. This activity, along with its long, slender legs, general coloration, and obvious antennae, commonly causes homeowners to report that these beetles look like wasps to them.

Redheaded ash borers commonly attack dead and dying trees and parts of trees, not being a problem attacking healthy areas of trees. As such, it is not considered to be a pest, although it is an indication of dieback of at least part of the tree that may need attention.

False powderpost beetle attacks dead and dying ash and other trees. The C-shaped, white, legless larvae tunnel throughout the wood, turning it into fine powderlike frass and sawdust. Fully grown larvae are about 1/4 inch long. The larvae pupate inside the branch or trunk, emerging as adult beetles through 1/8-inch-diameter round holes in the bark. Adult beetles are about 1/4 inch long and blackish, with down-turned heads. Dead branches and trunks are attacked repeatedly. Because this insect attacks only dead and dying branches and trunks, false powderpost beetle is not a threat to living trees or parts of trees.

Eastern ash bark beetle attacks dead and dying trees and parts of trees; therefore, they are no threat to healthy trees. The female chews through the bark and makes a straight tunnel in the cambium. Along this tunnel, she lays a series of eggs. After completing a 1- to 2-inch tunnel, she commonly dies in the end of the tunnel. The eggs hatch into C-shaped, white, legless larvae that tunnel at right angles to the female's original tunnel. After tunneling and feeding for about 1-1/2 inches, the larvae pupate at the end of their tunnels. The adults that emerge from the pupae chew pinhead-sized round holes through the bark. Because the larvae tend to tunnel about the same distance from the straight tunnel that the female makes, the subsequent emergence holes tend to be in straight lines. *(Phil Nixon)*

Moth Borers of Ash

Ash/lilac borer and carpenterworm are moths whose caterpillars are borers in ash. They are commonly found when scouting for emerald ash borer. Particularly in recently transplanted trees, it is important to recognize the ash/lilac borer because it can cause severe damage and death of trees. Carpenterworm is more likely to be found in older, established ashes.

Ash borer, also known as **lilac borer,** primarily attacks recently transplanted, stressed trees, and branches in larger trees with wounds from rubbing together, storm damage, or other causes. The damage to branches in large trees is not usually important to the health of the tree and may even aid in self-pruning activities of the tree. Ash borer's attack of young trees that have not yet adapted to site is a major problem in getting ash trees to establish.

The white, legless, cylindrical larvae grow to be about 1-1/2 inches long. They tunnel deeply through the trunk and branches, making round tunnels up to 1/4 inch in diameter. The larva keeps the tunnel free of frass by periodically pushing it out of its entrance hole in the bark. When fully grown, the larva pupates in the tunnel near the bark surface, commonly with the pupa extending out of the bark, covered by a layer of silk and frass. The moth that emerges from this pupa frequently leaves the empty pupal case extending 1/4 to 1/2 inch out of the trunk or branch. These empty pupal cases may take several weeks to drop from the tree.

The adult moth has clear, narrow wings, a slender body, and obvious antennae, making it appear wasplike. To add to this appearance, the moth flies during the day as wasps do and pulsates its abdomen as a wasp does when disturbed. Both the males and female moths are about 1 inch long.

Because ash borers are serous pests of young trees, treatment with insecticides is common. Once the larva gets inside the tree, it is difficult to treat. For that reason,

timing is critical to have an active insecticide residue on the bark when the eggs hatch. Eggs are laid in wounds, including borer emergence holes, because the moth has no chewing mouthparts or other mechanism for inserting the eggs below the bark surface.

Pheromone traps are available that attract and capture males. Recording the number of males caught two or three times per week allows one to determine when there is peak abundance. Treatment of trunks and major branches of susceptible trees with permethrin (Astro, Pounce) is recommended 1 week after peak male catch. Treatment is also effective when Vanhoutte spirea is in full to late bloom, but the pheromone traps are better indicators of treatment time.

Carpenterworm tunnels deep into the trunk and major branches of ash, oak, maple, poplar, and many other trees. Many tunnel through the wood to the pith, tunneling a foot or more up the center of the trunk or branch. Others create tunnels through the sapwood.

These insects have a 2-year life cycle, developing into very large caterpillars approaching 3 inches in length and 1/4 inch or more in diameter. As with other caterpillar borers, their tunnels are round in cross-section. They keep their tunnels free of frass by making periodical trips to the bark surface to expel the frass from the entrance hole. This results in holes 3/8 to 1/2 inch in diameter with frass clinging to the bark surface below it.

The mature caterpillar pupates just inside the entrance hole, emerging as a large moth with a several-inch wingspan. The front wings have a gray and black pattern that blends in with the bark surface where the moth sits during the day. After the moth emerges, the empty pupal case is commonly found hanging out of the tunnel entrance, similar to that of the ash/lilac borer. Of course, this pupal case is much larger, 2 to 3 inches long and 3/8 to 1/2 inch in diameter.

In the Great Plains states, carpenterworm frequently attacks trees in large numbers, causing severe dieback and entire tree death. However, in Illinois it is more typical for a tree to have only one or two entrance holes, indicating a very low infestation that does not generally warrant treatment. We have had a couple of recent reports of large numbers of carpenterworms being found in some individual ash trees. Most infestations in Illinois are found in trees with a trunk diameter of a foot or more.

With entrance/exit holes are so large and obvious, treatment has been effective when directed at individual caterpillars. Excellent results have been obtained by running a wire up the tunnel to pierce the caterpillar. This method is particularly effective because insects have very poor abilities of regeneration and wound healing. More recently, injection of insecticidal nematodes into the holes has been effective. Use a syringe to squirt them deeply into the hole.

Emergence of carpenterworm adults has just been reported in Illinois, so spraying the trunk and major branches with permethrin (Astro, Pounce) at this time should also be effective. Realize that with a 2-year life cycle, results from application now will not be determined for a year or more. *(Phil Nixon)*

Home, Yard, and Garden Pest Newsletter is prepared by Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey. Information for this newsletter is gathered with the help of staff members, Extension field staff, and others. Karel Jacobs and Donna Danielson of The Morton Arboretum also provide information and articles.

Major authors are Phil Nixon, (217)333-6650, and Fredric Miller, (708)352-0109, entomologists; Nancy Pataky, (217)333-0519, plant pathologist; and Tom Voigt and David Williams, (217)333-0350, and Michelle Weisbrook, (217)244-4397, horticulturists. Phil Nixon is the executive editor of the *Home, Yard, and Garden Pest Newsletter*. This newsletter is written by faculty in the Department of Natural Resources and Environmental Sciences and the Department of Crop Sciences. It is edited by Mary Overmier, Information Technology and Communication Services.

For subscription information, phone (217)333-2666 or (800)345-6087, or e-mail acesnews@uiuc.edu. Web subscriptions are available (http://www.ag.uiuc.edu/cespubs/hyg).

U of I Extension
Newsletter Service
University of Illinois
at Urbana-Champaign
528 Bevier Hall, MC-184
905 S. Goodwin Avenue
Urbana, IL 61801

University of Illinois Extension

University of Illinois • U.S. Department of Agriculture • Local Extension Councils Cooperating
University of Illinois Extension provides equal opportunities in programs and employment.