



INSECTS

Cicada Killer and Sand Wasps

We are receiving numerous calls about large numbers of cicada killers and sand wasps. These are solitary wasps, the female of which digs a 6- to 10-inch burrow (with a diameter of 1/4 to 1/2 inch) in the ground. She locates and stings a large insect such as a cicada or katydid, drags it to a chamber in the burrow, and lays an egg on it. The female covers up the burrow, digs another one, and repeats the process. The egg hatches into a legless, grublike larva that eats the paralyzed insect, pupates, and emerges the next summer as an adult. Research has shown that this stung, paralyzed host “wakes up” weeks later if taken from the female before she lays her egg on it. Of course, in nature, the host is eaten before it has a chance to wake up (sounds like a neat plot for a horror movie).

Male wasps establish aerial territories and patrol for intruders. Someone walking into the territory typically is confronted with a large wasp hovering in front of the face, zipping to the side and to the back before leaving. A male cicada killer drives off males entering his territory and tries to mate with female cicada killers that enter. Apparently, after determining an intruder is neither, he ignores the person. Unfortunately, in walking across a lawn, fairway, or other area where these wasps are nesting, the process is repeated as a person walks through each male’s territory.

These wasps are unlikely to sting. Wasp and bee stingers are modified egg-laying devices, so males are not equipped to sting. Females sting if crushed, as when stepped on or grabbed by bare hands. As a boy, I spent hours trying to stomp cicada killers coming to their nest or run them over with my bicycle tire and was never stung—I always wore shoes.

Cicada killers are about 2 inches long and black, with yellow bandlike marks. The head and transparent wings are brownish red. There are several common species of sand wasp, which tend to be black, with yellow to white banding. Sand wasps are typically 1 to 1-1/2 inches long, with black transparent wings.

Though these wasps are not dangerous, they are intimidating. In home lawns, educating the human

residents may foster tolerance. Wasps are more common in bare soil areas, so sodding, planting ground-covers, or mulching may greatly reduce the problem.

Nesting areas in public become a major problem. Application of permethrin or other labeled insecticide to the burrowed area should kill the females in golf course sand traps. Once the females are gone, the males leave. Sandboxes can be covered when children are not using them, and this deters the wasps (mothers will think the covers are to keep house cats out). Sand used below children’s swings, jungle gyms, and other playground equipment can be replaced with bark mulch or shredded tires. Beach volleyball courts and baseball infields are a harder problem. With scantily clad people diving and sliding onto the ground, one is reluctant to use an insecticide on a volleyball court. A couple of park districts are experimenting with weed and other barriers beneath the sand. (*Phil Nixon*)

Western Corn Rootworm

Western corn rootworm, *Diabrotica virgifera virgifera*, adults are numerous in most of Illinois. We have reports of their covering outside building walls, swarming golf courses, and creating piles of dead beetles on beaches.

These adult beetles are about 1/4 inch long and yellow to pale green, with three black stripes down the back. The underside is yellowish. On males, the anterior area of the wing covers is black, whereas females have more distinct stripes.

Although rootworms are the most important pest of corn in Illinois, the adults are primarily a nuisance in landscapes. Little can be done about them. When present in large numbers on buildings, they can be killed on contact with insecticidal soap. Applications may need to be made daily. Insecticidal soap is unlikely to harm foundation plantings, although other soaps are likely to damage foliage and roots. (*Phil Nixon*)

Unusual Caterpillars

Though Illinois has its share of destructive caterpillars, several nondestructive ones are present now and are unusual due to their physical appearance. These include the Io, polyphemus, cecropia, imperial, royal walnut, unicorn, and saddleback caterpillars.

Io moth, *Automeris io*, caterpillars are gregarious (feed in groups) and grow to 3 inches; they are light green, with a white stripe bordered in dark red. Tufts of irritating spines on their back are connected to poison glands. Small, young caterpillars are orange, with gray bristles. People who contact the spines often react as if stung; itching may be mild or severe. The caterpillar feeds on trees and shrubs, including ash, beech, birch, elm, linden, maple, oak, poplar, rose, sycamore, and willow. They eventually spin a thin, papery cocoon that falls to the ground. Hindwings of adults have conspicuous eyespots. Adult female moths are attracted to outdoor lighting and lay eggs in clusters on leaf undersides. There is generally one generation per year in Illinois.

Polyphemus, *Antheraea polyphemus*, caterpillars are light green and appear accordion-like, with hairs projecting from red, orange, and yellowish tubercles on each segment of the thorax and abdomen. Fully grown caterpillars are 3 inches long and thick-bodied. They feed on trees and shrubs, notably birch, elm, hickory, maple, and oak. These caterpillars create rounded, tough, parchmentlike cocoons that can be seen hanging on host plants or lying on the ground. Adults are large, yellow to brown, with windowlike eyespots on each wing; females lay eggs on leaves.

Cecropia, *Hyalophora cecropia*, caterpillars grow to 4 inches. They are light green, with four large red knobs followed by two yellow knobs behind the head. The rest of the body has yellow and blue tubercles. Young cecropia caterpillars are black and covered with bristles, the body turning orange and then green as they grow. Larvae are frequently found on urban trees, most commonly wild cherry, maple, apple, poplar, oak, sassafras, gray birch, and dogwood. They pupate in elongate, brown, silk cocoons tied to a tree branch, which are easily seen when the leaves drop. Adults are large, reddish brown moths with a 6-inch wingspan and whitish crescent moon shapes in the wings. The abdomen has prominent white bands.

Imperial moth, *Eacles imperialis*, caterpillars become large, up to 4 inches. They are covered with long, irritating hairs; people are more likely to react with an itching rash rather than a stinging sensation. They are green, with four large and four small horn-like yellow to orange tubercles behind the head and a couple of median, yellow to orange, short, cone-shaped tubercles towards the back end. These caterpillars feed on many trees, including oak, maple, linden, birch, elm, walnut, cedar, and pine. They form naked pupae (without a silk cocoon) in the soil or leaf litter. Adult moths are bright yellow, with brownish markings and wingspans from 3-1/2 to 5-1/2 inches.

Royal walnut moth, *Citheronia regalis*, is more common in southern Illinois. Its caterpillar, the hickory horned devil, grows to 6 inches. It is green, with four long and four short, orange, curving horns with black tips behind the head. Spiny, short tubercles cover the rest of the body, but the spines are not irritating. It feeds on hickory, pecan, walnut, sweetgum, persimmon, and sumac. It pupates as a naked pupa in the soil. The moth has a wingspan up to 5-1/2 inches; wings are brownish, with red veins and obvious yellow spots.

Unicorn, *Schizura unicornis* caterpillars are light brown, with a prominent dorsal projection. Unlike Io and polyphemus, these caterpillars are not gregarious; they grow to 1-1/2 inches. They typically sit on the chewed leaf margin, blending in—their brown color and dorsal projection looking like a ragged leaf margin with dieback. They primarily feed on wild cherry and willow. The adult moth has dark brown forewings with distinct markings, whereas the hindwings are light brown to gray. They lay eggs en masse on the underside of plant leaves.

Saddleback caterpillar, *Sibine stimulea*, is greenish, with an brown, oval saddleback marking on the back. Also, it has distinctive stinging spines or hairs that, when touched, can severely irritate the skin. The caterpillars grow to about 1 inch and primarily feed on rose, cherry, and pawpaw. An adult moth is dark brown, with two small white spots on each forewing.

Although these caterpillars, particularly the large ones, eat large quantities of leaves, the female moths typically scatter their eggs. This pattern results in only local defoliation. In some years, however, caterpillars can be locally numerous, with very noticeable defoliation. Io and polyphemus moths lay egg clusters, resulting in gregarious caterpillars that are more likely to cause damage. Even so, this late-season, occasional defoliation does not seriously harm the tree's health.

(Raymond Cloyd and Phil Nixon)

PLANT DISEASES

Daylily (*Hemerocallis*) Diseases

Many of you may think there is nothing to say on this topic. I would agree that traditionally we see few disease problems on daylilies. The fungal host index, *Fungi on Plants and Plant Products in the United States*, reports many diseases on daylily; but few cause problems to plant growth. A “new” disease has appeared on this host in the last 2 years and has caused quite a stir among producers and home growers alike. First, however, I mention some more common diseases you could confuse with it.

We occasionally see an anthracnose caused by the fungus *Colletotrichum* (like that on hosta and other perennials). It is associated with leaf scorch and can occur on stems. Usually we see this fungus on injured tissue in hot, humid weather. It has not caused many problems on daylily and does not move to healthy tissue. Look for bleached, brown, or scorched tissue on the leaves, with small (pinhead-sized) masses of clear to yellowish spores (use a hand lens).

A more common disease on daylily is leaf streak. Two fungi are associated with this disease: *Colleophthalus* or *Gloecephalus*. This disease occurs as yellowing along the central vein of the leaf. Small reddish brown, elongated spots appear in the yellowed areas. Often the brown spots are surrounded by yellow. This disease can be confused with rust, but there are no pustules or rusty spores. Daylily cultivars vary in susceptibility to streak, but generally the most severe result is streaking and death of infected leaves. To avoid spread of this disease, try to irrigate the soil rather than the foliage and avoid working with wet plants. Keep plants thinned to provide better air movement. No fungicides are listed specifically for this purpose, but general-use fungicides could work as preventives where this is a chronic problem.

The new disease on daylily is rust, caused by *Puccinia hemerocallidis*. It has been reported in the United States for 2 years. The fungus is native to Asia, with a natural range similar to that of daylily species. Due to much hybridizing of daylily, the disease resistance that occurs as plants evolve in nature has been lost. Cultivars reported as susceptible include Attribution, Pardon Me, Gertrude Condon, Crystal Tide, Colonel Scarborough, Starstruck, Joan Senior, Imperial Guard, Double Buttercup, and Stella De Oro.

What do you look for? This looks like most rust diseases. We see uredinial–telial stages on daylily. Look for raised pustules on either surface of the leaf but especially the undersides. The yellow-orange to reddish brown pustules produce abundant spores that rub off when touched. Resistant varieties may produce only yellow flecks. A few Web sites discuss this rust and show pictures of the disease and pathogen. A site to start with is ncf.ca/~ah748/rust.html.

The big concern over this disease is that it spreads very rapidly (new infections arise in 2 to 3 days on more susceptible cultivars), and daylilies have become one of the most popular and widespread perennials in the Midwest. Does it kill entire plants? We do not believe so, but it may kill infected foliage on susceptible plants. If found, infected foliage should be removed and fungicides considered to protect new foliage. State and national plant inspectors are watching for this disease, but you should too.

If you think you have rust on your daylily, get confirmation from a plant pathologist. Send a sample to a clinic or work with your Extension educator. Get the facts before you remove plant tissue and spray chemicals. For details on how to send a sample to our clinic, consult issue no. 2 of this newsletter. (*Nancy Pataky*)

What Is Killing My Tree?

Many clients bring samples to the Plant Clinic with dead leaves, stems that have lost all leaves, stems with cankered growth, or stems indicating years of poor growth. Laboratory diagnosticians can work only with the sample received; and nine times out of ten, the actual pathogen or insect is not on the sample submitted. We often (usually) need more information on what is happening at the site. Often, however, the person onsite does not know what to look for or what to convey to get the best help. Maybe this will help.

When the entire tree is affected, the injury or disease or insect logically must be affecting the trunk or the roots—an area that could cut off water to the entire tree. Look at the entire tree and compare it to nearby trees. Also consider when the problem started and what changed on the site about that same time. Healthy trees don't suddenly die because they are old. Many below-ground reasons may cause tree decline. Drought, flooding, compaction of the root zone, poor soils, planting too deeply, inadequate space for roots, and many more factors could be involved. Often, diagnosing such a problem is a process of elimination. One of the possibilities more difficult to eliminate is root rot. Most gardeners believe that they cannot possibly know the health of a mature tree's roots.

The first sign of any root problem is top decline. Look for a few clues to see if a tree is growing well. You can see a tree's annual growth by looking at the trunk cross-section. Most of us did this as children. We counted the number of rings to tell us how old a tree was when it died. We also looked at the thickness of these rings to compare relative growth between years. A less destructive way to determine amount of growth is to look at the stems. Follow the stem tip back to the first set of closely aligned rings (about 1/8 inch apart) around the stem. That is a year's growth. Continue down the stem to the next set of rings for the next year's growth. Most trees grow from 6 to 18 inches of twig length in a year. Of course, this varies with the species and whether you are looking at a shady or sunny part of the tree. If the tree has grown only an inch of twig growth for the last 2 years and 8 inches 3 years ago, it is safe to say that the tree is under stress that was initiated 2 years ago. Cankers on the stems, stem tip dieback, off-color foliage, early

fall color, and early defoliation are also clues that a tree may be stressed by underground causes.

To detect the pathogenic wood rots and root rots, look for mushroomlike fungi growing at the base of the tree or shrub. In wood rot fungi, the conks (also called shelf fungi or fruiting bodies) may be found growing on the trunk or main branches. These are signs of the pathogen. The actual fungal mycelium is probably growing in or on the roots or internally in the wood. One of the most common examples is *Ganoderma* root rot, which produces a shelf type of fungal structure at the base of many trees, especially honeylocust. The structure is reddish brown and appears to have been varnished. Its presence indicates invasion by a root rot. Other fungi may indicate wood rots. Wet weather often triggers the formation of these structures. They could easily be confused with fungi growing on dead organic debris near a tree. If, however, they are growing from the tree itself, they are excellent signs of wood rot or root rot.

You can also do some careful digging in the root zone of a tree to try to determine root health. Do this near the drip line at two or three spots. Healthy roots are brown outside but white internally or at the tips. If roots have a soft, brown outer layer that easily pulls off, then a root rot may be involved. Digging with a hand trowel a few inches below ground around the trunk may reveal girdling roots, mechanical injuries, or other clues to the cause of decline, such as deep planting. In issue no. 14, we explained how to determine if the tree was planted too deeply. Some experts say that conks on a tree or root rot in the root system means a tree will soon die. That may be true, but such trees and shrubs may survive for many years. Do not

remove a tree simply because it has a conk. Instead, use this as a diagnostic tool. If the tree becomes a threat to life or property because of its potential to fall or blow over, remove it as soon as possible.

No chemicals help a tree in decline. Use approved cultural practices to improve vitality, including watering in extended drought. Cut out dead branches in the dormant season, fertilize in late fall or early spring, and keep traffic off the root system. For very old or large trees, fertilization and watering may have no benefit. Still, they may help it stay alive for years.

For more on tree decline, read *Report on Plant Disease* no. 641, "Decline and Dieback of Trees and Shrubs," in Extension offices or on the Web, **ag.uiuc.edu/~vista/horticul.htm**. (*Nancy Pataky*)

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Major authors are Phil Nixon, (217)333-6650, Fredric Miller, (708)352-0109, and Raymond Cloyd, (217)244-7218, entomologists; Nancy Pataky, (217)333-0519, plant pathologist; Bruce Paulsrud, (217)244-9646, pesticide applicator training; and Tom Voigt and David Williams, (217)333-0350, 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. The newsletter is edited by Mary Overmier and typeset by Oneda VanDyke, of 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>).

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