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Cicada Killers

Cicada killer (Sphecius speciosus), Russ Ottens, University of Georgia, Bugwood.org

Cicada killers (*Sphecius speciosus*) are large wasps, about 1.5 inches long, with red-brown heads, black bodies and yellow banding on their abdomens. The size of these wasps can be distressing but they are unlikely to sting passers-by. Males establish and patrol an aerial territory where they attempt to mate with passing females. When a person or another cicada killer enters that territory, the male may approach in a way that seems aggressive. While this behavior is intimidating, the males are incapable of stinging and they only intend to harm other male cicada killers. They will leave when they realize you are not a threat or a potential mate. Females dig into soil or sand creating a burrow (1/4 – 1/2 inches in diameter) where they rear their young. Females sting and paralyze cicadas, which they carry back to the

burrow to feed their young. Females may sting people but this typically only occurs if someone attempts to handle them or if they are stepped on.

Since these insects rarely sting and do not damage plants, they seldom require control. In some cases, the digging behavior can create unattractive piles of soil and holes in the ground which may spur property managers to treat the wasps. Locations where bare soil or sand is available are preferred burrowing sites and large populations have the potential to cause significant aesthetic damage or become a nuisance. Some locations where cicada killers can cause damage may include baseball diamonds, beach volleyball courts, sand traps in golf courses, playgrounds and areas with sparse turf.

When treatment is needed, chemical controls such as pyrethroids, carbaryl (Sevin Dust) or other pesticide labeled for cicada killers can be applied to the burrows. When the females are gone, the males will leave the area as well.

In areas such as playgrounds and playing fields, where children and athletes may be in contact with the treated area, non-chemical control methods are preferred. Cultural controls like mulching bare soil, encouraging dense turfgrass or planting ground-cover will make these sites less attractive to female wasps. In many cases, educating concerned home owners about cicada killers can encourage understanding and tolerance.

(Sarah Hughson)

Carpenter Bees

Carpenter bees (*Xylocopa virginica*) have gotten a bad rap because of their tendency to construct their nests in exterior wood structures. However, they are extremely beneficial in their pollinating services. They visit large open-faced flowers with abundant nectar and pollen like asters, coneflowers, sunflowers and blanket flower but visit many species. They use a long tongue to get nectar, but will occasionally rob nectar from small flowers like penstemon and salvia, by chewing a slit at the base near nectar. They use buzz pollination on some of our favorite garden vegetables like tomato and eggplant.

Carpenter bee on azalea blossom

Dubbed the bumble bee look-alike by Beespotter, the eastern carpenter bee can be differentiated from bumblebees by their shiny black abdomen, which lacks fuzz. Males are the most territorial but lack the stingers of females.

Eastern Carpenter Bee is a stout bee that chews holes through rotting wood with their mandibles. In nature this is dead wood in the form of limbs and trunks of dead trees. In our backyard it is unpainted fences, decks, and buildings. During April and May, females excavate wood with their sharp mandibles, leaving deposits of sawdust beneath the entrance of their nest accompanied with a yellowish smattering. She tunnels a round hole about ½ an inch in diameter and then creates complex chambers with individual cells she fills with an individual egg, nectar and pollen. She seals the chambers with a mixture of wood pulp and saliva. In late summer, the new adults emerge from the nest.

If carpenter bees have become a nuisance, deter nesting by painting or replacing wood rather than plugging holes or using insecticides. To gain their pollinating services, leave rotting tree stumps and logs in the back yard gives carpenter bees a place to build a nest

(Kelly Allsup)

Plantains Noticeable with Drought

We could use a little rain at my house. The grass has stopped growing which always gives my husband a little reprieve from this weekly chore. What does *not* seem to stop growing however, are certain weeds. With their tall seed stalks, the plantains are notorious for making an otherwise decent looking lawn appear ragged within a few days. So out comes the mower just to tidy things up a bit. Typically, however, I subscribe to the "as long as it's green who cares" school of thought. Weeds in a lawn really don't bother me too much, but I'm not the one doing the mowing at my house.

The majority of my lawn's weeds belong to the plantain family (Plantaginaceae) which includes buckhorn plantain (*Plantago lanceolata)* and broadleaf plantain (*P. major*). These cool-season perennials have a similar growth habit and tend to be found in meadows, pastures, waste areas, and lawns. Buckhorn plantain is common on drier sites, on neutral to basic soils, and in low-quality turf of low to moderate soil fertility. It can tolerate compacted soils and low mowing heights. Broadleaf plantain prefers fertile, moist soils but will tolerate some shade, low mowing, low fertility, compacted soils, and dry sites. In my experience, plantains tend to do very well in dry, compacted areas such as pathways and along edges of driveways. They can better handle difficult conditions than turfgrass can. Additionally, I have found first hand that increasing your mowing height can help shade out and kill the plantains.

There are several differences between these similar species. The leaves of buckhorn plantain are lanceolate (much longer than they are wide), dark green, up to 1 ½ inches wide and 8 inches long. They are also sharp tipped, prominently parallel veined, and sometimes twisted and curled. In contrast, the leaves of broadleaf plantain are broadly oval, hairy or smooth, and dark green. They can be up to 6 inches wide and 10 inches long. They are prominently parallel veined, and the margins are entire or wavy. The petioles can be reddish in color.

Buckhorn plantain in flower – photo by Michelle Wiesbrook

Both plants can be found in flower summer long well into the fall. Buckhorn plantain has many small white to tan flowers that are tightly clustered at the end of a 6 to 30 inch long, hairy stalk. In contrast, broadleaf plantain produces numerous, inconspicuous flowers that are borne in dense clusters at the upper ends of 8 to 20 inch tall leafless, flowering stalks. These are similar in appearance to fingers or rat-tails. Both plants spread by seeds. Buckhorn plantain has a long sturdy taproot with lateral branches while broadleaf plantain has a short taproot with fibrous roots.

Broadleaf plantain in flower – photo by Michelle Wiesbrook

Plantains can be controlled without chemicals by simply maintaining turf density and health through proper culture. Fertilization practices should be evaluated. Core aerification can be used to alleviate compaction so that turfgrass can better grow and compete with weeds. Mow as high as the use and appearance will allow to shade out weeds. This recommendation alone can noticeably reduce plantain populations. I have seen this first hand over the years in my own yard. Additionally, plantains can be hand-pulled or mechanically removed.

These hot days of July are not the best time to apply chemical controls as off-target damage to sensitive ornamental plants is too risky. Instead, use this time to plan your applications for fall, which is actually the best time to control plantains. Postemergent herbicides should be applied when weeds are growing actively, which would be mid to late fall or even in mid spring to early summer for plantains. The herbicide 2,4-D has shown in the past to provide good control of broadleaf plantain, but control can be variable with buckhorn plantain. There are however many postemergent herbicides, including 2- and 3-way products that will effectively control plantains. Preemergent herbicides should be applied before seed germination, which typically occurs in late spring through mid-summer and sporadically in the fall. When using any herbicide, always read and follow all label directions carefully.

(Michelle Wiesbrook)

Oak Wilt

Oak wilt is a serious fungal disease which continues to kill oak trees in residential areas, parks, farm woodlots, and forests throughout Illinois. The oak wilt pathogen was first detected in Wisconsin in 1944 and has slowly spread throughout the central and eastern United States, including Illinois. Oak trees are the only known host. Oaks trees within the red and black group (pointed leaf lobes) are more susceptible than oaks in the white oak group (rounded leaf lobes).

Photo 1. Northern red oak killed by oak wilt

SYMPTOMS

Red and black oak group (pointed leaf lobes)

- Symptoms first appear at the top of the tree or at the tips of the lateral branches in late spring and early summer.
- Symptomatic leaves curl slightly and turn a dull pale green, bronze, or tan, starting at the leaf margins.
- Infected trees rapidly defoliate. By late summer, an infected tree is often bare of leaves.
- A brown or black discoloration usually develops in the current-season sapwood of wilting branches.
- Once infected, oaks in the red and black group do not recover.

White oak group (rounded leaf lobes)

- Symptoms usually appear on scattered branches of the crown, and may be confused with general dieback and decline.
- Leaves on infected white oaks become light brown or straw-colored from the leaf tip toward the base. Leaves curl, but often remain attached to the branches.
- The trees may die in one year, but usually die slowly over a period of several years or more.

Photo 2. Oak wilt foliar symptoms on northern red oak.

PATHOGEN

Oak wilt is caused by the fungal pathogen *Bretziella fagacearum,* formerly known as *Ceratocystis fagacearum*. The pathogen moves from diseased to healthy trees in two ways, through root grafts formed naturally between oak trees of the same group and through fresh wounds via sap-feeding insect vectors. Within a few days of infection, balloon-like tyloses and gums begin to plug the water conducting tissue within the tree, blocking the flow of water and nutrients from the roots to the foliage. As the supply of water becomes restricted, leaves wilt and die.

DIAGNOSIS

The leaf symptoms associated with oak wilt can easily be confused with other oak pests and disorders. Ideally, a plant diagnostic laboratory should confirm suspected oak wilt infections.

What to collect for a sample:

- Fresh samples, taken from living, symptomatic branches with the leaves still attached. The pathogen will not survive in dead or dry branches.

- Look for branches with symptoms of vascular streaking. The U of I Plant Clinic is most likely to isolate the pathogen from branches with vascular streaking.
- Sample 1-2 inches in diameter branches. Plant clinic staff are less likely to isolate the pathogen from small twigs or larger branches.

How to submit a sample to the University of Illinois Plant Clinic:

- The oak wilt pathogen is intolerant of temperatures above 90°F and is also sensitive to drying and other competing fungi. Exposure to these conditions during shipping may result in an inconclusive diagnosis.
- Mail samples the same day they are collected, or refrigerate and mail them soon after.
- When shipping samples, we recommend using an inexpensive cooler with a disposable ice pack.
- Ship via overnight or next-day delivery, and avoid shipping late in the week. This will help to prevent samples from being held over the weekend in a hot mail truck.

  NOTE (Summer 2020): Packages shipped to the Plant Clinic via USPS are being picked up 3-4 times a week. FedEx packages are picked up as packages arrive, and UPS is delivering packages daily. No matter how you send a sample, we highly recommend keeping your tracking number and checking to see if the sample was delivered. If you notice that the package wasn't able to be delivered (a delivery attempt or delivery failure), please contact plantclinic@illinois.edu with the tracking number and the method used to ship the sample.

Clinic results for oak wilt testing often take 7-14 days to complete. The Plant Clinic will send a detailed report with recommendations when the results are available.

When possible, send suspected oak wilt samples in an inexpensive cooler with a disposable ice pack.

MANAGEMENT

No complete control or cure for oak wilt exists. However, proper tree care, in addition to mechanical and chemical control measures, can keep the disease from spreading to nearby healthy trees.

Cultural Management

Avoid pruning oak trees in spring and early summer. The sap-feeding beetles that act as vectors for the oak wilt fungus are attracted to fresh wounds, which also act as a pathway for the pathogen to enter the tree. In Illinois, beetle activity and the highest risk of spreading oak wilt occur during April, May, and June. While the risk of infections via pruning wounds may decrease by mid-July, those erring on the side of caution should postpone any pruning until dormancy. If you cannot delay pruning, wound dressings

and latex-based paints have shown some effectiveness in reducing the potential for oak wilt transmission when applied immediately to a fresh wound. These products are believed to reduce the attractiveness of the wound to the insect vector and/or prevent the entry of oak wilt fungal spores into the vascular system of the wounded tree.

Chemical Management

Fungicide injections with propiconazole can be used to protect high value, healthy trees. Tree injections should only be made by trained arborists or others trained in injection techniques. Fungicides should be used in combination with the other strategies discussed in this article. Therapeutic injections can be effective on species within the white oak group when used early in the infection (less than 30% crown affected). However, researchers and practitioners tend to agree that it is rarely worth the expense to inject members of the red oak group that are infected with oak wilt.

Removal and Disposal of Infected Trees

Trees killed by oak wilt should be removed as soon as possible. Timely removal and proper disposal of diseased oak trees are critical for preventing the spread of the pathogen. Examine nearby trees, and determine if the diseased oak tree was likely to have formed root grafts with any nearby oak trees, especially those within the same group. The zone should be trenched to sever potential root grafts before or just after removing the infected tree. Trenching may not be feasible in urban settings with underground utilities and infrastructure.

Diseased oaks should not use for firewood unless they have been debarked, cut to length, split, stacked off of the ground, and protected from moisture. Properly stored firewood is not a source of infection. Moist, improperly stored wood will produce fungal spore mats that attract the beetle vectors.

Additional Resources

- University of Illinois Plant Clinic http://web.extension.illinois.edu/plantclinic
- Report on Plant Disease: Oak Wilt and Its Control http://ipm.illinois.edu/diseases/rpds/618.pdf
- Plant Clinic Report: Oak Problems http://web.extension.illinois.edu/plantclinic/downloads/Plant%20Clinic%20Report%20Oak%20LO.pdf
- First Detector Webinar on Oak Wilt. Presented by Brett Arenz, University of Minnesota.

(Travis Cleveland)

Controlling Moles in Turf

We may never actually see a mole, but we sure know when we have one in our yard. A person will notice mounds of soil (molehill) and surface tunnels in the lawn, as these are good indicators that moles are around. Moles live most of their lives underground. They are built for an underground lifestyle with very small eyes that are sealed by fused eyelids, allowing them only to distinguish between light and dark. Their ear canals are concealed in fur with no external ear. The forefeet are long and broad, with palms wider than they are long. The toes are webbed at the base of their claws. The hind feet are small and narrow with claws. The snout is

light pink colored and nearly hairless. Their average length is approximately 7 inches with dense grey or brownish color fur. The hands and feet make it very easy for them to push and move dirt as they are searching for food. In Illinois, we typically deal with the Eastern Mole.

Moles can be destructive pests in lawns, gardens, golf courses and parks. Mounds of loose soil are indicative of a deep tunnel. These cone-shaped mounds are usually four to six inches high and about one foot in diameter. They are usually present in pairs, with each mound being six to twelve feet apart. Beneath each mound is a vertical tunnel that extends five to eight inches below the surface to a horizontal tunnel. Tunnels that are deeper within the soil do not result in a ridge on the soil surface. The horizontal tunnel runs to the vertical tunnel beneath the adjacent mound.

Deep tunnels are used by the moles for bearing and rearing young. Thus, the presence of mounds usually indicates the presence of a reproducing pair of moles.

Figure 3Turfgrass injury resulting from mole

Life Cycle

Moles are omnivores and live a relatively independent lifestyle. There is typically no more than 2-3 moles per acre. They can dig 1 foot per minute. Their day is spent feeding and resting on two-hour cycles, 24 hours a day. Moles eat earthworms, grubs, millipedes, centipedes, spiders, sowbugs, snails, and slugs. They may also feed on seed and vegetable matter. Since they are eating basically around the clock, they can consume 70-80% of their body weight a day.

Mating occurs in the late winter, and gestation lasts 42 days with a single annual litter of 2-5 young being produced between March-May. Young are born only once per year, and the young stay with their mother through the summer. Those that near maturity in late summer or early fall due to an early litter are pushed from the den by their mother. Others resulting from late litters or slower growth are not driven from the home range until early spring when their mother is about to bear another litter.

It is these adolescent moles striking out on their own that typically venture into lawns and other maintained turf areas. Damage to turf is usually seen in spring and again in fall based on when they are driven from their mothers' range.

Management

Management is difficult. It is a common misnomer that if you have grubs, you have moles. Moles are insectivores, meaning they eat insects, worms, and other invertebrates. Grubs are just a portion of their diet. So even putting on grub control will not effectively eliminate moles. Some methods for control and damage prevention are exclusion. This includes things like using repellents, packing the soil, toxicants, fumigants, and trapping. Some ways to reduce the habitat's attractiveness include reducing the soil moisture, use insecticides to reduce the food supply and trap.

A practical method for mole control is with harpoon or choker traps set across straight tunnels that intersect with other tunnels. The tunnel should be mashed down or use a broom handle to poke holes in the runs. Check the holes or mashed down tunnels to see if holes have been replugged or tunnels pushed back up. This means this is an active feeding tunnel. Set a trap in that area. As the mole comes down the tunnel, it tries to rebuild the destroyed tunnel springing the trap, killing the mole. In heavy soils, it is useful to spring the trap once or twice to create openings where the harpoon or jaws can travel.

Bromethalin, sold as Talprid, is also available for mole control. The pesticide is sold in a plastic worm. A hole is made in the top of a straight tunnel, the "worm" is dropped into the tunnel, and the hole is repaired. This limits the exposure to pets and other non-target animals. Always wear latex gloves when handling traps and bait to avoid human scent contamination.

Resources

http://hyg.ipm.illinois.edu/article.php?id=112

https://www.canr.msu.edu/news/moles_in_the_lawn

https://content.ces.ncsu.edu/moles-in-turf

https://ipm.missouri.edu/MEG/2012/3/How-to-control-moles-and-reduce-turfgrass-damage/

(Maria Turner, Adapted from an article by Phil Nixon)