

Plant Health Care Report

Scouting Report of The Morton Arboretum

June 28, 2019

Issue 2019.7

Comments or concerns regarding PHCR should be sent to syiesla@mortonarb.org.

Our report includes up-to-date disease and insect pest reports for northeastern Illinois. You'll also find a table of accumulated growing degree days (GDD) throughout Illinois, precipitation, and plant phenology indicators to help predict pest emergence. Arboretum staff and volunteers will be scouting for insects and diseases throughout the season. We will also be including information about other pest and disease problems based on samples brought into The Arboretum's Plant Clinic.

We are continuing to use last year's format: full issues alternating with growing degree day (GDD) issues; focus on more serious pests; minor pests covered in shorter articles; alerts issued for new major pests. Readers who receive our email blasts that announce the newsletter is posted online will continue to receive them this year. To be added, please contact me at syiesla@mortonarb.org

Due to the 4th of July holiday, there will be no GDD update report next week

Quick View

What indicator plant is in bloom at the Arboretum?

Northern Catalpa (*Catalpa speciosa*) is in full flower (Figure 1)

Accumulated Growing Degree Days (Base 50): 775.5 (as of June 27)

Accumulated Growing Degree Days (Base 30): 2672.5 (as of June 27)

Insects/other pests

- Tussock moths
- Columbine leaf miner
- Sawflies...
- ...and caterpillars
- Hawthorn mealybug
- Tarnished plant bug
- Good guys
- Imposters in the garden

Diseases

- *Rhizosphaera* needle cast
- *Sirococcus* blight
- Eastern filbert blight
- Leaf spots on everything



Figure 1 Northern catalpa (photo: John Hagstrom)

Degree Days and Weather Information

We are once again offering Lisle readings right above the Arboretum readings. The spread between these two sites shows that temperatures can vary over a short distance, which means growing degree days can be quite variable as well. To show that this happens elsewhere, we are comparing the GDD in Glencoe to those at the Botanic Garden (which is in Glencoe) and showing the differences at two locations in Waukegan.

As of June 27, we have 775.5 base-50 growing degree days (GDD). The historical average (1937-2018) for this date is 909 GDD₅₀. Since January 1, we have had 26.42 inches of precipitation. Historical average (1937-2018) for precipitation Jan-June is 20.3 inches.

Location	B ₅₀ Growing Degree Days Through June 27, 2019	Precipitation (in) June 21-27, 2019
Carbondale, IL*	1505	
Champaign, IL*	1200	
Chicago Botanic Garden**	633	
Glencoe*	432	
Chicago O'Hare*	858	
Kankakee, IL*	972	
Lisle, IL*	898	
The Morton Arboretum	775.5	
Quincy, IL*	1231	
Rockford, IL*	795	
Springfield, IL*	1239	
Waukegan, IL* (60087)	645	
Waukegan, IL* (60085)	708	

**Thank you to Chris Henning, Chicago Botanic Garden, for supplying us with this information.

*We obtain most of our degree day information from the GDD Tracker from Michigan State University web site. For additional locations and daily degree days, go to <http://www.gddtracker.net/>

How serious is it?

This year, articles will continue to be marked to indicate the severity of the problem. Problems that can definitely compromise the health of the plant will be marked “serious”. Problems that have the potential to be serious and which may warrant chemical control measures will be marked “potentially serious”. Problems that are seldom serious enough for pesticide treatment will be marked “minor”. Articles that discuss a problem that is seen now, but would be treated with a pesticide at a later date will be marked “treat later”. Since we will cover weeds from time to time, we’ll make some categories for them as well. “Aggressive” will be used for weeds that spread quickly and become a problem and “dangerous” for weeds that might pose a risk to humans.

Pest Updates: Insects

Tussock moths (usually minor)

White-marked tussock moth caterpillars (*Orgyia leucostigma*) were found feeding on leaves of sugar hackberry and London Planetree. The caterpillars are quite distinctive. When fully grown, they are about an inch to an inch and a half long and have long, pale yellow hairs, reddish orange heads, and long tufts of hair near the front of their body (fig. 2). It is best to avoid touching them, because some people have allergic reactions to the hairs. Our scouts have found a couple of different species of tussock moth this season.



Figure 2 White-marked tussock moth caterpillar

White-marked tussock moth larvae feed on leaves, first skeletonizing them and eventually eating the entire leaf. In late summer, caterpillars form gray, hairy cocoons on twigs and branches. The adult male moth is gray. The female is dirty white and cannot fly because she is wingless. The female often lays her eggs on the cocoon from which she emerged. The moth overwinters as an egg. Other hosts include apple, birch, crabapple, elm, fir, hickory, horsechestnut, linden, maple, oak, pecan, poplar, rose, sycamore and walnut.

Management: In most years, damage by tussock moth larvae is mostly an aesthetic problem in landscapes. In years with heavy populations there will be more damage. They can cause major problems in forests. The caterpillars can be handpicked (carefully and wearing gloves to avoid allergic reaction). *Bacillus thuringiensis var. kurstaki* (Btk) can be sprayed on young larvae.

Good website: http://entnemdept.ufl.edu/creatures/URBAN/MEDICAL/tussock_moths.htm

Columbine leaf miner (minor)

The flower garden is also under attack this year. We are seeing mines in columbine (*Aquilegia* species and hybrids) leaves created by the columbine leaf miner (*Phytomyza aquilegiovora*). Luckily the damage is not fatal to the plants. Damage is serpentine or snake-like white mines in leaves (fig. 3), usually after the plants flower. The adults are small flies that deposit eggs on the underside of leaves. After hatching, the maggots burrow into the leaves, creating the mines.



Figure 3 Columbine leaf miner damage

Management: Removing and destroying infested leaves early in the season will help reduce later infestations, because there are several generations.

Good web site: <https://wimastergardener.org/article/common-columbine-pests-columbine-leafminer-and-columbine-sawfly/>

Sawflies... (minor to potentially serious)

Sawflies are a large group of insects (literally hundreds of species). Last year, we saw a lot of different species of sawfly larvae on a wide range of plants. It looks like this may be another big sawfly year. So far this year, we have received reports on sawfly on Creeping Jenny (*Lysimachia nummularia*) (fig. 4), white oak (*Quercus alba*) and even buttonbush (fig. 5) (*Cephalanthus occidentalis*).



Figure 4 Sawfly larva on *Lysimachia*

These insects can be confusing. As adults, they often have a fly-like or wasp-like appearance and may go unnoticed. As larvae, they look like caterpillars but are not true caterpillars (this means that *Bacillus thuringiensis* var. *kurstaki* will NOT kill them). Sawfly larvae and caterpillars do differ from one another. While each will have three pair of tiny legs near the head end of the body, they differ in the number of prolegs at the far end. Prolegs are outgrowths in the abdomen that the insect uses like legs. Caterpillars have five or fewer pair, while sawfly larvae have six or more pair. So, to be sure who you have, you'll need to get close and count those prolegs. Caterpillars have hooks, called crochets, on the bottom of their prolegs, so they can hold on tight. Sawfly larvae lack these hooks and can easily be dislodged from their host, so hitting them with a stream of water from the garden host often gets rid of them. Sawfly larvae vary in color by species. Some are very colorful, while others are not. Some may be identified by spots, spines or other marks. The slug sawflies, the rose slug sawfly and the oak slug sawfly (fig. 6) have a slightly gooey look that makes them look a bit slug-like.



Figure 5 Sawfly larva on buttonbush

Severity of damage depends on population and general health of the plant. High populations of sawfly can do a lot of damage and will add some stress to the host's life, but generally won't kill the host. Repeated defoliation year after year can lead to decline. Deciduous hosts can often

tolerate more damage than evergreen hosts, and healthy plants can tolerate more defoliation than weak plants. Many sawflies just eat as much of the leaf as they can handle. The slug sawflies eat away top and bottom layers of the leaf, leaving a thin brown membrane behind.

Management: Because sawfly larvae don't have hooks on the prolegs, they can't hold on tight. That makes them easy to wash off with the garden hose or to pick by hand.

Good websites: <http://jhr.pensoft.net/articles.php?id=4106>

<https://wimastergardener.org/article/sawflies/>

...and caterpillars (minor)

Along with the sawflies, our scouts are finding a number of caterpillars hard at work on new foliage. The speckled fruitworm was found feeding on sugar hackberry (*Celtis laevigata*). Fruitworms are usually associated with fruit trees, but can attack a wide variety of woody hosts. The speckled fruitworm is marked by thin white stripes and small speckles. It is a minor pest that will be present only for a short while.

Spring cankerworm (fig. 7) was found feeding on cockspur hawthorn (*Crataegus crus-galli*). Commonly known as the 'inchworm', cankerworms are in the same family as loopers and have a characteristic 'looping' form of movement. Spring cankerworm caterpillar eggs are laid in early spring. Eggs hatch at their host's budbreak. Full-grown cankerworms are about one inch long and range in color from yellow-green to black.

Cankerworms feed on the buds and new leaves of host trees in spring, eventually devouring all but the midrib of a leaf. Trees suffering from a heavy defoliation will usually produce a second crop of leaves, but their overall vitality may be diminished. Cankerworms infest many deciduous trees and shrubs.

We are also seeing a few leaf rollers. There are about 200 species of leafrollers that attack ornamental plants. Leafrollers are caterpillars that roll up leaves and feed from within the shelter of the rolled-up leaf. Damage is usually minor.



Figure 6 Oak slug sawfly larva



Figure 7 spring cankerworm, trying to look twig-like (he is the one on top)

Management: Light infestations are not harmful to tree health, and natural enemies such as flies, wasps, and birds help to control these pests. Heavy infestations of cankerworm can be controlled with *Bacillus thuringiensis* var. *kurstaki* (*Btk*) or other insecticides. To obtain good results, *Btk* or insecticides should be applied when larvae or feeding damage is first noticed in the spring.

Hawthorn mealybug (minor to potentially serious)

Hawthorn mealybugs (*Phenacoccus dearnessi*) were found infesting a cockspur hawthorn (*Crataegus crus-galli*) on the Arboretum grounds. Though they commonly infest hawthorns, they can infest other rose family hosts such as cotoneaster, amelanchier, and mountain-ash. The insect is about 1/8" in diameter and has a red body that is covered with white wooly wax. You may not see the red body under the white wax unless you wipe off the wax (fig. 8). Mealybugs have piercing/sucking mouthparts and feed on sap. Crawlers will be pale yellow. A heavy infestation can result in twig dieback (we have seen only small infestations so far). They also produce large amounts of honeydew that will make plants sticky. Sooty mold, a black fungus, can grow on the sticky honeydew.



Figure 8 Hawthorn mealybugs (note red color under the white wax; also yellow crawlers are present as well)

The insect spends the winter as a nymph on tree trunks and branches in bark cracks. In spring, they become adults and start to mate. The females lay eggs which she covers with white wax. The new crawlers emerge from the eggs during summer. They move to their overwintering place in fall.

Management: This pest has a lot of natural enemies, so no measures may be needed to keep it in check. Heavy infestations should be controlled with insecticides when crawlers are present.

Good website: <https://planttalk.colostate.edu/topics/insects-diseases/1457-hawthorn-mealybug/>

Tarnished plant bug (minor to potentially serious)

Tarnished plant bugs (*Lygus lineolaris*) were found on cockspur hawthorn (*Crataegus crus-galli*) by our scouts. These true bugs can be found on a wide range of ornamental plants, as well as fruit and vegetable crops. These 1/4" long insects overwinter as adults in leaf debris, in bark, or

in other protected areas. They emerge in the spring and begin feeding on buds and young leaves, often on early-emerging weeds. In early to mid-summer the females deposit their eggs in plant tissues (stem, leaves, buds, etc.). They hatch after a few weeks. Depending on their location, there can be 2-3 generations per year. We don't have a good picture of this pest, but the first website listed below does.

Management: This insect can be damaging to fruit and vegetable crops, and may warrant control. In landscape plantings, damage may be tolerable without any control measures. Removing weeds can help lower populations early in the season.

Good website: <http://entopl.okstate.edu/ddd/insects/tarnishedbug.htm>

http://ipm.illinois.edu/fieldcrops/insects/tarnished_plant_bug/index.html

Good guys

Every once in a while, it pays to stop and think for a minute. It is human nature to see an insect and want to get rid of it. We should rethink that. There are a lot of insects that are harmless. More importantly there are some that help us. This is turning out to be a good year for beneficial insects. Our scouts have been bringing in good guys regularly, including lady bug larvae (twice), a young lace wing, and assassin bug nymphs (twice). They also brought in a batch of stink bug eggs (bad guys). When the eggs hatched every one of them contained a parasitic wasp that had kill the stinkbug inside. We have friends among the insect world. These insects feed on other insects. Sometimes they do wander into our homes and become a nuisance, but when they are outside, they are beneficial to the gardener.

The bottom line is to take a minute to think before you squash or spray an insect. Sometimes they are the good guys. They appreciate it when we temper our use of insecticides. Insecticides can be good tools, but their use can be harmful to our friends, the beneficial insects.

Imposters in the garden

As mentioned above, we need to take some time to assess the insects we see in our landscapes. Sometimes we will see an insect and think we recognize it as a bad guy. There are, however, some look-alikes in nature and we need to be aware of them. In issue 6 (June 14), we wrote about the grape flea beetle, not because it is a major pest, but because the larva of this beetle looks a lot like the larva of the viburnum leaf beetle. Without a little thought and research, it would be easy to jump to the (wrong) conclusion that the viburnum leaf beetle had moved on to a new species. This week our scouts found a larvae feeding on prickly-ash (*Zanthoxylum americanum*). This larva also looked a bit like that of viburnum leaf beetle. Turns out it is really

the larvae of *Derospidea brevicolis* (no common name) (fig. 9), which feeds mostly on prickly-ash.

Here's another case of mistaken identity. We all know boxelder bugs, because they come inside and visit us in our homes every fall. They are not harmful, but certainly unwelcome. This season, our scouts have brought in an insect that looks like boxelder bug nymphs. Upon close inspection, its true identity was revealed. It was a species of *Lopidea* (another guy without a common name). It is related to boxelder bug and is a minor plant feeder. It just doesn't often show up uninvited in our homes. To see this look-alike, go to this link:

<https://bugguide.net/node/view/13882>



Figure 9 Looks like viburnum leaf beetle larva but is really *Derospidea*

Here is a real tricky one. The mealybug is a pest of many plants. It sucks the sap out of our plants. It also produces a sticky substance called honeydew. Black sooty mold grows on this honeydew and before you know it your lovely plant is a mess. Mealy bugs are white and covered with fluff. This description also fits the mealybug destroyer. The mealybug destroyer, however, is our friend because it eats mealybugs (and other pests). The destroyer is actually the larval form of a ladybug (*Cryptolaemus montrouzieri*)! The predator and prey can be hard to tell apart, but generally, the destroyer is twice as big as the actual mealybug. They will often be found close together because the ladybug lays her eggs in the egg sac of the mealybug.

Pest Updates: Diseases

***Rhizosphaera* needle cast (serious)**

Rhizosphaera needle cast is a serious disease that has been on the increase for the last few years. It is caused by the fungus *Rhizosphaera kalkhoffii*. This disease infects needles on the lower branches first and gradually progresses up the tree. Although needles become infected in May and June (**when new needles are emerging**), symptoms do not usually appear until late fall or the following spring. Infected needles initially turn yellow, and small dot-like fruiting bodies can be seen (with a hand lens) erupting through the pores of the needles (fig. 10). We are seeing this now.

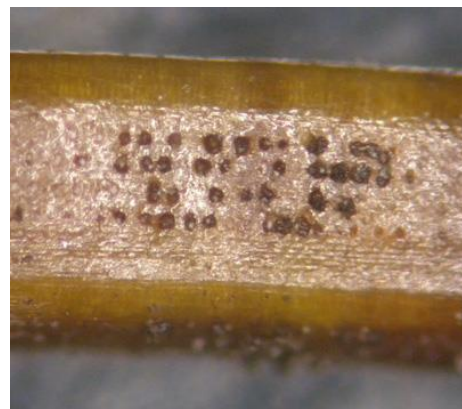


Figure 10 Fruiting bodies emerging from needle

Later, the needles turn purple to brown and begin to drop (it may take 12-15 months from the time of infection for all these symptoms to develop). Although trees are not immediately killed by this pathogen, trees which lose needles for 3 to 4 consecutive years may die. If left unchecked, the disease can turn the tree into an undesirable landscape specimen in two to three years. Colorado blue spruce is highly susceptible to *Rhizosphaera* needle cast. White spruce is moderately susceptible and Norway spruce is relatively resistant (this does not mean immune). Hosts in other genera include true firs, Douglas fir, and pines.

Management: Rake and dispose of infected needles to reduce the source of inoculum. Prune off lower branches and provide adequate spacing between trees to improve air movement. Disinfect tools between cuts. Chemical controls are most effective if the disease is detected early. Fungicides should be applied when needles are half-grown (as soon as bud caps fall off) and again when fully elongated. Two years of applications are usually required.

Good websites:

<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/help-diseases/spruce-diseases>

***Sirococcus* blight (minor)**

We have had one spruce sample come in to Plant Clinic with symptoms of *Sirococcus* blight (*Sirococcus conigenus*). We don't see this spruce disease with any regularity, but it does pop up when we have extended periods of cool wet weather (like this year). It is most common on blue spruce, but can occur on other spruces, including Norway, white and black. It is not restricted to spruces and can also infect Douglas-fir, concolor fir and mugo pine.

Symptoms are commonly seen primarily on the lower branches of the tree. New growth is affected, with needles turning brown and often curling into a shepherd's crook. The brown needles will fall off, leaving the obviously crooked stem tip intact. Pictures can be seen at the website noted below.

Management: During dry weather, prune out infected branches to get rid of spores for next year. Be sure trees are spaced out to allow for good air circulation to aid in drying of needles after a rain. It is too late to apply fungicides this year as the infection has already occurred.

Good website: <https://extension.umn.edu/plant-diseases/sirococcus-blight-conifers>

Eastern filbert blight (serious)

Eastern filbert blight has been found on Purple Haze hazelnut (*Corylus* 'Purple Haze'). This disease is caused by the fungus *Anisogramma anomala* infecting filbert (i.e. hazelnut) (*Corylus*) species. This disease has largely been studied in Oregon, where they have cool wet winters, so the lifecycle may be different in other parts of North America (Sinclair and Lyon). The pathogen requires 2-3 years to complete its life cycle, the length depending on the host's susceptibility. The symptoms include football-shaped pustule-like bumps in single or multiple rows (fig. 11). The infected branches may have dead leaves attached. The plant will decline, but may not die for several years.



Figure 11 Fruiting bodies of filbert blight

The pathogen's life cycle begins in the fall during rainy periods. Spores are moved in water and wind to surrounding plants. Once the spores adhere to a branch, they germinate and infect the plant. The pustules form and produce spores that overwinter and infect new tissue next year.

Management: The most common management practice is planting resistant varieties of *Corylus*. The cankers can be pruned out of the tree successfully so long as all the infected tissue is removed. It may be moved around within an infected tree on pruning tools, so sanitizing pruning tools between cuts is imperative.

Good websites: <http://oregonstate.edu/dept/botany/epp/EFB/index.htm>

Leaf spots on everything (minor)

We have had a WET year. Fungi love water. If you look around the landscape, it seems like every tree, shrub and flowering plant has some sort of fungal leaf spot. That tends to happen when we have a rainy spring. This year, the rain came at a very inopportune time, just as the new leaves were opening on many plants (and just about every day after that). Many leaf infections occurred during that rainy spell. The symptoms take a little time to develop, and the key word in that statement is little. Leaf spots are developing on a wide range of plants, and it is only the beginning of summer. It is likely that more and more will show up as the season progresses. Luckily, the majority of leaf spots are minor, doing little to no harm to the host plant. Leaf spots that lead to defoliation of the plant, especially early in the season, are of concern because they limit the plant's ability to make food (leaves are the food factories of the plant). Most leaf spots do not lead to defoliation and do not require any treatment.



Bartlett Tree Experts, Plant Clinic sponsor.

The Plant Health Care Report is prepared by Sharon Yiesla, M.S., Plant Knowledge Specialist and edited by Fredric Miller, Ph.D., Research Entomologist at The Morton Arboretum and Professor at Joliet Junior College; Julie Janoski, Plant Clinic Manager, and Carol Belshaw, Arboretum Volunteer. The information presented is believed to be accurate, but the authors provide no guarantee and will not be held liable for consequences of actions taken based on the information.

Thank you to the volunteers who will be scouting for us this season. The Scouting Volunteers include: Maggie Burnitz, LeeAnn Cospers, Ingrid Giles, Loraine Miranda, Mary Noe and Emma Visee. Your hard work is appreciated. Thanks also to Donna Danielson who shares her scouting findings.

Literature/website recommendations:

Indicator plants are chosen because of work done by Donald A. Orton, published in the book Coincide, The Orton System of Pest and Disease Management (<http://www.laborofloveconservatory.com/>)

Additional information on growing degree days can be found at:

http://www.ipm.msu.edu/agriculture/christmas_trees/gdd_of_landscape_insects
http://extension.unh.edu/resources/files/Resource000986_Rep2328.pdf

The Commercial Landscape & Turfgrass Pest Management Handbook (CPM), for commercial applicators, and Pest Management for the Home Landscape (HYG) for homeowners from the University of Illinois, are available by calling (800-345-6087).

This report is available as a PDF at The Morton Arboretum website at

<http://www.mortonarb.org/visit-explore/news-events/arboretum-news?tid=259>

For pest and disease questions, please contact the Plant Clinic at (630) 719-2424 between 10:00 and 4:00 Mondays through Saturdays or email plantclinic@mortonarb.org . Inquiries or comments about the PHCR should be directed to Sharon Yiesla at syiesla@mortonarb.org .

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