Plant Health Care Report

Scouting Report of The Morton Arboretum

May 27, 2022 **Issue 2022.5**

For comments regarding PHCR, or to subscribe to email alerts regarding posting of new issues, contact me at syiesla@mortonarb.org.

Our report includes up-to-date disease and insect pest reports for northeastern Illinois. This year we resume our on-grounds scouting program. Plant Clinic staff and volunteers are back working on-site this year. Contact us via email at plantclinic@mortonarb.org. or by phone at 630-719-2424 (Monday thru Friday, 10 am to 4 pm). The Plant Clinic is also open to walk-ins, but a timed entry for the Arboretum is required and non-members need to pay the entry fee.

Quick View

What indicator plant is in bloom at the Arboretum?

Black locust (*Robinia pseudoacacia*) is in full to late flower (fig. 1). It can serve as an indicator for a variety of pests. In late flowering (500-700 GDD), it can indicate emergence of white-marked tussock moth caterpillars.

Accumulated Growing Degree Days (Base 50): 405.5 (as of May 26)

Insects

- **Elm flea weevil**
- **Elm leafminer**
- **Sawflies**
- **Woolly apple aphids**
- **Spittlebugs**
- **Galls, part 1**

Diseases

- **Fire blight**
- **Powdery mildew on ninebark**
- **Anthracnose of shade trees**
- **Oak leaf blister**

Weeds

- **Bishop's weed**

Figure 1 Black locust in flower

Soil temperatures around Illinois (from Illinois State Water Survey)

This information will be provided all season. For data from other reporting stations, go to https://www.isws.illinois.edu/warm/soil/ (you will need to set up an account to access data.)

Max. Soil temps For 5/26/2022*	St. Charles reporting station (north)	Champaign reporting station (central)	Carbondale reporting station (south)
2-inch, bare soil	75.7	86.4	79.4
4-inch, bare soil	75.3	79.5	72.6
4-inch, under sod	69.5	73.9	74.5
8-inch, under sod	65.4	70.5	70.3

* This is the maximum soil temperature recorded the day prior to publication of PHCR.

Degree Days (current and compared to past years)

As of May 26, we have 405.5 base-50 growing degree days (GDD) at The Morton Arboretum. The historical average (1937-2021) for this date is 295 GDD_{50}. The table below shows a comparison of GDD in different years. We are comparing the GDD reported in this issue with the GDD reported in 2021, 2015 and 2014. These years were selected since publication dates of the first issue were within a day or two of each other. Glencoe, Lisle and Waukegan (60085) were not used in 2015 and 2014, so there is 'no report' from those stations.

Location	GDD as of 5/26/22	GDD as of 5/27/21	GDD as of 5/28/15	GDD as of 5/29/14
Carbondale, IL*	808	755	826	783
Champaign, IL*	570	557	678	614
Chicago Botanic Garden**	349 (5/25)	488	305 (5/26)	303.5 (5/28)
Glencoe*	195	232	No report	No report
Chicago O'Hare*	445	520	483	433
Kankakee, IL*	455	480	540	483
Lisle, IL*	453	517	No report	No report
The Morton Arboretum	405.5	401.5	377.5	340.5
Quincy, IL*	613	623	733	648
Rockford, IL*	358	433	382	351
Springfield, IL*	600	600	734	644
Waukegan, IL* (60087)	338	423	345	328
Waukegan, IL (60085)	377	464	No report	No report

**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 https://gddtracker.msu.edu/

Seasonal precipitation

Seasonal precipitation (rain and melted snow) in inches.			
	2022	2021	Historical average (1937-2021)
Jan	1	1.5	1.946
Feb	2.61	1.49	1.765
Mar	3.88	1.24	2.520
April	3.88	1.39	3.665
May	6.10 (as of 5/26)	3.34 (whole month)	4.18
June			
July			
Aug			
Sept			
Year to date	17.47 (as of 5/26)	8.96 (Jan thru May)	14.08 (Jan thru May)

How serious is it?

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". "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

Examples of insects that may emerge soon in northern Illinois (based on growing degree days)			
GDD (base 50)	insect	Life stage present at this GDD	Type of damage
300-700	Oystershell scale	Crawlers emerging	Feeding on sap
400-600	Bronze birch borer	Larvae hatching out and beginning to enter bark	Tunneling under bark
400-600	Elm leaf beetle	First generation larvae emerging	Chewing leaves
400-600	Emerald ash borer	Adults beginning to emerge	Mating and laying eggs
400-500	Pine needle scale	Crawlers emerging	Feeding on sap
450	Boxwood leafminer	Adults emerging	Laying eggs

Elm flea weevil (minor)

Figure 2 Adult elm flea weevil damage (holes) and larval damage (blotch mine)

Our scouts have found elm flea weevil (*Orchestes steppensis*) on 'Valley Forge' American elm. This pest has been in our area for nearly 20 years and has regularly caused foliage damage to elms during that time. Adult-feeding results in shot holes (fig. 2) in the leaves, and heavy feeding can cause newly expanding leaves to wither and turn brown. After feeding, the female weevil cuts a cavity into the leaf mid-vein and inserts an egg. The hatching larvae create blotch mines (fig. 2) at the leaf tips. Larvae feed for about 2-3 weeks, and then pupate within the mined leaf. Very heavy feeding can reduce photosynthetic capacity of the tree, thereby impacting overall tree vitality. Dr. Fredric Miller tells me that "the elm flea weevil, for some reason, prefers Siberian elm and any hybrids that contain *U. pumila* in their genetics."

Management: Insecticides are effective in controlling adults when they are present. Depending on how long the insecticide is effective, several applications may be needed. However, spraying a large elm may not be practical, especially for relatively minor damage.

Good website: https://mortonarb.org/plant-and-protect/tree-plant-care/plant-care-resources/european-elm-flea-weevil/#overview

Elm leafminer (minor)

Figure 3 Elm leafminer damage

Elm leafminer (*Fenusa ulmi*) has been found on Scots elm (*Ulmus glabra*). Elm leafminer is a type of sawfly. The adults emerge in spring to lay eggs in elm leaf tissues. A week later, the eggs hatch, and young larvae begin to make mines in the leaves. The sawfly larvae will feed on the leaf tissue between the upper and lower epidermis of the leaves. The mines start as elongated brown spots between veins in the leaf and may eventually spread to a large part of the leaf (fig. 3). Later, the insects will eat a hole through the leaf epidermis, fall to the ground, and excavate a hole in the soil to overwinter. Severe damage can result in defoliation, but since there is only one generation per year, trees often have time to make another set of leaves. To test a leaf for miners, hold the leaf up to the light. If the insect is still in

the leaf, you can see it. You will also be able to see frass (insect feces) which looks like pencil shavings within the mined area. They spend most of their life cycle burrowed about an inch in the ground.

Management: Because leafminer damage is often cosmetic, insecticides may not be warranted. By the time damage is noticed, it may be too late to treat successfully.

Good websites: https://bygl.osu.edu/index.php/node/1965

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

Sawflies (minor to potentially serious)

We are getting reports of a variety of different sawflies out and about. The elm leafminer, mentioned above, is a type of sawfly. We featured the European pine sawfly in our last issue. Our scouts brought in an adult sawfly (yet unidentified). Dr. Stephanie Adams has found another (yet unidentified species) feeding on American hazelnut (*Corylus americana*). A couple of years ago, we saw a wide range of sawfly species on a wide range of plants. This may be another busy year for sawflies. So, who are they?

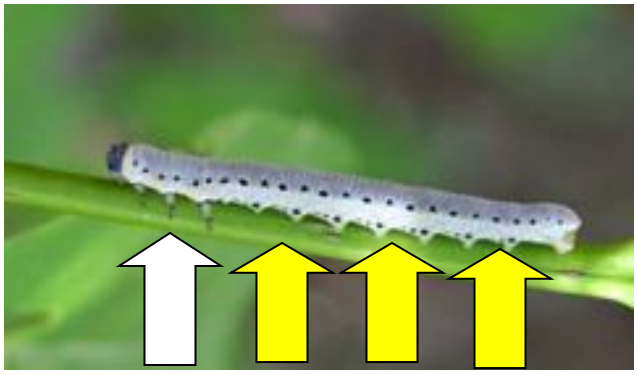

Figure 4 Sawfly larvae showing true legs (white arrow) and prolegs (yellow arrows)

Sawflies are a large group of insects, literally hundreds of species. 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 pairs of tiny legs near the head end of the body, they differ in the number of prolegs at the far end (fig. 4). Prolegs are outgrowths in the abdomen that the insect uses like legs. Caterpillars have five or fewer pairs, while sawfly larvae have six or more pairs. 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 hose 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.

Sawfly larvae eat foliage, and the severity of their damage depends on the host, the size of the 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.

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: https://www.extension.umn.edu/garden/insects/find/sawflies/ https://bugguide.net/node/view/13142

Woolly apple aphids (minor)

The elm trees are keeping our scouts busy this season. In addition to the elm pests already mentioned in this issue, our scouts also found woolly apple aphids (*Eriosoma lanigerum*) on 'Valley Forge' American elm (*Ulmus americana* 'Valley Forge'). Woolly aphids differ from regular aphids in that they are covered with a little fluff, giving them a woolly look.

The woolly apple aphid has an interesting story behind it. Back before Dutch elm disease (DED) took down so many of our elms, the woolly apple aphid would use elm trees as an alternate host. On the elm trees, this pest was able to reproduce sexually, while on other hosts (like apple), reproduction was completed asexually, with no males involved (see this link for more info on life cycles). Now with more DED resistant cultivars around, our population of elms is up and perhaps this insect is finding that useful.

On elms, the aphid feeding results in leaves that are curled and distorted (good photos on this site). You have to unroll the leaves to find the aphids hiding inside. Like other aphids, they produce honeydew. On the sample that the scouts brought in, the aphids were producing little drops of honeydew quite actively. Eventually, a winged form is produced, and this migrates to the other hosts (including apple and hawthorn).

Management: Control on the elm may not be needed since the population will move on to the other hosts. Because the insects are protected in the curled leaves, insecticide sprays may not come in contact with the insects. There are some predators and parasitoids that can help manage this pest.

Spittlebugs (minor)

Spittlebug is showing up on several weeds and perennials. They can be identified by the frothy white mass they produce on foliage and twigs. It does look quite a bit like spittle (fig. 5). Spittlebugs suck plant sap but inflict little damage on mature plants. There are a number of species

Figure 5 Spittlebug

of spittlebugs that feed on a variety of plants.

Management: Control is rarely necessary, and hosing the plants down forcefully with water is usually sufficient to remove most of the insects. This may need to be repeated a few times.

Good website: https://extension.umn.edu/yard-and-garden-insects/spittlebugs

Galls, part 1 (minor)

Galls are starting to show up on some of our favorite plants. The vast majority of galls are harmless, but they are included here so you can learn to recognize them in the landscape. No control measures are needed.

Figure 6 Elm sack gall

The elms are getting hit here as well. Elms are showing off the elm sack gall (fig. 6). The elm sack gall sticks up from the upper leaf surface like a little pouch. It is caused by an aphid.

We have reports of spindle galls on linden (*Tilia*). Spindle galls occur on a variety of plant species. The galls are long and thin and pop out of the upper surfaces of leaves (fig. 7). They are caused by eriophyid mite species.

Figure 7 Spindle galls on linden

Hackberry nipple gall is also showing up on hackberry leaves. It is caused by a tiny insect called a psyllid. The adult female psyllid will lay eggs on the underside of the leaves. When the eggs hatch about a week later, the plant grows tissue around the nymphs in response to the feeding of the insect (fig. 8). Inside the gall resides a tiny yellow to orange psyllid nymph. Nymphs grow larger and emerge from the galls as adults in September. The adults actually look a bit like miniature cicadas. Hackberries are the only known host of this psyllid. Hackberries frequently get nipple galls. As a matter of fact, I was taught to identify hackberries (*Celtis* spp.) by their warty leaves caused by the galls as well as their warty bark. The damage is not considered serious.

Figure 8 Hackberry nipple gall

Pest Updates: Diseases

Fire blight (serious)

Figure 9 Shepherd's hook caused by fire blight

Dr. Stephanie Adams reports fire blight (caused by the bacterium *Erwinia amylovora*) showing up on pears (*Pyrus* species) on the Arboretum grounds. Fire blight is a serious disease of plants in the rose family. Common symptoms are blossom and shoot blight. Branches are described as looking as though they were burned, thus the name fire blight. Blossoms, leaves, and shoots wilt, turn dark brown, and look water-soaked. Leaves usually persist, and succulent shoots that become infected frequently form what looks like a "shepherd's hook" (fig. 9). Fire blight infections move rapidly from the blossoms into branches and trunks, causing cankers (fig. 10). The cankers enlarge and may girdle a tree during the growing season. Clear, or sometimes milky, ooze often exudes from fissures on infected shoots and canker margins. The presence of ooze depends on weather conditions. Fire blight bacteria overwinter in canker margins and buds. In spring, bacteria resume reproduction when temperatures rise above 65 degrees. Rain, heavy dews, high humidity, and vigorous tree growth favor the disease. Frequently trees that are heavily pruned and have a lot of subsequent succulent new growth become infected. The bacteria are spread in droplets of ooze carried by pollinating insects, rain, and pruning tools.

Figure 10 Fire blight canker from infection of flowering spur on pear

Management: Infected limbs should be removed to prevent further spread of the disease within the tree. Prune blighted stems 10 to 12 inches below the last canker during dry weather as soon as they are spotted. Disinfect pruning tools between cuts. Longer term management includes avoiding crowded plantings and excessive pruning. It is also wise to avoid high nitrogen fertilizers that can increase succulent growth which is more susceptible to infection. Plant resistant varieties when available. Chemical control of this disease is limited.

Good websites:
https://mortonarb.org/plant-and-protect/tree-plant-care/plant-care-resources/fire-blight/#overview

https://extension.umn.edu/plant-diseases/fire-blight#pesticides-1760463

Powdery mildew on ninebark (minor to potentially serious)

Powdery mildew has been found on the leaves of ninebark (*Physocarpus opulifolius*). The straight species of ninebark is relatively resistant to powdery mildew, but some of the cultivars can be very susceptible and can sustain quite a bit of damage. University of Connecticut has done some research on this. Go to http://www.academia.edu/14492054/Susceptibility_of_eastern_ninebark_Physocarpus_opulifolius_L._Maxim._cultivars_to_powdery_mildew to see their findings. Hundreds of plant species are susceptible to powdery mildew, but the disease is caused by many different species of fungi which are host specific. This means that the powdery mildew on coralberry will not infect lilacs and so forth.

Figure 11 Powdery mildew on ninebark

Powdery mildew appears as a superficial white to gray coating over leaf surfaces, stems, flowers, or fruits of affected plants. Initially, circular powdery white spots appear. These spots coalesce producing a continuous patch of "mildew." On ninebark, the tips of branches often develop a thick coating of white powder (fig. 11), while other parts of the same plant may show very few symptoms. Later in the season, fungal fruiting bodies that look like black pepper under a hand lens will appear. Warm days and cool nights favor this fungal disease. The fungi that cause powdery mildew are deterred by water since spores will not germinate on wet leaves. However, the fungus still needs high humidity to infect the plant. Leaf curling and twisting result, and in severe infestations you may see premature defoliation and deformed flower buds. Although unsightly, powdery mildew is usually not fatal in the landscape.

Management: Infected plant parts should be removed as soon as symptoms appear. Dispose of fallen leaves. Water plants during periods of drought to keep them healthy. Put plants in locations where there is good soil drainage and sufficient sunlight. Provide proper plant spacing for good air circulation. Powdery mildew on some plants can result in significant damage, and fungicides may be needed. To obtain optimum results, spray programs should begin as soon as mildew is detected. In the future, plant mildew-resistant cultivars and species.

Good website: https://mortonarb.org/plant-and-protect/tree-plant-care/plant-care-resources/powdery-mildews/

Anthracnose on shade trees (minor)

Figure 12 Anthracnose on oak

Rain has been over-abundant this spring. So, of course, it is no surprise that anthracnose is already showing up. Anthracnose is primarily a foliar disease affecting many deciduous trees including ash, elm, oak, and maple. We have had one report of an infection on oak. Often, we don't see a lot of defoliation with anthracnose (except for sycamore anthracnose), but we will need to see how the disease develops this year. Defoliation is not fatal, but it will put some additional stress on trees as their "food factories", the leaves, drop off prematurely. The food that trees make for themselves is different from what fertilizers provide, so extra fertilization is not warranted.

The fungi are able to infect the young, tender leaves, especially during cool and wet springs, like we've been having this year. The disease is caused by several different fungi. The fungi are host specific, so the maple fungus doesn't infect oak trees, and so on. Symptoms vary with the plant host, weather, and time of year when infection occurs, but this disease often produces brown or black blotches (fig. 12) and curled or twisted leaves. Infection is more severe when prolonged spring rains occur after new growth is produced. Although the symptoms appear in late spring into the summer, the initial infection took place in the early spring at bud break and before the leaves hardened off. Once the symptoms show up, it is too late for any chemical applications to be effective.

Management: Cultural methods are usually sufficient to reduce the severity of anthracnose in our region. These include:

- Pruning trees to open up the canopy for better air circulation.
- Maintaining tree vigor with proper watering during times when rain is inadequate.
- In the fall, cleaning up and destroying fallen leaves to reduce the source of inoculum.

Good website: https://mortonarb.org/plant-and-protect/tree-plant-care/plant-care-resources/anthracnose-of-shade-trees/

Oak leaf blister (minor)

Oak leaf blister, caused by the fungus *Taphrina caerulescens*, has been found already this season. Leaves develop wrinkled, raised, pale whitish-yellow blisters on their upper surface (fig. 13) and corresponding gray depressions on the lower leaf surface in spring and early summer. Blisters range from 1/10 of an inch to an inch in diameter. As they age and merge, the blisters become thickened and puckered and the leaf may become distorted. Red oak (*Quercus*

rubra) is the most susceptible species. Oak leaf blister, like other *Taphrina* diseases, usually develops only during cool, wet springs (like this year!!). Oak leaf blister mostly a cosmetic problem. Infected leaves become distorted and may prematurely drop. The disease usually slows during the summer.

Figure 13 Oak leaf blister

Management: The fungus survives the winter on twigs and bud scales. On oak, leaf blister is more unsightly than harmful, so control is not a high priority.

Good website: http://plantclinic.cornell.edu/factsheets/oakleafblister.pdf

Pest Updates: Weeds

Bishop's weed (aggressive)

For many years, Bishop's weed (*Aegopodium podagraria*) was sold as a ground cover and some garden centers still sell it. The variegated cultivar (fig. 14) was especially popular. But times change, and the biggest question that the Plant Clinic gets regarding this plant is "How do I get rid of this?" Why the change? Bishop's weed is a strong grower and is very aggressive, often covering a lot more territory than is desirable. This plant spreads easily underground and can be difficult to control.

Figure 14 Variegated Bishop's weed

The leaves are compound with up to 9 leaflets. The arrangement of the leaves often leads people to mistake it for poison ivy. Leaves of the species are green (fig. 15), but the variegated cultivar has green leaves with creamy margins. The plants will produce clusters of white flowers that resemble Queen Anne's lace, followed by lots of seeds!

Figure 15 Bishop's weed with green leaves

Management: Bishop's weed can be difficult to control. Remove flowers before they go to seed to minimize spread through that venue. Control of existing plants is difficult without herbicides because digging the plant seldom

removes all the underground stolons. Glyphosate can be used to control this plant, but multiple applications may be needed. It is best to treat the plant when it is small, either at the time it is emerging from the soil or resprouting after being cut down. Glyphosate will be absorbed by the young leaves and transported down to the root system to kill out the entire plant. Glyphosate is a non-selective herbicide and can kill or damage any plant so care must be used to avoid getting it on desirable plants.

***Bartlett Tree Experts, Presenting Sponsor of the Plant Clinic*.**

The Plant Health Care Report is prepared by Sharon Yiesla, M.S., Plant Knowledge Specialist and edited by Stephanie Adams, Ph.D., Plant Health Care Leader; 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.

I would like to thank all the staff and volunteers that report disease and pest problems when they find them. Our scouts this year are Deb Link, Maureen Livingston, Loraine Miranda, and Molly Neustadt.

Literature/website recommendations:
Indicator plants are chosen because of work done by Donald A. Orton, which is published in the book Coincide, The Orton System of Pest and Disease Management.
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

This report is available as a PDF at The Morton Arboretum website at https://mortonarb.org/about-arboretum/plant-health-care-report/

For pest and disease questions, please contact the Plant Clinic. You can contact the Plant Clinic via email at plantclinic@mortonarb.org . Emails will be answered during business hours Monday through Friday. You can call the Plant Clinic by phone (630-719-2424) or visit in person, Monday thru Friday 10 am to 4 pm. Arboretum members need a timed entry ticket is needed to enter the Arboretum and visit Plant Clinic in person. Non-members need a timed ticket and must pay the Arboretum entry fee. Inquiries or comments about the PHCR should be directed to Sharon Yiesla at syiesla@mortonarb.org .

2022 Plant Health Care Report Index

Following is an index of the various subjects in this year's report. The number after each subject is the report number. For example, using the chart below, Cicadas…..1 means that it was discussed in the PHCR 2022.01 or the newsletter dated April 1, 2022. The index is updated with the publication of each full issue and is included at the end of each full issue.

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