

OSU Extension - Auglaize County Weekly Horticulture Newsletter – 7-3-20

What are Those Large Beetles in my Garden?



Japanese beetles are about to emerge! In some areas of the state they have already been seen. They feed on greater than 350 known plant species. The adult Japanese beetles usually only feed on the vegetables green beans, asparagus, and okra. The grubs can feed on roots of sweet corn, beet, beans, tomato, and onion, but not frequently. The adult Japanese beetle feeds on rhubarb, grape, raspberry, apple, blackberry, pear, plum, peach, and cherry. The adult Japanese beetle will feed on the following flowers: rose, hibiscus, hollyhock, and clematis. The adult Japanese beetle will feed on the following trees and shrubs: Japanese maple, Norway maple, horsechestnut, gray birch, American chestnut, Rose-of-Sharon, Black Walnut, flowering crabapple, London planetree, Lombardy poplar, sassafras, American mountain ash, American linden, American elm, and basswood. The adult Japanese beetle will feed on weeds as well, such as velvetleaf and smartweed species.

The scientific name for the Japanese beetle is *Popillia japonica*. The Japanese beetle was accidentally introduced into the United States on horticultural nursery stock in 1916 in New Jersey. Japanese beetles are present in every state east of the Mississippi River, except Florida, but can also be found west of the Mississippi river.

The Japanese beetle adult is quite large measuring 1/2 of an inch. The fore wings or the hard wing coverings are bronze to coppery-brown in color. The head and the thorax, the middle part of the insect, are a metallic green color. Another identifying feature are the six tufts of white hair on each side of the abdomen, the area below the wing coverings. The larvae are a greyish-white color and measure about 1" in length and can be found in a C-shape pattern.

The larval, worm or grub, stage of the Japanese beetle feeds in the soil on the roots of grasses and ornamentals. When the population is great enough it can kill the grasses. This usually only occurs in home lawns. In broadleaf crops/plants the adult beetles usually feed on the upper leaves of the plant, flowers, and overripe or wounded fruit. They eat the soft tissues between the veins leaving a lace-like skeleton pattern. In sweet corn it is possible to eat the leaves as well, but this is uncommon or when the population is large/dense. In sweet corn the Japanese beetles are attracted to the silks. When multiple beetles congregate they will eat all of the silks from an ear of corn.

The Japanese beetle has only one generation per year. Japanese beetle adults emerge from the soil in late – June and will continue to emerge for several weeks. The adults are most active in the afternoon in full-sun. Immediately after emergence they begin to mate and the females will go to grassy areas to lay the eggs. The female burrows two to four inches deep in the soil to lay the eggs. The eggs hatch in about two weeks. The eggs and young larvae need sufficient moisture to grow, so a long dry spell in mid-July can drastically reduce the population! The grubs grow quickly feeding on the roots of grasses and ornamentals. By the time the larvae reach full size (one to one and 1/4 inch) the larvae have moved to within one to two inches from the soil surface. However if soil conditions become dry the larvae will move deeper into the soil. After a few frosts the larvae start to move to a four to six inch soil depth to survive for the winter. Some grubs have been found 20 inches deep in the soil. The grubs become inactive when the soil temperature reaches 50 degrees F. The grubs become active again in the spring when the soil temperature has reached 50 degrees F and move back to the surface. The larvae will feed for another three to five weeks, then will begin to pupate, the resting stage, to prepare for emergence as an adult again in late-June.

Management of adult Japanese beetles can be accomplished by physical removal if there are not too many present.

The following active ingredient insecticides will control adult Japanese beetles: cyfluthrin, bifenthrin, deltamethrin, lambda cyhalothrin, esfenvalerate, permethrin, and carbaryl. The pyrethroid insecticides provide two to three weeks of protection while carbaryl only provides one to two weeks of protection. Some botanical products include Neem products and Pyola.

Management of Japanese beetle larvae in the lawn is best achieved by applying imidacloprid, thiamethoxam, or clothianidin in early June before the eggs hatch. Be sure to apply 0.5 to 1" of water after application to incorporate the product into the soil.

Local Observations



First patch of green beans



Last patch of green beans



Neighbor's sweet potatoes



Current stage of my zucchini



Green onion



Cucumber



Snapdragon



Balloon flower or Chinese bellflower



Geranium



Whorled tickseed or whorled coreopsis



Holly hock



Multiple species in a bird bath



Holly hock rust (top of leaf)



Maple anthracnose

Good afternoon! I pray you are well! Happy 4th of July!!

It is getting very dry again!! We received rainfall 4 days this past week! Rainfall on Friday, June 26th ranged from 0" at 11 locations mostly in the southern half of the county to 0.18", and near Kossuth. Rainfall for Saturday ranged from 0.1" near St. Rt. 117 and St. Rt. 67 to 0.5" near St. Rt. 116 and Glynwood roads.

Rainfall on Sunday ranged from 0" at 13 locations mostly south and east to 0.16" near Dowty and County Rd 66A. Rainfall for Monday ranged from 0" at 16 locations for everyone north and east of New Bremen to 0.25" near Sommers and Minster-Ft. Recovery roads. Rainfall for the week ranged from 0.1" near Feikert and St. Rt. 385 roads to 0.65" near Sommers and Minster-Ft. Recovery roads. The average rainfall for the week was 0.35, 0.39" less than last week. Rain for the month of June ranged from 1.64" near Feikert and St. Rt. 385 roads to 3.4" near Mercer Line and St. Rt. 197 roads. The average rainfall for the month of June was 2.44", 1.39" less than the normal of 3.83 for the month. Year to date rainfall is 22.11", 3.33" above the normal of 18.78". There is a slight chance of rain every day, but nothing greater than 40%!

A slightly warmer than normal week with it getting hot at the end of the week! The average high temperature now is 84 degrees F, just 1 degree higher than last week. Temperatures were above normal for 4 days and below normal for 2 days this past week. Temperatures ranged from 73 degrees F to 90 degrees F for the week. The average high temperature for the week was 85 degrees F which is 3.7 degrees F warmer than last week and 1 degree F warmer than the historical average high. The high temperature for the month of June ranged from 68 to 90 degrees F with an average of 79.4 degrees F which is only 0.6 degrees lower than the average high temperature for history. Temperatures will be much above normal (≥ 90) all week!

Back to dry soils and crops stressing out!! I started watering the garden on Wednesday and finished Thursday. With the added water all species in the garden grew very well with all of the heat. I finished harvesting the peas and started harvesting the green beans. My lettuce is doing really well and tasting great. The vine cops all look good and grew quite a bit this week. I need to get the squash treated for squash vine borer. After watering the tomatoes, they really greened up! They are looking much better.

Flowers are looking spectacular with new species starting to flower.

Issues brought to my attention this week was black to brown irregular lesions on silver maple caused by anthracnose, crabapple trees dropping leaves likely from apple cedar rust, identified what I think is goatsrue in a lawn, at tree with bacterial wetwood, and identified scouring rush in a pond setting.

Weekly Weed Photos



Prickly sida



Virginia copperleaf



Prostrate spurge



Common purslane

Special OSU Horticulture Meetings

Horticulture Lunch and Learn and Horticulture Happy Hour

During this period of COVID-19 OSU Extension is offering a Horticulture Lunch and Learn Program and a Horticulture Happy Hour Program. If you are interested, visit the following web address: <http://go.osu.edu/MGVlearn> The Lunch and Learn occurs every Tuesday and Thursday from noon to 1:00 PM and the Happy Hour is Wednesdays from 4:00 to 5:00 PM.

VegNet

Another Cucumber Downy Mildew Outbreak in MI – and Closer to Home

July 2nd 2020



Downy mildew sporulation on underside of a cucumber leaf.

Outbreaks of cucumber downy mildew on two commercial farms in Monroe County, MI were [detected on June 29](#). Monroe County is in southeast Michigan and borders Ohio's Lucas County. In addition, spores of the downy mildew pathogen have been captured in [spore traps](#) in four Michigan counties, so downy mildew is ramping up and very likely to be in cucumbers in northern Ohio at this time. Although the sunny, dry, warm conditions of the past 5 days or so do not favor downy mildew epidemics, growers in northern Ohio should protect cucumbers, melons and giant pumpkins with appropriate fungicides as outlined [here](#). Squash and pumpkins are generally much less susceptible than cucumbers, melons and giant pumpkins to the group of isolates of the downy mildew pathogen that circulates early in the Great Lakes Region. The second group affects all cucurbits and usually migrates from the southeastern states to Ohio in late July or August. Although daytime temperatures are expected to be $> 90^{\circ}\text{F}$ for the next two weeks, cooler nighttime temperatures, high humidity and intermittent rainstorms may allow initiation and spread of downy mildew disease foci.

There are a number of downy mildew lookalikes, especially angular leaf spot, a bacterial disease, and anthracnose. If you aren't sure and would like a lab confirmation, [send leaf samples to the OSU Vegetable Pathology Lab for diagnosis](#). The diagnostic service is free for Ohio growers. Doing so will also help us track downy mildew on cucurbit crops across the state of Ohio.



Angular leaf spot of squash.



Anthrachnose on cucumber – photo by M. Netz.

Wayne County Scouting Notes from the week of June 21-June 27

June 30₂₀₂₀

Vegetable Pests

Potato Leaf Hoppers are feeding on potato and [green beans](#). They will also cause damage to eggplant and other crops as well. Their feeding causes what is known as “hopper burn” around the leaf edges and if left untreated, the feeding will eventually cause the leaves to turn brown and begin to die back.

Cucumber Beetles are high in numbers right now. Cucumber Beetles vector the Bacterial Wilt disease so early season control of the beetles is vital to the long-term health of the plant. Also note that as your plants are blooming, the beetles may be in the blossoms. In small enough numbers, this is okay, but they can also damage the fruit from feeding on the blossom. Consider the pollinators when planning out treatment options for cucumber beetle.

European Corn Borer is now doing damage in tasseling corn. The small ECB larva feed in the tassels as well as the ears. It is important to thoroughly inspect the plants as you are scouting, especially with early season

corn as their damage will not always be detected in the tassel like in later planted sweet corn. An ECB trap in Wayne County had 9 moths in the trap this week.

Onion thrips populations have really trended upwards. Damage from thrips occurs primarily in the center of the plant where the new growth is emerging. Heavy feeding can lead to reduced bulb size or even plant death. The thrips damage can also open the plant up to purple blotch which is able to infect the plant via the wounds created by the thrips feeding. Click [here](#) to see photos of thrips and the damage they cause. Colorado Potato Beetle are still feeding on eggplant and potatoes. Although their numbers are not as high where there has been several treatments, their populations can quickly get out of hand.

Vegetable Diseases

Downy Mildew has been confirmed in south west Michigan. Considering the proximity to Ohio, it has been recommended that cucumber growers begin a downy mildew fungicide program immediately. [Read more](#) from Sally Miller's lab.

Some of the field peppers I am scouting showed signs of damping off. Damping off is caused by soil borne fungi such as Rhizoctonia, Pythium, Fusarium and Phytophthora.

Powdery mildew is starting to show up on cucurbit crops around the state. I have not yet had any cases in Wayne County, but this disease should be watched for closely.

Fruit Pests

Spotted Wing Drosophila are starting to be found in Wayne County and surrounding areas. As more small fruits come into season, expect the number of SWD to increase rapidly. ["Monitoring and Managing Spotted Wing Drosophila in Fruit Crops"](#)

Codling Moth and Oriental Fruit Moth traps had an increase in numbers but nothing above threshold levels.

Keep an eye out for aphids in orchard crops. We are getting into the time of year where aphid populations begin to increase and can do so rapidly. Leafhoppers are another pest to be on the look out for.

Fruit Diseases

It is the right time to consider looking at managing summer diseases such as flyspeck, sooty blotch, and fruit rots. This note can go for peaches as well with diseases such as brown rot and scab.

Another note on apples, although not a disease, the effect of freeze/cold damage can appear unsightly and may be confused for a disease. This scabby looking ring or spots on the fruit are known as "frost rings". This

is a result of the tissues being damaged in cold or freezing temperatures. Rich Marini from Penn State notes “Sometimes frost during bloom may not kill a flower or small fruit, but may injure the skin tissues and cause a ring of russet around the fruit and these are referred to as frost rings.” Read more [here](#) about apple skin disorders.

Grapes are now around the “shatter” stage where the unfertilized berries fall off the clusters. It is important to be considering proactive treatments for grape downy mildew especially if you have a variety of grapes that are susceptible to downy mildew.

Factors Influencing Measures of °Brix (Soluble Solids), an Indicator of Potential Crop Quality

June 27₂₀₂₀

Brix readings continue to interest and confuse farmers and others. Collecting a reading is far easier than making decisions based on it. In fact, it takes just moments to obtain a °Brix (soluble solids) reading in the field, packing shed, or elsewhere; the major steps include collecting a small drop of plant sap or juice and placing it on a properly maintained and used refractometer, a handheld instrument that fits easily in your pocket. A reading typically can be in hand in less than two minutes. However, making proper use of the °Brix value requires effort and experience for reasons outlined below.

The sugar sucrose is perhaps the most prevalent soluble solid in plant juice. Therefore, many vegetable-based °Brix (refractometer) readings are set primarily by the number of sucrose molecules in the sap or juice used as the sample (unless the sample is contaminated). Within a crop, these sucrose levels are, in turn, influenced by:

1. Variety;
2. Plant population/density;
3. Irrigation or soil moisture status;
4. Nutrient management or soil fertility status;
5. The plant part sampled (e.g., root, stem, leaf, fruit) and exact portion of it;
6. The age (maturity, position) of the plant part sampled;
7. Time of day of sampling;

8. Temperature and light conditions;
9. Post-harvest conditions; and
10. Other factors.

Not surprisingly, experienced refractometer users understand that it is essential:

1. To use a standardized, consistent approach involving sampling the same plant part (and portion) at the same development stage at the same time of day, etc. That way, comparisons based on other factors are more reliable.
2. To obtain and record many values (the process is nearly free minus small initial investments). Much like measures of blood sugar, cholesterol, heart rate, etc, the worth of one °Brix reading in decision-making is often based on comparing it to readings collected previously and the conditions under which they were collected.

We have measured °Brix levels in vegetable crops grown on Ohio farms and at OSU research stations for nearly twenty years using protocols explained in fact sheets at <https://u.osu.edu/vegprolab/research-areas/product-quality-2/> and taking factors listed above into account. The data below were collected in July-November 2011 by Dr. Natalie Bumgarner (then a graduate student at The OSU and now with Cooperative

Extension at the University of Tennessee). Note the variation within and across crops.

Crop	Brix average	Brix range	# obs	# Farms
Beet	7.8	2.8 - 13.6	36	4
Bean	6.9	2.9 - 15.7	56	3
Swiss Chard	4.6	2.6 - 6.5	14	2
Cucumber	3.3	2.2 - 5.4	59	4
Squash	4.3	3.5 - 5.3	42	4
Sweet corn	16.2	9.5 - 26.5	65	2
Ch. Tomato	7.5	4.5 - 11.7	99	5
Tomato	4.7	2.3 - 8.2	440	10
Turnip	6.0	4.5 - 6.9	19	3
Watermelon	10.8	9.0 - 12.8	65	4
Zucchini	4.0	2.4 - 6.0	70	5

Contact Matt Kleinhenz (330.263.3810; kleinhenz.1@osu.edu) for more information.

BYGL

I did not include all of this week's articles in this newsletter. To see all of them go here:
<https://bygl.osu.edu/>

Turfgrass Times, 07.02.2020

Authors

Amy Stone

Published on

July 2, 2020



Check out this week's Turfgrass Times - covering a little bit of everything turfgrass and talking about the current heat wave and predicted warmer temperatures!

Participants this week included: Dr. David Gardner; Dr. Ed Nangle; Joe Rimelspach; Dr. Zane Raudenbush; Dr. Karl Danneberger; and Dr. Dave Shetlar (aka the Bug Doc). This week's recording includes dormant turfgrass - herbicide volatility, turfgrass diseases, abiotic disorders and insect update.

Here is the link for the timely video: <https://youtu.be/kRTzOch4d8c>

Gypsy Moth Caterpillars Becoming Obvious in Some NW Ohio Areas

Authors

Amy Stone

Published on

July 2, 2020



Within the last week, there have been several reports of gypsy moth (*Lymantria dispar*) infestations to the county Extension Offices in NW Ohio, specifically Defiance, Fulton, Henry and Lucas Counties from landowners in those counties.

This comes on the heels of the Ohio Department of Agriculture (ODA) completing the aerial applications of the 2020 Gypsy Moth Management Program in Ohio with a combination of treatments geared at early instar larvae and mating disruption for the adult moths later this summer. In addition to these two programs, ODA also coordinates gypsy moth trapping that occurs throughout Ohio where lures are placed in traps to draw in male moths in a given area using a grid system. This type of monitoring provides valuable information to determine where the leading edge of this insect pest is located; are there any building populations in the state; along with a collection of data illustrating population dynamics over a long period of time.

This non-native insect hatched earlier this spring as a small caterpillar, but only now is making its presence known because of its huge appetite for leaves, both deciduous and evergreens. When defoliation occurs on deciduous trees, those trees tend to respond by sending out new leaves as the summer progresses. Evergreens, with spruces being a favorite, are often killed in a single season when feeding is extensive.

To learn more about gypsy moth in Ohio, check out the ODA's website at: <https://agri.ohio.gov/wps/portal/gov/oda/divisions/plant-health/gypsy-moth-program/gypsy-moth-program>

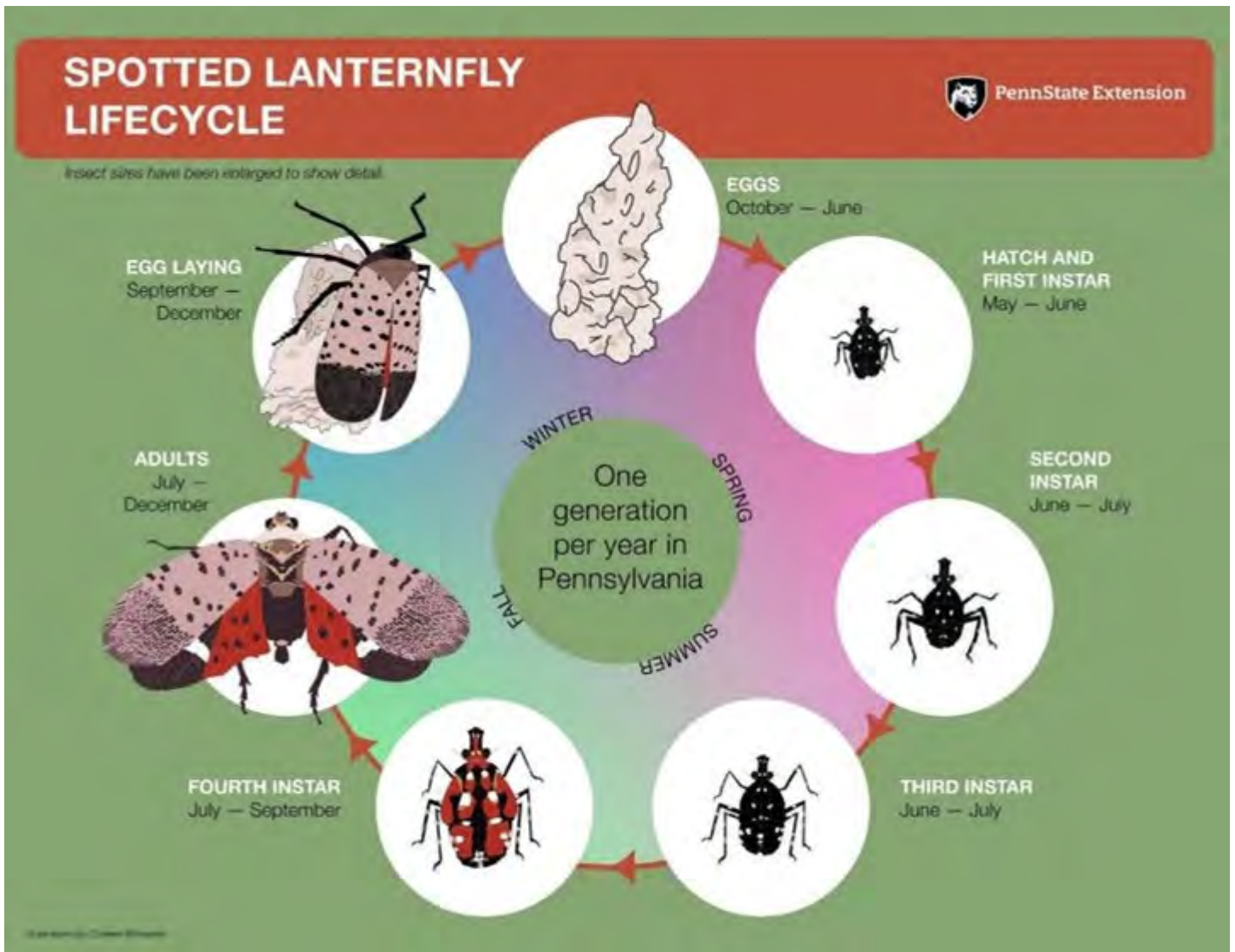
Spotted Lanternfly Continues to Develop

Authors

Amy Stone

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July 2, 2020



While the spotted lanternfly (*Lycorma delicatula*) (SLF) has not been detected in Ohio, the Ohio Department of Agriculture (ODA), along with the Ohio State University (OSU) and the Ohio Department of Natural Resources (ODNR) are urging Ohioans to continue to be on the look-out for this invasive insect. Many are using the Great Lakes Early Detection Network (GLEDN) App to report tree-of-heaven (*Ailanthus altissima*), a favorite food or host for this plant hopper, especially as an adult, and then revisiting the tree looking for signs and symptoms of SLF throughout the year.

The great thing about the GLEDN App is that you can make a *negative report* if you don't see SLF. Individuals engaged in this important work can download and then log onto the GLEDN App. Each time they revisit the site where tree-of-heaven has been IDed and do not see any indications that SLF has infested the host, a negative report can be made. If someone suspects that SLF is present, a suspect report can be made via the App and ODA will be alerted and follow-up will occur. Confirmation of an infestation must follow a detailed protocol that includes confirmation through USDA and any and all suspect reports are followed up on as quickly as possible. If someone isn't using the GLEDN App, but is concerned that they might have seen this insect, they can also contact the ODA directly and are urged to make the report online at: <https://agri.ohio.gov/wps/portal/gov/oda/divisions/plant-health/invasive-pests/slf>

In Pennsylvania where this insect was first discovered in North America, we have been following its development to alert Ohioans what stage of the insect to be on the look for. While the egg masses began hatching earlier this spring, if SLF is in Ohio, we should be seeing the nymphs with the prediction of adult activity beginning within the next 30 days.

The first, second and third instar nymphs are black and white, with the fourth instar being red, black and white. The adults look very different than the nymphs. Below are pinned specimens captured in a photo in a lab in Pennsylvania in the fall when members of the Extension Nursery Landscape and Turf (ENLT) Team visited Pennsylvania to learn more about this non-native invasive species.



Photo Credit: Amy Stone, OSU Extension - Lucas County

Adult SLFs on birch tree in Pennsylvania in October.





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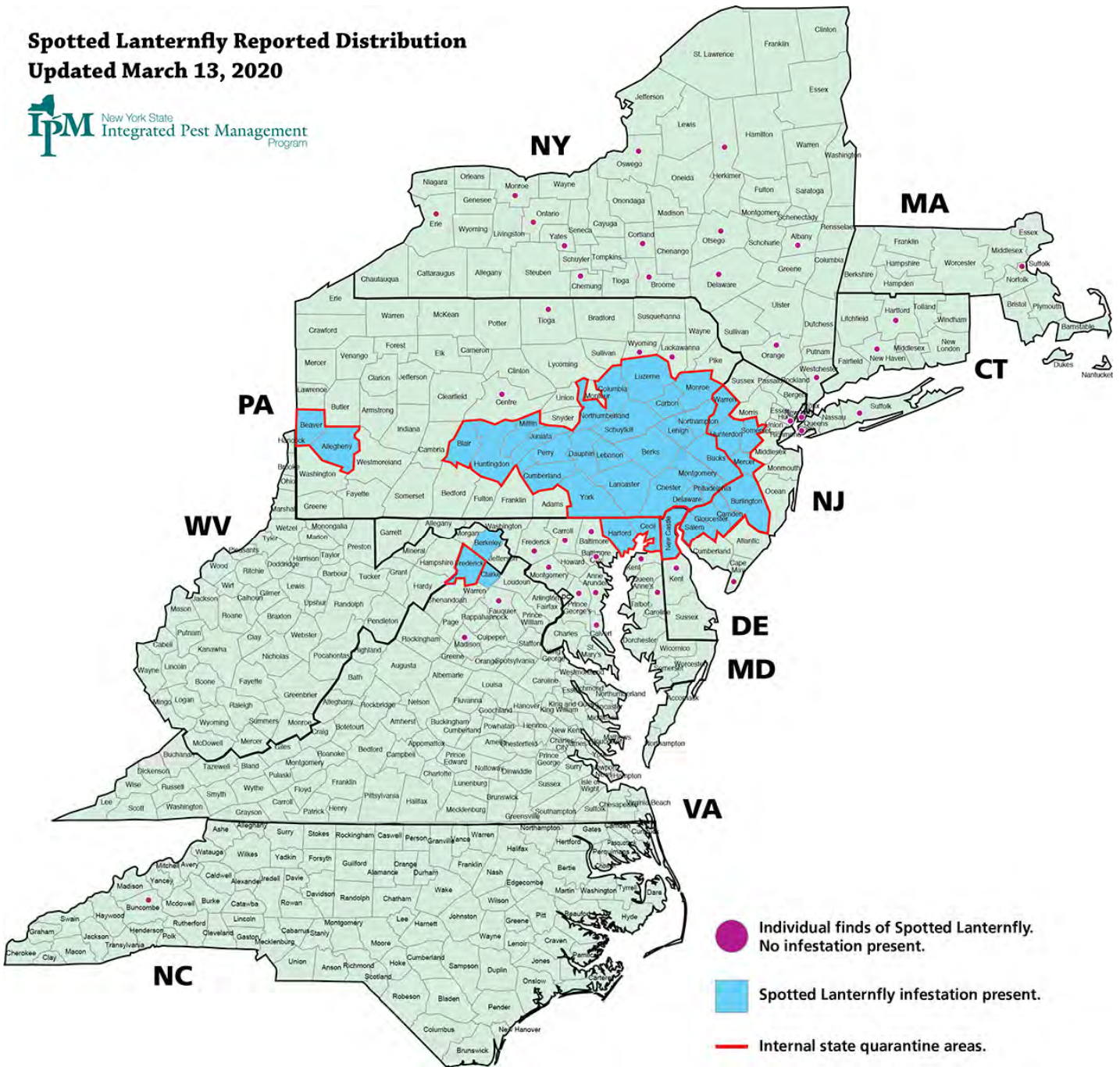
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Photo Credit: Amy Stone, OSU Extension - Lucas County

Help us look for SLF in Ohio - what we are calling Operation Spot the Spot. This insect, as with many non-native, invasive species, is a great hitch-hiker - catching a ride and spreading outside its established range or beyond its natural spread. Below is the current distribution map of SLF.

Spotted Lanternfly Reported Distribution
Updated March 13, 2020



Good Beetle: Fiery Searcher Caterpillar Hunter

Authors

Joe Boggs

Published on

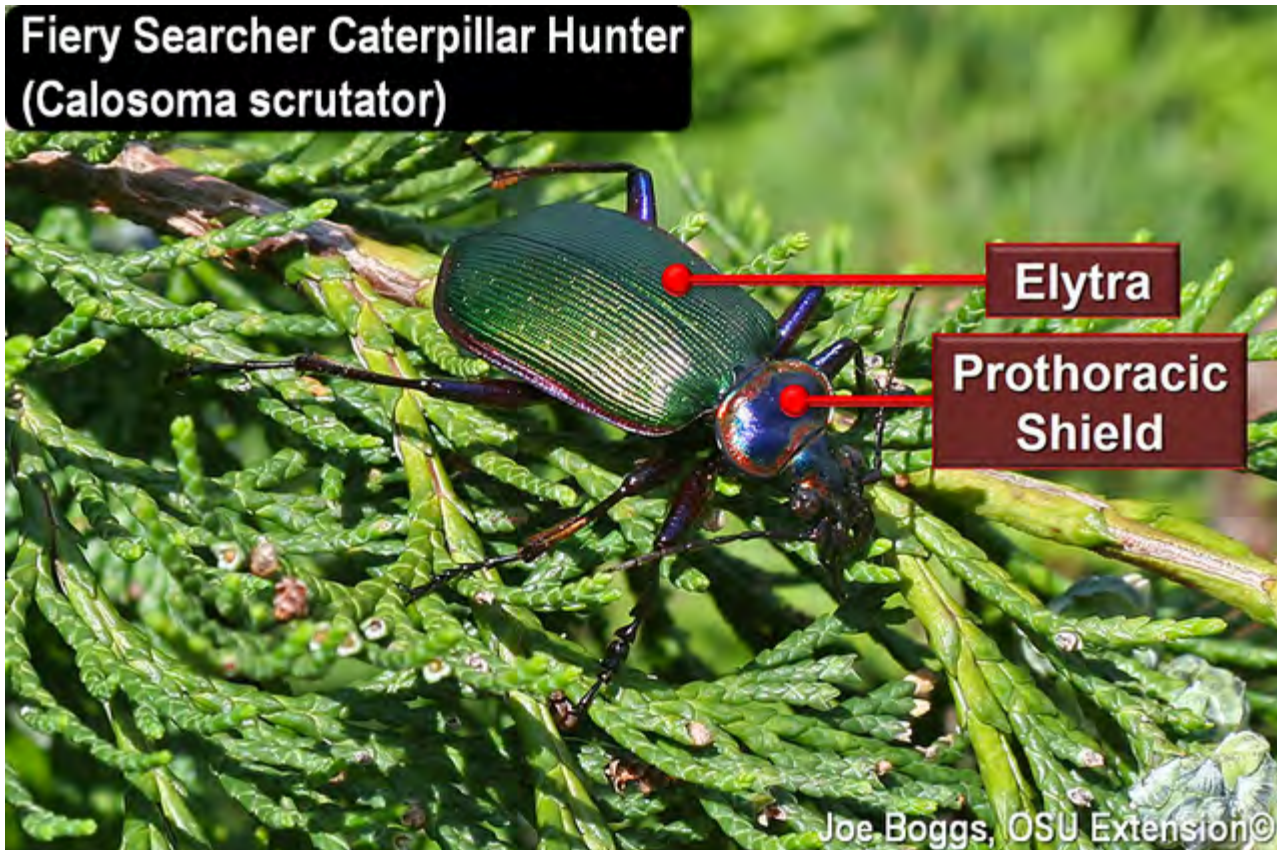
June 30, 2020

Fiery Searcher Caterpillar Hunter (*Calosoma scrutator*)



One of the most striking beetles that you'll ever find in Ohio is the fittingly named Fiery Searcher Caterpillar Hunter (*Calosoma scrutator*). But be careful. This meat-eating beetle is accurately described as beauty with a bite.

Their beauty is displayed with deeply grooved metallic green elytra edged in lustrous reddish-orange. The elytra are hardened front wings that protect the abdomen and membranous hind wings. All beetles share this general body plan as described in name Coleoptera: coleo = sheath; ptera = wing.

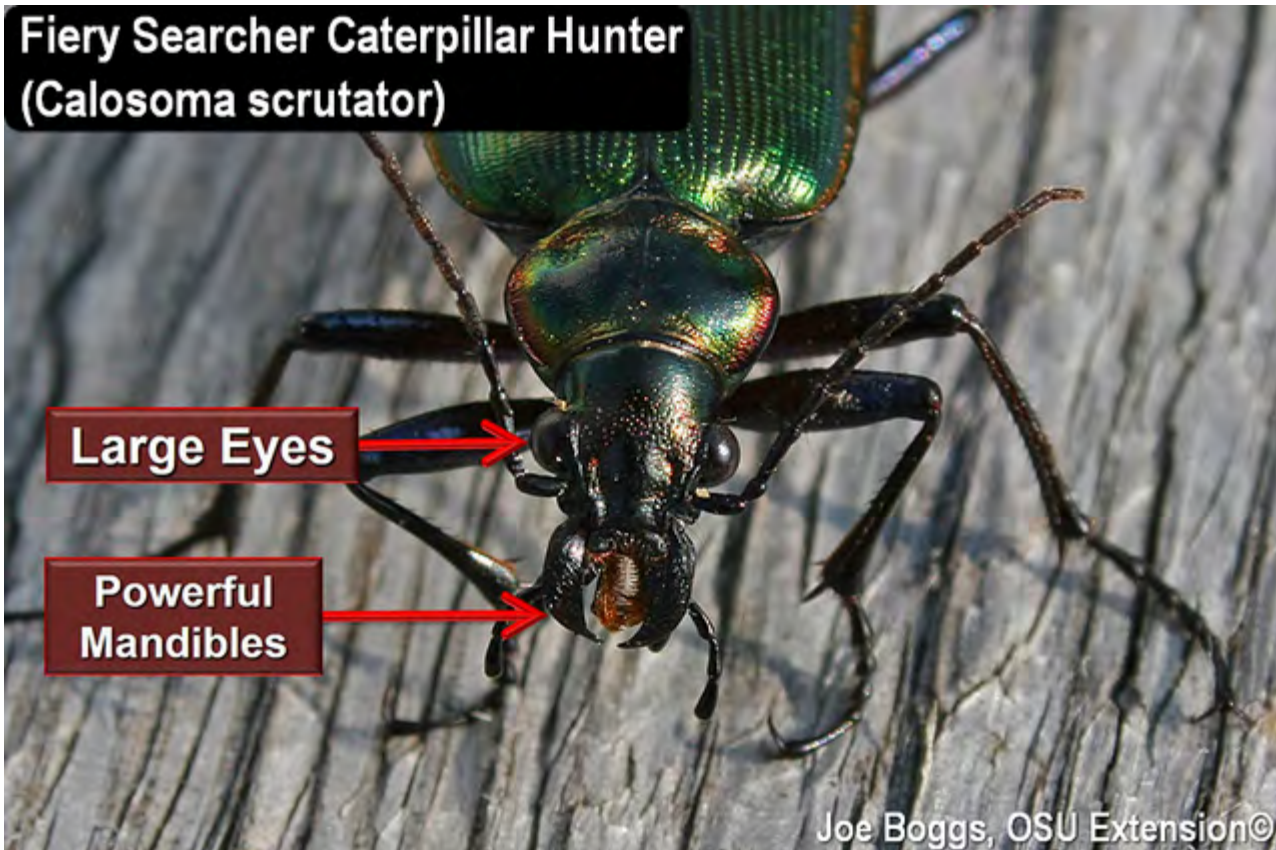


The eye-candy continues with the dark blue prothoracic shield which is also edged in a radiant ring of copper-orange. This flame-like motif is responsible for the "fiery" in the common name. Flipping the beetle over (carefully!) reveals a carnival glass-like mix of green and reddish-copper markings that play off the colors of the long legs best described as purplish-dark blue fading into electric-violet.

**Fiery Searcher Caterpillar Hunter
(*Calosoma scrutator*)**



The bite of this predacious beetle comes from their powerful, sickle-shaped mandibles. Fiery searchers hunt down and feast on free-range caterpillar meat as well as any other soft-bodied insect they can clamp their mandibles on; thus the "caterpillar hunter" in their common name.



Fiery searcher caterpillar hunters live for 2 to 3 years spending the winter beneath bark or in the soil. They are one of the largest "ground beetles" (family Carabidae) found in Ohio measuring around 1 1/4" in length. These meat-eaters are one of our more significant insect predators with the capability of having a substantial impact on the population densities of general defoliators.

The beetles are commonly found feeding on gypsy moth (*Lymantria dispar*) caterpillars as well as pupae. Once adult moths emerge, the beetles typically go on a crawl-about in search of food which may cause them to show up in unexpected places.



Their large size and obvious hunting equipment which includes long legs, big eyes (The better to see you with, my dear!), as well as obvious mandibles (The better to eat you with, my dear!) makes the fiery searcher a perfect model for teaching about insect predators. Of course, you should use pictures, not live specimens because they bite. They're wolves after all.

**Fiery Searcher Caterpillar Hunter
(*Calosoma scrutator*)**



Bad "Bugs"

Authors

Joe Boggs

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June 30, 2020

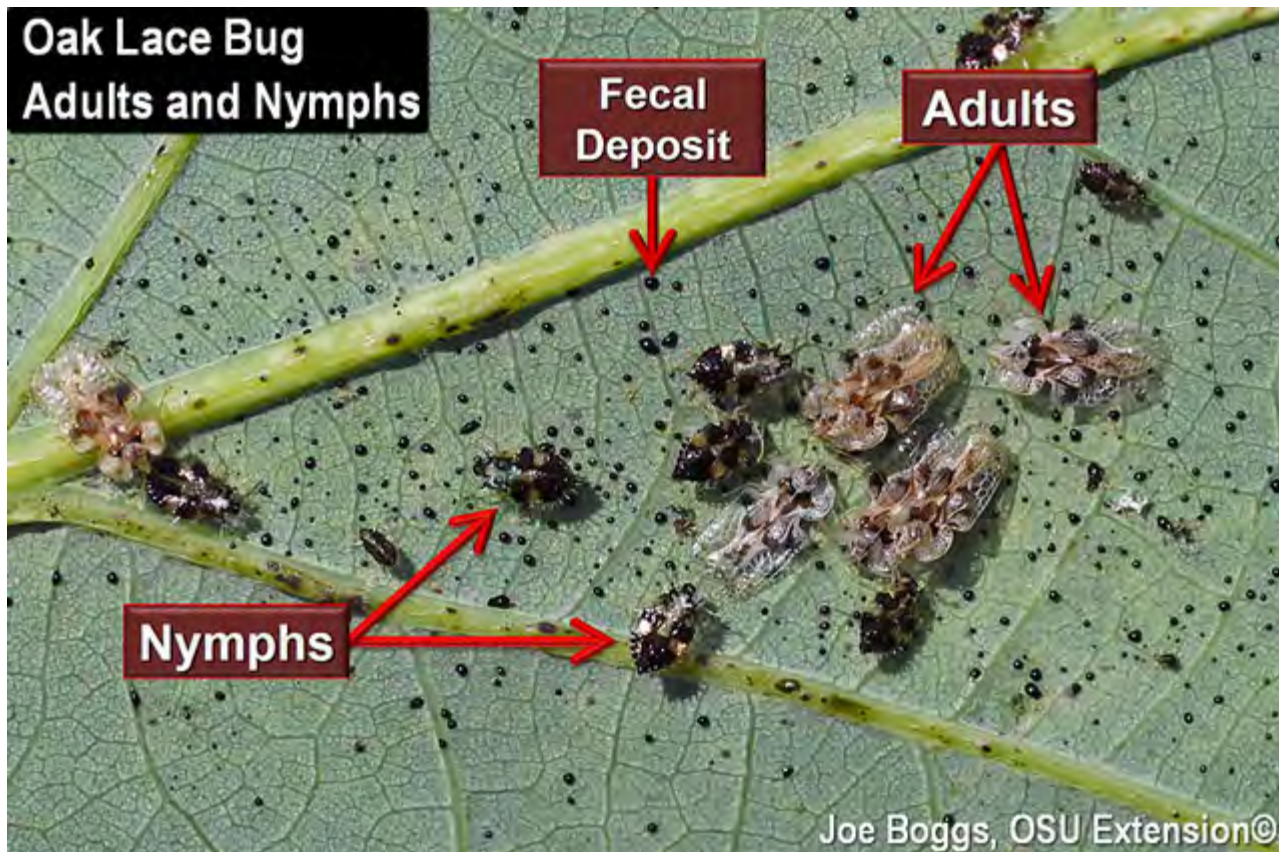
Basswood Lace Bug Adults on Silver Linden



Joe Boggs, OSU Extension©

Lace bugs (order Hemiptera; family Tingidae) are so-named because of the lace-like pattern of veins and membranes in their wings. Most lace bug species found trees in Ohio live on the lower leaf surface.

All lace bugs are tiny insects with the adults measuring no more than 3/16" long. The nymphs are even tinier and appear to be covered in small spikes.



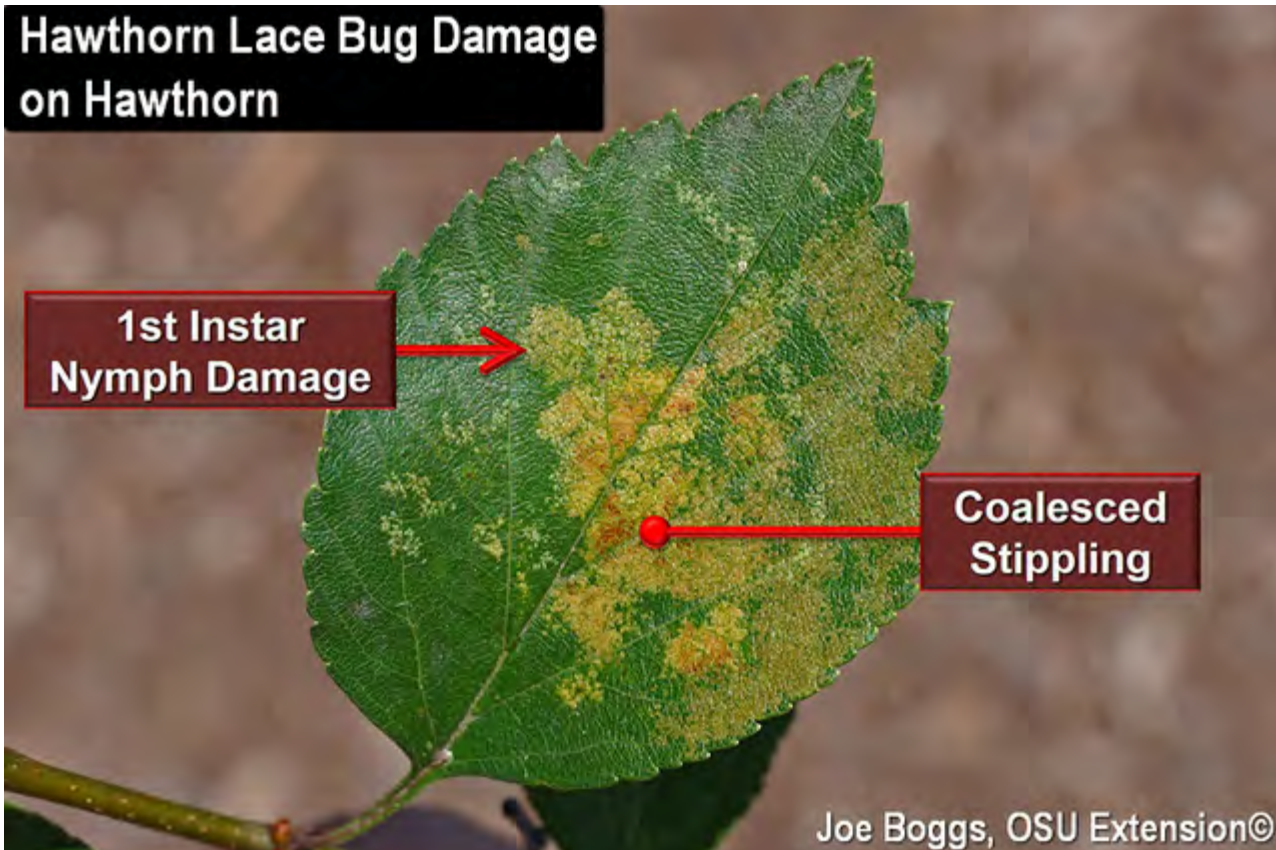
Both the adults and nymphs use their piercing-sucking mouthparts to suck juices from the leaves. Although feeding is done on the lower leaf surface, the damage appears on the upper leaf surface as tiny chlorotic spots (= stippling). High winds and heavy rains can drive lace bugs to lower leaves, so the stippling damage may be heaviest in the lower canopy.



The stippling may at first appear as distinct 1/4 - 1/2" diameter spots on the upper leaf surface created by 1st instar nymphs feeding near the cluster of eggs from which they hatched. This symptom is particularly evident with basswood lace bugs on silver linden owing to the dark green upper leaf surface.



Eventually, the stippling will coalesce to produce large white patches and heavily stippled leaves look "bleached-out." As the damage progresses, portions of the leaf, or entire leaves, will turn yellow to copper-brown. Another tell-tale feature of lace bug feeding is the appearance of black tar-like fecal deposits that add to the unsightly appearance of heavily infested leaves.



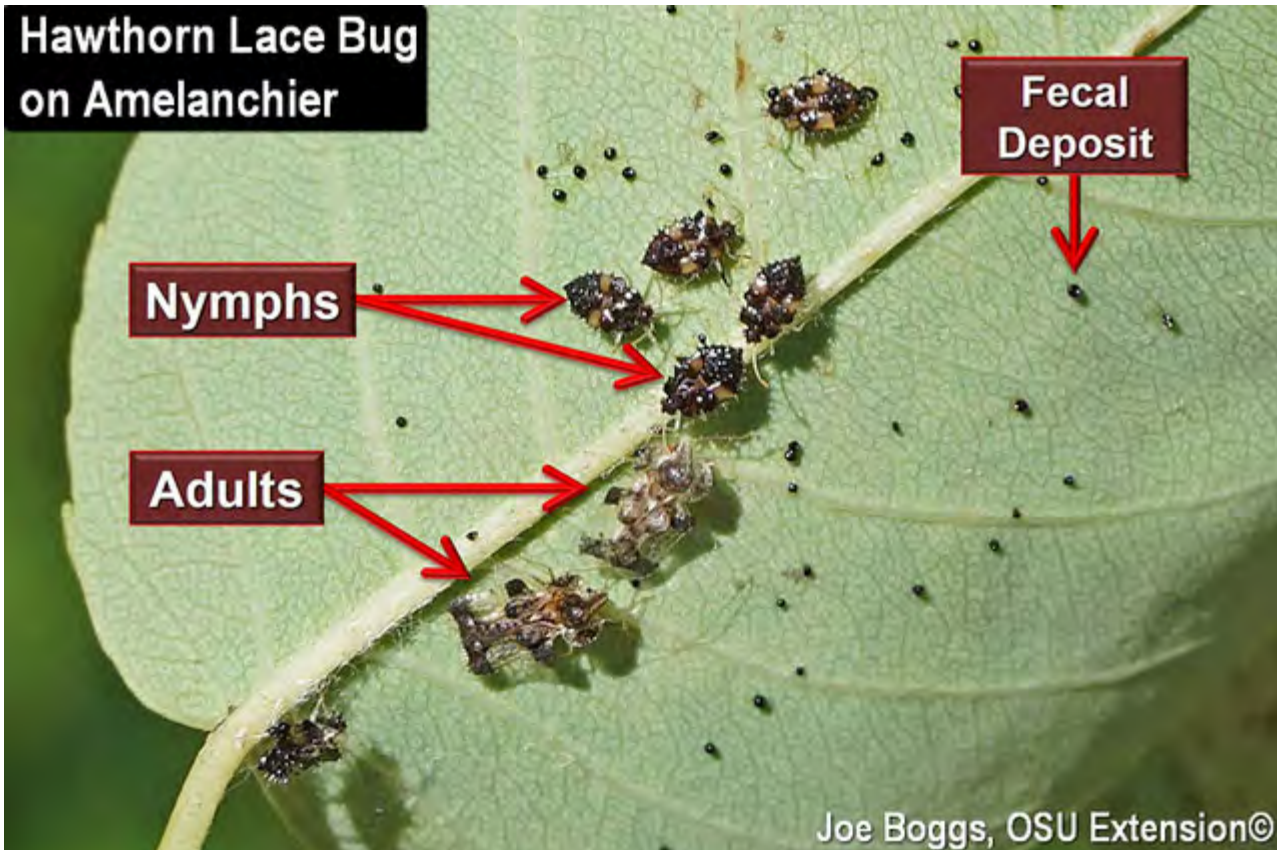
High lace bug populations can produce enough leaf damage to cause early leaf drop, branch dieback, and even the death of small trees and shrubs. Many lace bugs in Ohio have 2 to 3 generations per season with the leaf damage ramping up with each successive generation. This means it's critical to target the current first generation with control measures to halt further damage this season.



Lace bugs can also be a serious nuisance pest. They have a penchant for dropping from heavily infested trees onto unsuspecting hikers, picnickers, and patrons of outdoor bars and cafes. They don't feed on people, but they can use their piercing-sucking mouthparts to deliver a pinprick bite particularly if they fall between a person's neck and shirt collar. Adding insult to injury, floating lace bugs can ruin a good mint julep.

A Rogues Gallery of Lace Bugs

Despite its common name, hawthorn lace bug has one of the most cosmopolitan palates of any lace bug found in Ohio. It will feast on a wide variety of rosaceous plants as well as a few plants outside of the rose family such as common buttonbush (*Cephalanthus occidentalis*). However, they are most commonly found on hawthorn (*Crataegus* spp.), serviceberry (*Amelanchier* spp.), *Cotoneaster* spp. and firethorn, (*Pyracantha coccinea*).



Hawthorn Lace Bug on Cotoneaster



Other lace bugs that are beginning to produce noticeable damage in Ohio include: buckeye lace bug (*C. aesculi*); oak lace bug (*C. arcuata*), sycamore lace bug (*C. incurvata*); walnut lace bug (*C. juglandis*); and chrysanthemum lace bugs (*C. marmorata*).

**Buckeye Lace Bug
Adult and Nymphs**



Joe Boggs, OSU Extension©



The buckeye, oak, and walnut lace bugs confine their feeding to their namesake hosts. Sycamore lace bugs may be found on American sycamore and to a lesser extent on London planetree.

**Buckeye Lace Bug
Damage**



Joe Boggs, OSU Extension©





Basswood lace bug (*Gargaphia tiliae*) commonly focuses its attention on silver linden (*Tilia tomentosa*). This tough tree is able to handle many of the urban slings and arrows that send less hardy trees to wood chippers. However, this eastern European native seems to be having a growing challenge with our native lace bug. The bugs commonly turn silver lindens into golden-brown lindens by August the Greater Cincinnati region.

**Basswood Lace Bug Adult and Nymphs
on Silver Linden**



Joe Boggs, OSU Extension©



Chrysanthemum lace bugs (*C. marmorata*) are unusual in two ways. They are found on both the lower and upper leaf surfaces and they may feed on a wide range of herbaceous perennials in the Asteraceae family including asters, *Rudbeckia*, goldenrods, and sunflowers. These lace bugs may occur in greenhouses as well as landscapes. Indeed, landscape infestations may originate in greenhouses.



Management

Suppression includes simply applying a heavy jet of water to blast away the lace bugs. Of course, adults have wings, so the adults may thwart the "water park ride" approach to management by simply flying back to the leaves. Insecticidal soaps and horticultural oils are effective; however, direct contact is required. So, make sure to target the undersides of leaves. The same is true for pyrethroid insecticides; they are stomach poisons but lace bugs are sucking insects.

Some systemic insecticides such as acephate (e.g. Orthene, Lepitect) and the neonicotinoids dinotefuran (e.g. Safari, Transtect) and imidacloprid (e.g. Merit, Xytect) are effective against lace bugs. However, imidacloprid must be applied with enough lead-time to allow the active ingredient to migrate to the leaves in a high enough concentration to kill the bugs; it may be too late this season.

Of course, before using any insecticide, you must read and follow label directions paying close attention to plant safety as well as avoiding impacts on pollinators. This includes making certain sprays do not drift or runoff onto non-target flowering plants.

Cottony Maple Leaf Scale Hiding in Plain Sight

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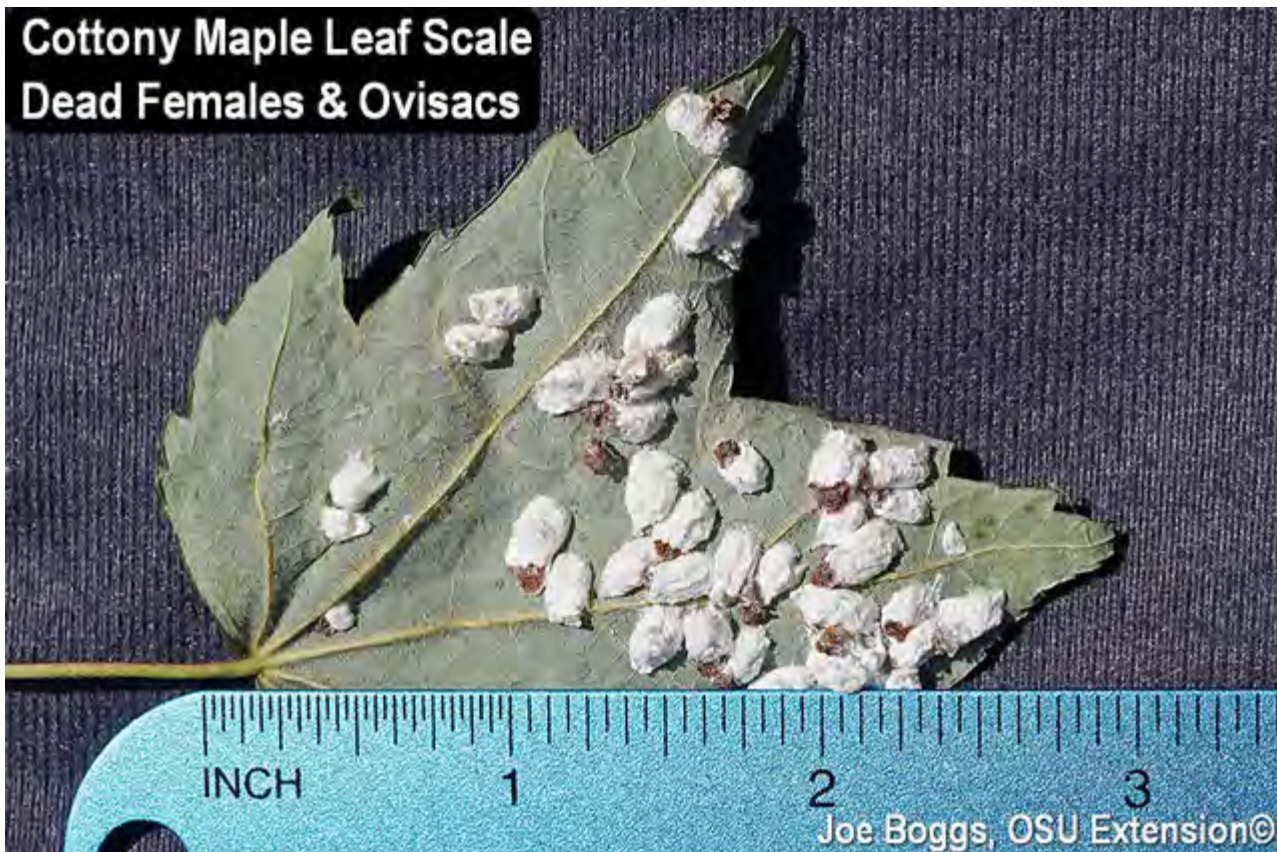


I recently visited two landscapes in southwest Ohio with medium-sized red maples (*Acer rubrum*) there were heavily infested with cottony maple leaf scale (*Pulvinaria acericola*). However, I would not have known the trees were infested had I not walked beneath their canopies.

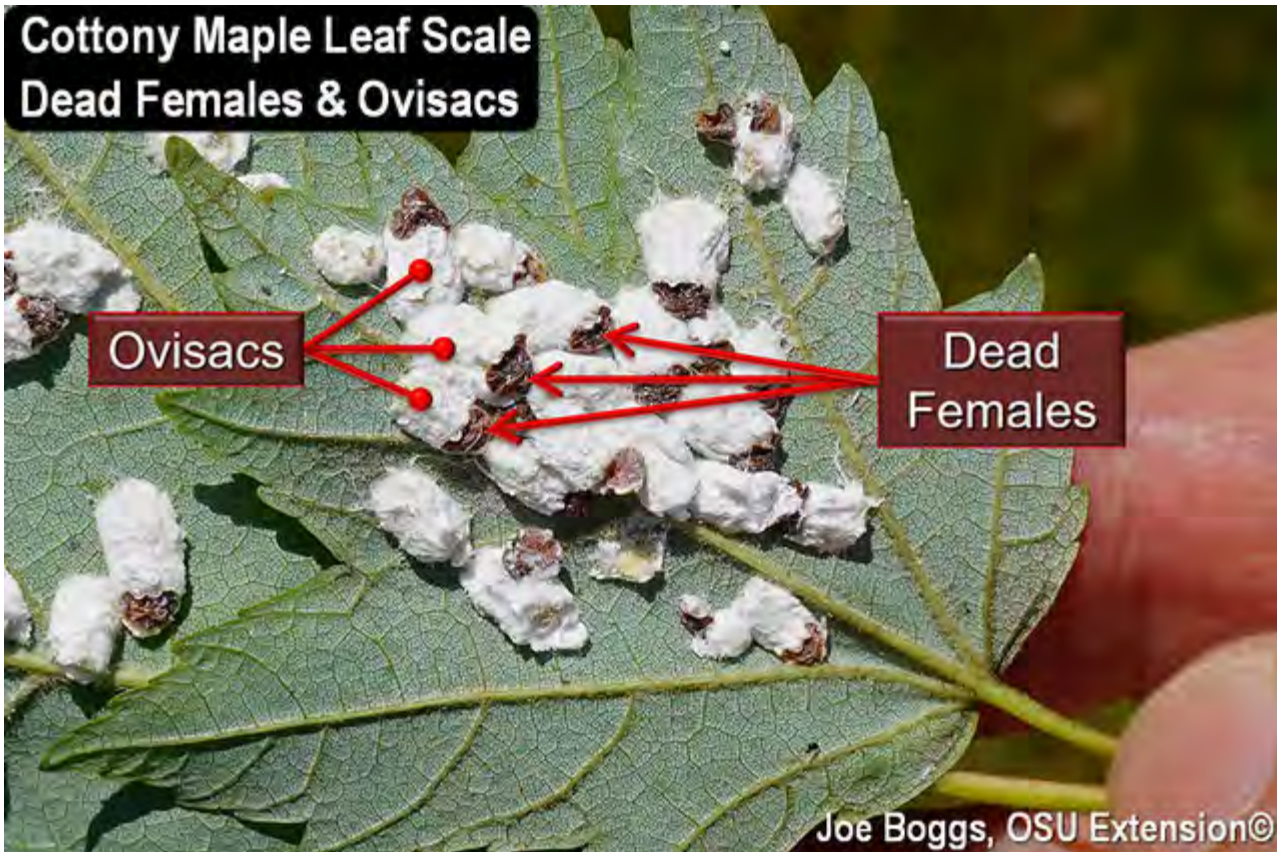
It's amazing how well these highly visible soft scales can remain concealed owing to their location on the underside of leaves. This is particularly true with the drooping leaves of red maples.



The cottony maple leaf scale is so named because the females exude their eggs in an elongated, white, cottony structure called an ovisac which are stuck onto the underside of leaves. A close examination of the ovisacs reveals the eggs are held inside a sack-like matrix of sticky, silk-like material.



The ovisacs are elongated because the female crawls forward as she's laying her eggs. She dies once she finishes and her body remains visible as the end of the ovisac appearing as a shriveled, reddish-brown husk. On the average, her ovisac may contain more than 2,500 eggs. Small wonder she's shriveled!





The closely related cottony maple scale (*P. innumerabilis*) also produces ovisacs but they are attached to stems. The only time they appear on leaves is when populations are exceptionally high. Both of the cottony scales have life cycles that are very similar; however, the cottony maple scale appears to have a wider host range.

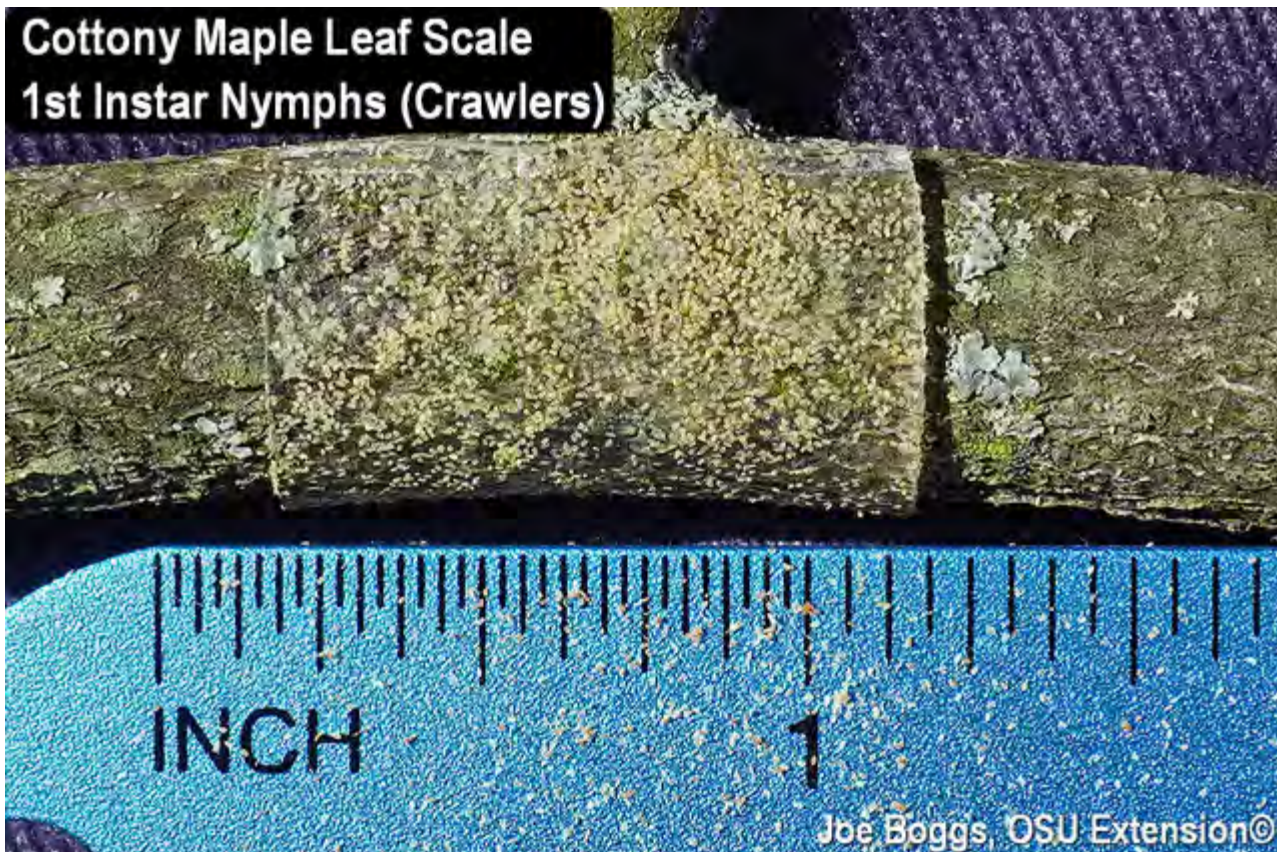


The cottony maple leaf scale prefers maples which isn't surprising given the scale's common name. They are most commonly found on red (*Acer rubrum*) and silver maples (*A. saccharinum*); however, they may also produce damaging populations on sugar maple (*A. saccharum*) and boxelder (*A. negundo*). Other occasional hosts include Andromeda (*Pieris Japonica*), flowering dogwood (*Cornus florida*), hollies (*Ilex* spp.), and sourgum (*Nyssa sylvatica*).



Cottony maple leaf scale eggs begin hatching when the accumulated Growing Degree Days (GDD) reach 1,216. The full bloom of goldenrain tree (*Koelreuteria paniculata*) is a pretty good phenological indicator of the event.

The first instar nymphs (crawlers) that hatch from the eggs are cream-colored to pale green and very small making them difficult to see with the unaided eye. Pieces of double-sided sticky tape are highly effective with helping to detect egg hatch and dispersion of the crawlers.



The crawlers scatter over several leaves and settle along the leaf veins where they insert their piercing-sucking mouthparts into phloem vessels to suck sap. Their primary target is the various amino acids that are dissolved in the sap; however, they must suck-up a large volume of sap in order to extract the small amounts of amino acids contained within the sap.



Once they process the sap, the excess liquid is discharged in the form of sticky, sugary, "honeydew" that drips from their anus onto branches, leaves, understory plants, lounging gardeners, etc. It's common for the honeydew to become colonized by black sooty molds to produce an unsightly mess on anything located beneath the canopy.

Cottony Maple Leaf Scale
Black Sooty Mold



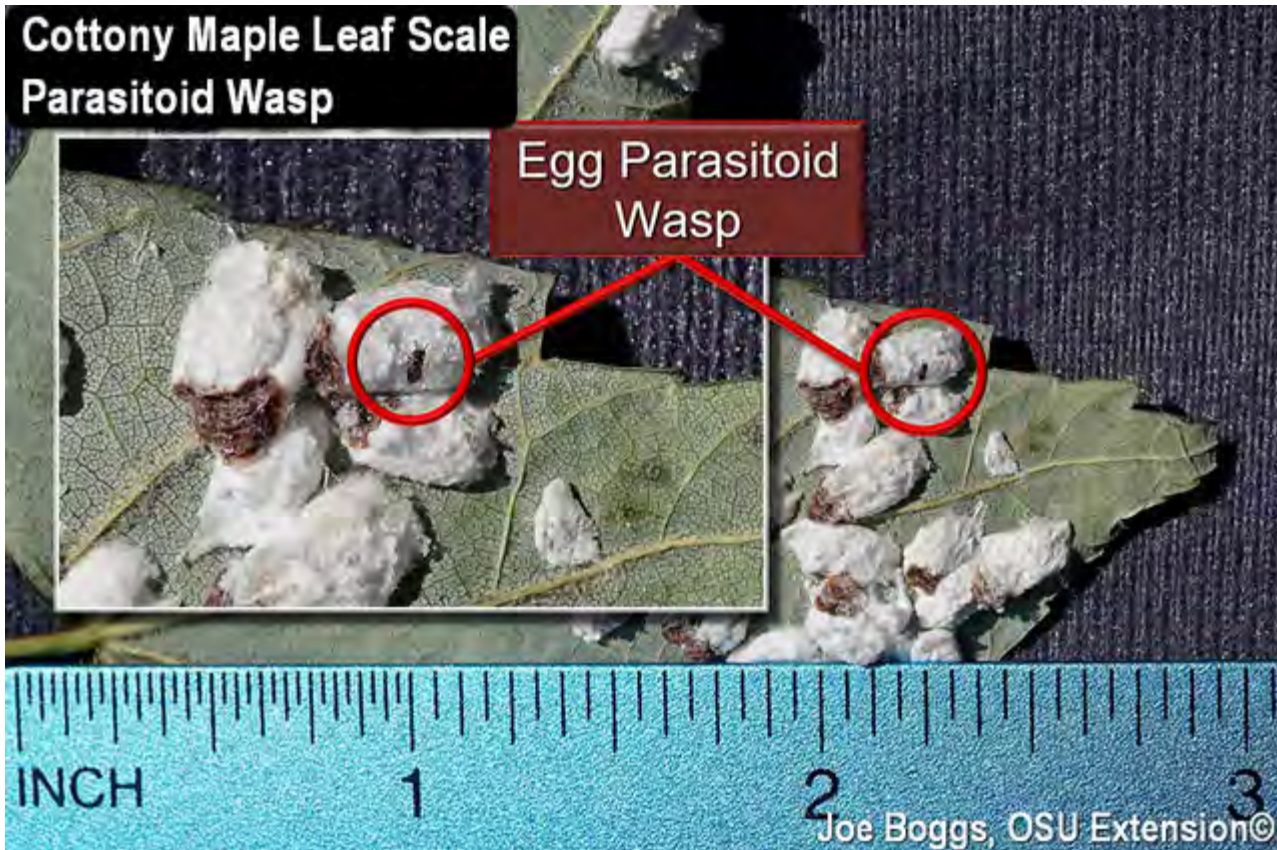
Joe Boggs, OSU Extension©



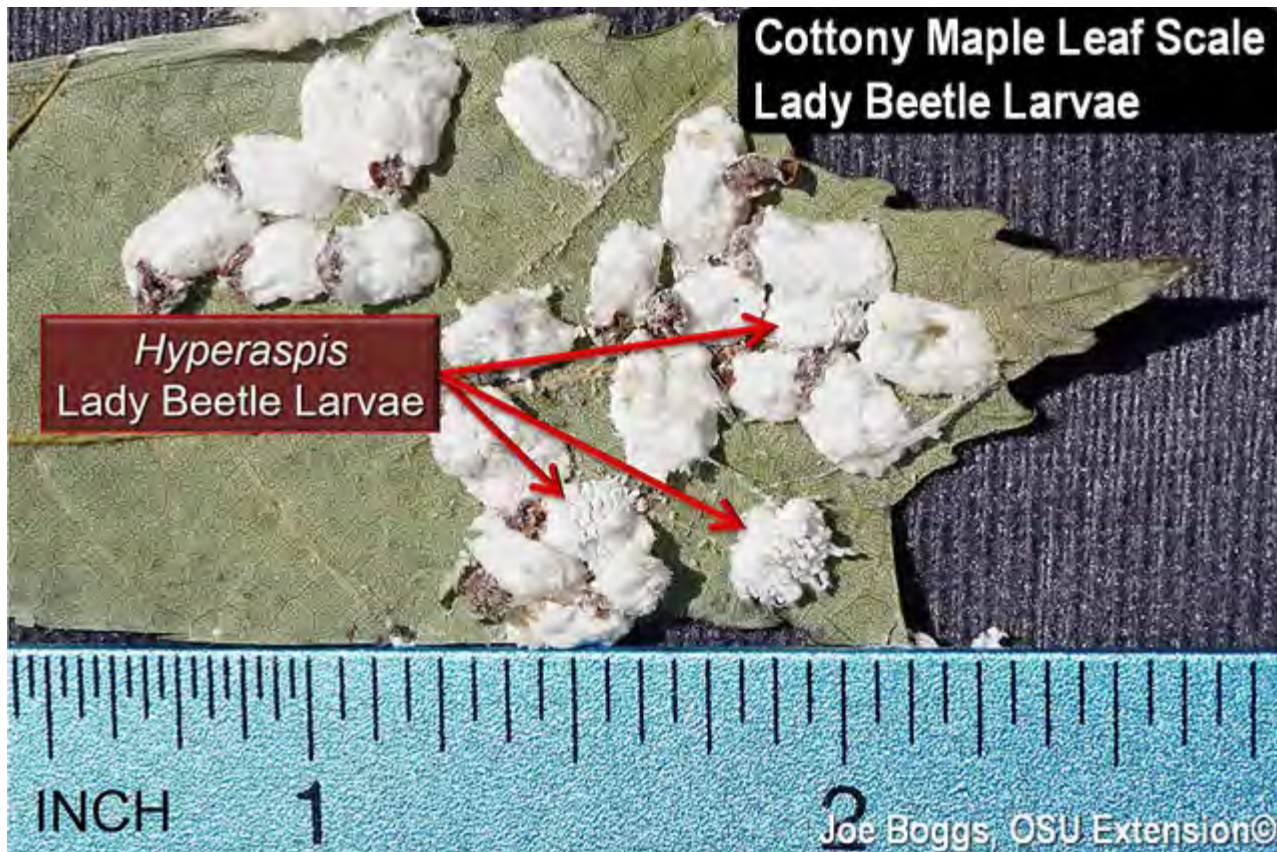
The nymphs molt into second instars as they feed and eventually migrate from the leaves to twigs in early fall. In the spring, the male and female nymphs mature, mate and the females crawl to the underside of leaves to lay eggs starting the life cycle all over again. There is one generation per season.

Although high populations can occasionally cause premature leaf drop and branch dieback, the overall impact of the cottony maple leaf scale is strongly related to plant health. Impacts are much greater on trees that are stressed. Thus, the first line of defense against this and other soft scales is to focus on maintaining tree health.

Control is seldom required particularly since there is a wide range of beneficial insects such as predators and parasitoids that can keep scale populations in check. For example, lady beetles belonging genus *Hyperaspis* are commonly found chowing-down on this and other soft scales.



Hyperaspis lady beetles are collectively referred to as sigil lady beetles. This is the second largest coccinellid genus with 94 species found in North America north of Mexico. These small, round beetles sport markings of various shapes and colors on a black background.



However, it's the larvae that are the real show-stoppers! In a twist on "you are what you eat," the larvae are typically covered in white, flocculent material making them blend with the white scale ovisacs. Of course, these are wolves in sheep's clothing. Unlike the immobile ovisacs, the lady beetle larvae are highly mobile and can be observed moving around to feed on the scale flock.

If control is deemed necessary, systemic insecticides will have less of an impact on beneficial insects compared to topical contact insecticides. NC State has an excellent fact sheet on cottony maple leaf scale that includes insecticide recommendations that are compatible with beneficials.

You can access the NC State Fact Sheet by clicking this hotlink:

<https://content.ces.ncsu.edu/cottony-maple-leaf-scale>

Other Articles

Growing Cosmos Flowers and Companion Plants

MEGHAN SHINN

JUN 30, 2020

- Source: <https://www.hortmag.com/plants/growing-cosmos>

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Garden cosmos are annuals derived from several *Cosmos* species native to Mexico and other areas of North and South America. They have long been treasured for their simple but profuse flowers, which can occur throughout summer and into autumn, and for the frothy mass of fine foliage that they create.



Recent years have seen diverse selections come to market, moving well past the typical tall pink- or white-blooming plants of the past. Cosmos can now be had with varied heights, colors and flower form.

Growing cosmos

Cosmos are easy to grow from seed started indoors or right in the garden. Indoor sowing should be timed so that the young plants can begin to move outside within just a couple

weeks, because otherwise they can become spindly. In [*Mastering the Art of Flower Gardening*](#), author Matt Mattus recommends sowing a handful of cosmos seeds in the garden every few weeks until early August, a regimen that will provide plenty of flowers for both the garden and fresh-cut bouquets throughout the summer.

Cosmos require full sun and warm temperatures, but their billowy shape necessitates some protection from wind. This may come in the form of a fence or screen, or simply some supportive or sturdier companion plants. Good drainage is important for cosmos, but they will grow in otherwise poor soil conditions. Too rich a soil can spur lanky stems, an abundance of leaves and a lack of flowers. Regular water is appreciated, although cosmos can withstand a dry spell.

Deadhead cosmos to promote continuous bloom. The whole plant can be sheared back by a third to cue fresh growth and flowering.

Companion plants

Cosmos are versatile companions, thanks to their (usually) simple flower shape, upright habit and feathery foliage. They match well with [dahlias](#), [zinnias](#) and [marigolds](#)—all of which also trace their roots to Mexico and whose flowers can have a similar shape and size to cosmos (depending on type). Other daisy-type summer bloomers like perennial [coneflowers \(*Echinacea*\)](#) and [black-eyed Susans \(*Rudbeckia*\)](#) can punctuate a drift of cosmos, too, and their chunkier blossoms and coarse leaves offer some contrast.

Cosmos also mix well with plants that have a similar wispy frame but flowers that look different, like sweet peas, with their tendriled stems and stout pea flowers, or [Verbena](#)

[bonariensis](#), with its tufts of tiny purple flowers atop airy stems. (Note: This plant is reported as invasive in parts of the United States' Southeast and West Coast. [See its listing at invasiveplantatlas.org.](#))

For a third look, try mixing cosmos with very coarse plants, such as the tall, large-leaved *Nicotiana sylvestris*, whose chandelier of flowers provides even further contrast; or [canna](#), whose bold, shiny and sometimes colorful leaves make a good foil for feathery cosmos foliage. Warm-season ornamental grasses are another interesting match for cosmos, especially those with rich color, like [Cheyenne Sky switchgrass](#).

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