UNIVERSITY OF MARYLAND EXTENSION

TPM/IPM Weekly Report

for Arborists, Landscape Managers & Nursery Managers

Commercial Horticulture **June 12, 2020**

In This Issue...

IPMnet
Integrated Pest Management for Commercial Horticulture

extension.umd.edu/ipm

If you work for a commercial horticultural business in the area, you can report insect, disease, weed or cultural plant problems **(include location and insect stage)** found in the landscape or nursery to sklick@umd.edu

Coordinator Weekly IPM Report:
Stanton Gill, Extension Specialist, IPM and Entomology for Nursery, Greenhouse and Managed Landscapes, sgill@umd.edu. 410-868-9400 (cell)

Regular Contributors:
Pest and Beneficial Insect Information: Stanton Gill and Paula Shrewsbury (Extension Specialists) and Nancy Harding, Faculty Research Assistant
Disease Information: Karen Rane (Plant Pathologist) and David Clement (Extension Specialist)
Weed of the Week: Chuck Schuster (Retired Extension Educator)
Cultural Information: Ginny Rosenkranz (Extension Educator, Wicomico/Worcester/Somerset Counties)
Fertility Management: Andrew Ristvey (Extension Specialist, Wye Research & Education Center)
Design, Layout and Editing: Suzanne Klick (Technician, CMREC)

Bagworms

By: Stanton Gill

Thanks to each of you who volunteered sites with bagworms. We have several people who collected female bags with eggs inside which is exactly what we needed. Several people volunteered their sites, but we have to have a number of plants that are untreated control plants in the field trials. So, most people would not want this part of the trial at their place. The other thing we had to consider about the location is that it has to have FAA approval for drone flight.

First hatch of bagworms in Brandywine on June 11
Photo: Rick LaNore, MRW Lawns

We will be setting up the trial in the next 3 weeks to test the use of a spray drone to treat bagworm infested plants.

Japanese Maple Scale, *Lopholeucaspis japonica* Hemiptera: Diaspididae

By: Paula Shrewsbury and Nancy Harding

Japanese maple scale (JMS) 1st generation CRAWLERs (egg hatch) were found on *Acer* (maple) in Frederick County, MD on June 8th. This is the 1st report of crawler activity this season and it has just begun. The accumulated growing degree days (DD) in Frederick on 6/8 was 656 DD. This is a little earlier for crawler emergence than our previous DD data predict (egg hatch ~800 DD). If you have JMS on trees you should be monitoring closely now for crawler activity. Adult females are about 1/8 inch long and have a whitish oyster-shell shaped waxy cover. The male cover is similar but smaller. The adult female body is under the cover and usually purple. There are two overlapping generations a year and fertilized adult females overwinter.

Fig. 1 Japanese maple scale crawlers
Photo: Nancy Harding, UMD

This introduced armored scale infests a wide range of host plants in the eastern United States. Click here for the host plant list.

Typically, Japanese maple scale is found on the trunk and branches of trees; however, they have also been observed on leaves. They use piercing-sucking mouthparts to penetrate the tree tissue and feed of cells just beneath the bark. Populations can build up quickly to very high and damaging levels. Heavy infestations of small trees can result in leaf yellowing and drop, branch dieback and ultimately tree death without intervention.

Monitoring: JMS adults are quite small and hard to see which means the crawlers are even smaller. We suggest using tape wrapped around branches where JMS adult activity is found. Tapes that have been found to work well include double-sided sticky tape, blue painters tape with the sticky side out, and black electrical tape with the sticky side out. When crawlers emerge and start moving they get caught on the tape and are much easier to see when monitoring. Use a hand lens or microscope to look for the light purple crawlers (Fig. 1).

Fig. 2 Twice stabbed lady bird beetle
Photo: Nancy Harding, UMD

Control: JMS management can be challenging to control as egg laying and crawler emergence periods can extend over long periods of time (~7-8 weeks), in addition to overlap of the two generations. Therefore, for optimal control it may be best to wait for peak crawler activity when the accumulated growing degree days are about 1000 DD, likely 2-3 weeks after the start of crawler emergence on your trees. Keep monitoring to determine this peak.

Applications of 0.5 - 1% horticultural oil and pyriproxyfen (Distance) or buprofezin (Talus) should be made when crawlers and settled crawlers are active. This treatment should have about 2 - 3 week residual activity. At that time monitor your plants again to see if any crawlers are still active. The twice-stabbed lady bird beetle (Fig. 2) provides some biological control of this scale.

For a fact sheet on JMS biology and management click here.

Cicada Brood X

By: Stanton Gill

Thanks to each of you for sending in reports of periodical cicada activity in various parts of Maryland. We received additional reports of activity of cicada in Brookeville, Woodbine, Cooksville, Ellicott City, and Jarrettsville this week. Mike Raupp, Retired – UMD, covered periodical cicadas in his June 1, 2020 Bug of the Week. In the article, there is a link to an app for reporting sightings.

Gaye Williams, MDA, pointed out the following: "Brood IX is nowhere in Maryland, but we do have II- southern md, V- far western Garrett County, X- central MD, and XIX- tip of St. Mary's County [13- year spp.]. See papers by John Zyla in April, 2004 Proc. Ent Soc Wash. Brood IX is very restricted to sections of WV, VA & NC and hundreds of miles away from MD."

So, there you have it – we are seeing off-timed cicadas of Brood X here in Maryland this year. Still, it is preparation for the big event in 2021. Let your customers know what is coming.

Lecanium Scale Control

By: Stanton Gill

Several of you have reported activity of lecanium scales in the nursery and landscape. In most parts of the state, we are in the crawler stage in mid-June. Marie Rojas, IPM Scout, reported that they have just hatched, but were still under covers on oaks on June 10 in Frederick County. Jason Hipp, Deeply Rooted Tree Care, found crawlers in Maple Lawn. I asked Juang Chong, Clemson University Extension, to comment on some of his work in South Carolina on lecanium scale on material he has tested out in the field.

Lecanium scale on oak on Taneytown on June 5 had eggs, but no crawlers yet

Here are are comments from Juan Chong:

"My program did some work on oak lecanium scale management a few years back. We had decent (> 80%) reduction in scale density a year after two applications of buprofezin, pyriproxyfen, hort oil + buprofezin or hort oil + pyriproxyfen (2 week apart) at the time of crawler emergence. Even foliar applications of acephate, bifenthrin, imidacloprid and dinotefuran did well. There are some variations in results from trial to trial, but good efficacy of oil + IGR panned out in all trials. Obviously foliar applications weren't practical for larger trees.

We focused on drench (and sometimes basal trunk spray, soil injection or granular) treatment against oak lecanium on large trees. Summarizing results of the trials, conclusions are (1) spring (March) application against overwintering twig-feeing nymphs via these indirect treatment methods was not effective in reducing adult density, but reduced leaf-feeding nymph density; (2) summer (May) against twig-feeding adults achieved similar results as the above; (3) summer application (June) against nymphs was very effective,"

Tea Scale on Holly

By: Stanton Gill

In 2018, we received a couple of samples of the armored scale called tea scale, *Fiorinia theae*. The samples were on camellias. This armored scale tends to be found on the undersides of leaves. In Florida and North Carolina, it is common on camellias and hollies. The scale has also been reported on pachysandra and boxwood. Dave Clement and I found this scale on camellias in a botanic garden collection in Norfolk, VA back in January.

Look for tea scale on the undersides of leaves, such as on this holly

Last week, Paul Wolfe, Integrated Plant Care,, sent in holly leaves with an armored scale on the undersides of the foliage. The plant sample was from Bethesda, and we confirmed it was tea scale. Yellow spotting occurs on the upper surface of the leaves, but the scale feeds from the underside.

With the heavy shipping of camellias and hollies from the south, you need to be very vigilant not to introduce this scale into your customers' landscapes. Last year, we monitored camellia plants at CMREC and found that there are at least 2 generations in the summer months. The first crawler emergence in 2019 was June, and a second occurred in mid-August of 2019.

White Prunicola Scale

By: Stanton /Gill

Mark Schlossberg, ProLawn Plus, Inc., wins the prize this week with his cherry tree heavily coated with white prunicola scale. This sample came from one of his customers in Baltimore County. White prunicola scale is in the crawler stage right now, and I found several settled 1st instars present. Now is the time to apply either Talus or Distance.

White prunicula scale is in the crawler stage this week

Cryptomeria Scale

Marie Rojas, IPM Scout, found cryptomeria scale with crawlers that were just hatching out and moving onto the needles of *Abies koreanna* in Frederick County on June 10. Crawlers will be active June through July with a second generation in August and September. Look for yellow spotting or banding on the needles.

Feeding by cryptomeria scale causes yellow spots or bands on foliage

Monitoring: Cryptomeria scale prefers hemlock, fir, and pine (not cryptomeria). Crawlers are yellow and usually appear in June and August. All stages of cryptomeria scale are found on the underside of needles. The covers of the adult females are elongated, oval and translucent to light brown. Male covers are similar but smaller. Also, look for holes in the scale's wax covering indicating parasitoid activity.

Control: When the majority of the eggs have hatched (crawlers), it is the optimal time for control. Apply pyriproxyfen (Distance) or buprofezin (Talus) mixed with 0.5 - 1% horticultural oil for control. If there is parasitoid activity, use only insecticidal soap or oil sprays. Be sure to get good contact for best control.

Minute Cypress Scale

Heather Zindash, IPM Scout, found minute cypress scale on Arborvitae 'Wintergreen' in Bethesda on June 8. This scale is finishing up its crawler period at this time. There is only one generation per year.


Minute cypress scale on Arborvitae 'Wintergreen' Photo: Heather Zindash, IPM Scout

Cottony Camellia/Taxus Scale

Marie Rojas, IPM Scout, found crawlers of cottony camellia/Taxus scale on hollies in Beallsville on June 9. Heather Zindash, IPM Scout, found crawlers on hollies in Washington D.C. on June 10. Heather noted that lady bird beetles were feeding on the crawlers. Now that this scale is in the crawler stage, treat with pyriproxyfen (Distance) or buprofezin (Talus) mixed with 0.5 - 1% horticultural oil.

Crawlers of cottony camellia/Taxus scale are active now

European Elm Scale, (*Gossyparia spurius*)

By: Nancy Harding and Paula Shrewsbury

European elm scale crawlers! (egg hatch) were found under the female scale's waxy cover on American elm (*Ulmus americana*) in Bowie on June 10th. The accumulated Degree Days were **946** DD. This introduced soft scale, also known as eriococcin, or felt scale, prefers native elms, but *Celtis, Cercis,* and *zelkova* are susceptible. Reproduction can be sexual or asexual. There is one generation a year.

Fig. 1 Adult European elm scale with ant collecting honeydew
Photo by Nancy Harding, UMD Entomology

Monitoring: Look for adult females in twig forks (Fig. 1) that are about 1/8 – 1/2 inch long, oval, and reddish brown and surrounded by a white, waxy fringe (resembling a mealy bug). Blood-like, red liquid results when scales are crushed. Winged and un-winged males, when present, overwinter in small white cocoons. Crawlers are small yellow and will migrate to the veins on the undersides of leaves (Fig. 2), settle, and feed throughout the summer before migrating back to older branches to overwinter in the bark cracks.

Heavy infestations of this scale can cause dieback and the scales feeding on the plant's sap can produce large amounts of honeydew ar days in your area is at or near **946** DD monitor closely infested plants undersides of the leaves.

Fig. 2 European elm scale crawlers along veins on underside of leaf
Photo by: Whitney Cranshaw, Colorado State University, Bugwood.org

Control: Beneficial insects can do a good job controlling this scale. I leaves, treat with foliar applications of pyriproxyfen (Distance) or bu mixture when crawlers are present.

Cottony Maple Leaf Scale

Marie Rojas, IPM Scout, reported that cottony maple leaf scale crawlers were just hatching out on rose of Sharon on June 9 in Gaithersburg. Heather Zindash, IPM Scout, found just hatched crawlers in Washington D.C. on June 10. Heather noted that lady bird beetles were feeding on the crawlers. In the spring, females move onto the undersides of leaves to produce the cottony egg sacs. Look for this scale on maple, dogwood, and holly.

Control: When crawlers are active, control options include Talus or Distance with 1% oil.

Cottony maple leaf scales are in the crawler stage now
Photo: Marie Rojas, IPM Scout

Peachtree Borer

By: Stanton Gill

We placed out a clearwing moth borer trap in the Brookeville area on Monday. We will let you know when we get flight activity of the male peachtree borers so you can time any protectant applications. Try to avoid wounding cherry trees, ornamental plums, and cherry laurels. Wounds attract females to lay eggs onto damaged plants. Mowers and weed whackers are instruments that can wound plants in nurseries and landscapes.

Fall Webworms

Marie Rojas, IPM Scout, reported that fall webworms were just out on *Cornus kousa* on June 10 in Frederick County. Fall webworms have a wide woody plant host range. They feed within the webbing which is around the tips of branches and not in the crotches like eastern tent caterpillars which are active much earlier in the season. There are two generations per season. Usually, the generation in late summer to fall is more abundant. There are two color forms of the caterpillar: one that is yellowish white with a black head and one that is brown with a red head.

Control: If possible, prune out webbed terminals. Bt, horticultural oil, or insecticidal soap can be used for early instars. There are many predators and parasites that help keep this native pest below damaging levels.

Look for activity of fall webworms now
Photo: Marie Rojas, IPM Scout

Oak Shothole Leafminer

Jason Hipp, Deeply Rooted Tree Care, found damage from shothole leafminer on red oak in Washington Grove (Montgomery County). The female adult leafminer inserts her ovipositer into oak leaf buds or expanding leaves to feed on the sap. Feeding by the larvae causes blotch mines.

Holes and blotch mines are signs of oak shothole leafminer
Photo: Jason Hipp, Deeply Rooted Tree Care

Powdery Mildew on Crape Myrtle

By: Rachel Ross and Karen Rane

We've had several reports of powdery mildew on a number of trees and shrubs over the past few weeks, and here's another one! Powdery mildew is one of the most common problems of crape myrtle, especially older varieties. Severe infection such as in Fig. 1 can have a negative impact on plant health. Plants with severe infection year after year may eventually develop branch dieback and poor growth. Planting resistant varieties is the best way to reduce powdery mildew problems. Resistant varieties include but are not limited to:

Semi-dwarf (up to 15 ft)
Acoma (white flowers), Pecos (pink), Tonto (red)

Intermediate (up to 20 ft)
Christiana (dark red), Osage (pink), Sioux (pink), Yuma (lavender)

Large tree (over 20 ft)
Fantasy (white), Miami (pink), Natchez (white), Tuskegee (dark pink), Twilight (purple)

Fig 1 – Heavy infection on new growth
Photo: R. Ross, UMD

Fig. 2 – White fuzzy, powdery growth on new leaves
Photo: R. Ross, UMD

Lone Star Ticks Active

By: Stanton Gill

Nancy Woods, MNCPPC, sent in this picture of a lone star tick this week. The hot, humid weather this week is making the lone star and other ticks very active. The ticks will be questing (holding their front legs out with sensors to detect CO_2 emission) on tall grass and on the edges of woods for the next several summer months. When working in the nursery and landscape, be sure to check yourself regularly for ticks. With lone star tick, it is not a factor with **Lyme disease Keep in mind that** the lone star tick does transmit bacteria that cause several types of illness. Those illnesses include **ehrlichiosis**; red meat allergy; and **Southern Tick Associated Rash Illness** (STARI), which produces **rashes** similar to those seen with **Lyme disease**.

Lone star tick
Photo: Nancy Woods, MNCPPC

Carbon Crust Fungus on Trees

David Clement

Something new to me came in recently on the lower trunk of a pignut hickory tree. It's caused by a carbon crust fungus called *Kretzschmaria deusta*. The name deusta means burned up in reference to the charred appearance of the fungus. *Kretzschmaria* is a destructive white rot pathogen of hardwoods that decays both lignin and cellulose. This fungus can also cause a weeping similar to Phytophthora canker. Infections can initiate in the roots and spread to the base, where the fungus causes a butt rot of the lower trunk. Additionally, *Kretzschmaria* can colonize basal wounds, which are very common on landscape trees. The asexual fruiting bodies are at first soft and grayish-white before they turn hard and black and form sexual spores within embedded perithecia. Infected trees could have significant wood decay and should be evaluated for structural integrity by a certified arborist.

***Kretzschmaria deusta* on hackberry**
Photo: Alan Windham, University of Tennessee

***Kretzschmaria deusta* on pignut hickory**
Photo: HGIC Ask an Expert Submission

Dobsonfly Adult

By: Stanton Gill

Three weeks ago, one of our readers sent in a picture of a larvae of a dobsonfly that they found along the canal. This week we had a report that an adult dobsonfly was found in the Glen Echo area. Dobsonflies are active at night and are attracted to lights.

An adult dobsonfly

Leafcutter Bees

Heather Zindash, IPM Scout, found leafcutter bees on epimedium this week. Leafcutter bees line their nest cavity and separate it into cells with circular leaf sections that they cut from various plants. A leafcutter bee nest looks a bit like a cigar. Usually, the damage they cause is not significant. Since they are a very important pollinators of many plants, it is best to tolerate the damage.

Leafcutter bee damage on epimedium
Photo: Heather Zindash, IPM Scout

Broad Mites Found in Maryland Caneberries

Jerry Brust, UME

About two weeks ago, I heard some reports of possible damage caused by broad mites *Polyphagotarsonemus latus* in caneberries in the mid-Atlantic region. So, I ventured out and looked at several raspberry and blackberry growing operations in Maryland. I found one farm with a light to moderate infestation of broad mites in their raspberries. This operation was relatively small, consisting of a little more than a ¼ acre or so of caneberries. The problem with knowing whether or not you have broad mites is that the mites are so small, they are very difficult to find even with a 10x hand lens and their feeding can look very similar to the damage caused by some environmental problems or by viruses (which are usually the cause of the damage symptoms). Damage by broad mites usually consists of a distortion of young leaves (fig. 1) or flower buds as the mites show a preference for young, developing plant tissue. This feeding preference will result in the lower leaves of the plant remaining unaffected while the younger leaves are damaged.

Mites feed on the underside of foliage near the leaf stalk. This feeding often causes the growing tips to become misshapen with distorted leaves that curl up and have irregular brown discoloration. An infestation of mites can result in brown stripes that form on the leaves (fig. 2). A more serious infestation causes a total loss of green tissue, with the veins remaining green on a brown background. On the leaf stalks brown, corky patches can appear. What exactly causes the leaf tissue distortion and browning is not known, although it is thought that the mites release enzymes and other substances when they feed that disrupt localized plant growth. These distortions remain for weeks even after the mites have been eliminated and is the reason why extensive damage can be caused by a relatively low population of mites. Flowers that are fed upon will become discolored and deformed while fruit will develop corky areas and also become deformed.

When I look for broad mites, I look for their eggs which are very distinctive, relatively large and are not moving around as adults and immatures are. The eggs are clear with a symmetrical pattern of white dots on their surface (fig. 3). Even with a 20X hand lens it is still difficult to find the mites as they are often wedged down into folded or curled plant tissue. It really is important though to verify their presence as there are other causes of similar looking symptoms on raspberries and blackberries as I have learned.

When mite numbers reach 5 mites per leaflet (granted it will be difficult to see) or leaf deformities are found then treatments should begin. Horticultural oils are recommended when temperatures are below 88 °F. Using the oils at temperatures above this may cause phytotoxic problems. Agri-Mek with a NIS has been found to be an effective product to control the motile stages of broad mites but it does not control the eggs so you'll need to make two applications 7-days apart. There are other miticides that are available and can be used, but the key to any of them and the oils is to get good coverage of the curled and distorted plant tissue especially the underside of the leaf.

Fig. 1 Distorted leaves of raspberry caused by broad mite feeding
Photo: G. Brust, UME

Fig. 2 Moderate to heavy broad mite feeding damage to raspberries
Photo: G. Brust, UMD

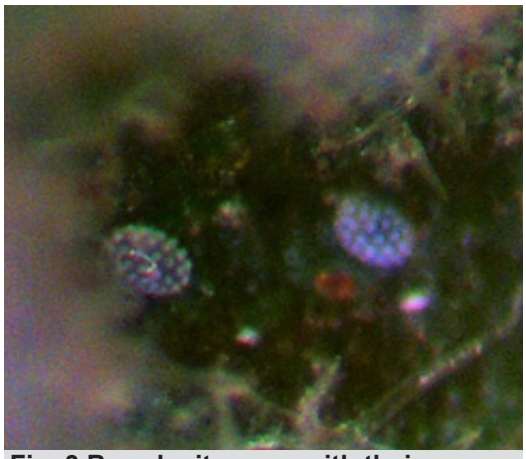


Fig. 3 Broad mite eggs with their distinctive white dots
Photo: G. Brust, UME

Wheel Bug Hatch

Ed Weber, Home Landscaping, found wheel bugs hatching on a red oak tree on June 9 in Glen Rock, PA. Paula Shrewsbury discussed this predator in last week's IPM Report.

Crapemyrtle Aphid

By: Stanton Gill

I received several emails asking to expand on crapemyrtle aphids. For the last 20 years crape myrtle has grown in popularity in nurseries and in landscapes. It is being used heavily in cityscapes where it is hot and dry, and they seem to perform pretty well. Many crape myrtles are being shipped in from southern nurseries to fill the demand from landscapers. Everything is wonderful in crape myrtle land. Or is it?

Close-up of a crapemyrtle aphid

One of the biggest pests of crape myrtles is the crapemyrtle aphid, *Sarucallis kahawaluokalani*. Although native to Southeast Asia, crapemyrtle aphid was described by Kirkaldy from specimens collected in Hawaii. In the U.S., crapemyrtle aphids are monophagous and only feed on crape myrtle. This is not your typical aphid. Most aphid species only produce winged stages (alates) when they want to disseminate the population or there is environmental stress on the plant on which it is feeding. Not so with the crapemyrtle aphid. All adult crapemyrtle aphids bear wings. Adults can take flight whenever they want and spread to a new plant. Nymphs are pale to bright yellow with black spike or hair-like projections on their abdomen. Adults are also yellow and have black spots and two large black tubercles on the upper side of the abdomen. Eggs overwinter on the stems.

Crapemyrtle aphids, cast skins and sooty mold on foliage

Some dormant applications of oil are an option for controlling crapemyrtle aphids. Since crape myrtles leaf out late you have plenty of time in the spring to apply dormant rates of oil. Eggs hatch in early spring when leaf buds break. There are multiple generations throughout the spring and summer.

If populations are heavy, sooty mold will be very noticeable. Black sooty mold can make plants look unsightly and interfere with photosynthesis. Heavy infestations can cause early leaf drop or complete defoliation of affected plants. Use of a systemic insecticide is an option but select materials that do not negatively impact pollinators. Endeavour was one I mentioned last week. Altus from Bayer has good potential as a control material for this aphid.

The adult moth is a night flyer. If you sample during the day, it flies in a zig-zag pattern for a short distance and then plunges into the canopy of fern foliage. Five years ago, we conducted trials with a perennial nursery in controlling this pest. Acelepyrn worked well on this pest.

Interestingly, we compared it to Acephate (Orthene). I thought the acephate would damage the fern foliage, but it did not, and it controlled the moth larval stage very well.

Interesting Oak Galls

By: Stanton Gill

Carol Allen sent in a picture of spangled oak gall on oaks. We usually get pictures of these galls appearing later in the summer. The insects that cause this are also called jumping gall wasp. The growth on the undersides of leave is interesting but harmless.

Upper and lower sides of oak leaf infested with oak spangled galls
Photos: Carol Allen

Beneficial of the Week

By: Paula Shrewsbury and Rebeccah Waterworth

Fireflies had a bright spot (or many bright spots) to our lives.

Earlier this week, I was out at a nursery in Frederick County MD looking for insects (surprise) and I observed my first adult **fireflies** for the season. I always like this time of year when we start to see the flashing lights of fireflies. Most of us have fond memories of catching fireflies as a kid and putting them in glass jars, which were kept by the bed to watch during the night. Those were good and much simpler times! Fireflies, also known as **lightening bugs**, are really neither bugs nor flies. They are soft-winged beetles in the order Coleoptera and the family Lampyridae. There are over 2000 known species of fireflies. Fireflies are found in temperate and tropical regions and in the humid regions of the Americas, Asia, and Europe. They are often found in habitats that are wet or damp. Most adult fireflies in the U.S. are about ¾" in length and are active at night. Adults and larvae of many firefly species exhibit bioluminescent – they glow in the dark! Many organisms such as

An adult firefly (*Photinus* sp). Note that the head is entirely concealed underneath the pronotum, the shield–like projection over the thorax. The antennae are the only part of the head visible.
Photo by: David Cappaert, Bugwood.org

bacteria, fungi, jellyfish, algae, fish, clams, snails, crustaceans, and of course insects exhibit bioluminescence. Many firefly species have special light organs that make the underside of their abdomens light up. The insects take in oxygen and, inside special cells, combine it with a substance called luciferin to produce light. The purpose of this bioluminescence varies. Both males and females emit light intermittently or in specific flash patterns. The rhythmic flash patterns produced are specific for each species of firefly and vary by sex within a species. It is believed that the flashes are part of a signaling system for attracting mates. The flashes that we see are from the males that are attempting to attract a mate. Light patterns are specific to each species of fireflies. For example, males of the common eastern firefly (*Photinus pyralis*) flash every six seconds. Females watch the light "show" from the ground below. If a display from a specific male is particularly attractive, she will flash a response but only if it is from the male of the same species. The male descends to that location to mate with her. In addition to transferring sperm to the female during copulation, the male offers a nuptial gift of rich protein, which the female uses to provision the eggs that will soon start to develop in her ovaries. Click here to see a video of fireflies flashing and mating – watching insect behavior is really interesting.

Underside view of an adult firefly showing the abdomen where the light organ is located (white segments).
Photo by M.J. Raupp, UMD

Glowworms, larvae of fireflies, are predators that live in the soil and search for prey.
Photo: M.J. Raupp, UMD

For the common eastern firefly, eggs are laid in moist soil and hatch about a month later. All immature fireflies (or larvae) are called **glowworms** (see image). They emit light, too, though it is a low intensity glow used to warn predators that they taste bad. The larvae of our eastern firefly develop over two summers, so they overwinter twice, before pupating and emerging as adults this time of the year. Larvae, which are active in the soil are believed to glow as a warning signal telling predators not to eat them as they are mildly toxic and taste nasty. It is not well known what all adult fireflies feed on but some feed on pollen and nectar and some do not feed at all. Interestingly, in one species of firefly the female mimics the flash pattern of another species to attract the male of the other species to her. When the male of the other species arrives thinking, he has found his mate - she eats it! A surprise for that male! The soil active larvae or glow worms are predators and known to feed on slugs, snails, worms, and other soil-dwelling insects. To assist glow worms in their feeding they first inject their prey with a substance that numbs the prey, making it defenseless and easier to consume.

The abundance of fireflies is greater east of the Great Plains than in western states. Fireflies that produce light are uncommon in western North America, making our nightly light shows we encounter something special to behold for a few weeks during spring and early summer. Be sure to help young people you know, and others, enjoy the experience of observing and collecting fireflies. Be certain to release the little lights when you are done!

Plant of the Week
By: Ginny Rosenkranz

Coreopsis lanceolata grandiflora is a native herbaceous perennial that lives for about 5 years, but it will also send out lots of seeds that will be true to the parents (open pollination). The common name is lanceleaf coreopsis or tickseed coreopsis because the leaves are shaped like a lance or sword and the seeds are in the shape of a tick. They do not attract ticks! Plants are hardy in USDA zones 4-9 and will grow 1½ to 2 feet tall and about 1 – 1 ½ feet wide in full sun. Coreopsis prefer moist well drained soils but once established they can handle some drought. Like a lot of native perennials, the plants will have weak stems and sprawl on the ground if given too much fertilizer. The leaves are a dark rich green and the sunny yellow daisy-like flowers have a central disk that is surrounded by 8 notched ray flowers. To maintain the growth of the plants, they should be divided every 3-4 years. Flowers will bloom from early spring into summer, especially if the spent flowers are removed or deadheaded. Deadheading will also control the amount of seeds that can become a small colony if left unchecked. Butterflies and other pollinators flock to the flowers, but deer usually leave the plants untouched. The only problem could be crown rot if grown in heavy or wet soils.

***Coreopsis lanceolata grandiflora* produces flowers for pollinators from early spring into summer**
Photos: Ginny Rosenkranz, UME

Pest Predictive Calendar "Predictions"

By: Nancy Harding and Paula Shrewsbury

In the Maryland area, the accumulated growing degree days (DD) this week range from about **666 DD** (Aberdeen) to **1048 DD** (Reagan National). The Pest Predictive Calendar tells us when susceptible stages of pest insects are active based on their DD. Therefore, this week you should be monitoring for the following pests. The estimated start degree days of the targeted life stage are in parentheses.

- White prunicola scale – egg hatch/settled crawlers 1st gen (594 DD)
- Bagworm – egg hatch (602 DD)
- Juniper scale – egg hatch (694 DD)
- Calico scale – egg hatch (714 DD)
- Oak lecanium scale – egg hatch (789 DD)
- Japanese maple scale – egg hatch 1st gen (829 DD)
- European elm scale – egg hatch (831DD)
- European fruit lecanium scale – egg hatch (940 DD)
- Mimosa webworm – egg hatch 1st gen (1002 DD)
- Japanese beetle – adult emergence (1056 DD)
- Fletcher scale – egg hatch (1105 DD)

See the Pest Predictive Calendar for more information on DD and plant phenological indicators (PPI) to help you better monitor and manage pests.

Degree Days (as of June 10)

Aberdeen (KAPG)	666
Annapolis Naval Academy (KNAK)	808
Baltimore, MD (KBWI)	885
Bowie, MD	946
College Park (KCGS)	835
Dulles Airport (KIAD)	852
Frederick (KFDK)	835
Ft. Belvoir, VA (KDA)	912
Gaithersburg (KGAI)	784
Greater Cumberland Reg (KCBE)	699
Martinsburg, WV (KMRB)	713
Natl Arboretum/Reagan Natl (KDCA)	1048
Salisbury/Ocean City (KSBY)	904
St. Mary's City (Patuxent NRB KNHK)	1001
Westminster (KDMW)	839

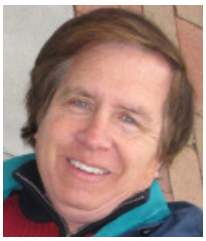
Important Note: We are using the Online Phenology and Degree-Day Models site. Use the following information to calculate GDD for your site: Select your location from the map Model Category: All models Select Degree-day calculatorThresholds in: Fahrenheit °F Lower: 50 Upper: 95 Calculation type: simple average/growing dds Start: Jan 1

Climate and Sustainability Webinars, 2020
Dr. Sara Via, Professor & Climate Extension Specialist, University of Maryland, College Park
Every other Wednesday, June 17 – Aug. 26, 3:30pm

June 17, 2020 Healthy soil: What is it and why is it the basis of regenerative agriculture, gardening and landscaping?
July 1, 2020 Regenerative gardening: Successful and sustainable climate victory gardens
July 15, 2020 Regenerative landscaping
July 29, 2020 What can the pandemic teach us about being (un)prepared for climate change and other global disasters?
Aug. 12, 2020 The power of individual choice: what can individuals do to combat climate change and how much difference will it make?
Aug. 26, 2020 Climate change is bad for your health

See the brochure for more information and a link to register.

CONTRIBUTORS:



Stanton Gill
Extension Specialist
sgill@umd.edu
410-868-9400 (cell)

Paula Shrewsbury
Extension Specialist
pshrewsb@umd.edu

Karen Rane
Plant Pathologist
rane@umd.edu

Chuck Schuster
Retired, Extension Educator
cfs@umd.edu

David Clement
Plant Pathologist
clement@umd.edu

Andrew Ristvey
Extension Specialist
aristvey@umd.edu

Ginny Rosenkranz
Extension Educator
rosnkrnz@umd.edu

Nancy Harding
Faculty Research
Assistant

Thank you to the Maryland Arborist Association, the Landscape Contractors Association of MD, D.C. and VA, the Maryland Nursery, Landscape, and Greenhouse Association, Professional Grounds Management Society, and FALCAN for your financial support in making these weekly reports possible.

Photos are by Suzanne Klick or Stanton Gill unless stated otherwise.