UNIVERSITY OF MARYLAND EXTENSION

TPM/IPM Weekly Report

for Arborists, Landscape Managers & Nursery Managers

Commercial Horticulture **May 3, 2019**

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:
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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), David Clement (Extension Specialist), and Joe Roberts (Plant Pathologist for Turf)
Weed of the Week: Chuck Schuster (Extension Educator, Montgomery County)
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)

Wheel Bug Egg Masses Needed

Paula Shrewsbury (Entomology, UMD) is in need of unhatched wheel bug (*Arilus cristatus*) egg masses (see pictures) for a research project. The wheel bug egg mass can typically be found on a wide variety of landscape trees such as: cherry, zelkova, goldenrain tree, Japanese pagoda, maple, crabapple, elm, hornbeam, and located on the trunk or branches of the tree. If found, remove the egg mass carefully using a knife. You usually need to take a little bit of bark with it. Please mail the sample (in a hard container to protect the egg mass from getting squished) with the location, date, and host tree (if known) where it was collected to:

Shrewsbury Lab
University of MD - Department of Entomology
4291 Fieldhouse Dr.
4112 Plant Sciences
College Park, MD 20742

If you have any questions, please contact Nancy Harding 301-717-9524 (mobile) or nharding@umd.edu

Black Locusts Are in Bloom! Emerald Ash Borer Adults Should Emerge Anytime!

By: Paula Shrewsbury

This past week black locust, *Robinia pseudoacacia* (Fabaceae), came into full bloom in many areas of Maryland. You will see the beautiful white drooping flowers on locust trees that are abundant on the sides of the road. If you look at the UME Pest Predictive Calendar (http://extension.umd.edu/ipm/pest-predictive-calendar-landscapenursery) on the IPMnet web site (http://extension.umd.edu/ipm) you will note that full bloom of black locust is a Plant Phenological Indicator (PPI) for adult emergence of emerald ash borer (EAB). You can also use Growing Degree Days (DD) to predict EAB adult emergence (see the Pest Predictive Calendar). When your location reaches about 420 DD, EAB adults should start emerging from overwintering in trees. If you check your local DDs or look at the list of DDs for select locations of MD at the end of this newsletter, you will see that some locations are near (below or above) 420 DDs.

Adult emerald ash borer on ash foliage that recently emerged from under the bark of an ash tree where it spent the winter as a larva and pupa. Note the defoliation of the ash leave where the beetle had been feeding
Photo: Leah Bauer, USDA Forest Service Northern Research Station, Bugwood.org

Chewing damage on ash foliage by adult emerald ash beetles
Photo: P.M. Shrewsbury, UMD

Please remember that PPIs and DDs are scientific based estimates of activity. They indicate that you should now start actively monitoring your trees for signs of EAB adult activity. Signs would include active adult beetles, new "D"-shaped adult exit holes on the trunks of ash trees, and/or defoliation (starts as shothole damage) of ash foliage by adult beetle feeding.

So what should you be doing if you want to save your ashes? Hopefully, by this time, you have done plant inventories and/or identified the ash trees that you want to save. At this time in areas where EAB is abundant (much of MD), ash needs to be treated with an appropriate systemic insecticide to protect it from being killed by EAB. Right about now, if your ash trees are done flowering (pollinator protection), is the time to treat trees with a systemic insecticide. The most common insecticide used is emamectin benzoate which should be applied in the spring and is reported to give up to 3 years (changed from the previous recommendation of every 2 years) of control. Imidacloprid is also used and the rate applied influences the amount of time the trees are protected (ex. 1-2 years). Others who want to use a biorational insecticide will use Azadirachtin. Be sure to read the publication "Insecticide Options for Protecting Ash Trees from Emerald Ash Borer" (available free at: http://www.emeraldashborer.info/documents/Multistate_EAB_Insecticide_Fact_Sheet.pdf). This bulletin provides excellent information on product choice, application method, and at what stage of tree decline products will or will not likely work to control EAB.

There are other IPM practices that should be integrated with pesticide applications to manage EAB and protect ashes. For good information on this topic go to: http://www.emeraldashborer.info/. These include practices

such as cutting down/removing EAB infested ash trees especially those that are hazard trees, creating trap (girdled) trees to attract EAB, and not moving ash products (wood) to uninfested areas. UMD, in collaboration with MDA and USDA, are involved in studies that include the release and assessment of native and exotic biological control agents for several years. Although biological control agents are attacking EAB at rates still too low to control EAB, the results that we see are promising. With more time, this program will provide long-term sustainable suppression of EAB. In the meantime, protect the ashes you want to keep with insecticides.

"D" shaped exit holes are a diagnostic clue that adult emerald ash borers emerging from your ash tree
Photo: M.J. Raupp, UMD

Survey of Borer Damage in Nurseries

Stanton Gill

Nursery and landscape managers, we need your help:
Dr, Karla Addesso of Tennessee State University in McMinnville, TN sent this request this week:
On behalf of the wood borer working group, I would like to share a survey we put together on flatheaded borer damage in nursery, tree fruit and nut production. Your assistance in spreading this survey as widely as you can is appreciated. The survey is appropriate for anyone involved in nursery production and landscape, fruit and tree nut cropping as well as extension agents dealing with these clientele.

Go to this site to enter your information: https://go.ncsu.edu/fabsurvey

Thank you for your assistance.

Eastern Tent Caterpillars

By: Stanton Gill

Paul Wolfe, Integrated Plant Care Company, called and inquired why he was not seeing any activity out of the eastern tent caterpillars in 2019. I have had only one email this season reporting eastern tent caterpillar activity from northern Virginia.

Since this caterpillar is a native pest, often predators and parasites build up and collapse populations. We had high tent caterpillar activity in 2015 – 2018 and the predators and parasites of this pest had a chance to build up. Also, bird feeding on caterpillars probably also contributed to the decline. Anyhow, if you saw activity in the landscape or nursery in your area, let me know at sgill@umd.edu with the location and severity.

Reports of eastern tent caterpillar have been few so far this year

Interesting Insect Damage in a Nursery

By: Stanton Gill

Marie Riojas, IPM scout, sent in an interesting series of pictures of heritage birch where major branches had broken off. Last fall, large European hornets visited the heritage birch trees and stripped bark from the branches and carried the bark back to create nests. We have seen this activity for several years on lilacs and river birches. Here is the interesting part, Marie is seeing the branches break off where the European hornets stripped the bark from the branches. This damage occurred on several trees.

I am curious as to whether other nursery owners and managers have seen any similar damage. If so, contact me at Sgill@umd.edu.

Breaking branches occurred on heritage birch where European hornets damaged the trees last year
Photos: Marie Rojas, IPM Scout

Boxwood Psyllid

By: Stanton Gill

We have received emails from several locations in central Maryland of boxwood psyllid nymphs producing a lot of white wax. Jacob Hartenstein, Brightview Company, found and photographed boxwood psyllid nymphs producing white wax. If you are going to control them, now is the time. Materials such as Avid, Endeavor, Altus, or Acephate should all control this insect.

Boxwood psyllid nymphs are producing white wax at this time of year
Photo: Jacob Hartenstein, Brightview Company

Kissing Bug on East Coast

By: Stanton Gill

On Sunday, I had a visitor at my farm. She was looking at some of the giant wood bugs I build. I proudly showed her a 6 ft long oak and poplar wood bug of a Reduviidae. I asked if she knew what it was modeled after. She looked at it a long time and said it was that new kissing bug they found in Delaware. I told her close, but it is modeled after the predatory bug called the assassin bug. I asked to which kissing bug in Delaware she was referring? She said it just popped up on the news on Sunday. I checked it out, and it turns out the US Centers for Disease Control and Prevention just confirmed the identification of a bug, *Triatoma sanguisuga*. The bug was found feeding around a young girl's mouth in Delaware while she was watching television. Her parents contacted the Delaware Public Health and Department of Agriculture about the incident.

Triatoma sanguisuga is in the Reduviidae family, same as the assassin bug. It is found in Latin America and in the southeastern United States ranging from Pennsylvania and Maryland to Florida and west to California. It is associated with a disease called Chagas disease, *Trypanosoma cruzi*. The little girl was tested and was found to not be infected with the disease, fortunately. Chagas disease can causes serious cardiac and gastrointestinal complications that can show up years after infection. It is called a kissing bug since it likes to feed around people's mouths or the corners of eyes. Risk of transmission of this terrible disease is considered minimal.

Try Something Different

By: Stanton Gill

Last October, we organized a new plants seminar with MNLGA for the greenhouse and nursery industry. I asked Heather McDermott to come up from Agri-Starts in Florida to talk about unusual plants that nursery managers can try out. One of the plants she showed was *Musa* 'Basjoo'. Some of you might already been growing this banana. Being an 'unusual plant nut', I migrated to the idea of a Maryland banana plant right away. I have grown banana plants at my orchard for years, but every fall I have to dig up the plants and wrap the trunks in plastic and hold them in my barn to replant each spring. It's a lot of work, but if you want the unusual, you have to work at it.

This cultivar is one of the most exciting bananas that could work here in Maryland. The plant has long, slender, bright green leaves. 'Basjoo' is the world's cold hardiest banana. It is hardy planted in ground to -3 °F, and with protective mulching, it can survive temperatures reaching down to -20 °F. Its inflorescence is one of the most beautiful of all bananas. Strong fibers in the trunk of 'Basjoo' have been used to make fabrics. It is a great landscape plant, it lends a tropical appearance to any situation. 'Basjoo' also does very well in containers and makes a good interior plant. You do need to cut the top down in winter, but the root and crown survive and sprout back up each summer. It gets larger and larger each year. Well, Heather is a really good salesperson, and I have 140 'Basjoo" growing in my greenhouse this spring. You can come visit my banana grove sometime later in the season.

Spotted Lanternfly

By: Stanton Gill

I spoke with a nursery manager in southeast-central Pennsylvania this Wednesday, and they had reached a little over 300 degree days. This nursery is a site where we are field testing a couple of systematic insecticides for spotted lanternfly control in nurseries this season. The degree days for hatch of spotted lanternfly is 355 days. So, they are close to hatch but not quite there yet as of this reporting. I spoke with Bob Dolan of Rainbow Tree Company this week. We are working with him and University of Delaware Extension on a field trial for SLF in northern Delaware. He reported that spotted lanternfly had hatched in the northeast corner of Delaware at our test site, but he had to visit late this week to confirm this hatch.

A refereed journal article, "A pair of native fungal pathogens drives a decline of a new invasive herbivore" was published on February 28, 2019 by Clifton, et.al. A Cornell Chronicle article also provides information on this research. These pathogens are *Beauveria bassiana* isolates and *Bakoa major*. *B. bassiana* is known principally as an arthropod pathogen with a broad host range. This pathogen has been noted in China infecting *Lycoma delicatula* (spotted lanternfly). This pathogen is known to persist in the environment as an endophyte or saprophyte. Little is known about *B. major*.

Calico Scale

Marie Rojas, IPM Scout, found eggs under plump female covers of calico scale on *Cornus* x *stellar* 'Celestial' in Frederick County on May 1. Marie noted that there were also many ants tending them. Marty Adams, Bartlett Tree Experts, found some calico scale getting a foothold on some trunk wounds on honeylocusts in Bel Air. This soft scale can be a pest to hardwood trees such as dogwood, elm, zelkova, honeylocust, sweetgum, magnolia, maple, pyracantha, buckeye, and tuliptree as well as to all stone fruit and ornamental fruit trees. Adult females are found on twigs and trunks. In the spring/early summer, they can easily be spotted by their mottled dark brown-black and white color. Newly hatched crawlers (1st instar) are oval-shaped that start off white to pink then turn yellow. They will move from the trunk and twigs to the leaves of the host plant where they will settle and feed near the leaf vein for the summer. In late summer, they move back to woody tissue where they molt and create a hard waxy coating; overwintering as 2nd instars. There is one generation per year.
Monitor: Look for honeydew on leaves and branches produced by the scale feeding on the phloem sap of the host plant and black sooty mold resulting from a fungus that grows on the honeydew. Also look for ant activity as it can be a sign of a scale infestation. Ants are the scale's protective army guarding their arsenal of sweet tasty food. In heavy infestations, dieback and stunted leaves that turn yellow and drop prematurely may occur.
Control: Systemic insecticides work well as soil drenches for this soft scale since it is a phloem feeder. The other course of action is Distance or Talus during the crawler period.

Calico scale on dogwood
Photo: Marie Rojas, IPM Scout

Calico scale in a wounded area on the trunk of a honeylocust
Photo: Marty Adams, Bartlett Tree Experts

Lichen on Trees

By: Stanton Gill

Dan Felice, Site One Company, sent in a picture of green material growing on the branch of an evergreen. The plants had been installed in the landsape in the last 2 or 3 years. This green material is lichen. It is very common on plants grown in a humid, wet areas. The lichen does not hurt the plant. In an earlier IPM Alert, I mentioned that the fixed copper material under the trade name Badge SC had a label rate for lichen if controlling it is your goal. I really do not see the need to kill the lichen unless your customer finds it totally unacceptable.

Lichens are senstive to air pollution
Photo: Dan Felice, Site One Company

Thousand Cankers Disease – New Detection in Maryland

By: Karen Rane

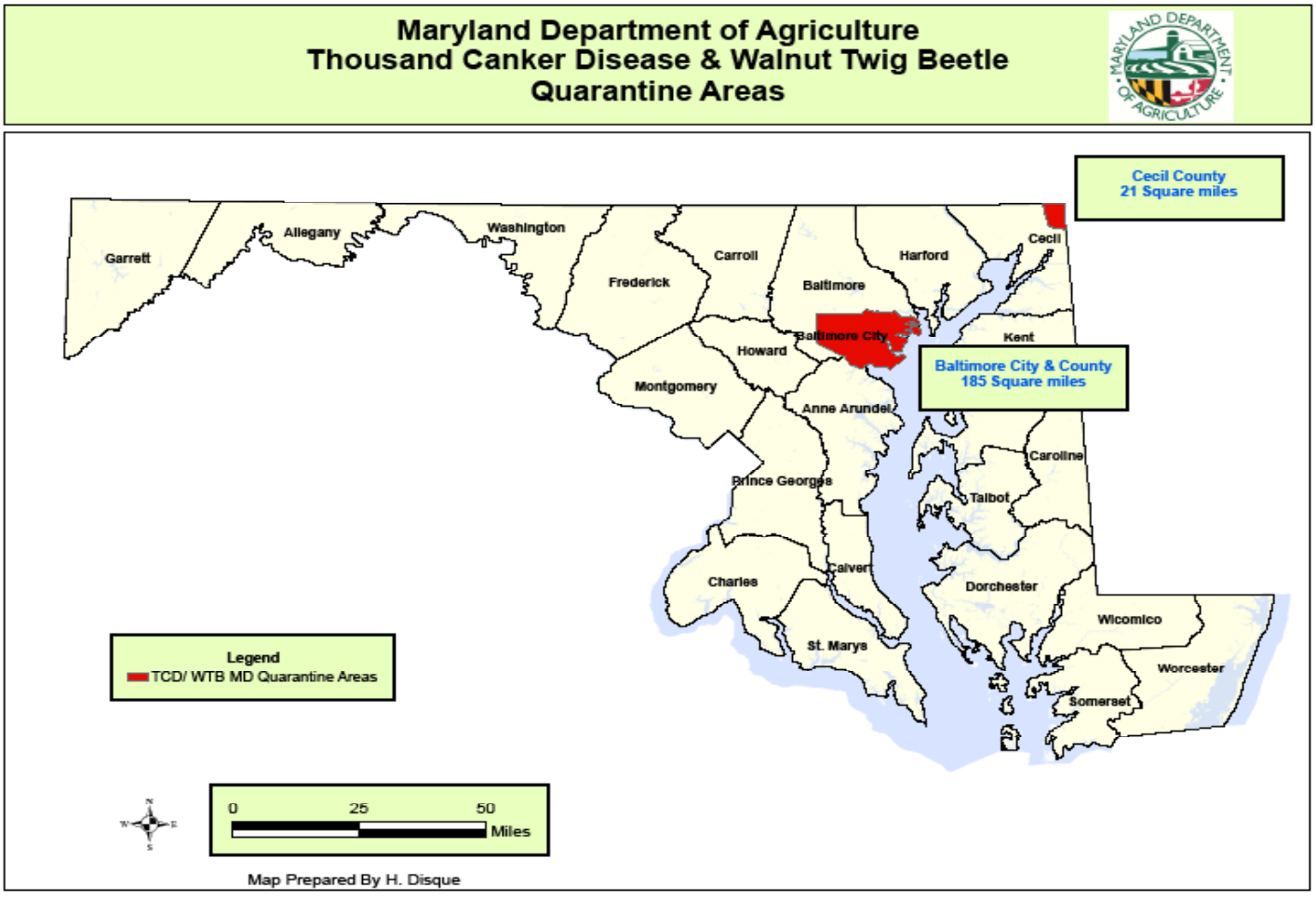
The Maryland Department of Agriculture (MDA) has recently confirmed a new state location for the walnut twig beetle (*Pityophthorus juglandis*) and the fungus *Geosmithia morbida*, which together cause the walnut disease called Thousand Cankers Disease. In response to this new find, the MDA enacted a state quarantine (effective May 1, 2019) prohibiting the movement of any walnut material and hardwood firewood out of the 185 square mile quarantine area which includes the entire city of Baltimore and portions of southeastern Baltimore County. A portion of Cecil County, MD has been under quarantine for this disease since 2015, and that quarantine remains in place.

Figure 1. Branch dieback caused by Thousand Cankers Disease
Photo: Curtis Utley, CSUE, Bugwood.org

Thousand Cankers Disease affects primarily black walnut, *Juglans nigra*, and symptoms include yellowing and wilting foliage, and branch dieback (Figure 1). Walnut twig beetles spread the disease by carrying the fungus into the tree when they tunnel in walnut bark. The fungus colonizes the inner bark tissue, causing cankers around the insect galleries (Figure 2). This effectively girdles the twigs resulting in branch dieback. If beetles attack the trunk in large numbers, trees can be killed from the formation of numerous trunk cankers. For more information on thousand cankers disease, refer to this link at the UME Home and Garden Information Center website.

Although both the beetle and fungus were confirmed in walnut samples from the new quarantine area, the samples were taken during the dormant season so symptoms were not observed. MDA will be surveying the area looking for symptomatic walnut trees this season. More information on the recent Baltimore detection and quarantine, including maps of the quarantine area can be found in the press release and Thousand Cankers Disease page posted on the MDA website.

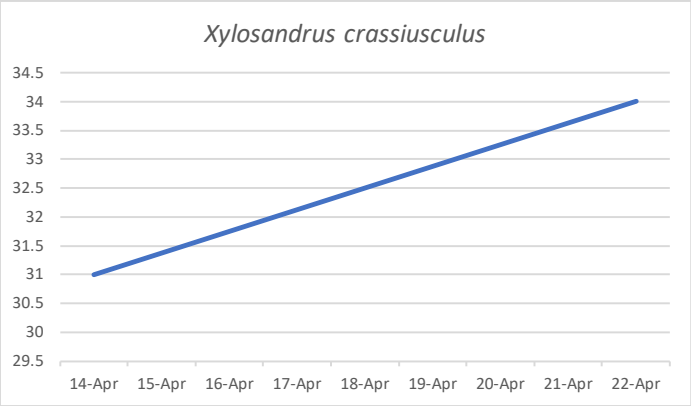
Figure 2: Galleries of walnut twig beetle and brown cankers in inner bark caused by the fungus *Geosmithia morbida*
Photo: Ned Tisserat, Colorado State University, Bugwood.org

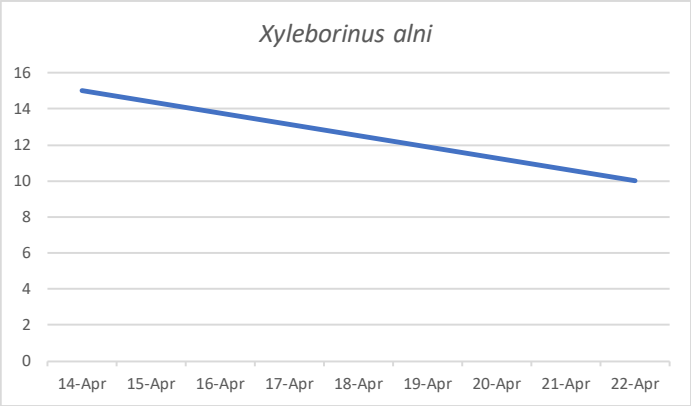


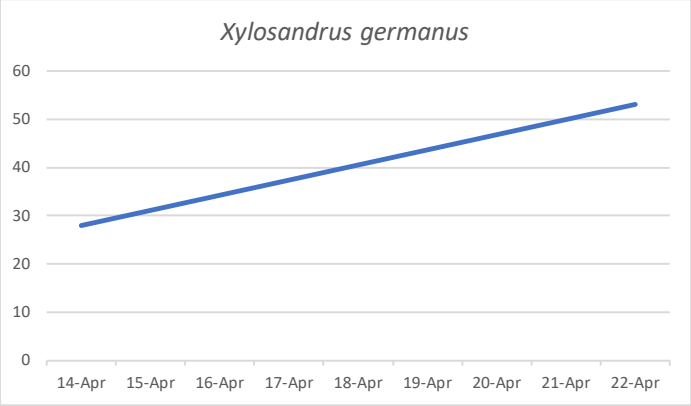
Ambrosia Beetle Activity

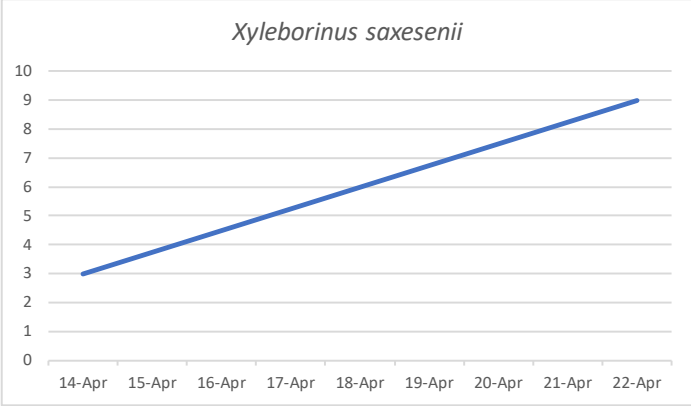
By: Stanton Gill

The swings in the weather are having an impact on activity of the ambrosia beetles. We were getting high counts in our traps late last week. Suddenly, the number of adult captures in the trap plunged with the winds and cold front that blew into the area. The warm weather of Thursday resulted in another surge in adult activity. Rachel Ross has charted out the counts for this week.









Excessive Rain Damage

By: Stanton Gill

Thanks for the outpouring of examples of water-logged plants dying in nurseries and in landscapes. It was greater than I thought. A nursery from central Maryland sent in this picture of *Thuja* 'Green Giant' tree that died in the nursery field. Normally, this field is great for growing trees, but last year the soil moisture levels were excessive and the root systems were damaged. As I mentioned last week, expect to see more dieback as we progress into the warmer drier weather inb 2019.

Last year's extended periods of rain will continue to impact trees this season
Photo: Submitted by a nursery grower

Pine Needle Scale

Marie Rojas, IPM Scout, reported that pine needle scale was found on white pine in Darnestown on May 3. She noted that there are eggs under the female covers. This native armored scale feeds on most needle-bearing conifers, including spruce, fir, pine, hemlock and Douglas-fir. Scotch and Austrian pines are preferred. Monitor plants closely for the first generation of crawlers. Many lady bird beetles and parasitic wasps feed on this pest; therefore, careful monitoring for predators and parasitoids, as well as using pesticides with little effect on beneficials, can allow biological control to suppress the population. If control is warranted, use a summer rate of horticultural oil or an insect growth regulator (IGR) such as Distance or Talus to target crawlers.

Look for the first generation of pine needle scale in May

Leaf Curl Disease

Marie Rojas, IPM Scout, found damage from leaf curl disease on *Prunus* 'Red Haven' and *P.* 'Hale Haven'. It is too late in the season to control this disease. If necessary, a fungicide spray should be made after trees have lost most of their leaves in the fall or in the spring before buds start to swell. Fungicides include chlorothalonil (Bravo), Lime Sulfur, and copper compounds (Kocide, COCS, etc.). Fungicides will not control the fungus once it is in the leaf tissue.

Leaf curl disease damage is evident this week on *Pyrus* 'Hale Haven' Photo: Marie Rojas, IPM Scout

Katydid females laid eggs appressed to the stems just before the cold came in late last fall. We are pointing these eggs out in case you see similar eggs in the nursery or landscape.

Marie Rojas, IPM Scout, found and photographed these katydid eggs on *Salix matsudana* 'Golden Curls'

Boxwood Leafminer

Bruce Allentuck, Allentuck Landscaping, found boxwood leafminer adults in Clarksburg. Adults lay their eggs in the foliage and larvae will hatch within 2 weeks after laying. The larvae feed in May until it becomes hot, then they go into a resting stage. Avid, Mainspring GNL, or a synthetic pyrethroid can be used when the adults are flying. A systemic insecticide can be applied to the soil now so the hatching and feeding early instar larvae would be killed.

Adult boxwood leafminers are active at this time
Photo: Bruce Allentuck. Allentuck Landscaping

American Holly and Leaf Spots

Leaf spot diseases are fairly common on American holly. The leaf symptoms usually appear during the late winter and in spring on previous season foliage. Small to large irregularly shaped yellow-brown spots appear during the winter and spring on old American holly leaves that can be infected by several species of fungi. Also, there is some winter desiccation on holly foliage. Heavily damaged leaves drop prematurely in the spring. These leafspots are rarely of major concern since it damages old foliage that drops in the spring and new foliage emerges on the American holly that is healthy. The newly emerged foliage continues to look good through the season. Holly leaf spots seldom cause significant damage to the health of infected plants. Maintain plant vitality with proper fertilization, irrigation during dry periods, mulching, and attention to soil pH levels is the best way to minimize these diseases. Prune plants to promote sunlight penetration, air circulation, and rapid drying of foliage. Removal of infected fallen leaves reduces the amount of the inoculum present for new infection.

Leaf yellowing and leaf drop on American hollies are common in spring, new foliage usually looks good
Photos: David Clement, HGIC

Spiny Ash Sawfly: *Eupareophora parca* Cresson (Hymenoptera: Tenthredinidae)

By: Nancy Harding and Paula Shrewsbury, UMD

Early instar larvae of spiny ash sawfly were found feeding on the leaves of a white fringe tree (*Chionanthus virginicus*) in Bowie, MD on April 29. The accumulated growing degree days as April 29 in Bowie were 385 DD.The white fringe tree is a deciduous shrub/small tree, native to North America and is currently in full bloom. White fringe tree is in the Oleaceae family which is the same family of ash, another known host plant of spiny ash sawfly.

There is little documentation on the biology spiny ash sawfly however, it is native to North America and widely distributed across the United States. At this time the white fringe tree in Bowie has a significant amount of defoliation, mostly shot holes. Spiny ash sawfly become active in spring when you should look for shot holes made by the young larvae in the leaves of plants such as *Fraxinus* and *Chionanthus*. As the larvae get older, they will eat the entire leaf. The larvae look like greenish or yellowish caterpillars (but they are sawflies) with short fleshy spines and dark-coloured heads (see picture). Adult sawflies are small and black and look somewhat like wasps, but do not sting and have "wide" waists (where abdomen and thorax come together). They feed on pollen and nectar.

In the spring, adults lay eggs in slits cut along the outer margins of young leaflets. Larvae feed and mature in early spring. When mature, they drop to the ground where they make earthen cocoons in the soil and spend the summer, fall, and winter. In the spring, larvae pupate and emerge as adults to begin the cycle again. It is reported there is one generation per year.

Control: There are some natural enemies such as birds, parasitoids, and other insects that attack spiny ash sawfly. In heavy infestations young larvae may be sprayed with a horticultural oil. In light infestations, manually remove and destroy the sawfly larvae or use a high pressure wate spray to knock them off the plant.

Early instar larva spiny ash sawfly
Photo: Nancy Harding, UMD

Spiny ash sawfly larvae damage on white fringe tree
Photo by Nancy Harding, UMD

Craig Greco, Yardbirds, Inc., found and photographed a Carolina mantid egg mass. Also, look for the larger Chinese mantid egg masses which will hatch this month.

Beneficial of the Week

By: Paula Shrewsbury

Ants can also disrupt biological control

Last week I discussed that there are many species of ants worldwide, they are found almost everywhere, and they "do" many different things. I then talked about the role of ants as predators. Today I would like to talk about ants that do the opposite of biological control. They disrupt biological control – not good!

Soft scales suck phloem sap from plants and excrete honeydew. An ant stays close enough to the back end of this scale to obtain the honeydew and protect it from natural enemies.
Photo: Alex Wild, http://www.myrmecos.net/

Some species of ants really like sweets! In nature, one of the best sources of sweets for ants is the honeydew produced by certain piercing-sucking insects, in particularly those that feed on the phloem sap of their host plants. These include aphids, soft scales, mealybugs, whiteflies, and some leafhoppers and psyllids. Ants have evolved to be very efficient at finding honeydew producing, phloem feeding insects. I have seen an ant trail going up a magnolia tree that had just a few soft scale insects on it. The presence of ants is a sign that you should monitor the plants closely for phloem feeding insects! In addition, many ants and honeydew producing insects have what is referred to as mutualistic relationship. This situation is when two organisms have a relationship where they both benefit in some way. In the ant/honeydew producing insect relationship, the insect provides food (ex. honeydew) for the ants; and the ants protect the insects from natural enemies that want to eat them! When a predator or parasitoid lands on a plant with ants attending sucking insects, the ants quickly swarm the natural enemy and scare or knock it off the plant, thereby protecting the plant feeding insect from its natural enemies. When ants are in association with phloem feeding insects we often find their "protection" results in a reduction in biological control and

Ants can be arboreal and attack insects like this eastern tent caterpillar
Photo: Bob Germain, from https://gardening.usask.ca

higher populations of the pest insect. One of the best ways to enhance biological control and control the pest is to reduce the ant population. Using chemical or physical barriers can reduce the ant populations. For example, spraying the base of tree with an ant killing pesticide, or placing some type of sticky barrier around the plant to prevent ants from accessing the plant and pest insect, allowing natural enemy populations to attack the pest population. Sometimes we have to give the natural enemies a little bit of help.

Weed of the Week

By: Chuck Schuster, UME

As spring is upon the season once again, many undesirable plants are in the turf and landscape as we move forward with the warming trends of the season. Be aware that Japanese stiltgrass has germinated in some areas. As we review the multitude of blooms now on the horizon, one of these plants that we are seeing on road edges and where turf meets some of the wooded areas in the landscape is an invasive plant called garlic mustard, *Alliaria petiolata*, in the Brassicaceae family. (Photo 1) It is found throughout much of the East Coast of the United States and is moving beyond this region. It may also be known as hedge-garlic, sauce-alone, Jack-by-the-hedge, poor man's mustard, garlicwort, or mustard root. Garlic mustard is native to Europe and western and central Asia. It is a plant for which one will want to check all incoming plant material in pots and trees that come as B&B.

Photo 1: Garlic mustard on the edge of a wooded area

This weed is a cool season biennial that produces a heart-shaped, coarsely toothed leaf (photo2) which will appear on a stalked stem that grows to 3.5 feet tall. The leaves give off a garlic odor when crushed. The first year of growth the plant produces a rosette of green leaves very close to the ground. This rosette will remain green all winter and will produce a flowering stalk in early spring. During the winter the plant has a green rosette that will remain very close to the ground. Flowers are produced with four petals that form a cross (Photos 2 & 3). The root system of this plant is a thin taproot, white in color, similar to that of horseradish.

Photo 2: Note the heart-shaped leaves of garlic mustard

This plant is a prolific seed producer, producing thousands of seeds per plant each season that can be dispersed several feet from the plant. This invasive weed prefers a shaded understory condition, slightly acidic soils, and soils that are moist. It is a self-pollinating plant in many cases and will shade out other plants quickly with its dense foliage. Removal by pulling will only be successful when the complete root system is pulled. Removal of the flowering parts is partially successful as it can bolt again later.

Wildlife and livestock do not prefer garlic mustard and will graze around it and eventually trample it in some cases. The West Virginia white butterfly (*Pieris virginiensis*) eggs laid on this plant seem to not hatch, indicating some type of insect poison may be present.

Photo 3: Close-up of garlic mustard flowers

Attempts to control garlic mustard with mowing will be met with less than the success desired. This plant can produce a seed cluster very quickly. Chemical control of garlic mustard in a landscape can be obtained using glyphosate products at the 1% to 2% rate, or triclopyr (Garlon3a) can be used, even during the winter months when temperatures are at 50 °F or higher. Rodeo or Aquamaster may be used near water to control garlic mustard. This weed has seed that will

remain viable in the soil for up to five years, so control is a long-term commitment. This weed can be found in many settings, so everyone must be aware of it. Watch for it coming with trees and shrubs in pots or on soil balls to prevent establishment where it is currently not found. While similar to goutweed (Photo 4), the leaf shape is different, and it produces only four petals, where goutweed flowers will produce more. Early detection and control is important with this weed.

Photos: Chuck Schuster, UME

Photo 4: Goutweed is similar to garlic mustard, but note the different leaf shape

Plant of the Week

By: Ginny Rosenkranz, UME

Cornus florida, flowering dogwood, is a beautiful native tree that thrives naturally in the woods under the shade of larger trees. The dogwood only grows 15 – 30 feet tall and wide and prefers moist, organically rich, acidic, well drained soils. As stated before, dogwoods prefer the afternoon shade, but if given adequate moisture the plants can tolerate full sun. The flowers bloom in April to May and are centered inside 4 large white or pink petal-like bracts that open up flat to look like a large 3-4 inch flower. The bracts are rounded with a small half circle or cleft inserted at the tip that is sometime tingled with pink or red. In the center of the bracts there are tiny yellow green flowers formed into a tight button-like bouquet that matures into bright red fruit in the fall. The fruit is a favorite of the native birds and quickly disappears when ripe.

Dogwoods prefer the afternoon shade, but if given adequate moisture the plants can tolerate full sun Photo: Ginny Rosenkranz, UME

Dogwood trees need to be planted in the spring time or fall if grown in containers and should be placed at least 1-2 inches above the soil line with 2-3 inches of mulch to keep the roots cool. The dark green deciduous leaves are oval in shape and about 3-6 inches long. In the autumn, the foliage turns shades of reds and purples. The branches grow almost horizontally, giving the small tree a very attractive silhouette. 'Appalachian Spring' is a variety that was found growing wild on the Catoctin Mountains around Camp David and has shown strong resistance to anthracnose disease that can kill dogwood trees. There are also 3 varieties of dogwood that show good resistance to powdery mildew which has recently become a dangerous disease of dogwood trees. The varieties that are considered the best at this time include 'Jean's Appalachian Snow', 'Karen's Appalachian Blush' and 'Kay's Appalachian Mist'. There is also *Cornus florida* 'Appalachian Joy', a beautiful flowering dogwood that is very resistant to powdery mildew and has up to 8 pure white petal-like bracts instead of the usual 4. Besides dogwood anthracnose and powdery mildew, the diseases that can be problematic include leaf spot, cankers, root rot, and twig blight. Most of the diseases are present when the dogwood trees are heat or drought stressed. Leafminers and scale are occasional insect pests.

Degree Days (as of May 1)

Aberdeen, MD (KAPG)	331
Annapolis Naval Academy (KNAK)	432
Baltimore, MD (KBWI)	369
College Park (KCGS)	350
Dulles Airport (KIAD)	360
Frederick (KFDK)	333
Ft. Belvoir, VA (KDA)	402
Gaithersburg (KGAI)	334
Greater Cumberland Reg (KCBE)	260
Martinsburg, WV (KMRB)	293
Natl Arboretum.Reagan Natl (KDCA)	481
Salisbury/Ocean City (KSBY)	393
St. Mary's City (Patuxent NRB KNHK)	416
Westminster (KDMW)	380

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 mapModel Category: All models Select Degree-day calculatorThresholds in: Fahrenheit °F Lower: 50 Upper: 95Calculation type: simple average/growing dds Start: Jan 1

CONFERENCES

MAA Pest Diagnostic Clinic for Arborists
May 22, 2019
Location: Woodmont Country Club in Rockville
Schedule and registration information is available at
https://maapestwalk.eventbrite.com/

Eastern Shore IPM Pest Walk
May 15, 2018
Location: Salisbury University, Salisbury, MD
https://2019esipmpestwalk.eventbrite.com

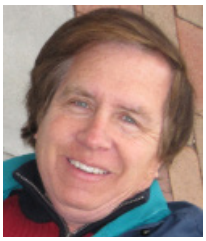
Eastern Shore Pesticide Conference
June 7, 2019
Location: Wye Research and Education Center, Queenstown, MD
https://2019esprocrastinators.eventbrite.com

Procrastinators' Pesticide Recertification Conference
June 14, 2019
Registration and schedule are available at
https://24th-procrastinatorsconference.eventbrite.com/

Maryland Christmas Tree Association Summer Meeting
Saturday, June 22, 2019
Location: Taylor Sines Woodlake Tree Farm, Oakland, MD
For more info contact:
Joncie Underwood@410.398.1882

All Day Session on Herbaceous Perennials
July 25, 2019
Location: The Perennial Farm in Glen Arm, MD

CONTRIBUTORS:



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