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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 sgill@umd.edu

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Periodical Cicadas: Brood X is Coming in 2021

By: Stanton Gill

So much focus has been on the economy and the Covid situation let's move forward to what is happening in the insect world this spring. First, take a minute and drift back to 2004. The air was "abuzz" with the sound of the 17-year periodical cicadas, *Magicicada septemdecim*. Male cicadas were drumming their abdomens making noises that carried for miles. The female cicadas slashed into branches to lay their eggs. At the peak of the flight activity of the cicadas, the bird population was getting



A Brood X periodical cicada nymph emerging from the soil in 2004

plump from the bounty of insects to feed on. The eggs hatched in a couple of weeks and the nymphs dropped to the ground to burrow into the root-zones of plants to feed on tree roots for the next 17 years. We thought we were safe from the 17-year cicadas until 2021. Well, time slipped by and it is now "2021", and we will be seeing and hearing the Brood X periodical cicada this year in late spring to early summer.

In 2020, we put out several articles and pictures of rogue Brood X periodical cicadas that showed up in Montgomery, Howard and Anne Arundel counties. These were just periodical cicadas (Brood X) that got out-of-sync with the main body. The big emergence is set for this spring.

Males are capable of producing a high-pitched whine that some people liken to a small chainsaw or 2-cycle engine noise. Females, which do not produce sound, are attracted to the males to mate. Males have a large group noise then sing a quitter song when a female approaches then switches to an even softer noise as he mates with the female. The group noise is the one that is slightly annoying and overwhelming.

Periodical cicadas emerge in different geographical areas and these emergence groups are labeled as "Broods". The one we experienced in 2004 in most of Maryland was "Brood X." There was another brood of 17-year periodical cicada that emerged in 2013 called "Brood II". In most central and western areas of Maryland, you will not see these Brood II cicadas. If you have customers in Southern Maryland, Virginia, Pennsylvania, North Carolina, New Jersey, and New York, they will be seeing activity of Brood II in 2030. It is something to look forward to for 2030. The parts of Maryland that will have emergence of Brood II is mainly in southern Maryland, Prince George's County and the lower portion of Montgomery County. In Pennsylvania, entomologists even recorded which counties you can expect to see Brood II emerge in 2030 which includes: Berks, Bucks, Carbon, Chester, Dauphin, Delaware, Lancaster, Lebanon, Lehigh, Luzerne, Monroe, Montgomery, Northampton, Philadelphia, Pike, Potter, Schuylkill, and Wyoming Counties, PA.

Periodical cicadas are found in eastern North America and belong to the genus *Magicicada*. There are seven species -- four with 13-year life cycles (including one new species described in 2000), and three with 17-year cycles. The three 17-year species are generally northern in distribution, while the 13-year species are generally southern and Midwestern. *Magicicada* are so well-synchronized developmentally that they are nearly absent as adults in the 12 or 16 years between emergences. When they do emerge after their long juvenile periods, they do so in huge numbers, forming much denser aggregations than those usually achieved by cicadas. Many people know periodical cicadas by the name "17-year locusts" or "13-year locusts", but they are not true locusts, which are a type of grasshopper. Adult *Magicicada* have black bodies and striking red eyes and orange wing veins, with a black "W" near the tips of the forewings. Most emerge in May and June.

A few weeks before emerging in late spring, the nymphs of cicadas construct exit tunnels to the surface. These exits are visible as approximately 1/2 inch diameter holes, or as chimney-like mud "turrets" the nymphs sometimes construct over their holes. On the night of emergence, nymphs leave their burrows around sunset, locate a suitable spot on nearby vegetation, and complete their final molt to adulthood. Shortly after ecdysis (the process of an arthropod molting its exoskeleton) the new adults appear mostly white, but they darken quickly as the exoskeleton hardens. Sometimes a large proportion of the population emerges in one night. Newly-emerged cicadas work their way up into the trees and spend roughly four to six days as "teneral" adults before they harden completely (possibly longer in cool weather); they do not begin adult behavior until this period of maturation is complete. An adult female can occasionally use their stylet to piece plant material or small fruit to extract a small amount of sugar for flight and mating but damage is not detected on most plants. The cicadas have sucking mouthparts called a stylet. Young, immature nymphal cicadas feed on liquid from plant roots. Adult cicadas do not generally feed, according to U.S. Department of Agriculture.

You may say, wait a minute, I see cicadas every summer in August. Yes, you would be correct. The annual cicada, which is out in August every year, are a large green-colored cicada and never reach really high populations numbers. They are called dog-day cicadas since they are in flight when the dog star cluster is visible in the sky in August. Although annual cicadas' life cycle is typically 2-3 years long, they are staggered so we see some emerging every summer. These late summer cicada species, which are sometimes mistaken for the periodical cicadas, are usually in the genera *Diceroprocta*. The annual cicada is more robust in body size than periodical cicadas and body is a green color.

A few weeks before emerging in late spring, the nymphs of periodical cicadas construct exit tunnels to the surface. These exits are visible as approximately 1/2 inch diameter holes, or as chimney-like mud "turrets" the nymphs sometimes construct over their holes. On the night of emergence, nymphs leave their burrows around sunset, locate a suitable spot on nearby vegetation, and complete their final molt to adulthood. Shortly after ecdysis (molting), the new adults appear mostly white, but they darken quickly as the exoskeleton hardens. Sometimes a large proportion of the population emerges in one night. Newly-emerged cicadas work their way up into the trees and spend roughly four to six days as "teneral" adults before they harden completely (possibly longer in cool weather); they do not begin adult behavior until this period of maturation is complete.

Noise and Egg-laying

A week to 10 days after the males begin "singing," the 'early adopter' females begin to lay eggs. Each female is capable of laying up to 400 eggs in 40 to 50 pockets in the wood of several small branches of many types of trees. More than 80 species of trees were recorded in 2004 to being damaged by female cicada ovipositing. Some of the most susceptible trees we recorded in 2004 included paperbark maple, oaks, maples, ornamental pears, and fruit trees. The type of branches preferred by females is about the width of a pencil (if anyone remembers what a pencil looks like) up to 0.5 inch in diameter or a little larger.

After mating, a female cicada slices into the wood of the branch with an egg-laying apparatus (ovipositor) and places the egg into the wood. She usually lays one to several dozen eggs in a single branch before moving to another branch or tree. Female egg-laying activity is controlled by temperature. If it is cool in the spring, then egg laying is over a longer period of time. Generally, it is 30–45 days of egg laying. Approximately 5 – 7 weeks later, the eggs hatch into tiny white nymphs. The nymphs drop to the ground and burrow into the soil to feed on grass roots and, eventually, tree roots for the next 17 years.

Are They a Threat?

Cicadas do not bite or sting defensively, nor do they attack people. If a cicada lands on you, it is only because it finds you to be a convenient place to land. A good anecdotal story is that some lawnmowers and weed-whacker's motors may produce a sound that might be attractive to the periodical cicadas. We did not witness any of this action in 2004. We did have people cancel outdoor weddings in late May and early June of 2004 because they were worried about the male cicada's singing out-competing their ceremony speakers and music.

When handled, both males and females struggle to fly at first, and males make a loud defensive buzzing sound that may startle but is otherwise harmless. Periodical cicadas are not poisonous to animals or humans, nor are they known to transmit disease. Adult periodical cicadas live only for a few weeks—by mid-July, all have disappeared. The one purpose of their short adult life is to reproduce.

Periodical cicadas can cause physical damage to small trees or shrubs if too many feed from the plant or lay eggs in the twigs; such damage can cause "flagging" or breaking of peripheral twigs. Orchard and nursery owners probably should not plant young trees or shrubs in the years preceding an emergence of periodical cicadas, because young trees may be harmed by severe flagging. Mature trees and shrubs, however, usually survive even dense emergences of cicadas.



This damage was caused by an adult Brood X periodical cicada laying eggs into a small birch twig in 2004

In 2004, many homeowners purchased netting for covering small trees, but this was not a very practical solution since the netting is often blown off trees or entangled in branches. If you do choose to put up netting, leave it on the plant only during the egg-laying period of the females. Longer periods will encourage foliar disease on several plant species, especially fruit trees. Use netting with ¼ inch or smaller openings. Contact me at Sgill@umd.edu if you are looking for commercial sources of netting.

One furry creature is ‘happy’ about periodical cicada activity. Moles are said to flourish on the fully-grown nymphs in the weeks prior to emergence. Other wild animals that enjoy the advantage include snakes and spiders. So, at least, some of nature’s wildlife gets a benefit out of the nymphs that emerge from the soil.

Chemical sprays are not practical to control the periodical cicadas. Beyond the concern by owners of fruit orchards and nurseries, periodical cicadas are not regarded as pests. Their loud noises may be annoying but tolerable, since it only last for a couple of weeks. Just prepare your customers for the activity this late spring to early summer.

Why So Many?

When periodical cicada emerge, they do it in a big way with high numbers saturating an emergence area. *Magicicada* population densities are so high that predators apparently eat their fill without significantly reducing the population (a phenomenon called "predator saturation"), and the predator populations cannot build up in response because the cicadas are available as food above ground only once every 13 or 17 years, depending on the species.

If You Can’t Beat Them Then Try Eating Them

Cicadas are said to make good eating because they are low in fat and high in protein. There are over 3000 species of cicadas and they are considered a delicacy by many people in different parts of the world. The European settlers in North America observed some Indian tribe members eating cicadas. During the last emergence of Brood X cicadas in 2004, a number of very brave (or just weird) people reported to have tried deep-fried and stir-fried cicadas. This is just for the adventurous people of the world or good for a “dare” at a cook-out.

We will continue to report on cicada activity throughout the spring.

Winter Damage?

With the gripping cold of last month, are you seeing any woody plants like Japanese maples and nandina showing dieback? Please let us know at sgill@umd.edu if you are seeing seeing winter injury. *Botryosphaeria* is a disease that can move into injured branches. If necessary, samples can be submitted to the plant diagnostic lab to determine if any diseases are present.

Advanced Level II - Natural Area Management Services Webinar Series: Grow Your Business

In fall of 2020, The Woods In Your Backyard Partnership offered a multi-state program for Green Industry Professionals to gain knowledge and skills useful for providing additional services to clientele with small acreage properties. The Advanced Level II webinar series will provide four weeks of in-depth training with two evening webinars per week on the following topics: 1) wildlife habitat enhancement and conflicts; 2) residential riparian buffer installation and maintenance; 3) woodland health practices and harvesting; and 4) managing competing and invasive vegetation and non-herbicide controls. A resource manual & specialized checklist tool have been developed for Green Industry professionals to determine which enhancement practices are suitable for the client's property. A certificate of completion provided for each webinar can be used to secure continuing education credits.

Wildlife Week

February 23, Tuesday – 7- 8:30 p.m. Creating and Enhancing Wildlife Habitat

Speakers: Calvin Norman, Forestry Educator, Penn State Extension, and Luke Macaulay, Wildlife Specialist, University of Maryland Extension

February 25, Thursday – 7- 8:30 p.m. Dealing with Uninvited Guests: Addressing Wildlife Conflicts

Speaker: Jim Parkhurst, Wildlife Specialist, Virginia Tech

Tree Planting and Water Week

March 2, Tuesday – 7- 8:30 p.m. Installing a Residential Riparian Buffer

Speakers: Dave Wise, Watershed Restoration Manager, Stroud Water Research Center, Avondale, PA, and Lamonte Garber, Watershed Restoration Coordinator, Stroud Water Research Center, Avondale, PA

March 4, Thursday - 7- 8:30 p.m. Maintaining tree plantings: Riparian Buffers and Lawn Conversions

Speakers: To be announced and Matt Wright, Wright Environmental & Land Services, Hanover, PA

Woodland Management Week

March 9, Tuesday – 7- 8:30 p.m. Applying Woodland Health Practices to Different Successional Stages

Speakers: Sarah Wurzbacher, Forestry Educator, Penn State Extension, and Jonathan Kays, Forestry Specialist, University of Maryland Extension

March 11, Thursday – 7- 8:30 p.m.

Woodland Management: Harvesting on Single or Multiple Properties

Speakers: Tom Robertson, Professional Forester, TR Land Forestry & Tree Company, Keymar, MD, and Rich Anacker, Logger, and Arborist, A&A Tree Experts, Pikesville, MD.

Vegetation Management Week

March 16, Tuesday – 7- 8:30 p.m. Using Forest Herbicides To Control Competing and Invasive Vegetation

Speaker: Dave Jackson, Forestry Educator, Penn State Extension, and Art Gover, Wildland Weed Management Specialist, Penn State Extension

March 18, Thursday – 7- 8:30 p.m. Non-Herbicide Control and Efficacy of Competing Vegetation

Speakers: Katlin DeWitt, Forest Health Specialist, Virginia Department of Forestry, and Ginny Rosencrantz, Horticulture Educator, University of Maryland Extension

For more information and to register check out: <https://nams-level2.eventbrite.com>

New International Boxwood Seminar Series

The Boxwood Blight Insight Group (BBIG), is sponsoring an International Boxwood Seminar series to be hosted by AmericanHort and its research arm, Horticultural Research Institute (HRI). The series is open to all boxwood enthusiasts across the globe. The first presentation is March 18, 2021 from 1:00 to 2:00 Eastern US/ Canada Time, and is entitled “Boxwood Blight: a 15-year love-hate relationship” presented by Dr. Thomas Brand, Department Head of Ornamental Plant Cultivations, Tree Nurseries, Public Greenery @ Chamber of Agriculture of Lower Saxony, Germany. For more information and to pre-register online, go to https://us02web.zoom.us/webinar/register/8016123772513/WN_gpDb6xsAQ7iRxrRRSof-DA

Virtual FALCAN Pesticide Recertification Conference

March 12, 2021

[For more information and to register](#)

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