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OSU Extension - Auglaize County Weekly Horticulture Newsletter – 3-27-20

How do I Manage Annual Grass Weeds in Turfgrass?

The wide leaf that is yellowish-green is crabgrass

The lawn is beginning to grow. The biggest problem with weeds in turfgrass is reduced aesthetic value, although some weeds can out compete turfgrass when management is reduced. Smooth and large crabgrass, yellow foxtail, and annual bluegrass are the most frequent annual grass weeds in turf.

Smooth crabgrass emerges in the spring before large crabgrass. Smooth crabgrass emerges slowly when soil temperatures in the upper inch of soil reaches 54° F for seven days and moisture is available. This 54° F soil temperature occurs in most years when the dogwood begin to flower and the forsythia flowers begin to fade. The current soil temperature is 49° F. Visit this website to track soil temperature for your area: http://www.greencastonline.com/tools/soil-temperature . Based upon the current 10 day forecast, crabgrass preventer will not need to be applied until sometime after April 7th and maybe later. Waiting to apply crabgrass preventer until just before emergence will ensure control of smooth and large crabgrass later into the season. Peak crabgrass emergence is from mid-May to July 1st. Crabgrass preventer must be applied before plants emerge, otherwise it will not be effective. After applying the crabgrass preventer irrigate the lawn to get the herbicide incorporated into the soil, unless one inch of rainfall is forecasted within five days after application.

If crabgrass densities are high, a postemergence herbicide application may be necessary. If you have used preemergence crabgrass preventer for many years and have successfully controlled the crabgrass, it may be

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wise to stop applying the crabgrass preventer and scout to see whether any crabgrass will emerge. If it does emerge then apply a postemergence herbicide. Crabgrass can be controlled with some postemergence herbicides, but timing and rate are very important to effectively control crabgrass. Effective postemergence herbicides include Dimension, Methar 30, Acclaim Extra, MSMA Turf Herbicide, and Drive 75 DF, but some of these may be difficult to obtain. Acclaim Extra can injure certain bluegrass varieties. When applying postemergence herbicides be sure to obtain thorough coverage and do not mow for three or four days before and after the herbicide application.

There are more herbicides available to control yellow foxtail compared to crabgrass and all of the crabgrass herbicides will control yellow foxtail.

Annual bluegrass is difficult to control in turf and complete control is nearly impossible. Apply preemergence herbicides twice in the fall starting in late August since the fall is when most annual bluegrass emerges and again six weeks later. Herbicides such as Betasan, Dimension, Pendulum, and Barricade will control annual bluegrass.

Local Observations

Good afternoon! I pray you are well.

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We received rainfall 2 days and snow and rain 1 day this past week. Rainfall on Friday, March 20th ranged from a 0.02" near Valley and Idle roads to 0.3" near Mercer Line and St. Rt. 197 roads. Total liquid precipitation on Sunday ranged from 0.1" near Bloody Bridge, near Mercer Line and St. Rt. 197 roads, and near Uniopolis to 0.32" near Shelby-Fryburg and Santa Fe-New Knoxville roads. Rainfall on Thursday ranged from 0.27" near Santa Fe-New Knoxville and Kettlersville roads, near Shelby-Fryburg and Santa Fe-New Knoxville roads, and near Valley and Idle roads to 0.4" near Bloody Bridge. Total liquid precipitation for the week ranged from 0.51" near Santa Fe-New Knoxville and Kettlersville roads to 0.7" near Mercer Line and St. Rt. 197 roads. The average rainfall for the week was 0.60", 0.76" less than last week.

The average high temperature now is 52 degrees F, 3 degrees higher than last week. Temperatures are starting to change more rapidly! Temperatures were above normal for 3 days and below normal for 4 days. Temperature ranged from 32 degrees F to 66 degrees F. The average high temperature for the week was 49.0 degrees F which is 3 degrees F cooler than the historical average high.

Flowers are starting to bloom. Giant ragweed has started to emerge, so summer annual weeds are on their way. That means prostrate knotweed should be emerging and common lambsquarters will soon.

I purchased my garden seeds for the year as well as some asparagus to get started. That was expensive. I ordered Purple Passion.

VegNet

Questions Regarding the Novel Coronavirus (COVID-19) on Farms with Employees

Gustavo M. Schuenemann, DVM, MS, PhD, Professor & Extension Veterinarian

Jeffrey D. Workman, PhD, Extension Program Coordinator OHIO STATE UNIVERSITY EXTENSION

What is COVID-19 coronavirus?

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COVID-19 is an infection caused by a novel (or new) strain of coronavirus. This strain is new; thus, people around the world do not yet have any immunity to the virus. Group immunity means a high enough proportion of individuals in a population are immune; thus, the majority will protect the few susceptible individuals because the pathogen is less likely to find a susceptible individual. This virus strain is very contagious before any signs or symptoms of sickness appear. It spreads very easily from person to person and has become a worldwide pandemic. In addition, this strain of virus can cause serious disease and death in elderly people and those with underlying health conditions such as heart disease, lung disease, and diabetes. Anyone who has a suppressed immune system (immunocompromised) is also considered high risk. CDC: https://www.cdc.gov/coronavirus/2019-ncov/index.html

Are the risks and concerns regarding COVID-19 coronavirus different on a farm?

The difference between a farm and some other workplaces is that most work cannot be performed remotely. People must be physically present to feed, milk, and care for animals or crops. While automation may reduce the number of people necessary on some farms (e.g., robotic milkers, automatic feed pushers, automatic calf feeders, etc.), people are still needed onsite to operate and manage the automated systems as well as to provide care that cannot be automated.

Is there anyone available to communicate remotely with my employees at the farm?

Yes, we are available to assist farmers remotely via conference call (e.g., Zoom, WhatsApp). Please contact Dr. Jeff Workman at workman.45@osu.edu or Dr. Gustavo M. Schuenemann at schuenemann.5@osu.edu (Ph: 614-625- 0680).

Can livestock or other animals be infected with the COVID-19 coronavirus?

The Center for Disease Control and Preventions (CDC) has reported that while this virus seems to have emerged in China from an animal source, it is now spreading from person-to-person. There is no reason to believe that any animals including livestock or pets in the United States might be a source of infection with this new coronavirus. There are bovine coronavirus infections that are caused by different strains of coronavirus such as: calf diarrhea, winter dysentery in cows, and bovine respiratory disease complex (shipping fever). It is illegal and dangerous to use any vaccines or drugs labeled for cattle for human use. No current products will help prevent or cure COVID-19. Merck Veterinary Manual: https://www.merckvetmanual.com/digestive-system/intestinaldiseases-in-ruminants/intestinal-diseases-in-cattle CDC: https://www.cdc.gov/coronavirus/2019- ncov/faq.html#animals

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Do farm workers develop a better immune systems?

Your immune system helps your body fight an infection from microorganisms. Microorganisms include bacteria, viruses, fungi (yeasts & molds), protozoa, and algae. The microorganisms that infect and cause disease are called pathogens. Being exposed to various pathogens commonly found on a farm can help your body develop some immunity. However, this novel strain of coronavirus is new and different from other strains of coronavirus in which you may have been previously exposed. COVID-19 appears to spread very easily between people because it is able to spread without people knowing they are infected and there is no immunity to the virus in the population.

How is this coronavirus different from the common cold or flu?

Many different respiratory viruses can cause the common cold, but rhinoviruses are the most common. Other virus such as coronaviruses, parainfluenza, and adenoviruses may also cause the common cold. Flu is caused by the influenza virus. Flu is considered to be a more serious and dangerous infection than the common cold. The COVID-19 coronavirus has many of the same signs and symptoms as the common cold and flu. It would be closest related to those coronavirus strains that do occasionally cause a common cold. However COVID-19 is different because it is novel meaning our bodies do not yet have any immunity, and it can cause serious disease and death in certain groups of people similar to an influenza virus. CDC: https://www.cdc.gov/features/rhinoviruses/index.html CDC: https://www.cdc.gov/flu/index.htm

How can I protect myself from getting COVID19?

1) Social distancing: This helps to prevent spread of virus from person to person. Social distancing includes avoiding large groups of people and the closing of certain public businesses and events. Groups of people who are only in contact with those within their house or farm and are not in contact with other people are less likely to experience community spread. Avoid hand shaking when greeting someone and maintain 6 feet of distance from other people. 2) Proper hand washing and sanitation: It is extremely important you wash your hands frequently and after touching a high contact surface. The virus may live on surfaces for 2- 3 days. If you touch a surface such as a doorknob or counter that has virus on it, and then you lick your fingers or touch your mouth, nose, eyes, or face, you could become infected. By washing your hands frequently and wearing disposable gloves, you decrease the risk of becoming infected or potentially spreading a virus to others. Most people still need to go to public places on occasion such as the grocery store and gas station. It is important to maintain 6 feet of distance from other people and wash your hands with soap and hot water for at least 20 seconds, or if a sink and soap aren't available, use an alcohol-based hand sanitizer (at least 60% alcohol). Keep the bathrooms and break/kitchen area in your workplace and at home clean and disinfected. 3) Avoid

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any direct contact with individuals feeling sick or experiencing the symptoms/clinical signs of common cold or flu. With the exception of those responsible for providing care for sick individuals. CDC: https://www.cdc.gov/coronavirus/2019-ncov/index.html

Should I report to work?

The short answer is "YES", unless you are sick or experiencing the symptoms/signs: fever, dry cough, and shortness of breath. CDC: https://www.cdc.gov/coronavirus/2019-ncov/if-you-aresick/steps-when-sick.html

What if I start to feel sick or are getting symptoms/signs?

Symptoms/signs are similar to the cold or flu: fever, dry cough, and shortness of breath. Emergency signs are difficulty breathing or shortness of breath, persistent pain or pressure in the chest, new confusion or inability to arouse, and bluish lips or face. Emergency signs require that you immediate call your health care provider for help. Do not go in-person as you might spread to others. By calling ahead, health care professionals can give you instructions and prepare for your arrival. You may also contact your manager or supervisor to help you contact the doctor's office if you are experiencing these symptoms/signs. CDC: https://www.cdc.gov/coronavirus/2019-ncov/if-you-aresick/steps-when-sick.html

How long will this concern about COVID-19 last?

All of the current changes are intended to reduce the spread. Eventually, a vaccine or treatment may be developed and manufactured that will allow protection of individuals and the population such as with the seasonal flu vaccine. No one knows for certain how long it will take for life to return to normal, but a few weeks or months of collective efforts will certainly make a huge difference within our community.

All farms should immediately implement stricter biosecurity protocols for all outside personnel and visitors.

BYGL

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Eastern Tent Caterpillar Hatch: Bring on the Ants!

Authors
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Published on
March 27, 2020

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Overwintered eastern tent caterpillar (ETC) (*Malacosoma americanum*) moth eggs are hatching in southwest Ohio; a sure sign that spring has sprung. As their common name implies, the caterpillars are accomplished tent-makers displaying their silk handiwork in branch forks.

ETC spends the winter in shiny, blackish-brown egg masses wrapped around twigs on their host plants. A close examination will reveal that the eggs are encased in a structure that resembles bubble-wrap perhaps for winter protection.

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The accumulated Growing Degree Days (GDD) that predicts ETC egg hatch is 92 and we've reached 112 in my part of Ohio. The full bloom of Corneliancherry dogwood (*Cornus mas*) is usually a pretty good phenological indicator for ETC egg hatch.

The caterpillars begin producing their highly visible silk nests immediately upon hatching. Indeed, egg-hatch may be revealed by observing the tiny, hairy first instar caterpillars clinging to small, silk nests that surround their egg mass.

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The caterpillars prefer to feed on trees in the family Rosaceae, particularly those in the genus *Prunus*, such as cherry. They also occasionally feed on birch, maple, and oaks. Healthy large trees can handle the early season defoliation by producing a new flush of leaves. However, newly planted trees may not fare as well. Leaves lost to caterpillar feeding this spring must be replaced using energy stored from last season.

Small nests within reach from the ground can be eliminated digitally using five-fingered "smash and/or smear" techniques. Less hands-on methods include applications of the naturally occurring bacterium, *Bacillus thuringiensis* serotype *kurstaki* (Btk), applied to early instar stages, as well as standard insecticides labeled for general caterpillar control.

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It's too early to assess the general population density of ETC in southwest Ohio. However, this native moth has a history of producing occasional outbreaks.

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ETC is of particular interest to the thoroughbred horse industry because of the link between hairs on the caterpillars and Mare Reproductive Loss Syndrome (MRLS). The syndrome produced an estimated economic loss to the industry in Kentucky of $336-$500 million in 2001. The entire pathogenesis was untangled through diligent scientific sleuthing by scientists at the University of Kentucky. Many thoroughbred farms in the Lexington, KY, region took steps to reduce the risk by cutting down black cherry (*Prunus serotina*) which commonly grew in tree lines surrounding horse pastures.

Sweet Payment for Services

Nectar is the currency used by plants to pay insects and other animals to do their bidding such as carrying flower pollen from producer to recipient. And it costs plants nothing to photosynthesize this sweet medium of exchange. We can all breathe easier knowing that the only thing plants need is a little sunlight to rearrange the atoms in water (H2O) and carbon dioxide (CO2) to produce glucose (C6H12O6) and atmospheric oxygen (O2).

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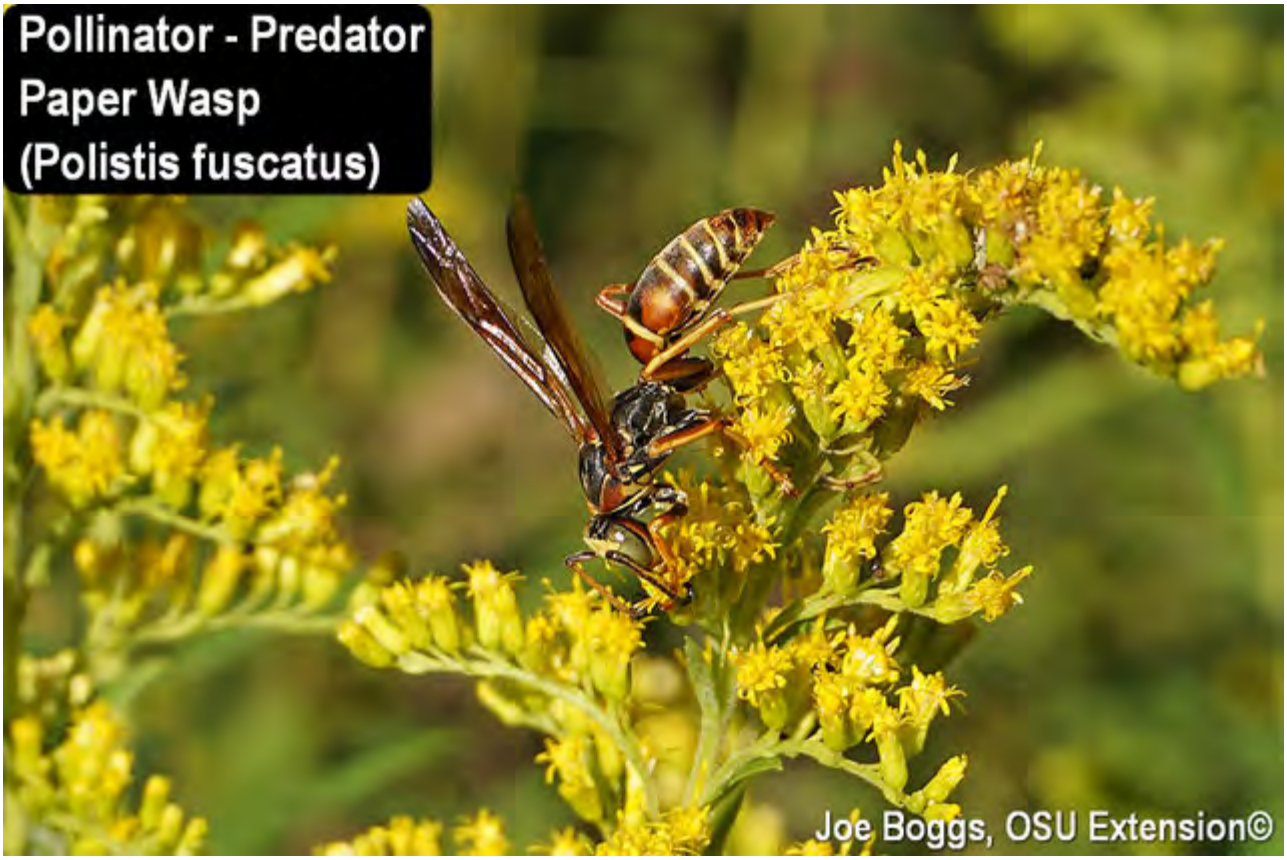
Of course, nectar is more complex than just glucose used by plants to satisfy their own energy needs. Plants raise the reimbursement by including a mix of nutrients essential to the needs of pollinators.



The recent rise in awareness of the importance of pollinators has highlighted this nectar-based economy. However, flowers are not the only place where nectar serves as coinage in exchange for services.

Extrafloral nectaries (EFNs) are plant glands that produce nectar but they are not associated with flowers. A good example is the EFNs found on the leaf petioles of trees in the genus *Prunus*. They were long used as handy identifiers of plants in the belonging to genus; particularly cherry, before research revealed their important ecological function.

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The EFNs on cherries can vary considerably in size and shape from species to species. Some appear as small red or green "bumps" or even "dots" on the petiole at the base of the blade while others look like well-defined deep red donuts. Of course, a lot of things look like donuts to me, but that's another sweet story.

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In 1978, the University of Minnesota ecologist Dave Tilman published a paper in the journal Ecology titled, "*Cherries, Ants, and Tent Caterpillars: Timing of Nectar Production in Relation in Relation to Susceptibility of Caterpillars to Ant Predation*." The title says it all.

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Tilman found that the EFNs on black cherry commonly attract western thatching ants (*Formica obscuripes*) which are predaceous on many caterpillars including ETC. His research showed that the number of ants visiting the EFNs was directly correlated with the distance between ant colonies and cherry trees and ETC survivorship was positively related to those distances.

He also found that the highest number of ants visiting the trees occurred just after bud break and decreased as the number of active EFNs decreased. This time frame coincided with the development of ETC with caterpillars large enough to escape ant predation appearing after EFNs ceased their nectar-payment activity. He concluded that "*… the ant-cherry relationship is a facultative mutualism and that nectar production is timed so as to maximize the chance of successful ant predation on tent-caterpillar colonies*."

The term "myrmecophile" means "ant lover." It is derived from the Greek "myrmex" = ant, and "phlos" = loving. The term applies to the special relationship some plants and animals, including insects (e.g. aphids), have with ants. Obviously, many plants in the *Prunus* genus are myrmecophiles with their sweet love expressed through their EFNs.

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What Is That?: Take Notice of Winter Annual Weeds

Authors
Ashley Kulhanek
Published on
March 25, 2020

Many among us have found ourselves confined to quarters over the last few weeks. During times like these, I find I have more time to be observant in my yard and garden, resulting in the inevitable shout of, **"WHAT IS THAT????"** Perhaps some of you too are noticing new plants or critters as you soak up the sun on days like

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today! While out walking my cat, Mew Mew, (a superstar plant-lover in her own right) we got ourselves tangled up in some winter annual weeds, Hairy bittercress (*Cardamine hirsuta*) and Catchweed Bedstraw (*Galium aparine*).

We found both weeds mixed together and alone throughout our landscape beds and even creeping into the lawn. Both weeds are known to thrive in shady, moist areas and take advantage of thinning turf.

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Hairy Bittercress and Catchweed Bedstraw
Photo: Ashley Kulhanek, OSU Extension

CATCHWEED BEDSTRAW (*Galium aparine*)

Let's take a closer look at Catchweed Bedstraw. Even though it is considered a weed, it happens to be one of my favorite plants because it has a fun little trick. (*I know, "who has a favorite weed!"*) Often called, "Velcro®-weed", Catchweed is covered in short hairs that behave like tiny hooks allowing it to cling to other plants, surfaces, animal hair, and YOU. These hairs line the stems, leaves and eventually the seed pods. Other names it can go by include bedstraw, grip grass, and stickywilly. It is a member of the Madder family (Rubiaceae).

One source noted that catchweed grown in full sun may have thicker hooks than that of plants grown in shade, making it more irritating to the skin when gardening and weeding by hand.

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The fun is really this velcro characteristic. Need a game to play with the kids? Get some landscape weeding out of them while playing pin the "tail" on the donkey. It's great fun. I find this is also a great test for identification too.

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Identification is made easy also by catchweed's distinct appearance. The simple lanceolate leaves 1-3" in length are arranged in a whorl of 6 to 8 leaves around a central square stem. The stems can reach 3-6' in length but can't support themselves and will either spread over the ground or climb over other more desirable plant material. This also can make pulling the hand weed somewhat frustrating as the weak stems often snap off instead of pulling up the root.

The plant produces small green to white flowers that are pollinated by flies or beetles. Spherical seed pods (the fruit) contain a single seed 1-4 mm in diameter. The hooked bristles on the pod create a burr, which help it disperse via animal fur or clothing. Individual plants produce 300-400 seeds.

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Flowers and therefore SEEDS will begin in late May into June, so NOW is a great time to get out and pull it before it gets too large and creates a tangled mess. As it grows it will stick to itself and topple over other plants, shading them out and creating a pretty tangled mess to weed through, so pull it now! It should be noted that some people with sensitive skin can have an allergic reaction to this plant causing red itchy rash on the skin which can last several days. You can protect yourself by wearing gloves and long sleeves when hunting down this plant.

Hairy Bittercress (*Cardamine hirsuta*)

Now onto Hairy bittercress. This weed has a cool trick too! Its seed pods EXPLODE when touched. A very effective seed dispersal mechanism. Now, unlike playing around sticking Catchweed to your shirt... you might not want to encourage those seeds exploding as they will become next year's problem!

Hairy bittercress is another winter annual weed and is a member of the Brassica family (Brassicaceae). . This flowering bittercress we are seeing NOW actually germinated last October and grew into a small basal rosette that

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hung out through winter. When spring conditions hit, bittercress resumes growth and flowers in early spring to set seeds for the next season.

The plant has pinnately compound leaves with 4-8 leaflets on the rachis. Hairy Bittercress flowers grow in clusters with each white flower having four tiny petals, a key identifier. (Hairy Bittercress is often confused with Common Chickweed, *Cerastium arvense,* another winter annual whose flowers have 5 white petals, "deeply lobed" giving the appearance of 10 petals.)

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It takes only 14 to 28 days after flowering to develop the thin cylindrical seed pods known as **SILIQUES.** These will stick up past the flower. As the fruit matures and turn brown, they will begin to explode to disperse their seeds with some reports stating that seeds can fly up to 15 feet. This gives rise to several other common names for this plant: Flick Weed and Shot Weed. Each silique can contain up to 20 seeds and a single plant can produce up to 5000 seeds over its lifetime with these seeds being viable for several years.

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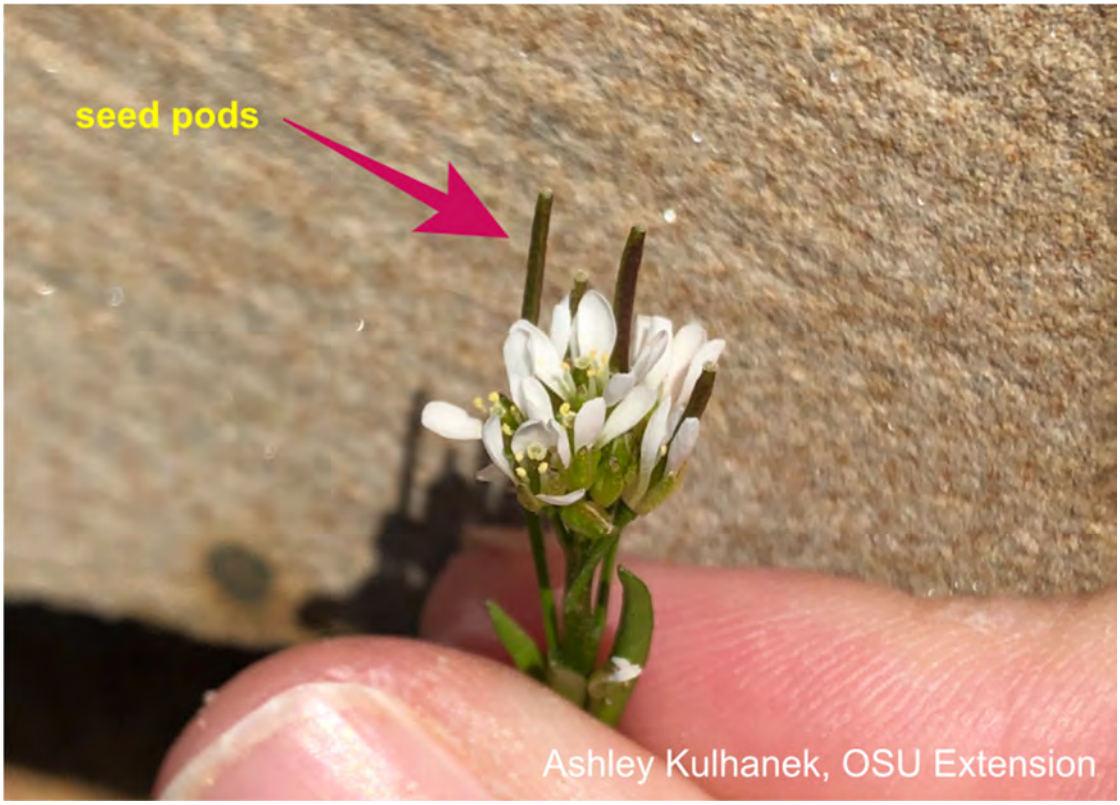

This plant is not without its virtues. It is edible and is reported to taste like arugula. So, while you are "weeding" you can be harvesting greens for dinner. Just be sure that the area has not been treated with any pesticides nor been visited by any critters, and that your identification is spot on. It is also a food source for two butterflies the spring azure (*Celatrina landon)* and the falcate orangetip (*Anthocharis midea)*.

As winter annuals, both hairy bittercress and catchweed can be managed by preventing them going to seed through pulling, hoeing, or mowing. Chemical control is an option as well. For winter annuals, this is most efficacious if applied in summer-fall to prevent seeds from germinating. Catching them now when they are small and, hopefully, before they've spread, is the best option.

Remember: Pulled weeds left in the yard may continue to develop and produce seeds. Always dispose of weeds properly to ensure management. Use caution when adding plant material to your compost piles. Most home compost piles do not reach a high enough temperature to destroy weed seeds. Using the finished compost could then result in the dispersal of weed seeds that were not adequately heated to kill them off.

More Information

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Bedstraw
https://wimastergardener.org/article/catchweed-bedstraw-galium-aparine/
Bedstraw
https://www.canr.msu.edu/news/bedstraw_is_stuck_on_you
bittercress
https://extension.tennessee.edu/publications/Documents/W399.pdf
https://plants.ces.ncsu.edu/plants/cardamine-hirsuta/

Holy Hellebores!

Authors
Paul Snyder
Published on
March 27, 2020

Everyone anticipates spring's arrival and subsequent awakening of plants from their winter slumber. If you're like me, every plant exhibiting signs of life is exciting: from the complex flowers *Acer saccharinum* to the showy flowers of the magnolias, all are welcome. At Secrest Arboretum you can find many plants that remain unknown to

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the average gardener, but there is one plant that seems to remain in obscurity-*Helleborous,* or Lenten Rose. The people who know and grow this plant love it, but for others it remains a mystery. I am stunned whenever I show the plants at Secrest Arboretum to various groups how many gardeners don't know this wonderful harbinger of spring.

Helleborus x *hybridus* at Secrest Arboretum

Hellebores, a member of the *Ranunculaceae,* are perennial plants native to Europe where they are found in open meadows. In our gardens we usually plant them in the shade in moist but well-drained soils, though they will thrive under drier conditions of neglect. Hellebores are susceptible to root rots in wet soils, so avoid planting in such locations.

The showy part of the plant, what we would call the petals, are not petals at all, they are actually sepals. Sepals serve to protect the developing reproductive structures on the inside. The real petals are inside the sepals and are considered tubular nectaries. Hellebores can flower anywhere from January to April depending on the species.

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Hellebores are divided into two groups, those with stems (caulescent) and those without stems (acaulescent). Most of the plants in the nursery trade today are the acaulescent types, most notably *Helleborus* x *hybridus* and several newer hybrids. These plants have flowers that emerge from the soil in late winter or early spring and provide a floral display for about eight weeks. Even after the foliage emerges the sepals retain much of their color and remain showy until finally bending to the ground in June. Most acaulescent types including *Helleborus* x *hybridus,* mature around 12" tall and have dark green leathery leaves. The foliage is evergreen in nature, though it begins to brown in late winter. previous season's foliage of acaulescent types should be removed just as the flowers begin to emerge from the crown of the plant. The leaves act as a protectant for the flower buds, preventing them opening too early and being damaged by cold.

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Helleborus x *hybridus* double flowered selection.

Plant breeders have been improving hybrids by selecting for plants that hold their flowers upright, and thus more visibly. New colors, patterns, speckles, foliage, and sepal numbers are being introduced to the trade constantly, contributing to excitement about this plant. Hellebores will self-seed in the garden but has never exhibited invasive tendencies. Seedlings should be removed if one desires to maintain the parent cultivar.

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Helleborus x 'Ivory Prince'

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Hellebore seedlings, March 25, 2020

One caulescent species of Hellebore can be found at Secrest Arboretum (and other places in Ohio too), the stinking hellebore, *Helleborus foetidus.* The common name, stinking hellebore, might cause some to avoid this species. However, the fetid nature of the plant is faint, and one must place their nose directly in the flower or crush the foliage to experience the scent. Stinking hellebore reaches 16-20" tall and forms small clumps. *Helleborus foetidus* is less hardy than *H.* x *hybridus* and has been killed to the ground at Secrest during the polar vortex of 2014-15.

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Helleborus foetidus

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Helleborus foetidus flower

All parts of the Hellebores contain alkaloids making the plant poisonous. The poisonous nature contributes to Helleborus being deer and rabbit resistant, though human poisoning is rare in modernity. The plant was used in ancient times to poison people. One report by Greek geographer, Pausanias, states that statesman Solon ordered hellebore roots to be thrown into the water supplies of the towns he was going to besiege. The towns were overthrown because the residents were suffering from the effects of the poisoning.
Stop by Secrest Arboretum or you local public garden to see these wonderful plants.

Futher Reading
https://herbaria.plants.ox.ac.uk/bol/plants400/Profiles/GH/Helleborus
https://www.plantdelights.com/blogs/articles/hellebores-winter-hardy-shade-perennials-for-the-woodland-garden
https://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=d100
https://www.etymonline.com/word/hellebore
https://pss.uvm.edu/ppp/articles/hellebore.html

Daffodils or Jonquils...Are They One in the Same...Which Are They?

Authors
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Published on
March 26, 2020

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Popping up in many landscapes, along edges of roads, and in woodlots where old homesteads had once been throughout Ohio are the perennial daffodils. Many of the daffodils are yellow in flower color, but there are multitudes of shades of yellow plus splashes of additional colors such as red, orange, pink, green and white.

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Daffodils with white tepals and yellow coronas.

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Daffodil with white tepals and corona.

These perennials have been popular for decades and possibly for centuries. They are typically very easy to grow and require minimal attention most of the time. However, there is some confusion in the public about whether to call them daffodils or jonquils. The short answer to this question is that they are almost the same thing. In other words, ALL jonquils are daffodils, but not all daffodils are jonquils. As an entomologist, we have a similar adage, ALL bugs are insects, but not all insects are bugs! What all that means follows.

Any member of the plant genus *Narcissus* (Latin scientific name) (Family Amaryllidaceae) could be called a daffodil (common non-scientific name). Some use the genus name *Narcissus* as a common name narcissus to refer to the plants that can be found in the genus, possibly a questionable practice. There are at least 40 and maybe as many as 200 different species in the genus and over 25,000 registered cultivars (named hybrids) classified into 13 Divisions per the Royal Horticultural Society classification system. Most daffodils produce a single flower on each floral stock composed of six flat flower tepals (structures that are neither sepals nor petals) surrounding a central cup.

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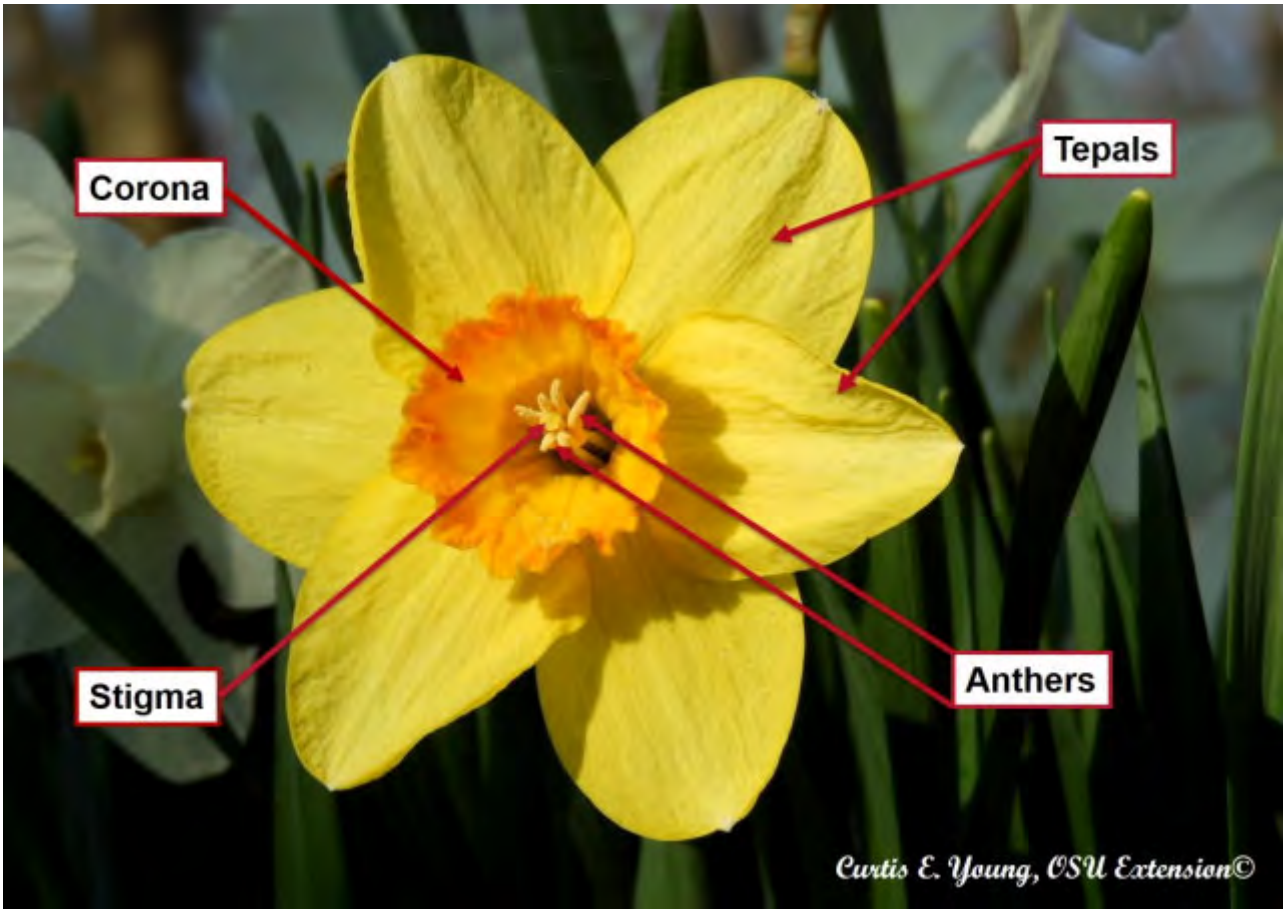

Daffodil flower anatomy.

Members of Division 4 have double blossoms.

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A Division IV double blossom daffodil cultivar.

When the flower stocks first appear, the flower buds are enclosed in a covering called a spathe. As the flower matures, the spathe splits open and releases the bloom. The spathe dries and can be found at the base of the flower as a papery material.

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Daffodil flower buds covered by intact spathes.

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Spathe beginning to split open to release daffodil flower.

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Spathe remains at the base of the daffodil flower.

Several common garden species included in this group of plants are the common and popular daffodil (a.k.a. wild daffodil or Lent lily) (*N. pseudonarcissus*), the jonquil (*N. jonquilla*), and the poet's narcissus (*N. poeticus*).

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A Division IV double blossom daffodil 'Cheerfulness' that produces multiple flowers per floral stack.

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Narcissus 'Golden Dawn', a Division VIII daffodil that exhibits multiple flowers per floral stalk.

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Narcissus 'Golden Dawn', a Division VIII daffodil that exhibits multiple flowers per floral stalk.

Also amongst the daffodils are those called "paperwhites," a couple of species (e.g., *N. papyraceus*) that are not hardy in northern climates such as that of Ohio, but are considered naturalized in states such as Texas, California and Louisiana. In Ohio and other northern states, they are grown as a house plant, and can be forced to flower throughout the year. Paperwhites are called such because of the nearly pure white flowers that they produce in bunches at the tops of their floral stems. Most daffodil species are native to southern Europe and northern Africa.

Daffodils are bulb forming perennial plants. The bulbs are similar in appearance to onion bulbs. This is unfortunate, because daffodil bulbs are toxic. All parts of the plant are toxic, however the bulb is the most toxic part. Daffodils contain an alkaloid compound (lycorine) that causes vomiting and gastrointestinal cramping. This compound is toxic to humans as well as other animals. Symptoms of poisoning include diarrhea, vomiting, salivation and, in extreme cases, convulsions and cardiac arrhythmias.

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When buying daffodil bulbs from catalogs and other sources, there is a standard way of describing and listing the 25,000 plus cultivars of daffodils. These descriptions are a combination of a number and letters. The number is in reference to a "classification system" of 13 "divisions" and the letters are "color codes" of the perianth (tepals) and corona (cup) of the flower. For example, the cultivar Hillstar has the classification coding 7 YYW-YWW [Jonquilla] which means it is in Division VII (Jonquilla and Apodanthus Daffodil Cultivars) with both sets of tepals yellow at their tips fading to white at their bases, and the corona being yellow at its base fading into a white rim of the cup. The American Daffodil Society's webpage ([https://thedaffodilsociety.com/a-guide-to-dafodils/classification-system/]) provides a full description of the divisions and color code system.

Daffodils are very easy to grow and adapt well to numerous different environmental conditions. Daffodils grow in many soil types. However a well-drained, deep, fertile soil with a high organic matter results in the best performance. Average fertility levels are better than high fertility levels. High fertility, especially in nitrogen, promotes excessive vegetative growth at the expense of high-quality flower production, as well as excessive bulblet production.

If one plans their plantings well, they can have daffodils in flower from late March through early May.

More Information
The American Daffodil Society
https://thedaffodilsociety.com/a-guide-to-dafodils/classification-system/
Purdue FactSheet - The Narcissus
https://ag.purdue.edu/hla/pubs/HO/HO-11.pdf
Brooklyn Botanic Garden
https://www.bbg.org/gardening/article/how_to_grow_hardy_bulbs_indoors

Bark Stripper Squirrels

Authors
Joe Boggs
Published on
March 25, 2020

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Tom deHass (OSU Extension, Lake County) showed pictures during this week's BYGL Zoom Inservice of heavy bark-stripping damage he observed in Pete's Pond Preserve in northeast Ohio. I've also received reports and images of damage occurring elsewhere in Ohio.

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There are a number of North American animals that will strip bark, but few can produce damage high-up in tree canopies. Bark-stripping on the upper tree stems in Ohio is most likely caused by eastern gray squirrels (*Sciurus carolinensis*). If the debarking occurs elsewhere in the U.S., the culprit could be North American porcupine (*Erethizon dorsatum*). However, it would be highly unlikely to find this fascinating prickly animal in southwest Ohio.

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We've been posting BYGL Alerts on squirrels stripping tree bark for a number of years. Of course, squirrels can injure trees in two ways: by stripping bark and lopping off twig tips. The twig pruning most often occurs in the fall and causes no real damage. The "natural pruning" may actually increase canopy density.

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However, destructive debarking by squirrels can potentially girdle trees. In fact, gray squirrels are considered a major non-native pest in the United Kingdom (UK) where they've changed their name to *grey* squirrels.

Eastern grays aren't the only squirrels that strip bark. The peculiar behavior has been observed in North America with fox squirrels (*S. niger*) as well as two so-called pine squirrels; the red squirrel (*Tamiasciurus hudsonicus*) and Douglas pine squirrel (*T. douglasii*).

Gray squirrels are reported to strip bark on a wide range of deciduous trees. I've most commonly seen the damage on honeylocust (*Gleditsia triacanthos*) and various maples (*Acer* spp.); however, I posted a BYGL Alert last spring of damage to dawn redwoods (*Metasequoia glyptostroboides*) with the bark on the main stem stripped in patches. The damage extended from a few feet above the ground to around 20 – 25' up the tree.

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Tree debarking by squirrels remains somewhat rare in North America. This is not the case in the UK. Eastern gray squirrels were introduced to various areas in the UK from the late 1880s through the 1920s. They are now wreaking havoc throughout the UK producing widespread severe debarking of woodland and landscape trees and threatening biodiversity; gray squirrels have caused regional extinctions of their native red squirrel (*S. vulgaris*).

Reasons posited on both sides of the Atlantic for the odd bark-stripping behavior has ranged from reasonable hypotheses such as feeding on the sugar-rich phloem, searching for a water source, gnawing on trees to wear down ever-growing incisors, to the bizarre such as pregnant female squirrels gnawing bark in response to their pain.

Research-Based Explanations?

A review of the scientific literature makes it clear that more research is needed to truly pin down the reason(s) for the odd bark-stripping behavior by gray squirrels including the extensive damage observed in the UK. We may

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become frustrated with hearing, “more research is needed;” however, more times than not, it's the truth of the matter.

A number of studies conducted in the UK on grey squirrels noted two important findings. First, the damage most often occurs in the spring to early summer. Although bark-stripping may be observed later in the season, the vast majority occurs from March through May.

Second, the greatest amount of damage seems to occur after a good mast year supports an elevated population of juvenile squirrels; maybe more accurately juvenile delinquents. Of course, a high population of young squirrels also means there is a high relative population of post-pregnant females.

A study published in 2016 coupled these findings with naturally occurring elevated levels of calcium in tree phloem in the spring to early summer; as much as a 40% increase compared to other times of the year. Of course, it is well documented that gray squirrels will gnaw on calcium-rich sources such as bones, antlers, and even limestone, to get this much-needed mineral.

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Creative use of Photoshop ...

The authors hypothesized that juvenile gray squirrels strip bark to feed on tree phloem in order to acquire calcium for bone growth. They also posited that post-pregnant females gnaw the phloem to replace calcium lost during pregnancy and nursing.

An open and shut case? Not hardly. Note the authors "hypothesized" which is the beginning of the Scientific Method, not the end. In fact, the same authors published a paper in 2017 that seemed to disprove their hypothesis.

They found the dominant form of calcium in tree phloem is calcium oxalate (CaC_2O_4) which is commonly abbreviated as CaOx. This is important because the authors noted that many animals cannot utilize this form of Ca for building bone. Calcium carbonate ($CaCO_3$) is a form of Ca known to be readily utilized by animals to build bone.

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In a very small scale study, the authors fed grey squirrels a diet with CaOx; a diet with low-Ca; and a control group a diet with calcium carbonate. The researchers found no differences in femur length between squirrels fed three diets. This seemed to refute the phloem calcium hypothesis.

Unfortunately, as the authors recognized, their study was extremely limited. It only included 18 grey squirrels; 10 males and 8 females. Of equal importance, they only had one sub-adult.

The reason for their small sample size highlights that science does not occur in a vacuum. Their study was limited by both money and social concerns. Here is their explanation: "*This was an arbitrary sample size chosen for this small-scale study to garner an understanding of the effect of the three custom-made treatment diets, and because it is divisible by three. This number was also restricted by the cost of the treatment diets, and an ethical obligation to keep the total number of individuals involved to no more than scientifically necessary*."

A Call to Arms

As a squirrel hunter in my juvenile (delinquent?) days, I never observed bark-stripping by squirrels in the deep woods of West Virginia. Much of the damage in Ohio seems to occur on landscape trees, trees at the edge of wooded areas, or in limited woodlots including some parks. I've never gotten a report of trees being damage in heavily forested areas.

What do you see? Is the bark-stripping by squirrels an urban phenomenon?

I welcome your own observations. You can get **my e-mail address by clicking on my name at the top of this Alert.** Your pictures would also be welcome!

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Another creative use of Photoshop

More Information
2016: “A novel causal mechanism for grey squirrel bark stripping: The Calcium …
http://www.sciencedirect.com/science/article/pii/S0378112716300421
2017: “Regulation of bone mineral density in the grey squirrel, Sciurus caroli…
http://onlinelibrary.wiley.com/doi/10.1111/jpn.12740/full

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Planetree Questions II: The Final Five

Authors
Jim Chatfield
Published on
March 24, 2020

Q6. – What are the key horticultural features of planetrees?

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A large sycamore at the College of Wooster.

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I told you it was large - and tall. Jason Veil and Steve Shaffer visit COW from OSU.

A6. – Sycamore (*Platanus occidentalis*) and other planetrees love water, and you can see that along rivers. If you do not believe me, next winter, visit Clifton Gorge Nature Preserve in Greene County. Take the upper trail and look down toward the gorge and the Little Miami River. Beautiful sycamores on either side, very defined when leaves are off the trees. They are not intolerant of reasonably dry sites, though. They grow fast and truly become large trees with age, both in size and spread: Michael Dirr & Keith Warren in “The Tree Book” cite 80 feet by 70 feet for London planetree (*Platanus* x*acerifolia*) and 75-100 feet tall for sycamore.

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Sycamores are large trees.

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Check out these glass flowers and leaves next time you visit Harvard's Peabody Museum. Over 4000 in toto.

They are “dirty” for horticulturists interested in mowing in the area, with fallen leaves and twigs from anthracnose, exfoliated bark, disintegrating seed-heads, and fallen branches. However. They are “the bone structure of the landscape” in winter and the mottled bark is sensational, the “everchanging vision of the everlasting view” as Carole King put it so well.

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Planetree bark and leaves in Iowa yard. Good-sized "devil strip".

I suppose she was not really talking about planetrees, but who knows? Obviously planetrees do need some space and given certain conditions may cause sidewalk issues. Large maple-like leaves are impressive: we get a bunch of them in our yard each fall, though I am not sure where they come from; there are none nearby as far as I can tell, and they are big enough not to be carried by the merest wisp o' wind.

Q7. – What are some uses of planetrees?

A7. – Planetrees are widely used as street trees and for other ornamental uses. As large-canopy trees with fairly fast growth they have high i-Tree values for environmental services trees provide. Planetrees are used for timber and for biomass energy production.

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Obviously not a sign for a planetree. But it does give some ideas about I-Tree benefits. On OSU Campus.

Q8. – What are some cultivars of planetrees?

A8. – London planetrees are where the action is for planetree street trees and other horticultural uses. Some of the many you may want to investigate include:

'Bloodgood' for the attractive bark, anthracnose tolerance, and graceful form; one of the trees trialed in the Shade Tree Plot at Secret Arboretum.

'Morton Circle' Exclamation!TM is noted as the favorite by Dirr & Warren in " The Tree Book". Hybridized at the Chicago-area's Morton Arboretum. They list its merits as its cold hardiness, straight trunks and narrowly pyramidal shape, and pubescence of spring leaves providing a somewhat silvery appearance. Morton touts its especially attractive exfoliating bark.

Others include 'Liberty', a National Arboretum selection "rivaling 'Bloodgood" (Dirr & Warren); 'Pyramidalis' with a narrower form than most (abundant fruit production); and 'Suttneri' with variegations of cream, yellow, and green in the foliage and especially attractive exfoliating bark, exposing snow-white bark that Bill Hendricks of Klyn Nursery touts as rivaling white-barked birches.

Q9. – What is the family for the genus *Platanus*?

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Fossilized planetree fruit from the Cretaceous. From WIkipedia

A9. – This is an easy one. It is a member of the Platanaceae. And it is a mono-generic family. There are fossil relatives from the Lower Cretaceous Period, indicating that planetrees began to evolve fairly early in the development of flowering plants.

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Fossilized planetree leaf from the Cretaceous. From WIkipedia.

Q10.- What are some cultural references to planetrees?

A10. – Let's take a look at two. First, is the Pinchot Sycamore in Simsbury Connecticut. After my planetree bygl-alert yesterday, Richard Cowles of the Connecticut Agricultural Experiment Station, a new BYGL reader due to the tireless efforts of Joe Boggs, e-mailed that he lives 10 miles from said sycamore. It was measured in 2016 with an average canopy diameter of 121 feet, a trunk 18 feet around, a height of approximately 100 feet.

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The Pinchot Sycamore. From WIkipedia.

The Pinchot Sycamore is touted as the largest tree in Connecticut and tied at one time for second largest sycamore in the country, with the largest being astride a farm field near Jeromesville in Ashland County, Ohio. I use phrases such as “touted as” and “at one time” because storms happen and rot happens and new finds happen and…I have been at the Ohio specimen, visiting years ago with ODNR Division of Forestry’s Ann Bonner and Barb Fair (now on the faculty of North Carolina State University) and it is quite remarkable.

The Yale graduate Gifford Pinchot was the first head of the U.S. Forest Service, appointed by President Teddy Roosevelt. For wonderful stories of Roosevelt and Pinchot, check out “Wilderness Warrior” by historian Douglas Brinkley (and his FDR book “Rightful Heritage”). Pinchot was involved in some high-profile struggles.

One was with Richard Ballinger, Secretary of Interior in the Taft administration over adherence to Rooseveltian conservation philosophy. A second was with Yosemite’s John Muir over Muir’s concept of “preservation” of wilderness area untouched vs. Pinchot’s and TR’s concept of “conservation” and utilization of wilderness for the public good. He later became the Governor of Pennsylvania.

Must check it out – when travel once again is doable.

Our second story is of: the Buttonwood Agreement. I say “our” because if I do not tell at least some of this story, Joe Boggs has agreed to disinherit me (We have co-joined West Virginia Wills, and we are allowed to say so since we are both Almost Heaven natives). Not to mention the fact that he is 99% as smart as me; wait, what does that mean, does that extra 1% mean that he is smarter or less smart than me?). I prove my point.

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Buttonwood Agreement picture. From Wall Street Journal.

May 17, 1792. Two dozen monied New Yorkers signed said Buttonwood Agreement, launching the first New York Stock Exchange. Under a buttonwood tree, the largest tree around, *Platanus occidentalis.* "Button" because the wood of sycamore makes nice buttons. That's where the 1% comes into play.

Want to know even more about planetrees and the Buttonwood Agreement, with many wonderful pictures, including their sensational flowers? Check out bygl.osu.edu/node 939, Joe Bogg's "Ode to the Buttonwood."

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From Google. First, they were the Fighting Teachers, then the Fighting Sycamores. Larry Bird and MSU's Magic Johnson: what a Final Four!

Snowdrops: Beauty in the Midst of Chaos

Authors
Ann Chanon
Published on
March 23, 2020

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It can be easy to miss the beauty of the natural world when being overwhelmed by anxiety and stress. I nearly missed this herald of spring the Common Snowdrop (*Galanthus nivalis).* This member of the amaryllis family is native to Europe and Eurasia but is not considered an invasive.

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Each bulb produces 2-3 gray green linear leaves typically 4-6" in height and ¼" in width. The white bell like flowers about ¾-1" long are supported on an erect scape. Each flower is composed of six tepals; this is the botanical term used when sepals and petals have a similar appearance. The three outer tepals are all-white and are about twice the length of the inner tepals. The three shorter inner tepals have green blotch bordering the notch in each inner tepal. The green markings are thought to act as nectar guides for pollinators and to increase photosynthetic capacity (Aschan and Pfanz, 2006). Snowdrops produce nectar and some are fragrant. Flowers can last up to one month depending on the temperature (Weryszko-Chmielewska and Chwil, 2016). Snowdrops have no serious insect or disease problems and are not bothers by deer, rabbits, chipmunks and mice. I found one caution for pets and children that is with other members of this family the plants are poisonous if ingested. Plants need full sun to part shade and do well under deciduous trees and shrubs. Soil should be moist but well drained. Snowdrops are typically 6" in height so they fit well in perennial gardens, along walks or pathways and in woodland areas. Choose a site where the snowdrops can be easily seen from indoors. Bulbs should be planted in fall 3" deep and 3" apart in drifts of 10-25 or more and can be left undisturbed for many years to form large groups. They can be combined with other early blooming bulbs like Siberian squill (*Scilla siberica*), Glory of the snow (*Chionodoxa*), and early small daffodils. Sometimes snowdrops are confused with snowflakes (*Leucojum vernum*). The key diagnostic features of snowflakes are plants are usually taller (9-12") and all the tepals are of equal length.

There are many cultivars on the market. One of the most widely available is 'Flore Pleno'. It is a double flowered fragrant form that won the Award of Garden Merit from the Royal Horticultural Society.

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Ten Questions About Planetrees: The First Five

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March 23, 2020

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Sycamore in Oberlin, Ohio.

Q1. - What is the difference between sycamore and London planetree?

A1. – Sycamore (*Platanus occidentalis*) is the American planetree, while London planetree (*Platanus* x*acerifolia*) is a hybrid with the Oriental planetree (*Platanus orientalis*). It is thought to have hybridized at Vauxhall Gardens in London where planetrees were collected from the respective native North America eastern Europe/western Asia ranges. The London planetree hybrid became very popular in London and in western Europe for its adaptability and pollution tolerance. It is overplanted in some community forests, resulting in lack of diversity.

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London planetree in Brooklyn, New York.

Q2. - Are there still other planetree species worldwide.?

A2. - It was news to me that there are two additional planetrees in the United States, *Platanus racemosa* in California, and *Platanus wrightii* in Arizona, New Mexico, and Mexico. In retrospect some of the planetrees I saw in past years in native canyon areas in New Mexico and in California were probably these other species, though I just assumed they were sycamores at the time. I did notice more star-like features of foliage and more slender stems, but this barely registered – until now, especially as I spend some time with various websites, and with "The Tree Book" by Michael Dirr and Keith Warren (2019). There is also another species, *Platanus kerrii*, native to Vietnam.

Q3. – How do you tell the difference between sycamore (American planetree) and London planetree?

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Sycamore fruits, typically one per peduncle.

A3. – It can often be difficult, since after all, sycamore is also now hybridizing with London planetree and new cultivars of these hybrids continue to come on the market, but there are some helpful characteristics. First, the exfoliating bark that peels off planetrees, providing contrast (and messiness) tends to be whiter and has fewer khaki tans and greens on sycamores than on London planetrees.

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A sycamore leaf with large ears at the leaf base.

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London planetree leaves. With plant bug damage.

Second, sycamore more generally has one fruit per fruit stalk (peduncle), while London planetree more commonly has two. Third, and this is one I think is at least somewhat reliable but not fool-proof: sycamores tend to have droopier ears at the base of the large leaves, while London planetrees seem to more often have the leaf blade flat across at the base. Don't go to the bank with this third feature, but see if it fits and let me know.

Q4- Is there some confusion regarding the common name of "sycamore"?

A4. – Yes. The first one I learned from a bit of googling: there is a a fig, *Ficus sycamorus*, the sycamore fig native to Africa and Lebanon, sometimes simply known as a sycamore, or sometimes spelled "sycomore". It is referred to numerous times in the Bible, as in,

Psalm 78:47: "*He destroyed their vines with hail/and their sycamore-figs with sleet."*

A second example I learned while in Scotland and England this Autumn. They have London planes of course, especially as street trees, but they also have a plant they regularly call sycamore – and it is not the American planetree, as we commonly say. It is a maple! What we call sycamore maple, *Acer pseudoplatanus*. This is

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another reminder of how common names, rather than the Latin binomial, can result in confusion. The common and Latin name of this maple does relate to our name of American planetree/sycamore, as the leaves do look somewhat like *Platanus occidentalis.*

Sycamore maple, with flower cluster, at Dow Gardens in Michigan.

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Sycamore maple at Nate Ames place in Columbus.

Some giveaways that it is a maple, though, range from the winged fruits of maple, the opposite leaf arrangement of maple, and easy on my eyes as a plant pathologist, the fact that there is considerable maple tar spot disease on the sycamore maples we saw, which were many compared to sycamore maples found in North America. Sycamore maple is native from central Europe to Ukraine and was introduced to the British Isles in the 1500s.

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Maple tar spot on sycamore maple (they just call them sycamores) in Scotland.

Q5. – So, what are some common diseases of planetrees?

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Sycamore anthracnose with classic water-soaked blotching along leaf veins.

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The effects of sycamore anthracnose in early Spring in upstate New York.

A5. – Most of us are familiar with sycamore anthracnose disease (fungal pathogen: *Apiognomonia veneta*) with the annual (some years more noticeable than others) leaf blight and twig dieback in Spring. The good news is that it rarely kills trees, though it seems like it early in the season. It is also good news that it is less prevalent on our London planetree street trees than on sycamore, thanks to the *Plantanus orientalis* parent. Keys for bad sycamore anthracnose years are cool, wet weather during leaf emergence, as the fungus overwintering on twigs has ideal ”environment conducive to disease” conditions.

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Leaf blight and stem dieback from sycamore anthracnose in Marietta along the Ohio River.

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Gotta love those disease symptoms.

Powdery mildew is also quite common on *Platanus*, with symptoms of leaf distortion, especially on new foliage, including leaves that emerge from buds in June after the first set of leaves may be slammed by anthracnose. This disease is primarily cosmetic and not serious relative to plant health. Both anthracnose and powdery mildew, though, contribute, along with normal shedding of bark and branch drop to an overall sense of *Platanus* as a “dirty tree”, especially so on sycamore.

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Powdery mildew on young planetree foliage.

More seriously, there are several stem diseases of *Platanus*, especially in the UK and Europe. *Ceratocystis platani* causes a “canker stain” disease, especially on Oriental planetree, with greater resistance on American planetree and intermediate incidence on London planetree, all suggesting that the pathogen co-evolved with *Platanus* here. It can be a killer.

The branch-damaging Massaria disease, caused by the fungus *Splanchnonema platani*, causing large branch lesions has resulted in several outbreaks on *Platanus* hybrids in Europe in the 21st century

Well, that’s it for now. Say tuned for,,, the Rest of the Story, with five more *Platanus* queries on a bygl-alert tomorrow, from cultural and horticultural notes to cultivars and more “name-en-culture”.

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Sycamore bark.

Till tomorrow: *"Goodbye to buckeyes and white sycamores"* from the song "Coal Tattoo" .

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Ken Cochran, Pam Bennett, and Cathy Herms (with very long arms) encircles a Central Park planetree in NYC years ago.

As Predicted: Leaf-Browning by Boxwood Leafminer is Extensive This Spring

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Published on
March 23, 2020

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It's common for boxwoods to emerge from winter with yellow to brown foliage caused by a number of issues including winter injury and salt damage. However, a primary reason boxwoods are discolored this spring in many areas of Ohio is the heavy damage caused by the non-native boxwood leafminer (*Monarthropalpus flavus*) that was initiated early last season.

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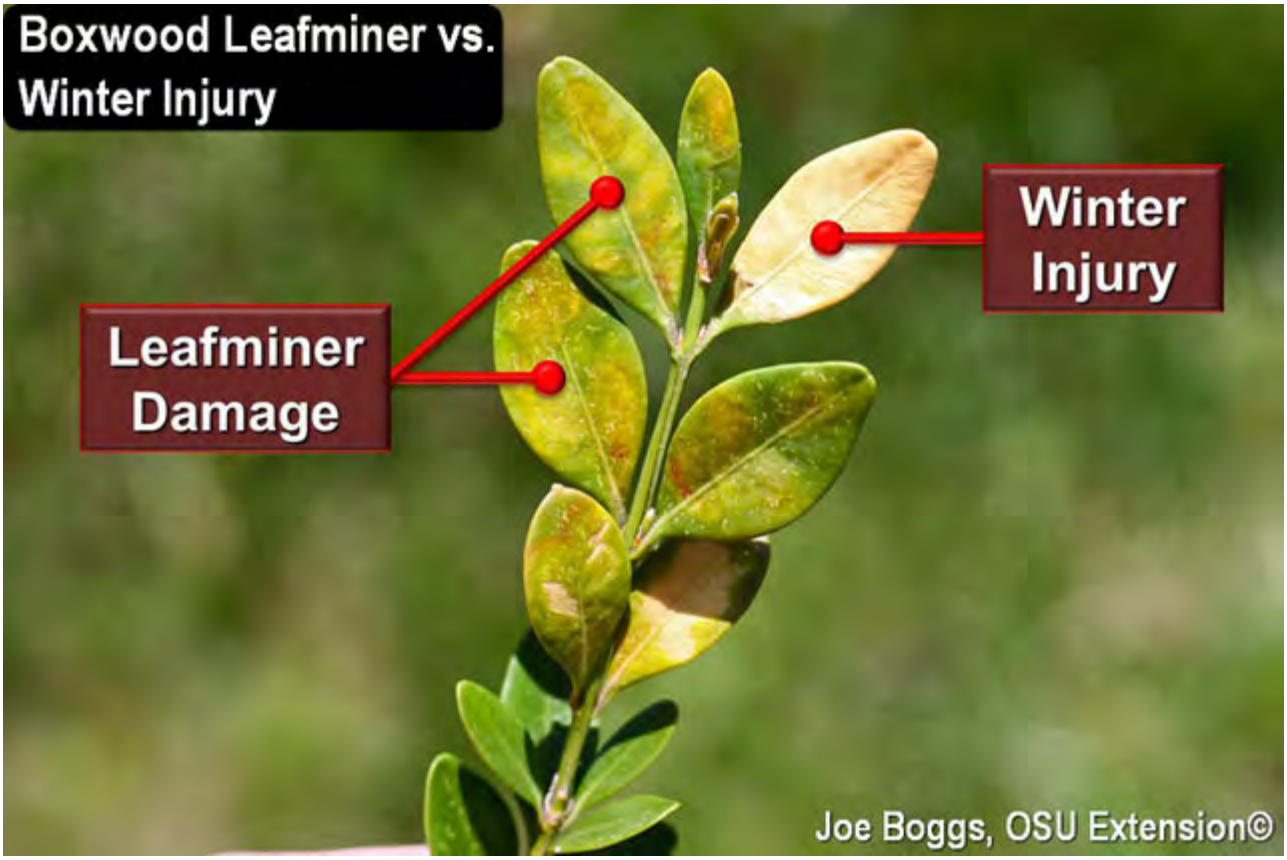

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I posted an Alert in early July last season noting that populations of this tiny midge fly were unusually high in some parts of Ohio; they were the highest I'd ever seen in the southwest part of the state. Some plantings had virtually every leaf loaded with maggots. It was a portent of heavy leafmining symptoms that would appear this spring (Click this hotlink to read "Boxwood Leafminer 2020 Prediction": https://bygl.osu.edu/index.php/node/1342)

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This non-native midge fly was accidentally introduced into North America from Europe in the early 1900s and is now common throughout Ohio. Adults emerge at around the time red horsechestnuts (*Aesculus* × *carnea*) and doublefile viburnums (*Viburnum plicatum*) are in full bloom (440 GDD). Except for their bright orange abdomens, the adults superficially resemble miniature mosquitoes.

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The boxwood leafminer is grouped with the "gall midges" (family Cecidomyiidae, subfamily Cecidomyiinae); however, this taxonomic construct is not based on lifestyle. The flies do not produce galls; they are leafminers.

Females use their needle-like ovipositors to insert eggs between the upper and lower leaf surfaces of boxwood leaves. Each leaf may contain multiple oviposition sites with several eggs per site. These sites will become individual leafmines producing the blister-like leaf symptoms.

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Eggs hatch in early summer and the resulting larvae spend the remainder of the season consuming interior leaf tissue as they develop through the 1st and 2nd instar stages. Winter is usually spent as 3rd instar larvae inside the leafmines. The larvae resume feeding in the spring and develop through a 4th instar stage. Much of the leaf damage usually occurs in early spring with the ravenous maggots rapidly delaminating the upper and lower leaf surfaces as they expand their leafmines.

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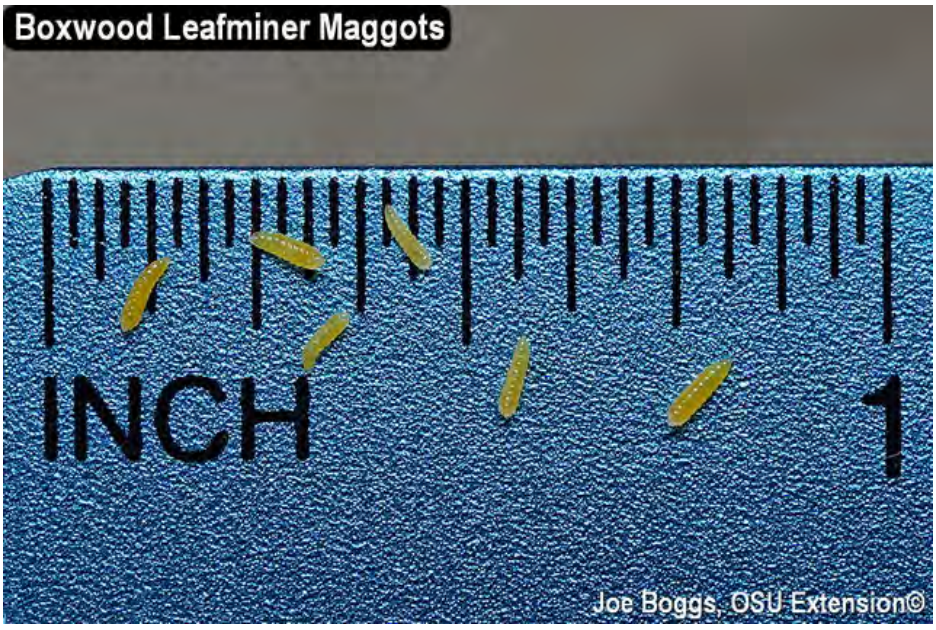

Individual mines may turn reddish-green at this time of the year with heavily mined leaves turning from yellow to orangish-brown causing the leafmining damage to be mistaken for winter injury.

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Damaging boxwood leafminer infestations can be suppressed through applications of neonicotinoids such as imidacloprid (e.g. Merit, Marathon, and generics) or dinotefuran (e.g. Safari or Zylam). However, applications should be delayed until AFTER boxwoods bloom to protect pollinators.

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Boxwood blooms attract a wide range of pollinators; blooming plants can literally buzz with their activity. Delaying applications until blooms drop will result in some minor miner damage, particularly with imidacloprid because it is taken-up more slowly compared to dinotefuran. However, this is a small price to pay for protecting pollinators.

Plant selection provides a more long term solution by removing insecticides from the management equation. A helpful research-based listing of the relative susceptibility of boxwoods to the leafminer was published in 2014 by the American Boxwood Society in their "The Boxwood Bulletin" (Click this hotlink to access the leafminer information: http://www.boxwoodsociety.org/uploads/54_1_2014_Summer.pdf#page=9)

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Boxwood blight caused by the fungal plant pathogen *Calonectria pseudonaviculata* is another boxwood challenge to consider when selecting replacement plants. I posted an Alert last season reporting this disease in southwest Ohio. The BYGL Alert also included links to online resources describing best management practices including selecting boxwoods that are less susceptible to the disease (Click this hotlink to read "Be Alert to Boxwood Blight": https://bygl.osu.edu/index.php/node/1359)

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Secrest Arboretum: Spring Has Sprung

Authors
Jim Chatfield
Published on
March 22, 2020

The first daylight of Spring at Secrest this past Friday brought warm, rising overnight temperatures that by midday were in the mid-60s, falling throughout the afternoon and into the 20s overnight with a windy chill on Saturday that by nightfall fell freezing into the low 20s. Time will tell if this sudden temperature drop caused damage to woody plant tissue that had awakened from winter slumber. For now, let's take a look at plants of note Friday at Secrest.

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The red maple flowers light up the sky.

Pistillate flowers of silver maple.

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Early forsythia flowered for the first time. Pistillate silver maple flowers reached full bloom while red maples emerged with first bloom (Growing Degree Days in Wooster's 44691 zip code rose to 55). A few more corneliancherry dogwood flowers pushed out. And the species *Pieris japonica* that was not out on Wednesday were just starting to bloom by Friday, at least for some cultivars. Common chickweed (*Stellaria media*) was in flower: can you tell from this picture how many petals chickweed has?

Corneliancherry dogwood trees coming more fully into bloom at OSU Wooster and Secrest.

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Corneliancherry dogwood blooms are out more completely this past Friday than on Wednesday.

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Pieris japonica buds open

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Common chickweed in bloom Friday.

Though it looks like ten, it is really five, because chickweed like most plants in the pink family, the Caryophyllaceae, has cleft petals, deeply cleft in the case of chickweed.

The real standouts at Secrest Friday, though, were a number of conifers. They are soon to lose their winter primacy; as deciduous plants begin to leaf out in their riot of greenery, the needled evergreens will seem a bit more ordinary. This is something of a metaphor for what has happened evolutionarily to gymnosperms ("Naked seeds"), the seed plants that do not enclose their seeds inside fruits like the angiosperms, the true flowering plants.

Ferns and seed ferns occurring in the Devonian and Carboniferous and Permian periods of the Paleozoic Era (419-252 million years ago) gave way to the prominence of gymnosperms moving into the Triassic period of the Mesozoic Era, and then the emergence of flowering plants (angiosperms) in the middle of the Cretaceous period of the Mesozoic Era, by 125-120 million years ago.

This was quite the evolutionary innovation, in that seeds are multicellular instead of unicellular for spores, store more resources, and have more robust modes of dispersal. Angiosperms have some advantages over gymnosperms, at least for now, partly due to their successful co-evolution with pollinators such as insects, resulting in great range of adaptive variation.

For now, let's take a look at the present: a few gymnosperm of interest at Secrest this Friday.

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Cunninghamia lanceolate needles at Secrest

Cunnighamia lanceolata, or water-fir (not a true fir in the genus *Abies*), is an uncommon one. *Cunninghamia* is in the Cupressaceae, the cypress family, native to China and southeast Asia and named for James Cunningham (great initials). It is a timber tree that can grow to 150 feet and more in its native habitat, but as a garden tree in North America it is a small to medium tree.

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Cunninghamia lanceolata at Secrest

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Small *Cunninghamia lanceolata* tree at Secrest

Water-firs tolerate full sun if not allowed to dry out; bronzing may occur in the winter. The seed cones have unusual vegetative shoots growing beyond the cones. Fossils do occur in North America. Attractive exfoliating bark; glossy, pointed needles. Jason Veil, curator of Secrest Arboretum comments that this tree has a “prehistoric look”.

Dawnredwood trees gave a lift when viewed spirally upward in the middle of the Dawnredwood Grove at Secrest on Wednesday. On Friday, the focus was downward, at the string of fallen fresh male cones, filled with pollen and the charming female cone left over from last year. It will not be too many weeks before the fresh, new, soft green foliage on this deciduous conifer will emerge.

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Male cones of dawnredwood

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Female dawnredwood cone

Nordmann fir (*Abies nordmanniana*) is a true fir, thus having upright cones and flat needles, singly attached to the stem, with two rows of white stomates on the undersides of needles and intensely glossy, dark-green upper needle surfaces. The tree was named by a Finnish zoologist, Alexander von Nordmann in the mid-1800s while at the Odessa Botanic Gardens, and this fir, also known as the Caucasian fir, is native to Turkey and the Caucasus.

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Nordmann fir upper needle surface

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Lower needle surfaces of Nordmann fir needles

It is the largest tree in Europe, growing up to but rarely 200-250 feet in height, though arboreta specimens in the U.S. tend to be in the 50 foot range at maturity. Cooler climates (the native trees tend to be in the low mountains) are preferred, so, along with many firs (one exception being *Abies concolor,* white fir) climate change further suggests problems with ongoing thriving in Ohio. However, las Jason points out, the large Nordmann firs at Secrest seems to be doing quite well. Can be a great Christmas tree.

Nordmann fir tree at Secrest

Jason has an excellent idea for an upcoming future program at Secrest: a celebration of the true firs (the genus *Abies)* of Secrest. On a future Friday of a certain numerology (one that we just passed doubly) we will do a Friday the FirTeenth program!

Pitch pine (*Pinus rigida*) is a 3-needled, sometimes 2-needled pine native, I was surprised to discover, from central Maine to Georgia, and west to Ohio. I suppose I thought of it more as a southern pine, perhaps from stories and historical accounts of tar and turpentine from resin in southern states. At Secrest it is not a widely planted pine, more there simply as part of a pine collection.

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Pitch pine

Pitch pine is, though, the primary tree of New Jersey's Pine Barren area, demonstrating its tolerance of very acidic soil pH (blueberries also abound there). Pitch pine is adaptable to both wet and dry and does well in poor soil, though is oft replaced by oaks and other trees in more fertile soils. Fire resistant. Used for pulpwood; very knotty. As I trying to pry off a cone to take a photo I soon learned how hard and sharp-pointed the cones are – should have had pruners ready, anyway.

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Pitch pine needles (3 in a bundle) and cone.

Pitch pine trunk and bark

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The Dwarf Jezo Spruce (*Picea jezoensis* 'Chitosemaru'). The full-sized Jezo spruce (*Picea jezoensis*) is a large timber tree (to 120 feet) in its native Japan (Hokkaido and Honshu areas) and Siberia habitats. The Secrest dwarf cultivar specimen I photographed was an early 2010s planting and was about six feet tall . Jason Veil used to grow the subspecies *Picea jezo* subsp. *hondoensis* in his nurseryman days.

He praises the glaucous blue-green foliage (the "blue" color is the light that it is not absorbed by waxy filaments of the needles). Jason describes this "cultivar" as a conical, well-behaved, semi-dwarf spruce. Jezo spruce is a close relative to the Sitka spruce, which natively holds forth on the other side of the Pacific in North America's Pacific Northwest. And in the UK, where it was extensively planted, especially after World War II in reforestation efforts, it is a sort of post-war lend-lease from NA to the UK.

Chitosemarazu' Jezo spruce at Secrest

In addition to timber, in its native range Jezo, Ezo (from an old name for Hokkaido) or Yezo spruce is also used to make paper and a Japanese stringed instrument, the *tonkori.*

Hemlocks at Secrest include the Canadian hemlock (*Tsuga canadensis*) and the Carolina hemlock (*Tsuga carolinana*), and they have a morphological difference that make them easy to tell apart. In both cases the needles are flat (rather than the round or square needles of pine and spruce). On Canadian hemlock needles are attached and arrayed along the stem in a flat plane, while for Carolina hemlock the needles are arrayed at all angles along the twig. This gives the branches of the tree an immediately different look.

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Eastern hemlock cones and needles

Carolina hemlock cone and needles

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Carolina hemlock needles radiating along the axis of the twig.

Well, that's it for Secrest gymnosperms for now. Stay tuned for further riots of Spring.

Beetles Emerge from Firewood

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Joe Boggs
Published on
March 22, 2020

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I received an e-mail message from a concerned Ohio homeowner asking for an ID of several large beetles flying around their home. They were worried the beetles were emerging from something inside their home including recently purchased groceries and other supplies.

An attached image revealed the interlopers were Painted Hickory Borers (*Megacyllene caryae*). I replied asking about firewood and learned they had a sizable stack in their attached garage leftover from our mild winter.

The painted hickory borer is a type of longhorn beetle (family Cerambycidae), so-named because of their long antennae. However, not every longhorn beetle sports long antennae. Prior to the collapse of ash in Ohio from Emerald Ash Borer (EAB) (*Agrilus planipennis*, family Buprestidae), the Banded Ash Borer (*Neoclytus caprea*, Cerambycidae) was another beetle that commonly emerged from firewood in the spring. It has relatively short antennae for a longhorn beetle.

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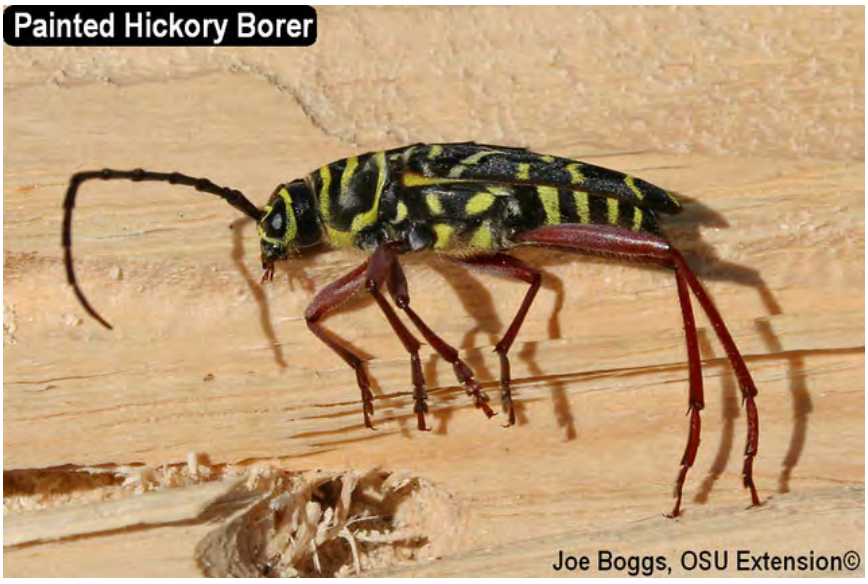
Painted hickory borers will only infest dead trees that died within one year or raw wood (e.g. firewood) that has been cut for less than one year. They target a wide range of hardwoods including their namesake host as well as ash, black locust, hackberry, honeylocust, oak, Osage orange, walnut, butternut, and occasionally maple.



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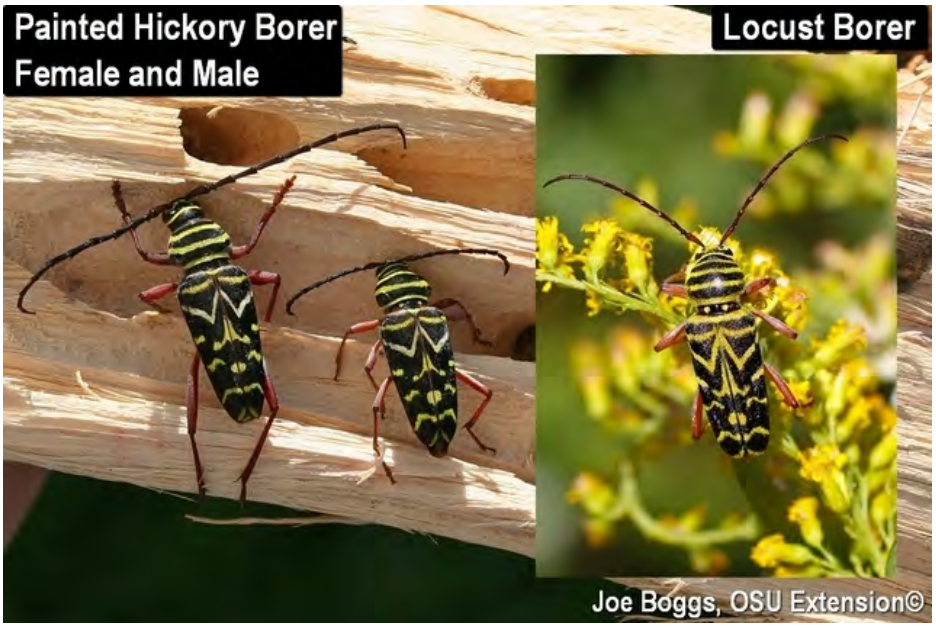
The beetles present no risk to wood furniture, flooring, paneling, or other processed wood in homes, or wood used in home construction. They are just nuisance pests if they find their way into homes. However, their sudden appearance can be a surprise and cause concern; particularly inside log homes.

Painted hickory borers are sometimes mistaken for another native longhorn beetle that belongs to the same genus, the locust borer (*M. robiniae*). Both beetles are about the same size and share similar markings. However, locust borer adults emerge in late summer to early fall at about the same time common goldenrod (*Solidago canadensis*) is in full bloom. In fact, locust borer adults are commonly spotted on goldenrod partaking of the pollen and nectar.



More Boring Information

There is a wide range of native wood-boring insects; predominantly beetles, that infest the stems of stressed, dying and dead trees. Their lifestyle is revealed by entry and exit holes through the bark or when the bark falls off to expose tunnels or channels through various parts of the tree stem. Many of these beetles are known to emerge from firewood.

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The native borers play an important role in forest ecology by initiating the biodegradation process to convert large wood fibers into smaller organic particles that ultimately support soil microorganisms important to soil health. Of course, when the borers infest fresh-cut logs used for lumber or firewood, they are considered forest products pests.

Be Alert to ALB

It's important not to lump all the evidence of wood-boring activity into "it's only natural." EAB taught us that lesson and Asian Longhorned Beetle (ALB) (*Anoplophora glabripennis*) continues to instruct.

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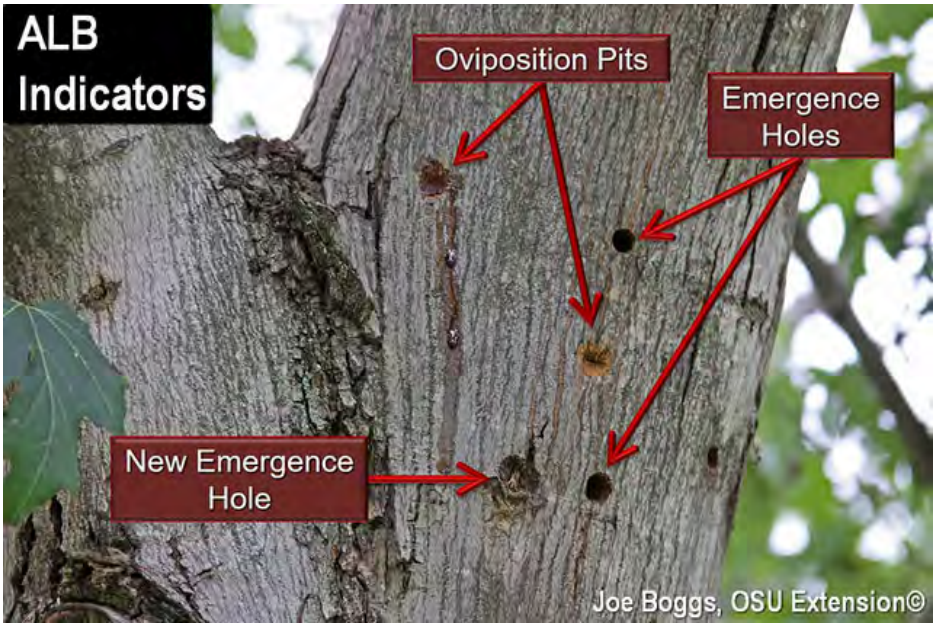

Here are some key points relative to remaining alert for ALB:

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1. Get an identification. Any large beetle emerging from firewood should be identified. It's well known that ALB will only infest living trees and firewood is obviously dead wood; however, the tree stems may have been infested when they were converted into firewood late last season.

2. Don't quibble about the time of the year. While it's too early in the season for ALB adults to emerge outdoors from their wood-tunneling abodes, all bets are off if the firewood is being held in a protected location, particularly indoors. The warm temperatures may speed-up development from larva to pupa to adult.

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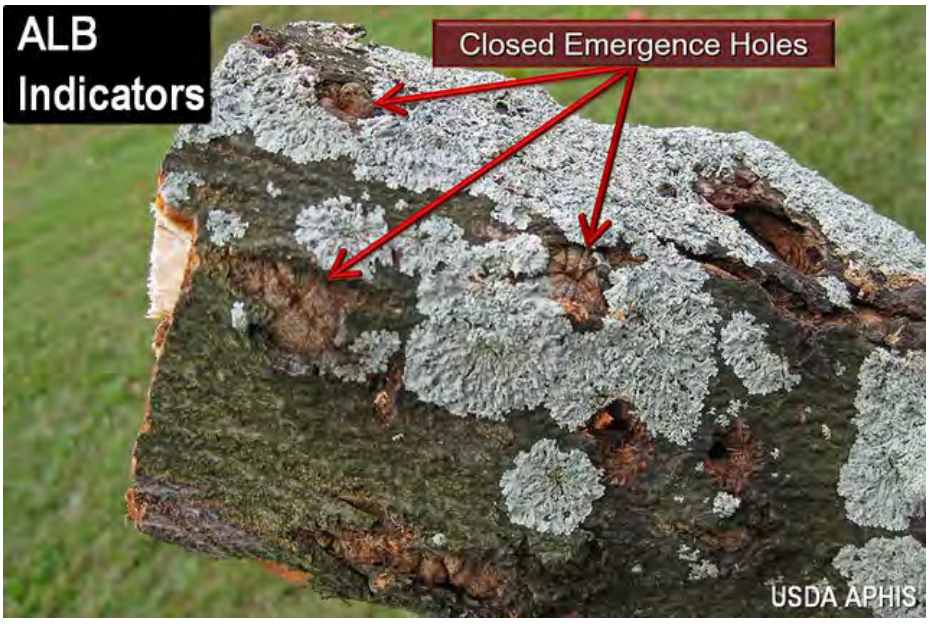
3. Don't just focus on maple firewood. ALB prefers maple; however, the beetle will infest trees belong to 12 genera, not just maple. Besides, it's not easy to identify maple once it's converted into firewood. That's why the Federal ALB quarantine restrictions simply state: "Firewood (all hardwood species) … "



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4. It never hurts to call. The ODA/USDA APHIS ALB Cooperative Eradication Program in Ohio are the experts on all-things-ALB. If you spot a suspicious-looking beetle or suspicious evidence of wood-boring activity, you can call them at 513-381-7180. You can also get in touch with the national program at 1-866-702-9938.

Crocus By Other Names

Authors
Jim Chatfield
Published on
March 21, 2020

My favorite poem this time of year, evoking the rollercoaster ride and thrills of Spring, is a short one from Lilja Rogers: *"First the howling winds awoke us/Then the rains came down to soak us/Now before the mind can focus/Crocus."*

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Crocus pushing up through the leaves in the ChatScape in a previous Spring.

I was thinking of this two weeks ago when croci were first trying to come out in northeast Ohio and I was preparing a talk on “Having Fun With Plant Families”. I had plenty of material already, but a few hours before the talk once I decided to start with this poem, I pondered, hmm, what is the family of the genus *Crocus.* That started me down the garden path of learning and relearning about *Crocus,* including some very important distinctions.

First things first, *Crocus* is in the iris family, the Iridaceae. I knew *Crocus* was a monocot, the class of plants with single cotyledons (seed leaves), along with grasses, sedges, and more closely, lilies. But had not remembered about the Iridaceae; it is a family with over 80 genera (a family is a group of related genera) and over 1700 species.

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An *Iris* image, taken in New York City in a previous Spring. An obvious member of the Iridaceae.

These genera include *Iris, Gladiolus, Sisyrinchium* (the lovely blue-eyedgrass – not really a grass), and - *Crocus.* A distinctive feature of genera in the Iridaceae is that the male flower parts include three pollen-bearing stamens and the female flower parts consist of a pollen-receiving stigma atop the stalk-like style, often three-parted, with the ovary at the base. Remember this.

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Gladiolus from the ChatScape last year. Note the three-part style.

Gladiolus with its three stamens.

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Again, the three stamens. So cool.

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Sisyrinchium, blue-eyedgrass, is such a lovely wildflower in Spring. Not out yet.

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This is my favorite feature for blue-eyed grass. It livens up weedy areas with a cheery wink. Horticultural cultivars available.

For now. Let us turn back to *Crocus.* Species in the genus are native from central Europe to China, with many of the garden croci we plant and are enjoying now being the “Dutch” crocus, *Crocus vernus.*

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Crocus image taken on the High Line in NYC (closed now this Spring)

The autumn crocus, *Crocus sativus,* is the source of saffron, the lovely golden- to orangish-yellow colored spice that is so wonderfully used in cuisine, such as the Spanish dish paella, in French bouillabaisse, and in Italian risotto. It is also used as a food coloring, a dye, and in fabrics. Saffron threads are stigmas of *Crocus sativus.* Now, remember that *Crocus,* as a genus in the Iridaceae, has three stamens and one three-parted style.

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Not really my picture. *Saffron. From Crocus sativus stigmas.*

But there is another crocus-like plant that blooms in the Autumn, and this is where I realized I was unclear about the identity and particulars of another plant that is called “Autumn crocus”. This other plant should be called Autumncrocus or Autumn-crocus to signify that it is not a true member of the genus *Crocus.* It is also commonly called naked ladies or meadow-saffron. It is the plant *Colchicum autumnale.*

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Autumn-crocus and palm tree at Logan Botanic Garden in southern Scotland taken this past Autumn.

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Colchicum autumnale. Note the six stamens.

I am probably not alone in a mind smerging of *Colchicum autumnale* this late-in-the-growing-season bloomer, with the true "Autumn crocus", *Crocus sativus*, the plant that produces saffron. They are different plants, and *Colchicum* is not even in the same plant family. It is a member of the Colchicaceae rather than the Iridaceae. Importantly, *Colchicum autumnale* and related plants produce colchicine and colchicine-related products.

Colchicine is used to treat gout and certain other medical conditions, and Autumn-crocus has been used for millenia to treat for swollen joints. According to Wikipedia, with medical references cited and checked, colchicine available generically in the UK by the National Health System was available in 2019 for just over 7 pounds in cost for a month's supply; in the U.S. the wholesale cost for that supply is just over $250.

Colchicine is also a mutagen long-used by plant breeders to produce tetraploids and octoploids (multiples of chromosomes) resulting, for example, in double flowers on crabapples. Colchicine used for medical conditions is a classic case of "the dose makes the poison"; it is highly toxic if used therapeutically at even mild dosages in excess of recommended rates. Some have also posited it could be a carcinogen and with other developmental and reproductive toxicities, but the verdict is unclear.

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Colchicum is a genus with over 160 species. *Colchicum autumnale* is native to Great Britain and Ireland. The Colchicaceae has 15 or so genera (there are always arguments among classifiers) and over 280 species. Other genera in the family are less well-known, but include *Ornithoglossum* and *Iphigenia.*

Note: How can you easily tell the difference between *Crocus* and *Colchicum,* or the difference between genera in the Iridaceae and the Colchidaceae? *Crocus* and the Iridaceae genera have three stamens and one style. *Colchicum* and the Colchidaceae genera have six stamens and three styles. Now, come Autumn we can practice identifying the difference between Autumn crocus and Autumncrocus!

So, now I certainly know more about *Crocus* and hope you do too. Finally, for fun, while putting this together, I also found some additional quotes and poems about croci. Ah, Google. From AZ Quotes: for "Crocuses"

Bee-loved *Crocus vernus* in a previous ChatScape Spring.

"*You might think that after thousands of years of coming up too soon and getting frozen, the crocus family would have had a little sense knocked into it."* – Robert Benchley

"*And all the woods are alive with the murmur and sound of Spring,*
And the rose-bud breaks into pink on the climbing briar,

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And the crocus-bed is a quivering moon of fire
Girdled round with the belt of an amethyst ring." – Oscar Wilde.

"A single crocus blossom ought to be enough to convince our heart that springtime, no matter how predictable, is somehow a gift, gratuitous, gratis, a grace." – David Stedindl-Rast.

"*The bed of flowers*
Loosens amain,
The beauteous snowdrops
Droop o'er the plain.
The crocus opens
Its glowing bud,
Like emeralds others,
Others, like blood.
With saucy gesture
Primroses flare,
And roguish violets,
Hidden with care;
And whatsoever
There stirs and strives,
The Spring's contented,
It works and thrives."

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- Johann Wolfgang von Goethe.

Crocus!

Other Articles

This Dwarf Nasturtium Is a Winning Pick

MEGHAN SHINN

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MAR 23, 2020

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Virtues: Tip Top Rose nasturtium is a compact, mounded annual plant that produces deep pink, nearly red flowers and round green leaves. Both the leaves and the flowers are edible. Tip Top Rose nasturtium in an All-America Selections Flower Winner for 2020.

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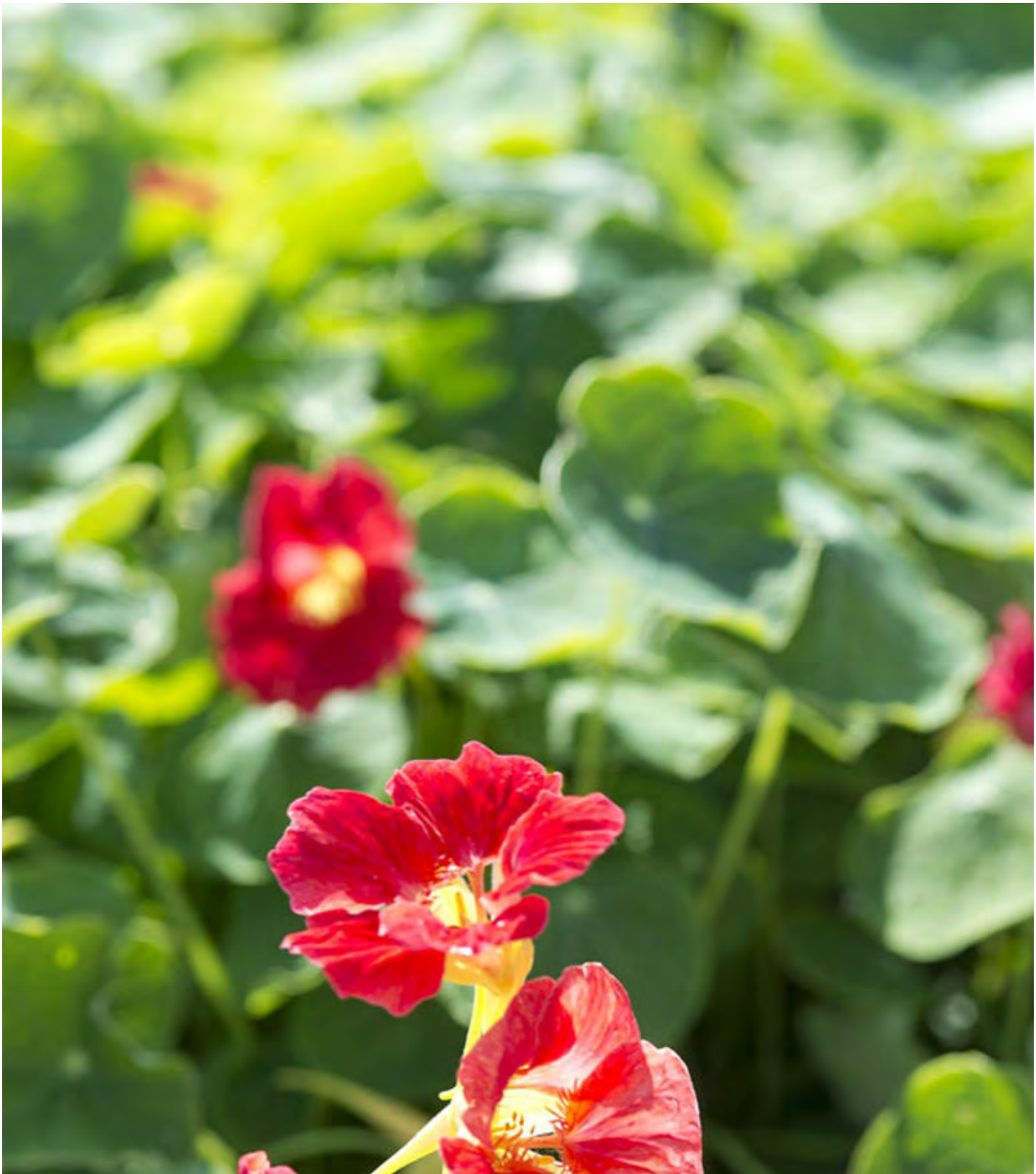

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Common name: 'Tip Top Rose' dwarf nasturtium

Botanical name: *Tropaeolum minus* 'Tip Top Rose'

Exposure: Full to part sun

Flowers: The large flowers are the typical nasturtium shape, but they bring something new with their rosy red color, which does not fade over time. Blossoms occur from spring to fall in cooler climates, or over the winter where the climate remains mild.

Foliage: The leaves are a medium green and perfectly round, as is usual for a nasturtium.

Habit: 'Tip Top Rose' nasturtium grows about 14 inches tall and 18 inches wide, with a mounded habit. Its size makes it suitable for containers as well as garden beds.

Origin: The species *Tropaeolum minus* is native to the mountains of Ecuador and Peru. The cultivar 'Tip Top Rose' was bred by Taki Europe BV.

How to grow it: Start this dwarf nasturtium from seed just after your last frost, spacing seeds four inches apart. Germination can be hastened by nicking or scratching the seed coat prior to planting or soaking the seed in water overnight. Nasturtiums do not do well with transplanting, so it's best to sow them right where they will remain, be it the garden or a large container. They require full or part sun. Flowering will be best in full sun. They prefer even moisture, although they can tolerate some drought. Dry spells will curtail

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blooming, however. It is hardy in USDA Zones 9–11 and it is grown as an annual elsewhere.

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