Spring has officially arrived! The vernal equinox (first day of spring) is the day of the year when light and dark are balanced. The season of rebirth begins. Enjoy the longer daylight, warmth and all the visual things brought by spring!

I look at spring as a time to see how I can re balance and renew my own personal life. I explore my creativity. Take time to assess my health. Take time each day to stop for a mental “time out” and just look at the beauty that surrounds us. As far as the eye can see, Mother Nature waves her magic wand. Flowers pop, bees buzz and we are anxious to get our hands in the warm soil.

Spring is a time to give back and make our community healthier, greener and a happier place. Please take time to support our various Master Gardener committees and projects.

I find volunteering very rewarding. From the look on a child’s face when we make compost, a kind word from a library patron, to smiles and hugs from the Harford Center special needs clients. I am sure each one of you have stories describing the pleasures of serving as a Master Gardener. Are you smiling now as you think of a few?

Happy spring!

Ronnie Grevey, ‘16
This information follows up the presentation given during Master Gardener’s March General Meeting held 3/7/19.

**Genus:** *Allium*  
**Species:** *sativum* (garlic), *schoenoprasum* (chives), *ampeloprasum* (leek), *tricoccum* (ramp)  
**Common name:** *allium*, chives, garlic, shallot, leek, ramp, ornamental *allium*  
**Origin:** Northern Hemisphere, Asia  
**Growth habit:** herbaceous perennial  
**Dimensions:** height - 2 in. to 58 in.; width - bulbs range from .75 in. to 3 - 4 in.  
**Leaf:** green, strap shaped, linear flat (garlic) tubular (chives)  
**Flower:** blooms in early summer; tiny erect flowers, centripetally pink and white; umbel inflorescence  
**Fragrance:** garlicky and oniony smell  
**Fruit:** capsules, seeds, bulbs  
**Uses:** ornamental, landscape, culinary vegetable herb crop, repel insects, attract bees and butterflies  
**Climate:** zones 6-10, full sun  
**Soil:** well-drained  
**Pruning:** cut garlic scapes in spring  
**Propagation:** seeds, bulbs (divide bulbs into cloves), divide clumps of chives  
**Insect pests and diseases:** rarely bothered by pests or diseases; some diseases are smut and black mold; pest - onion maggot; resistant to rodents and deer  
**Comments:** Garlic can be used to ward off vampires such as Dracula (a little humor). Wild garlic and wild onions can be invasive.

**Sources:**  

*Native Plants Committee, submitted by Virginia (Ginger) Huller, ‘14*
French Onion Leek Soup Recipe

Ingredients:
3 Tbsp unsalted butter
2 lbs onion cut in half and sliced into half moons (I used red, white, and yellow onions.)
1 lb leeks white and pale green parts, sliced and washed thoroughly
4 oz shallots (about 2 large), diced
2 cloves garlic minced
2 Tbsp all-purpose flour
1 Tbsp light brown sugar
1 Tbsp sherry vinegar (I used white balsamic vinegar.)
1 1/2 cups dry white wine
1 quart beef stock (I used chicken stock.)
1 Tbsp fresh thyme minced (I used fines herbes.)
1 bay leaf
1-2 tsp kosher salt
1/4 tsp freshly ground black pepper
2 Tbsp port
1 baguette
8 oz gruyere grated (I used mixed Italian cheeses.)

Instructions
1. Heat the butter in a dutch oven or a large heavy-bottomed pot.
2. Add the onions and a dash of salt and cook over medium/low heat for 15 minutes.
3. Add the leeks, shallots and garlic and continue to cook for an additional 15 minutes, stirring often.
4. Stir in the flour and cook for 2 minutes.
5. Add the light brown sugar, vinegar and a pinch of salt and cook until onions are a deep golden brown and very soft, an additional 15 mins.
6. Add the wine, bring to a boil and then reduce to a simmer.
7. Pour in the stock and stir in the thyme, bay leaf, salt (to taste) and pepper.
8. Simmer for 30 mins.
9. Add the port and simmer an additional 5 mins.
10. Slice the baguette into rounds and toast in the oven or a toaster.
11. Ladle the soup into oven safe bowls or crocks, top with a couple of rounds of toasted baguette and a good sprinkling of grated cheese.
12. Turn your broiler up to high and broil the tops until melted and golden brown.

Application of Knowledge - Making French Onion Leek Soup After Presenting a Lecture on Alliums to the Master Gardeners

Phantasm of the Forest

Many guests visit Longwood Gardens to appreciate, enjoy, and study our carefully curated, world-class collection of more than 11,000 kinds of plants. Occasionally, plants find their way to the Gardens without the assistance of horticulturists—some of these are native species not previously found at Longwood that have found a happy home in Longwood’s natural lands, while others are unwanted invasive species. Very rarely, a plant is found that defies logic and provides insight into the horticultural history and ecological health and capacity of the interface between Longwood’s gardens and natural lands.
In July 2018, Longwood’s Director of Library and Information Services David Sleasman spotted the bright red fruits of a ghostly, striking plant growing along an access road in one of Longwood’s naturally forested areas and immediately queried the curatorial office about its identity. It was identified as Cyrtosia (syn. Galeolea) septentrionalis, a hardy, Japanese native orchid known for its medicinal properties and peculiar life history. While it is not unusual to see orchids in the Conservatory or outdoor gardens, the occurrence of this species is truly an anomaly due to its highly specific requirements for seed germination and growth. In fact, it’s considered impossible to cultivate and has never previously been found in the United States. So what makes Cyrtosia so special—and how did it come to be at Longwood?

Cyrtosia belongs to a highly specialized group within the orchid family known as mycoheterotrophic orchids, which obtain some degree of their food or nutritional needs from fungi, rather than making it themselves through photosynthesis. Cyrtosia is an obligate mycoheterotroph—all of its food comes from parasitism of a common parasitic fungus called Armillaria, known commonly as shoestring or honey fungus. The reliance on fungi is evident by appearance of the plants; they are achorophyllous, meaning that they don’t produce leaves and chloroplasts necessary for photosynthesis. Without the fungus, these orchids cannot survive. This relationship is extremely difficult or impossible to replicate in cultivation, begging the question: how did these orchids find their way to Longwood Gardens and how long have they been there?

Although Longwood has a rich history of importing and promoting plants from Japan, how Cyrtosia arrived at the gardens remains a mystery. Since Cyrtosia is considered impossible to cultivate in a garden setting, it is also impossible to purchase from Japanese nurseries, and accordingly there are no official records of its introduction in the plant accession database.

Conversations with former Longwood employees and students involved in past plant exploration and importation efforts have suggested that the introduction of this species was accidental. It is plausible that the tiny, long-lived seeds of Cyrtosia hitch-hiked their way to the Gardens on the roots of other plants imported from Japan. This makes sense considering the location of the plants near the experimental greenhouses, the first place many imported plants would have been first grown at the Gardens.

While it may seem unremarkable, the fact that appropriate fungi exist to support the germination and sustained development of this orchid cannot be understated. There are at least 10 individuals of Cyrtosia growing in widely scattered parts of the naturally forested area and some of them are large clumps of multiple stems—suggesting that not only have the plants been there for a long time, but they are thriving! Their presence provides clues to the quality and plasticity of the historic woodlot ecosystem where they were found, suggesting that it has been stable and healthy over a long period of time. Coincidentally, the three birds orchid (Triphora trianthophora), a very rare native orchid in Pennsylvania, was also found in the same historic woods.

Cyrtosia is also unique in other ways. The bright red, banana-like fruits are meant to attract birds. Birds feed on the sweet, fleshy fruits of the orchid and, in doing so, eat the seeds. The seeds are then dispersed as they pass through and out of the bird’s digestive tract, making Cyrtosia one of a handful of the 25,000 to 30,000 orchid species in which seeds are not dispersed by wind. Unlike other orchid seeds, which are dust-like, Cyrtosia seeds are comparatively large (although still very small!) and possess a circumferential wing, making them look like miniature flying saucers upon close inspection. We have not found evidence that birds are eating the seeds of Cyrtosia at Longwood, but while searching the woods for plants, many partially eaten fruits were discovered throughout the woods and sometimes at appreciable distances...
from the parent plants. It appears that squirrels, not birds, can also use the fruits as a food source and may be responsible for distributing them throughout the woods.

As introduced species carry the potential to be invasive, we are closely monitoring the *Cyrtosia* to prevent further spread in our natural areas and beyond. After discovering this species on our grounds, our natural lands team scouted the entire property for additional plants. All of the plants we have found are confined to a single woodlot that is bound on all sides by roads. This appears to serve as a barrier to further spread, although we are still gathering information. We will monitor all of the plants at flowering and fruiting time and continue to the scout other forested portions of the property in the coming years. Since this species has such a specific relationship with *Armillaria* fungus, we also wonder if further spread may be limited because the fungus it is associating with is limited in distribution. We are currently growing the fungus in our tissue culture lab and have partners that will use molecular tools to provide an identification. With this we can learn much more about the potential ecological breadth for the orchid in our region and begin to determine its invasive potential.

At this point, we don’t feel that *Cyrtosia* is displacing any native species or displaying invasive potential. In the event that it appears the *Cyrtosia* is aggressively spreading into natural areas surrounding Longwood, we will eradicate it. Over the years this has been done for several plant species introduced to the Gardens and we constantly monitor our natural lands for invasions. We also discuss potentially invasive species with other public gardens in our region so we can prevent them entering the property.

Another interesting trait of mycoheterotrophic orchids is their ability to enter prolonged dormancy. Some of these orchids are known to flower one year, but may not be seen again in the same place for a number of years, only to reappear and flower after a substantial length of time. Longwood Research and Conservation division staff members will census the plants each year to determine if they also display this trait and determine the extent of and record variations in yearly flowering and fruiting patterns. In the meantime, staff scientists will attempt to propagate this species by growing the fungus and the seeds in strictly controlled laboratory conditions to learn more about them and how they arrived and have persisted at Longwood. This effort will support other current research initiatives to learn more about the conservation horticulture and collections development of Pennsylvania native orchids that will one day be used in garden displays and in the restoration of Longwood’s natural lands.

As a side note, at least 55 different kinds of orchids are native to Pennsylvania. Some of these, such as the coralroots (*Corallorhiza*), are mycoheterotrophic and superficially similar to *Cyrtosia*. At least one of these, *Corallorhiza maculata*, can be quite showy in flower. However, these orchids are impossible to grow in garden settings and should be left in their native habitat for all to enjoy.

Submitted by Greg Ledoux, ‘18

2019 MG Activity
St. John the Evangelist After-School Garden Club

St. John the Evangelist Catholic School in Hydes, Maryland (a pre-kindergarten through eighth grade Blue Ribbon School), has hosted an after school garden club for several years that was developed by the Master Gardeners of Harford County. The club meets every Monday after school for one hour to learn and talk about gardening, grow vegetables and flowers, play some educational games, and eat! In the fall, the program usually runs for ten weeks, while in the spring, students meet for eight weeks—a shorter session, usually because of school closures and spring break. The group consists of anywhere from six to fifteen students where the age range is usually quite diverse.
It is fun and sometimes a little challenging to plan lessons since the age range varies. We base our program on the UME Grow It, Eat It model. Sessions include creating milk jug lettuce gardens, growing two raised beds of peas and greens, and for the second consecutive year, we planted tulip and daffodil bulbs!

Probably the most interesting fact we have learned is that fall planting works best with the school calendar. Plant cool weather crops or bulbs in fall! By the time we can plant in the spring, the school year is winding down. This year we hope to have the students working on a pollinator garden, planting annuals and perennials to attract birds, bees, and butterflies. Once established, adults will be needed to maintain this summer garden to keep it growing. We hope to enlist parent volunteers, other master gardeners, and even some parishioners to assist with the Pollinator Garden this year.

During the cold fall and winter days, we work on indoor projects that students can take home and share with their families. They have been able to describe the parts of a plant and taste-test some of them; they have made salads and followed recipes exploring plants they may never have tried before only to find they enjoy them! We have experimented with the effects of light or lack of light on plants, dissected lima bean seeds and learned new words like photosynthesis, cotyledon, and capillary action (and used them in conversation!).

We always plan a culminating activity at the end of each semester. Activities include fairy gardens and teapot herbs with the students decorating the teapots. This year we decorated small pine seedlings and birdhouses while learning about deciduous trees and evergreen trees. Terrariums are our next idea for the end of the spring session.

This is the second school year that Tom Hock and I have overseen this garden club. MG Jeanine Smetana started the club. It is rewarding to hear the enthusiastic students remark how fast the hour has gone! There was a brief conversation at the close of the last session about extending this program into a week long summer camp, although presently it’s only an idea. We view this as an indication of the success of the gardening program!

Marsha Brett ‘17 and Tom Hock ‘17

Natives Vs ‘Nativars’ Impact on Insects

While I do have the wild native Echinacea (coneflowers), I also have several Echinacea cultivars with a variety of flower colors, and I have always wondered if they are as beneficial as the wild native Echinacea to the native wildlife. A bed of various colored Echinacea can be quite a display, but I do want to support native wildlife as well.

A recent woody plant study, conducted by Mt Cuba Center and University of Delaware, was performed to assess whether nativars (native plant cultivars) support the same level of insect population as the native, wild counterparts. The article was published in Hort Technology and is synopsized on the Mt Cuba Center website with a link to the actual study: https://mtcubacenter.org/do-leaf-eating-insects-eat-nativars/

Researchers Emily Baisden and Doug Tallamy use a leaf blower to vacuum insects off the branches of woody plants to evaluate the ability of native plant cultivars to support insect herbivory.
The good news is that the **nativars do support the same level of insect feeding as their native, wild counterparts!** With one exception, trees which have been selected for pretty red or purple leaves contain anthocyanins (pigments) which make the leaves distasteful to insects.

Unfortunately, this study focused on woody plants and not on perennials. While the study did not address my *Echinacea*, it has lowered my concerns about whether the *Echinacea* nativars would support leaf eating insects. Additional studies are being conducted by Mt. Cuba Center to evaluate nativars and wild natives with respect to pollination. I am hoping the results continue to allay my fear of desiring more colorful garden displays that do not negatively impact the environment.

*Bill Fritch ’14*

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**The Genius of Birds Book Discussion**

For years people have often denigrated the intelligence and character of others with insulting references to birds. You can be called a goose or a turkey for silliness and a chicken for being afraid. An elderly woman can be called an old crow; an elderly man can be referred to as an old buzzard. If you talk too much you are a magpie. According to Jennifer Ackerman, the author of *The Genius of Birds*, “our language reflects our disrespect.” She pointed out in her book that something worthless is considered “for the birds.” And if you are ever caught doing something foolish you can be tagged with the insult of “bird brain”. The crux of her book was to prove that birds are far from being the silly creatures many believe them to be, but instead have a propensity to genius.

The Master Gardeners met on February 27, 2019 for our first book discussion of the year. We certainly came to the conclusion that birds were indeed intelligent creatures. We began the meeting with personal stories of encounters with birds.

One MG described how the birds in her yard had learned her voice and that she was not a threat to them. In another story an MG described observing gulls at North Point State Park breaking clams open by dropping them onto concrete sidewalks. The gulls’ behavior is similar to crows’ behavior of using cars to crack open nuts for them at pedestrian crosswalks ([https://www.youtube.com/watch?v=WJBwPKDRVU4](https://www.youtube.com/watch?v=WJBwPKDRVU4)). Another MG told a hummingbird feeder story. She regularly feeds hummingbirds in her yard, and she notes when they return to the area in the spring and makes sure the feeders are full. Occasionally, she has been late in hanging the feeders or she has allowed the feeders to empty. The hummingbirds quickly learned to fly to her window and then to her porch where the hummingbird feeders hung to alert her to fill the feeders.

Variation in bird species’ intelligence was partially explained in the book by how long birds remained in the nest or precocial species versus altricial species. Precocial species (20% of bird species) typically leave the nest in one or two days whereas altricial species do not. Altricial species seem to have bigger brains and this potentially could contribute to greater intelligence. Several MGs noted that later in the book the author provided scientific evidence that brain size does not totally account for greater intelligence. A number of other factors outlined in the book also appeared to contribute to variations in species intelligence.

Do you remember the Aesop fable of the crow and the pitcher? A thirsty crow found a pitcher of water. He discovered that it contained so little water that he could not possibly get at it. He tried everything he could think of to reach the water to no avail. At last he collected as many stones as he could carry and dropped them one by one with his beak into the pitcher until the water rose high enough for him to drink. The moral of the story: “Necessity is the mother of invention”.

These stories, as well as, scientific studies described by Jennifer Ackerman in her book support the concept of bird intelligence. If birds are so intelligent, one MG wondered, then why do birds continually fly into her second story window? According to the Audubon Society of Portland, over one billion birds fly into windows each year because they do not perceive the windows as barriers but as open space and attempt to fly right through them. In addition, male birds may mistake their reflected image as a competing
male that they try to attack and chase away. The society recommends placing markers across the entire window, spaced around 2-4 inches apart (https://audubonportland.org/wcc/urban/windows). Safe Skies Maryland is a group that is promoting the passing of legislation to help reduce bird window strikes such as those described by the MG (https://safeskiesmaryland.org/). In addition Lights Out Baltimore (http://www.lightsoutbaltimore.org/) members are collecting, recording, and rescuing birds that are victims of window strikes in Baltimore.

After sharing these bird stories, we discussed the question of whether language use equals intelligence. It was disconcerting to view the video of the gray parrot, Alex, learning to speak human language (https://www.youtube.com/watch?v=w8LepYR8v9A). Alex had learned to say “Wanna go back” when he was tired of being tested. According to Ackerman, the researchers working with Alex believed this was evidence he had learned two-way communication. It was difficult to watch because Alex appeared to be an intelligent bird living caged for 30 years. One MG commented that she found it difficult to read the descriptions of the bird studies within the book because intelligent birds’ lives were sacrificed for what appeared to be minor advancements in scientific knowledge.

Alex’s learning of human speech indicates birds can learn language and are intelligent. However, other animals exhibit nonverbal communication behavior that exhibits their intelligence. KoKo the gorilla for example learned to communicate with sign language and researchers working with KoKo discovered gorillas have their own gestural language (http://www.koko.org/sign-language). For this reason several MGs voiced their opinion that humans in Western society see themselves as the center of the universe. This anthropocentrism leads us to equate human language with intelligence and overlook the many alternate ways that birds exhibit their intelligence. For example, bird species learn their own song and practice it until it is perfect in order to attract mates. Furthermore, some species such as the mockingbird perform songs and calls of numerous species. Several MGs described stories of mockingbirds performing for them as the MGs worked within their gardens. One mockingbird even took a bow at the end of its performance.

Next the MGs discussed if cognition and intelligence were the same. The author suggested cognition could be defined “as the mechanisms by which a bird acquires, processes, stores, and uses information…” Under her definition when a bird sings its song, it is performing a cognitive task and could be equated with intelligence given that refining the song requires additional mental resources. Some MGs suggested cognition could be thought of as awareness in contrast to intelligence, which would be what is done with awareness.

One MG suggested that the examples in the book of crows learning several individual tasks and then integrating those tasks into a unique task to obtain a treat would be an example of this idea. Another MG witnessed first-hand the Barbados Bullfinches stealing sugar packets that the author had mentioned in the book. Another MG described how bluebirds in her yard had learned that she was the source of the mealy worms they loved so much.

One of the most important aspects covered in Ackerman’s book dealt with humanity’s influence on the evolution of birds. Have we or have we not dealt an ecological blow to these wonderful creatures? We overwhelmingly agreed that humans are affecting not only the lives of birds, but also, the habitat upon which birds depend. Articles summarizing recent scientific studies from around the world have documented how human influence has drastically reduced insect populations resulting in consequences to birds, animal species, and humans. Furthermore, articles are appearing documenting the impact of climate change on the distribution of insect populations. As insect populations migrate then bird species will need to migrate also to survive.

The MGs also discussed the changes humans have made to the landscape (such as altering river courses, clearing forests, building new roads, etc.). These changes have affected the migration patterns of birds. A number of MGs mentioned that house, landscape, and park recreation lights left on at night disrupt the night flight of birds which is a big problem because so many birds migrate at night. In addition, humans seem to be
capricious in their efforts to protect animals. For example, we feel a need to protect dolphins more than salmon and bluebirds more than chickens.

The last topic we discussed concerned disconnection with humanity and nature. Today’s children and young adults appear to be spending less time playing outside than previous generations and thus may be less aware of nature. Adults are spending more time with technology as well. The group agreed that our MG programs such as the library garden series, speakers bureau, Grow It Eat It, Baywise and educational programs for young adults at Eden Mill, Harford Glen, and Ladew are critical for awakening the public to their impacts on nature and how to make sure their impacts are beneficial ones.

We Master Gardeners know that the world cannot afford to be shortsighted with our relationship with Mother Nature. Instead we must constantly be thinking of the world we want our children and grandchildren to inherit. This year’s Earth Day theme is “protect our species.” Let us renew our efforts to do so.  

Diane Mitchell,’12  and Ginger Huller, ‘14

In Our Woods, Sometimes a Rare Music
~ Mary Oliver (1935-2019)
Every spring
I hear the thrush singing
in the glowing woods
he is only passing through.
His voice is deep,
then he lifts it until it seems
to fall from the sky.
I am thrilled.
I am grateful.

A new kind of mosquito repellent that comes from bacteria

Source: https://news.wisc.edu/a-new-kind-of-mosquito-repellent-that-comes-from-bacteria/

January 17, 2019 By Kelly April Tyrrell

People may soon have a new weapon in the battle against mosquitoes, and it comes from an unusual source: bacteria. Published Jan. 16 in the journal Science Advances, University of Wisconsin–Madison researchers describe the first mosquito-repelling compounds to be derived from the microbes.

These compounds, purified from extracts of the bacterium *Xenorhabdus budapestensis*, appear to work at lower doses than repellents currently on the market, including DEET and picaridin. The study showed them to be effective against *Aedes aegypti, Anopheles gambiae* and *Culex pipiens*, mosquito species known to transmit diseases such as Zika, West Nile, malaria and chikungunya, diseases that afflict millions of people worldwide.

Whether these natural chemical compounds, called fabclavines, are suitable for human use remains to be determined, but the study, says UW–Madison Professor of Entomology Susan Paskewitz, opens up a new area of exploration in the search for insect-repelling and insect-killing compounds.
“We didn’t come at it thinking we would find a repellent,” she says. “It was a bit of serendipity.”

In fact, the project did not begin with Paskewitz at all. It started with her colleague, Que Lan, who tragically passed away in 2014 from complications of cancer. At the time, Lan was looking for bacterial compounds that would kill mosquitoes. Paskewitz helped secure additional funding to keep the study going and found a scientist, lead study author Mayur Kajla, interested in carrying the work forward.

When Kajla joined the project, the research team already knew that extracts from the bacteria did not kill mosquitoes but when it was added to their food, the mosquitoes refused to eat. He designed a set of experiments to test the repellent potential of the bacterial extract and identify the compounds responsible.

Using a commercial mosquito feeding system, Kajla made modifications to more closely mimic a mosquito feeding on a human being. For instance, he selected a skin-like membrane to contain a special, red-dyed mosquito diet that simulates human or animal blood. He also tested a variety of cloth coverings to sit atop the membrane, which would be coated with the repellents being screened.

Kajla coated the cloth with water, DEET or picaridin and allowed mosquitoes to feed for 30 minutes before freezing them and counting the number that were engorged with red liquid (fed) or unfed. The mosquitoes did not feed when the cloth was coated in repellent.

He then tested purified extracts from the bacteria and, with assistance from UW–Madison co-author Gregory Barrett-Wilt, found that an extract dominated by two fabclavine molecules effectively deterred mosquitoes from feeding.

When compared for effectiveness against picaridin and DEET, which is found in more than 500 insect repellents registered with the U.S. Environmental Protection Agency, the bacterial extract was effective at doses eight times and three times lower than each, respectively.

“If you can use less of an active ingredient in a formulation it may be less expensive,” says Paskewitz, who with Kajla has filed for a patent related to this work through the Wisconsin Alumni Research Foundation (WARF).

The scientists are not quite sure how it works to deter mosquitoes from feeding, but it may simply taste bad.

Paskewitz and Kajla are now collaborating with colleagues at the UW–Madison School of Medicine and Public Health to test the safety of the compounds in human cell culture. Some of the preliminary work suggests there may be some toxicity. The team continues to investigate safety.

“I am itching to put it on my hand and put it in a cage of mosquitoes, but I can’t do it yet,” says Paskewitz.
DEET is the most widely-used insect repellent in the United States and has repeatedly been shown to be safe and effective, yet the public continues to express concern about its use, especially in young children. This is why, Paskewitz says, some scientists continue to search for alternatives, though most have looked to plants. Bacteria are common sources of antibiotics and other pharmaceuticals, and the species *Bacillus thuringiensis* is commonly used in agriculture to deter insects.

Kajla says the compounds extracted from *Xenorhabdus budapestensis* may yet prove useful for other applications and continues to explore their potential.

Additionally: “These compounds might end up being more effective against a wider array of biting arthropods,” Paskewitz notes. “DEET works against ticks, but it’s not as good as it is with mosquitoes. We will test the bacterial compounds against other kinds of biting insects and their relatives.”

*The study was funded by the National Institutes of Health grant no. AI123719.*

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### Continuing Education Opportunities

**April 6**

**1:00 – 4:00 pm**

**A Foray to Yunan China in 2018**

**Norrisville Recreation Center meeting room**

A very special horticultural presentation - Larry Klotz, Ph. D. will share observations of the geography, geology, culture, and vegetation with special emphasis on the flora of Yunan, China. He plans to share his wonderful photos of and information about the showy wildflower groups. For questions email Jerry Hudgens: [gahudgens@comcast.net](mailto:gahudgens@comcast.net)

**April 6**

**9:00am – 12:00pm**

**Knowing, Sowing an Growing**

**Longwood Gardens – Catalpa Room**

Nothing more exciting than seeing seedlings emerge in the garden. Review proper planting depth, spacing, and placement within the garden. Learn the process of seed preparation, viability and storage. Take home a selection of seeds.

Fee: $49.00 To register online go to [www.longwoodgardens.org](http://www.longwoodgardens.org) or call 610-388-5454

**April 10**

**10:00 am**

**Awaken Your Gardens Lecture – Taffy Litz**

**Ladew Topiary Gardens**

New life can emerge from an old garden by using imaginative techniques. Practical information guides the gardener about ways to rejuvenate an existing space, enhancing its form and structure. This is a lively lecture with informative before and after photographs.

To register call 410-557-9570. Registration should be made in advance and accompanied by payment.

**April 13**

**10:30 am – 12:30 pm**

**The Healing Power of Nature - Dr. Heidi Schreiber – Pan**

**Ladew Topiary Gardens**

Dr. Schrieber-Pan has extensively studied the connection between our well-being and nature and will discuss how nature impacts human resilience and overall mental health, and the role of spirituality in this relationship. Indoor discussion followed by a nature walk.

To register call 410-557-9570.

**April 13**

**8:30 am – 12:00 pm**

**Performance Pruning and Shrubs**

**Longwood Gardens  Catalpa Room**

Improve your shrubs and vines performance an take the mystery out of pruning. Proper timing will ensure optimum blooms and appearance.
April 14 2:00 – 4:00 pm
Invasinators
Anita Leight Estuary
Become part of a volunteer team of invasive plant removers and native plant restorers. Learn why non-native invasive plants are a threat to our ecosystem, how to identify problem plants, and removal and restoration strategies. Must register for activities. Go to HC online registration or call 410-612-1688

April 18 – May 23 *ON-LINE
Ornamental and Native Shrubs
Longwood Gardens
Discover some of the most outstanding shrubs for the home landscape. Explore how to incorporate native ornamental plants that naturalize. Discuss the aesthetic qualities, identification techniques, cultural practices and landscape uses of many reliably hardy mid Atlantic shrubs.
Fee: $179.00 by April 11 after April 11 $189.00 To register online go to www.longwoodgardens.org or call 610-388-5454

April 20 10:00 am – 12 pm
ABC’s of Growing the Luscious Tomato
Harford County Extension Office
Master Gardener Bill Fritch will provide information for this topic. Participants will take part in a tomato seed growing workshop, learn tips and tricks for growing tomatoes, and get 3 peat pots of soil with 2 tomato seeds in each to take home.
Fee: $5.00  To register visit www.ABCTomato.eventbrite.com or call 410–638-3255

May 4 9:00 am – 12:00 pm
Identifying Invasives
Longwood Gardens Betula Room
Callary pear, autumn olive, Japanese stilt grass and other invasive plants confound and frustrate each year. Through combined classroom and field course designed to explore the life history, identification characteristics and management strategies will be addressed. Fee: $49.00 To register online go to www.longwoodgardens.org or call 610-388-5454

May 4 1:00 – 2:00 pm
Name That Tree
Anita Leight Estuary
Bring in some branches with leaves and take part in a hands-on lab to learn how to tell deciduous trees apart. Must register for activities. Go to HC online registration or call 410-612-1688

May 6 1:00 – 4:00 pm
Crevice Gardening in a Trough
Longwood Gardens Catalpa Room
Create your own crevice garden for some of the most alluring and exciting alpine and rock gardening plants. Learn about the culture and care. Participants will leave with design and trough garden. Fee: $49.00 To register online go to www.longwoodgardens.org or call 610-388-5454

June 16, 17, 18, 19, 20, and 21
2019 International Master Gardener Conference – Various Locations in Pennsylvania
http://www.cvent.com/d/hggxlp. You are encouraged to pre-plan your conference choices.
April-May Harford County Master Gardener Calendar

The below Calendar entries are only a small sample of the scheduled Master Gardener events. Please refer to the following link to view the entire Harford County Master Gardener calendar https://calendar.google.com/calendar/b/3?cid=bWFzdGVyZ2FyZGVuZXJzaGNAZ21haWwuY29t

MG Stephanie Flash is the contact for changes and additions to our new calendar. Please send calendar requests, changes or additions to mastergardenershc@gmail.com

<table>
<thead>
<tr>
<th>Wednesdays</th>
<th>Time</th>
<th>Event Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 4</td>
<td>6-8 pm</td>
<td>Master Gardener Training class</td>
<td>Extension Office</td>
</tr>
<tr>
<td>April 11</td>
<td>9 am</td>
<td>Monthly MG Meeting (MG Volunteer Appreciation Award meeting)</td>
<td>Liriodendron Mansion</td>
</tr>
<tr>
<td>April 19</td>
<td>6:30-8 pm</td>
<td>ABC’s of Growing the Luscious Tomato</td>
<td>Extension Office</td>
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<tr>
<td>April 25</td>
<td>6-8 pm</td>
<td>Steering Committee</td>
<td>Extension Office</td>
</tr>
<tr>
<td>May 2</td>
<td>10 am</td>
<td>Monthly MG Meeting</td>
<td>Extension Office</td>
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</tbody>
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April 4 The normal monthly MG meeting is POSTPONED and moved to next week due to conflicts at the Liriodendron Mansion

Joyce Browning
Urban Horticulturist
Master Gardener Coordinator
Harford County Office

MG Elena Sempos serving at the Harford Home Show this past weekend.

Everyone is very interested in our booth.

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