WELCOME TO SUMMER!

HOT Topics

Point your Dame's Rocket towards the Dog Star because it is hotter than the burrito cooking in foil on my exhaust manifold out there, and I'm Sirius!

However, inside this edition you will find some cool news about the upcoming HIS Central Chapter Annual Conference event, the HIS Eastern Chapter Interstate event, and... FOOF! (pulls off the dropcloth) the unveiling of the Central Chapter's new website!

And if all that weren't enough, we're also featuring news about current plant pests and disease trends, getting up-close and personal with ticks, and to make up for that, more funnies! Come on in and chill out...

Phew! I'm feeling light-headed and prickly all over

Inside this edition:

Join us for the
HIS Central Chapter Annual Conference
October 16-19, 2023 in Columbia, Missouri!

The Horticultural Inspection Society Central Chapter and the Missouri Department of Agriculture invite you to attend our 2023 Annual Conference to be held in Columbia, Missouri, October 16th to 19th, 2023.
An array of excellent speakers are lined up, with presentations discussing herbicide damage, pathology, entomology, apiary inspection, a local nursery's perspective on becoming SANC certified, and much more. Additionally, there will be a field day with a tour of the Horticulture and Agroforestry Research Farm in New Franklin, Missouri.
Conference check-in begins Monday, October 16th from 5:00 pm to 9:00 pm, and on Tuesday the 17th until 8 am. The conference will conclude Thursday, October 19th, at 11:00 am.
Registrations for the conference must be received by September 15, 2023.
Hotel reservations at the discounted group rate are due by September 24, 2023.
Please return the registration below as soon as possible.
Registration for all four days of the conference is $215 per person. This includes continental breakfast on the 17th, 18th, & 19th, lunch on the 17th and 18th, and a banquet dinner on the 17th.
Hotel accommodations are not included in the registration fee, please see below.
Checks should be made out to the HIS Central Chapter, credit/debit cards will not be accepted for the conference registration.

Accommodations

HIS Central Chapter conference attendees must make their own reservations with the Stoney Creek Hotel & Conference Center, 2601 S Providence Rd, Columbia, MO 65203. Phone: 573-442-6400.
Please use this customized link to receive the discounted rate of $100.54 per night (taxes are not included). Make reservations early to ensure your accommodations.

Membership dues

Annual HIS dues of $20.00 may be paid at the meeting, or included with your registration using the attached membership application form (one form is required for each individual). If you are not attending the meeting, please mail your dues to Liz Meils, HIS Central Chapter Treasurer (WI-DATCP, Liz Meils, HIS Treasurer, 2811 Agriculture Dr., Madison, WI 53718). Membership dues for 2024 are required even if you do not attend the meeting – Please make your checks out to HIS Central Chapter and use the registration form below.

Exhibit Displays

If you would like to bring a display and need a table, please indicate this on your registration form. An area will be available for table top or floor displays.

State Reports

Each state should supply a state report using the standard HIS State report form. The state report is a short summary of notable pest & diseases, activities, trends, and changes in your state. Please provide at least one copy for each attending state, but up to 30+ copies are encouraged so each attendee can take one.
State report presentations during the meeting will be approximately 5 minutes.
If you are unable to print these reports beforehand, please email them to the HISCC Secretary for digital distribution. All state reports will be posted to the Members Only section of our website (cchis.org) after the conference.

Attire

In keeping with the spirit HIS Central Chapter's motto: "To make professionalism a part of every effort" please wear professional but comfortable clothing. Note that in October the weather varies greatly in Missouri, so be sure to check the weather before packing. Additionally, the tour of the Horticulture and Agroforestry Research farm in New Franklin will be outdoors, please bring boots and field clothing.

The HIS Central Chapter has a new Website!

Thanks to the gracious and munificent efforts of our new webmaster, Diane Turner (IN) and the indefatigable cohesion of the HISCC Executive Board, our HIS Central Chapter Website has found a new home at: **CCHIS.ORG** !!!

The new website features downloadable PDF's of all the current Conference documents, images from Chapter events, and more member submissions! (if you catch my drift).

Plans are in the works to scan and feature much of our 50+ years of chapter materials, along with consolidating our archives and board information in a secured members-only area. More space and focus for current committee news, and reference materials is also being implemented.

Please visit **YOUR** new website and give us some feedback!

Horticultural Inspection Society Central Chapter
2023 Missouri Conference Registration Form

Name:_____

Agency:_____

Address:_____

City:_____State:_____Zip:_____

Phone:_____

Email Address:_____

Registration Fee: $215.00 Checks should be made out to:
HIS Central Chapter (HIS does not accept credit or debit cards).

Want to bring an exhibit? Please include details here:

_____

_____

Please list any special accommodations needed:

_____

HIS membership dues for 2024 can be included as part of the conference registration check, but be sure to fill out a separate membership application form for each individual's dues payment.

Send your registration form and check to:

Missouri Department of Agriculture
Attn: PI-PPC Tammie Bishop
P.O. Box 630, Jefferson City, MO 65102

Please direct any questions or concerns to HIS Central Chapter Vice President Zach Starr, or contact by phone/text at 573-418-5971

Registrations are due by September 15, 2023

HORTICULTURAL INSPECTION SOCIETY CENTRAL CHAPTER ANNUAL CONFERENCE
October 16th – 19th 2023 - Columbia, Missouri – Stoney Creek Hotel
2601 S Providence Rd, Columbia, MO 65203, PH 573-442-6400

Monday, October 16th, 2023	
3:00 to 7:00 pm	**Welcome and Registration,** Dinner on your own
7:30 to 11:00 pm	**Hospitality Suite open**: Informal discussion, Committee meetings
Tuesday, October 17th, 2023	
6:30 to 8:00 am	**Breakfast** - hotel provided
7:30 to 8:00 am	**Registration**
8:00 to 8:15 am	**Welcome**: Zach Starr, HIS Central Chapter Vice President; Introduction of Rosalee Knipp, State Entomologist, MO SPRO
8:15 to 9:15 am	**Tree Health, Herbicide Impacts**: Robbie Doerhoff, MDC Forest Entomologist
9:15 to 10:15 am	**MU Plant Diagnostics Lab Season Review**: Peng Tian, Director of MU Plant Diagnostics Lab
10:15 to 10:30 am	**Break**
10:30 to 11:00 am	**State reports:** North Dakota, South Dakota, Wisconsin, Michigan (5 minutes each)
11:30 to 12:00 pm	**SANC, A Nursery Perspective**: Forest Keeling Representatives with Zach Starr and Susan Ehlenbeck, MO inspectors and SANC auditors
12:00 to 1:00 pm	**Lunch** provided
1:00 to 2:00 pm	**Plant Diagnostics Samples and Stations**: Hands on workshop to work on samples, various whodunits and findings discussion
2:00 to 3:00 pm	**US Customs Borders and Protection Work in St. Louis**: Angela Vitale, Supervisory Agriculture Specialist, US Customs Border Protection
3:00 to 3:15 pm	**Break**
3:15 to 4:15 pm	**Pesticide Safety and Policies**: Sam Polly, Pesticide Safety Education program Coordinator with MU Agriculture and Environment Extension Program
4:15 to 5 pm	**State Reports**: Kansas, Missouri, Nebraska, Iowa, Illinois, Indiana (5 minutes each)
6:00 to 7:00 pm	**Banquet Dinner** at hotel
7:30 to 11:30 pm	**Hospitality Suite Open**: Sharing images of inspections and pest and plant pathogens; Informal discussion, Committee meetings

HORTICULTURAL INSPECTION SOCIETY CENTRAL CHAPTER ANNUAL CONFERENCE

October 16th – 19th 2023 - Columbia, Missouri – Stoney Creek Hotel

2601 S Providence Rd, Columbia, MO 65203, PH 573-442-6400

Wednesday, October 18th, 2023	
6:30 to 8:00 am	**Breakfast** - hotel provided
8:00 to 8:45 am	**Missouri Apiary Inspections:** Lee Conner, Forester and Apiarist with MDA
8:45 to 9:00 am	**State Reports:** Ohio, Minnesota (5 minutes each)
9:00 to 10:00 am	**Missouri Natural Heritage Program:** Malissa Briggler, Missouri Department of Conservation, State Botanist
10:00 to 10:15 am	**Break**
10:15 to 11:00 am	**MO Forest Pest Program Updates and Survey Work**: Sarah Phipps, Missouri State Survey Coordinator; Rosalee Knipp, State Entomologist
11:00 to 12:00 pm	**Load Bus, travel to MU Agroforestry Research Farm,** New Franklin, MO
12:00 to 1:00 pm	**Box lunch** provided at MU Agroforestry Research Farm
1:00 to 3:30 pm	**Tour at MU Agroforestry Research Farm**
3:30 to 4:30 pm	**Load Bus,** return to hotel
4:30 to 5:00 pm	**Wrap up any remaining state reports;** Conclude for the day
5:00 to 7:00 pm	**Dinner** on your own
7:00 to 11:30 pm	**Hospitality Suite Open**: Sharing images of inspections and pest and plant pathogens; Informal discussion, Committee meetings
Thursday, October 19th, 2023	
6:30 to 8:00 am	**Breakfast** - hotel provided
8:00 to 11:00 am	**HIS Central Chapter Business Meeting**
11:00 am	**Conference adjourns**

The Horticulture and Agroforestry Research Farm, near New Franklin, Missouri, sits at the interface of the loess hills and Missouri River bottom and provides a scenic, historic and scientific setting for development of horticultural and agroforestry-related studies.

Figure 1. Multiple buds and partly expanded shoots are typical of a *R. fascians* infection. Shown here is *Veronica spicata* 'Royal Candles', which is particularly susceptible.

Demystifying *Rhodococcus fascians*

By Melodie Putnam

Prevention is the grower's best defense against this tenacious pathogen

Disease caused by the bacterium *Rhodococcus fascians* continues to slip under the radar of some growers. This may be because the symptoms, although identifiable once you become familiar with them, may be mistaken for other things. It is difficult to combat a problem if you do not recognize it for what it is. We at the OSU Plant Clinic have been working for more than a decade with *R. fascians*. This article will address disease-related questions we have received from growers over the years.

What are the symptoms of disease?

The primary response of plants to infection by the bacterium *R. fascians* is the production of numerous buds that expand only partially (Figure 1),

Figure 2 (left). Leafy gall disease on a *Leucanthemum* plug. Figure 3 (right). A massive crown gall due to *Agrobacterium tumefaciens* at the base of a *Gaillardia* cutting. These galls are quite different from leafy galls due to *Rhodococcus fascians*.

resulting in shoot proliferation. When the buds are even more numerous, a structure called a leafy gall is formed (Figure 2).

Disease from *R. fascians* is often mistaken for that caused by the crown gall bacterium, *Agrobacterium tumefaciens* (also known as *Rhizobium radiobacter*). However, the symptoms are significantly different. Crown gall bacteria cause growth of largely undifferentiated tissue (galls), which are roughly round and cream-colored when fresh (Figure 3). In contrast, *R. fascians* produces well-differentiated tissues into buds and leaves in tight clusters. This extra growth usually occurs at the base of the plant, but may also be present in leaf axils, and may be mistaken for the outcome of hard or repeated pinching, the effects of growth regulators, or abnormalities that sometimes arise from tissue culture (Figure 4).

Once a plant is infected, there is no cure and the plant must be discarded to prevent spread of disease.

How does the disease get started?

Leafy galls don't occur in a vacuum. In nearly all instances, the disease has been brought into a nursery on propagation material.

In general, material derived from seed is clean, but *R. fascians* can be seed-borne in some crops such as nasturtium and possibly petunia. Once present, the bacteria grow on the surface of plants without causing symptoms, sometimes for an extended period. At some point the bacteria move into the interior, where chemical signaling between the pathogen and plant takes place, triggering symptom development.

Unfortunately for propagators, that "extended period" during which the bacteria are present but not causing disease is variable, and can be as long as several months. This means the bacteria can be more widespread in a greenhouse or field than may be apparent from symptoms alone.

We have detected *R. fascians* in plants still in tissue culture boxes, so tissue culture by itself is no guarantee plants will be clean. Growers interested in obtaining tissue culture material should inquire whether the company producing the plantlets uses safeguards to prevent bacteria from moving with the material they are propagating.

How does *R. fascians* spread?

The primary means of transmission is by clonal propagation of infected material. Once present in a nursery,

R. fascians will move via water splash and in flood irrigation systems.
Anecdotal information from growers suggests the bacteria will persist long enough on pruning tools to be transmitted to plants during cutting operations.
Growers who use mowers to trim plants have experienced increased problems with disease, especially when the mower blades were not cleaned and disinfected between groups of plants. The bacteria are not known to be wind-borne (for example, there is no aerial phase), nor does it appear to be moved by insects.

Can cuttings be taken from an infected mother plant?

Taking cuttings from a mother plant is not a good idea.
Although the bacteria do not become systemic within a plant, we have detected bacteria on stems many inches away from leafy galls.
In greenhouse experiments we were able to recover the bacteria 28 days after they were sprayed onto plants, and the plants looked perfectly healthy the entire time. Taking cuttings from diseased plants is too great a risk. Growers should cut their losses and discard infected plants before they shed bacteria onto surrounding plants.

Which plants are susceptible?

R. fascians has a wide host range and is capable of infecting plants in nearly 50 families, most of which are herbaceous perennials, although a few woody plants are also susceptible.
Certain genera seem particularly prone to infection. These include *Leucanthemum*, *Viola*, *Veronica*, *Lavatera*, *Phlox*, *Petunia*, *Hosta*, *Campanula*, *Iberis* and *Aster*. For a comprehensive list, including cultivars, see http://plantclinic.bpp.oregonstate.edu/rhodococcus.

How is the disease controlled?

As with other bacterial diseases, prevention is the best cure. No specific products have been found to be effective in curing a diseased plant or preventing disease when bacteria were sprayed onto plants. A program of training, sanitation, scouting and roguing will allow quick detection and action.
Growers should familiarize themselves with the symptoms and train their workers to also recognize and report suspect plants. A regular scouting program is advisable, especially when new material is brought in. Once the disease has been confirmed, it is best to:
1. Discard the affected plants;
2. Discard any plants that had contact with the infected plants; and
3. Sanitize the surface on which the plants had been sitting and any other surfaces which had contact with the plants (for example, pruners and hose ends).
Follow up with regular scouting, and repeat steps 1–3, if needed.

Are there any bright spots in the picture?

One big question has been whether *R. fascians* is widely distributed in the environment, including soil. Although *R. fascians* has been recovered from surfaces as diverse as the rind of some brick cheeses, ice cores, and the backs of sheep with fly-induced sores, there has been no clear indication of whether isolates that infect plants are common in the environment.
Is it possible the bacteria are present on a variety of surfaces and can move to plants when the opportunity arises?
To check this, we collected samples from a variety of substrates and hard surfaces to see if we could recover the bacteria. We isolated some nutrient-rich sources, including animal manure and mud, and also from what we thought should be nutrient-poor sources, such as hard surfaces of buildings and equipment. We also collected samples from more conventional places, such as the soil beneath a variety of trees and exterior planting beds.
We collected nearly 100 samples and evaluated more than 1,000 bacteria. Not a single one was *R. fascians*. This was very curious, and we decided to back up and see if the bacteria are even capable of surviving in soil.
The genus Rhodococcus is considered an excellent soil resident. R. fascians has been reported from soils under northern forests to a desert with furnace-like temperatures. Given that range, it would appear that the bacteria are pretty hardy and would persist in soil for quite a while.
We set out to determine if we could isolate *R. fascians* from soil spiked with the bacteria. We looked at a sandy loam field soil and a common commercial peat-based soilless potting mix. We added live bacteria then tried to recover them after three days.
What we found was a complete surprise — the bacterial numbers started to decline in those three days. When we air-dried the inoculated soil and tried to recover the bacteria, the population had plunged to 1–14 percent of what we had started with.
These experiments were performed on bare soil, and it may be that the bacteria can survive only as long as living plant matter is present. We are currently looking at whether the bacteria will survive longer in soils if plant tissue is present.
What does this mean? It means that the bacteria do not appear to be widely distributed in the environment, and that if a grower can exclude infected material from the nursery, there is no reason to be concerned about R. fascians.
If the disease does show up, the bacteria are not likely to persist for extended periods in soil free of plant material.

What research is currently under way?

Molecular methods are being used to enlighten investigators about the strategies and mechanisms of biological processes.
Just as examining human DNA allows researchers to gain insights into human disease processes, determining the genetic structure of *R. fascians* is allowing us to determine how the bacterium is able to cause disease. This, in turn, will lead us to find weaknesses in the process, which can then provide insights into effective management strategies.
We have been working with Dr. Jeff Chang of OSU's Department of Botany and Plant Pathology to demystify R. fascians.
The entire genetic structure of 20 isolates of R. fascians was determined.
So far we have found that "Rhodococcus fascians" is not a single organism, but at least two very different species of bacteria, which possess more genetic variability than was expected. On a practical basis, this genetic mutability can influence whether the bacteria can be detected using molecular methods.

▲ Demystifying *Rhodococcus fascians*

Dependence on a single test can result in a misdiagnosis.
Our lab has created three different molecular assays, which target different genes. Over 11 years, we have tested nearly 200 plants using these molecular assays. Some infected plants reacted with only one of the assays and not the other two. Dr. Chang's group is learning the genetic basis for this response.
To minimize the possibility of missing an infection, the OSU Plant Clinic uses a combination of molecular and traditional microbiological methods to diagnose plants suspected of having leafy gall disease.
Used together, a molecular approach and an applied approach will allow us to gain an understanding of how *R. fascians* is put together. Eventually, we hope to provide growers with more tools for managing leafy gall disease.

Melodie Putnam is the director of the OSU Plant Clinic and an extension plant pathologist in OSU's Department of Botany and Plant Pathology. She may be reached at putnamm@science.oregonstate.edu or 541-737-3472.

Figure 4. A petunia plantlet with abnormal growth as a result of tissue culture propagation. No *Rhodococcus fascians* was detected with either molecular assays or culturing.

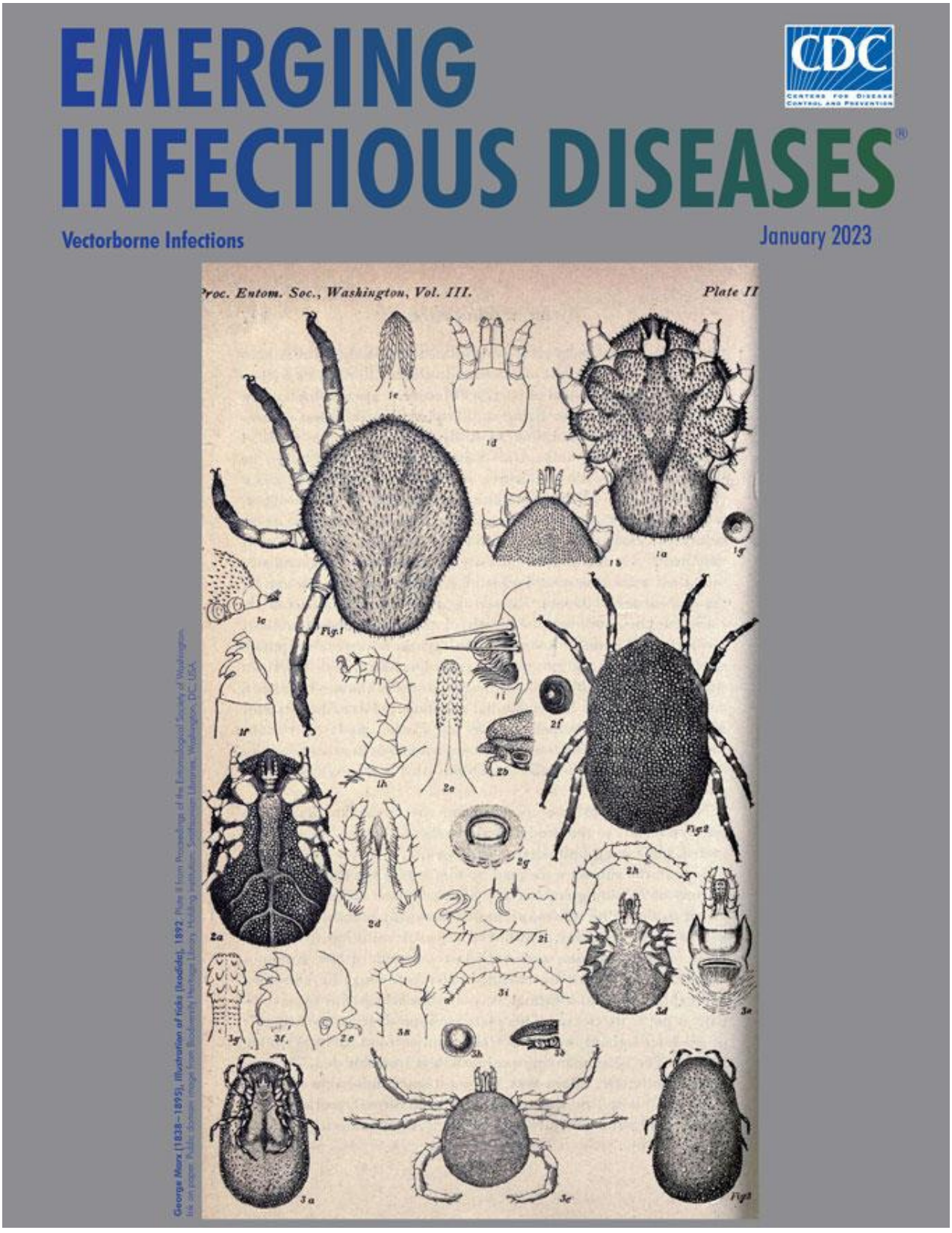
For more photos of plants infected with *R. fascians*, see http://plant-clinic.bpp.oregonstate.edu/rhodococcus-hosts. For photos of plants with crown gall, see http://plant-clinic.bpp.oregon-state.edu/crown-gall.

The Amazing Kew Gardens - The Holy Grail of Arboretums?

London's Kew Gardens, officially known as the Royal Botanic Gardens at Kew, is one of the most extensive and important botanical gardens in the world. Founded in 1840, it houses one the "largest and most diverse botanical and mycological collections" found on Earth. Kew Gardens includes more than 50,000 different plants in its living collection, over 7 million preserved specimens, and more than 750,000 volumes and illustrations are contained within its library. Located southwest of central London in the borough of Richmond upon Thames, this 330 acre site includes an elevated treetop canopy walkway, "The Hive," a 56 foot structure set in a wildflower meadow and designed to highlight the extraordinary life of bees, and not to be outdone, one of the largest compost heaps in Europe!

More on page 18

Interesting art and story called "Ticks up close" from the January 2023 edition of the CDC's Emerging Infectious Diseases newsletter, featuring Vectorborne Infections and starring your friendly neighborhood tick.



George Marx (1838–1895), *Illustration of ticks* (*Ixodida*), 1892. Plate II (above) from the Proceedings of the Entomological Society of Washington. Ink on paper. Public domain image from Biodiversity Heritage Library. Holding institution: Smithsonian Libraries, Washington, DC, USA.

Worldwide, only mosquitoes spread more vectorborne diseases than ticks; however, in temperate areas of North America, Europe, and Asia, ticks cause most vectorborne diseases. Ticks are vectors for multiple viruses, bacteria, and parasites that cause can cause an array of infectious diseases. Researcher Daniel Sonenshine notes, "Ticks transmit a greater variety of pathogenic microorganisms than any other hematophagous arthropod."

Ticks were spreading pathogens for millions of years before humans evolved. Biologist George Poinar, Jr., has found evidence of *Borrelia,* a type of spirochete-like bacteria that causes Lyme disease, in fossilized ticks preserved in 20-million-year-old amber, with much older fossilized ticks having been found in 99-million-year-old amber. However, it was not confirmed that ticks are vectors for infectious diseases that affect humans until the early 20th Century.

Recently these tiny arthropods gained additional notoriety by purportedly being the first living animals to be filmed under a scanning electron microscope. Science journalist James Gorman offers this colorful account: "Chain saws, hockey masks and the undead are all classic symbols of horror. But for a true shiver of dread, take a look at a tick. When seen with an electron microscope, a tick's mouth has what look like twin saws (chelicerae) flanking an appendage (a hypostome) that appears to be the kind of long, barbed sword that a villain in a video game might favor."

Images and videos from such research reveal new insights into how ticks penetrate and remain attached to hosts and transmit pathogens. They also confirm that some hand drawn illustrations of ticks from the late 19th century were remarkably detailed and accurate. This month's cover image, *Illustration of ticks (Ixodida)*, by George Marx, is an excellent example.

Born and educated in Germany, Marx enrolled in the gymnasium at Darmstadt in the Hesse district when he was 14 years old. His obituary notes that while he was a student there, Marx "proved himself so proficient in botany, and at the same time so able an artist, that to him was assigned the task of making the illustrations for the Flora of Gross-Gerua," the district seat in that part of Germany.

After earning his degree in pharmacy in 1860, Marx left Germany for the United States, where he served in the American Civil War, receiving an honorable discharge after experiencing a serious wound and illness. In 1865, Marx moved to Philadelphia, where he began collecting Arachnida. In 1878, Marx relocated to Washington, DC, after accepting a position as a natural history illustrator in the Division of Entomology, US Department of Agriculture. Cited for his meticulous artwork, in 1889, Marx was selected to be chief of the department's newly established Division of Illustrations, where he worked and devoted much of his time to studying ticks until just before his death in early 1895. A charter member of the Entomological Society of Washington, DC, Marx served as its fourth president. His obituary notes "...the various plates and figures which adorn his contributions to science are by far the best illustrations of Arachnids that have ever been produced in America."

His meticulously rendered *Illustration of ticks (Ixodida),* illustrates the appendages, forms, and features of 3 specimens accompanied by his up-close depictions of the capitulum, maxillae, mandibles, stigma, and Haller's olfactory organ. One can imagine Marx peering through his microscopes and magnifying glasses, methodically rendering and notating his observations with pen and ink, then later refining his sketches for the finished composite.

In 1896, the year after Marx's death, Rocky Mountain spotted fever was identified in the Snake River Valley of Idaho, and in 1899, it was first described in a paper by E.E. Maxey. For a decade, its cause eluded researchers until a team led by Dr. Howard T. Ricketts discovered ticks' role in transmitting Rocky Mountain spotted fever to humans. Eisen and Paddock note that after the bacterium now known as Rickettsia rickettsii was discovered, "18 additional tickborne human pathogens have been recognized; remarkably, more than 40% of these agents have been described since 1980."

Tickborne viral diseases include Bourbon virus disease, Colorado tick fever, Crimean-Congo hemorrhagic fever, Heartland virus disease, Kyasanur Forest disease, and Powassan encephalitis. Among the tickborne bacterial diseases are anaplasmosis, bartonellosis, ehrlichiosis, Lyme disease, Rocky Mountain spotted fever, and tickborne relapsing fever. Microscopic parasites transmitted by ticks cause the disease babesiosis. The global incidence of the long list of diseases that ticks transmit to humans, none of which were known when Marx created his illustration, continues to increase.

However, Wisconsin has a response plan…

America's Next Top Entomology Outreach Model

ENTOMOLOGY TODAY FEBRUARY 10, 2023

At education and outreach events, University of Wisconsin entomologists have recruited a pair of mannequins as life-size visual aids for people to practice checking for ticks. Meet Valerie (left) and Vanessa (right). (Photo by Xia Lee, Ph.D.)

By Tela Zembsch and Xia Lee, Ph.D.

One thing you can say about Vanessa and Valerie, the newest lab members of the Medical Entomology Laboratory at the University of Wisconsin–Madison, is that they catch everyone's eye when they enter a room. That's because Vanessa and Valerie are life-sized mannequins harboring blacklegged ticks (*Ixodes scapularis*). These ticks transmit the pathogen that causes an estimated 300,000 cases of Lyme disease in the United States annually.

The use of repellents like DEET and picaridin are highly recommended for anyone looking to enjoy the outdoors during tick season to prevent tick bites. But, even if you use repellents, it's also important to do a full body check for ticks after being outdoors.

However, a recent study by our University of Wisconsin colleagues found that roughly 50 percent of participants in the study could not correctly identify blacklegged ticks (https://doi.org/10.1093/jme/tjaa234) when shown an epoxy resin petri dish filled with ticks and other insects. Add in clothes, different skin tones, and other skin markings, and this identification can get even trickier. Training people to have the right "search image" is also challenging: Photographs or graphics often fail to convey the true size of the ticks, their different life stages, or the difficulty of spotting a tick on your own body.

Vanessa is one of two new members of the Medical Entomology Laboratory at the University of Wisconsin–Madison. Placed on the mannequin are 16 dead blacklegged ticks (*Ixodes scapularis*), allowing members of the public at outreach events to get realistic practice searching for ticks on their bodies. Shown here, circles represent tick locations on the front of the mannequin. Yellow, magenta, blue, and purple represent larvae, nymph, adult male, and adult female placements, respectively. (Photo by Xia Lee, Ph.D.)

Tela Zembsch

Xia Lee, Ph.D.

So, how could we safely simulate finding a tick on a person? We purchased Vanessa as a substitute for a human to assess tick acquisition sites on people but quickly realized that Vanessa could be used to educate people and increase awareness of ticks and tick-borne diseases.

At various extension and outreach events, Vanessa and Valerie allow people to train their eye and to practice how and where they would check for ticks on themselves and others. Dead ticks are glued to commonly reported attachment areas: the hairline, back of the knees, and under waistbands, to name a few. People can readily see what it looks like to have a tick tucked away in an armpit and how they're easier to spot on light-colored clothes compared to darker colors. They can also practice spotting nymphs, which are notoriously difficult to find compared to adult ticks because of their small size.

We are currently working with the Vectorborne Disease Program at the Wisconsin Department of Health Services along with colleagues at Michigan State University and the Michigan Department of Health and Human Services on ways to deploy and assess the effectiveness of this new educational and outreach tool. Although not published yet, our latest survey of the general public's ability to perform tick checks using Vanessa and Valerie showed that, on average, most participants were only able to find 37 percent of the ticks that were glued to Vanessa and Valerie when given five minutes to search for 16 blacklegged ticks (two larvae, 10 nymphs, two adult males, and two adult females), and not a single individual out of 97 participants found all the ticks. This clearly highlights the knowledge gap that we are hoping the mannequins can bridge.

Aside from effectively translating a public health message into a real-life scenario, the mannequins also tend to create quite a buzz at events. Beginning in the fall of 2022, we have deployed the mannequins at a variety of outreach events, from community science festivals to middle school field trips. They stand out among the sea of brochures and posters and create a talking point everywhere they go. Several people have approached our booth saying they heard about the mannequins and wanted to see them for themselves. We have become used to answering to the name "mannequin wranglers."

***Tela Zembsch, BS, MS**, is a research specialist working in the Paskewitz and Bartholomay labs at the University of Wisconsin–Madison and the Midwest Center of Excellence for Vector-Borne Disease. Email: zembsch@wisc.edu (mailto:zembsch@wisc.edu). **Xia Lee, Ph.D.**, is a public health entomologist in the Vectorborne, Respiratory, and Invasive Diseases Unit at the Wisconsin Department of Health Services and previously a researcher in the Paskewitz Lab in the Department of Entomology at the University of Wisconsin-Madison. Email: xlee1@wisc.edu (mailto:xlee1@wisc.edu).*

Horticultural Inspection Society
Eastern Chapter

2023 INTERSTATE INSPECTION MEETING

Niagara Crossings Hotel & Spa
100 Center Street
Lewiston, NY 14092

To Register scan the QR code

MONDAY OCTOBER 2ND

Time	Topic
	Travel
5:00 – 9:00	Registration / Reception / Hospitality / Discussion Time

TUESDAY OCTOBER 3RD

Time	Topic
7:00-8:00	**Breakfast** - provided
8:00-8:15	**Housekeeping, Welcome** *Chris Logue – SPRO NYS Department of Agriculture and Markets* *Deb Hayes – HIS Eastern Chapter President*
8:15 – 9:00	**Biology and Lifecycle of Boxtree Moth and Management** *Brian Eshenaur – NYS IPM Program Cornell University* *Dan Gilrein - Associate Agriculture Program Director* *Long Island Horticultural Research and Extension Center*
9:00 – 9:45	**Inspection and Regulatory Program of Boxtree Moth** *Wayne Prindle and Cody LaDuke – Horticultural Inspector* *NYS Department of Agriculture and Markets*
9:45-10:15	**Delimitation Surveys of Boxtree Moth** *Ted Lewis – USDA-APHIS-PPQ*
10:15-10:30	**BREAK**
10:30 – 11:30	**Boxtree Research Overview** *Gregory Simmons- USDA, APHIS, PPQ, S&T*
11:30-12:00	**Boxtree Moth Outreach** *Chris Logue – SPRO NYS Department of Agriculture and Markets*
12:00 – 1:00	LUNCH - PROVIDED
1:00 – 4:00	Field Visits to Boxtree Moth infestations
Dinner - on your own	

Optional Visit to Niagara Falls

WEDNSDAY, APRIL 6TH

Time	Topic
7:00-8:00	**Breakfast** - provided
8:00-8:45	**Roundtable discussion about potential impact of BTM** *Mike Sarnowski - HIS Vice President*
8:45-9:45	**Nursery Certification for SLF Updates**
9:45 -10:15	***Applying SANC to Boxtree Moth*** *Dana Rhodes – SPRO Pennsylvania Department of Agriculture*
10:15-10:30	**BREAK**
10:30-11:00	***Applying SANC to Boxtree Moth – cont.*** *Dana Rhodes – SPRO Pennsylvania Department of Agriculture*
11:00-11:45	**Front Line of Prevention of Agricultural Pests** *US Customs and Border – Presenter TBA*
11:45 -12:00	**Closing Remarks**
12:00-1:00	**Lunch – on your own**
1:00-3:00	Tour of Lewiston Port with CBP (Optional)

More about Kew Gardens

On the Kew Gardens grounds, five trees survive from the original establishment of the gardens area in 1762. Together they are known as the 'Five Lions' consisting of a ginkgo (Ginkgo biloba), a pagoda tree or scholar tree (Styphnolobium japonicum), an oriental plane tree (Platanus orientalis), a black locust or false acacia (Robinia pseudoacacia), and a Caucasian elm or zelkova (Zelkova carpinifolia).
The Treetop Walkway (Right) provides a tree canopy hike and impressive views from 60 feet above the ground.

The Temperate House was commissioned in 1859 and is world's largest surviving Victorian glass structure. Covering over 55,000 sq. ft., its footprint covers 1.2 acres and took 40 years to construct. Intended to accommodate Kew's expanding collection of hardy and temperate plants, it contains plants and trees from all the temperate regions of the world, some of which are extremely rare. A viewing gallery near the roof of the the central section allows visitors to view the collection from above. (Left)
Inside the Palm House lives the world's oldest potted plant, a huge Jurassic cycad (Encephalartos altensteinii) which originally came to Kew in 1775. Naturalist Frances Masson collected the specimen during one of Captain Cook's voyages around the Eastern Cape of South Africa.

The "Tree pincushion" (Leucospermum conocarpodendron) (Right) is also endemic to South Africa. This specimen was grown from seed collected in 1803, and germinated at Kew.

The End of the Row