

Bugged

MSU DEPARTMENT
OF ENTOMOLOGY

MICHIGAN STATE
UNIVERSITY



Ebony jewelwing by Bill Ravlin, MSU Entomology

FROM THE CHAIR

The times are indeed changing at MSU (Bob Dylan was here earlier this month). Dr. Samuel L. Stanley, Jr., became the 21st president of Michigan State University Aug. 1, 2019. There is an international search for a provost and many other new faces are appearing in high-level administrative positions all with a focus on increasing transparency and enhancing diversity, equity and inclusion (DEI).

This is a much-needed agenda given events of the past couple years. New topics beyond entomology are on the table including issues such as: mental health first aid; white men as full diversity partners; advancing a culture of respect, awareness and

compassion; protecting students and the campus community; building a safer, more responsive campus; and more (see <https://msu.edu/ourcommitment/>). The College of Agriculture and Natural Resources now has an associate DEI dean and the Department of Entomology has a standing committee to explore how we can be better organized to meet the many seen and unseen DEI challenges and opportunities.

As you know, I plan to retire at the end of 2020 and we are in the middle of a chairperson search with three candidates visiting campus over the next few weeks. It will be interesting to hear our candidates' thoughts on how the department can continue to grow and respond to emerging societal and community needs and their

impact on long-held cultural norms.

On the discipline side, we continue to be highly successful in extramural grant arenas including receiving awards from USDA, NSF, USAID, NIH and the Gates Foundation to name a few. This equates to new projects and new dollars that support research and extension programs and bring the best and brightest graduate students and postdoctoral research associates to MSU Entomology. Our long-standing relationship with Michigan agriculture is as strong as ever; our external stakeholders provide excellent support in many ways.

Last but not least, MSU Entomology alumni have increased their support for the department through gifts and endowments that have a strong focus on student support in the form of fellowships and travel grants. Thanks very much for all your support!

All the best and Happy Holidays!



Photo: Jefferson National Expansion Memorial, NPS

Congratulations

2019 recipients of the J. E. and Jean M. McPherson travel awards for the Entomological Society of America meeting in St. Louis!

Ben Savage
Zinan Wang
Celeste Wheeler
Ali Zahorec



Bill Ravlin,
Chairperson

RESEARCH & PROJECTS

Be Noble Photography for MSU Entomology



Cognato and Smith

[Sarah Smith](#) and [Anthony Cognato](#) with collaborators recently completed a three-year project to aid in Xyleborini identification. Their online tool walks users through identifying 34 genera and 316 species of xyleborines. “This resource is a game-changer for identifying these beetles. In the past, identifications would take years due to a lack of expertise and taxonomic resources. Exotic species can now be rapidly identified and action taken to control the population,” said Smith, project leader. View the website: [Southeast Asian Ambrosia Beetle ID](#).



Megan Andrews, MSU Entomology

[Larry Gut](#) and [Chris Adams](#) are using large drones to release sterile codling moths as a more sustainable and cost-effective way to disrupt their reproduction in apple orchards. Without effective control, losses can exceed 50% of the crop. Existing control methods include insecticides, mating disruption and viruses, all of which can be time consuming and costly. For 25 years, farmers in the Pacific Northwest have been releasing sterile moths to disrupt reproduction via insects bought from a local source and releasing them manually by driving up and down the orchard in an ATV. The researchers hope drones and finding a local source of sterile insects will make the technology affordable in Michigan.

Read more in MSUToday: [Use of drone technology releases sterile insect.](#)

A new book, “[Integrated management of diseases and insect pests of tree fruit](#),” edited by Xiangming Xu and Michelle Fountain includes several MSU Entomology faculty and alumni as authors in the fruit insect pest chapter:

- Cultural control of arthropod pests in temperate tree fruit: [Matt Grieshop, MSU](#).
- Biological control in integrated management of deciduous fruit insect pests: the use of semiochemicals: [Larry Gut](#), Christopher Adams and James Miller, MSU; and Peter McGhee and Donald Thomson, Pacific Biocontrol Corporation.

LANDSCAPE PATTERNS IMPACT NATURAL ENEMIES AND PEST SUPPRESSION

A new review article published in Trends in Ecology and Evolution summarizes recent research into ways landscape configuration



David Cappaert, Bugwood.org

affects natural enemies and pest suppression. Entomology’s **[Nate Haan](#), [Yajun Zhang](#) and [Doug Landis](#)** report the research sheds light on how natural enemies respond to large-scale

spatial patterns in agricultural landscapes made up of crop fields, forests and grasslands. Their configuration significantly impacts how many natural enemies show up in a field to find pests.

“One of the take-homes from our review is that natural enemies can be more abundant when agricultural landscapes are made up of smaller farm fields,” said Haan, a postdoctoral researcher and the study’s lead author. This research will help scientists predict how future changes to farming landscapes will affect insect diversity and pest suppression, a service that is estimated to save farmers billions of dollars every year. One expected change to landscapes in the Midwest will occur as farmers begin to grow more bioenergy crops. See: [Predicting landscape configuration effects on agricultural pest suppression](#).

PEOPLE

MSU WorkLife Office



Will Wetzel was named the 2019 recipient of the Outstanding Supervisor Award from MSU's [WorkLife Office](#). This award honors MSU supervisors who have consistently demonstrated worklife sensitivity and support of the professional and personal needs of the employees in their unit.

Wetzel was nominated by [Luke Zehr](#), manager of the Wetzel lab, who wrote in nomination materials, "He always treats people as complete humans and takes sincere interest not only in each lab member's professional progress toward goals on a weekly basis, but also encourages others in their various life struggles and accomplishments."

"Will cultivates a lab environment that celebrates holistic scientists," said Dan Turner, PhD student in the Wetzel lab.

Karim Maredia was awarded the [International Association of Plant Protection Scientists' \(IAPPS\) International Plant Protection Award of Distinction](#). The honor recognizes his many contributions toward the development of plant protection strategies and promotion of global food security. IAPPS also acknowledged his role in advancing plant protection sciences through his global training of legends of plant protection workers. Maredia received the award at the International Plant Protection Congress in Hyderabad, India, in November.

ENTOMOLOGY 2019 More than just posters and presentations



Sara Herrmann

For many, one of the best parts of attending the Entomological Society of America's annual meeting is reuniting with former lab colleagues and building new networks. Above, visiting scientists along with past and current members of Doug Landis' landscape ecology lab met for dinner in St. Louis.

Mallory Marienfeld was chosen by the Michigan Association of Extension Agents (MAEA) to be the 2019 recipient of their Outstanding Academic Specialist Award. Marienfeld is a communications specialist with the MSU Integrated Pest Management Program and leads editing of MSU Extension's plant agriculture news. MAEA noted her work keeps MSU Extension at the pinnacle of outreach technology and assists Extension educators in maintaining the highest content standards.



MSU Extension

Marienfeld



Karim Maredia at the awards ceremony in Hyderabad.



SAWBO

A trainer shows growers the SAWBO fall armyworm animated video on a mobile phone. Trainers report the technology has several benefits that enhance learning for growers.

Barry Pittendrigh and Julia Bello-Bravo are the developers of Scientific Animations Without Borders (SAWBO). The two have developed a global network that creates and deploys scientifically accurate animations that have been translated into more than 100 languages. In early 2019, FIPS-Africa tested the use of a new SAWBO animation “How to Identify and Scout for Fall Armyworm.” Trainers showed the animation using mobile phones to 2,513 farmers across Eastern and Western Kenya.

“We found it changed the game on how we could get farmers to understand the pest that was devastating their maize crops,” said one of the organizers. Previously, the trainers had relied on traditional training under a tree with visual aids and practical demonstration. This was effective, but there were two critical gaps in understanding how to distinguish fall armyworm from other caterpillars and how to scout effectively. Using the SAWBO animation, trainers could easily zoom in to see pests at different life stages, zoom out and take a bird’s-eye view showing how to select different parts of the field for scouting, and zoom forward in time to show the consequences of not controlling the pest.

FIPS-Africa reports for the first time their farmers understood the point of scouting and were “keen to run to the field and search practically for the caterpillars!” Even though the animation wasn’t developed specifically for Kenya, the way the characters look and spoke made it relatable to the farmers. This season, FIPS is scaling up training using the animation to target 10,000 farmers.

Take a look at this and other SAWBO animations online at bit.ly/sawbo-armyworm

Three department alums secure tenured faculty positions. **Sara Hermann** (PhD 2019, Landis) is assistant professor of arthropod ecology and trophic interactions in the Department of Entomology at the Pennsylvania State University. She teaches Integrated Pest Management and Applied Biostatistical Techniques in R. Her research lab focuses on how predatory insects influence behavior, physiology and ultimately the fitness of their insect prey.



MSU CANR

Hermann

Phil Fanning (postdoc 2019, Isaacs) is an assistant professor of agricultural entomology in the School of Biology and Ecology at the University of Maine. His research program’s focus is integrated management of pests and pollinators in agricultural systems, with emphasis on lowbush blueberry production. He will also teach Introductory Applied Entomology and a graduate course of his choosing.



Be Noble Photography for MSU Ento.

Fanning

Chris Adams (PhD 2018, Gut) is the new assistant professor of tree fruit entomology at Oregon State University working at the Mid-Columbia Agriculture Research and Extension Center. His primary focus will be integrated management of arthropod pests of fresh sweet cherry and pear systems with the goal of enhancing the production efficiencies and competitiveness of the Mid-Columbia growers.



Derrick L. Turner, MSU Photography

Adams

Emilie Cole (MS 2019, Quintanilla) has joined the MSU Applied Nematology lab as manager and research technician. She leads and assists with projects based on growers’ needs for effective, economical and sustainable nematode management across the majority of Michigan’s agronomic commodities.



Courtesy photo Quintanilla lab

Cole

Continued on page 7.

**MINALI
BHATT**
FEATURED
UNDERGRAD
STUDENT



Hometown: Farmington Hills, Michigan
Future plans: Research in plant-arthropod interactions.

Tell us about your experiences working at the USDA Forestry Lab on emerald ash borer. Working with emerald ash borer with Toby Petrice and [Leah Bauer](#) has been one of the best experiences of my career so far. The position gave me an amazing insight into the life of a researcher, especially during the field season. It was amazing to learn and interact with emerald ash borer, as it was something I had only previously read about.

What is the best selling point about an entomology major that you would like others to know?

Entomology is one of the oldest programs at MSU and has many unique courses that are taught by very experienced professors. It's nice that there's such a big community for entomology.

What or who inspired your interest in entomology?

My mom is an outdoorsy person and always brought me with her. She fostered a passion for nature in me.

What has been your best experience with entomology? The people in the Entomology Department have made my entomology experience the best because of how helpful and friendly everyone is!

Favorite way to spend your time outside of your studies? I love to backpack in my spare time and spend time in the outdoors in general.

What is your favorite insect? Because of my job, probably emerald ash borer.

What is your favorite thing about MSU? Probably the Spartan Sierra Club, a club I'm a part of that promotes environmental activism.

Do you have advice for anyone interested in an entomology major? There are a ton of resources available for you from the people who are in entomology as well as events going on in the department; make good use of them.



**GABRIELA
QUINLAN**
FEATURED
GRADUATE
STUDENT

Hometown: North Carolina
Previous education: BS at North Carolina State University
Major professor: Rufus Isaacs

What are you researching? I research landscape level effects of nutrition on honey bee health and productivity.

Why study entomology? Insects are the cornerstone of ecosystem functioning. If you care about anything—nature, conservation, sustainability, food security, and all the implications these issues have for humans and society, you need to care about insects.

What or who inspired your interest in entomology?

I was scared of insects growing up. I took an entomology course to get over my fear. As I started to learn about their crazy life histories, ecological niches and how much we still don't know, I was hooked.

What is your favorite activity or responsibility as part of your graduate studies? I like working with students and the public. My work on bees and flowers lends itself really well as an avenue for getting people excited about entomology, conservation and science.

What is your favorite thing about MSU? I am proud of MSU's legacy of Extension and its commitment to supporting local and global communities through meaningful science and involvement.

What is your favorite insect? I like longhorn bees because they are super charismatic with their long, elegant antennae, fuzzy, Go-Go-boot legs and kaleidoscope eyes. Also, a lot of them are specialists on fall asters, which are my favorite flowers.

What is your favorite activity/way to spend your time outside of your studies? I like traveling, spending time with friends and seeing live music.

Every once in a while a job will metamorphose into an opportunity to earn a doctoral degree. Dan Herms was directing pest management at Dow Gardens in Midland, Michigan, when leadership asked him to earn a PhD to lead a new research program at the gardens. Herms was agreeable but realized his only real option for study was at Michigan State University (MSU). After his studies were underway, Herms found MSU was a surprisingly good fit for him. In a recent interview, Herms shared his experiences.

When did you graduate from MSU?

I finished my PhD in 1991 with a specialization in ecology, evolutionary biology and behavior. As I was finishing my MS, Bill Mattson was on my short list for a PhD advisor but I did not know he was in East Lansing, Michigan, as he had recently transferred with the U.S. Forest Service from Minnesota. It was like a match made in heaven. Despite not having any choice where I would study, I couldn't have had a better PhD program. My doctoral research was on the effects of environmental factors on expression of trees' resistance to insects and tree defense.

Why did you choose entomology? My family had a greenhouse business in southern Ohio, so I earned a bachelor's degree in horticulture with a specialization in plant protection at Ohio State University (OSU). I took an entomology course from a wonderful teacher and decided to continue at OSU for a master's degree in entomology. My first job was at Dow Gardens, which led to studies at MSU, which worked out so well. MSU had a critical mass of faculty and students in the area of plant insect interactions with Bill Mattson, Guy Bush, Mark Scriber and Jim Miller. It was a very stimulating environment to conduct research. So many of my grad student colleagues went on to faculty positions.

What are your best memories at MSU?

One of the highlights were the informal plant/insect discussions and pizza dinners at Chairperson Mark Scriber's home. There, we had a chance to informally present our ideas and discuss papers with other students and faculty. Anyone who wanted to could come—students,

post-docs, faculty. Many of the students are faculty members now including Matt Ayres, Janice Bossart, Kelly Johnson, Joe Spencer and Rich Cowles. Working with Jim Miller to develop the course The Nature and Practice of Science was another highlight of my graduate program.

My greatest memory, of course, was meeting my wife Cathy who was a technician in Dave Smitley's lab and became Deb McCullough's first graduate student. Cathy is a lab director at OSU in weed science now.

Where did your career take you after MSU?

After Dow Gardens, I was a faculty member in the Department of Entomology at OSU and now I'm vice president for research and development at The Davey Tree Expert Company. I oversee the strategic goals of our research program, which currently include repurposing a golf course into a research and training facility for Davey Tree. I'm also leading research on climate change to project how it impacts our tree care operations and strategic plan. Davey Tree is the largest full-service tree care company in the world, a billion dollar company with more than 10,000 employees.

So it's been a really great experience for me after first working in the public garden non-profit sector at Dow Gardens, and then 21 years in academia at OSU and now to have the chance to influence a company with the size and impact of Davey Tree. I feel like I've had three separate careers.

Best advice for current students? Develop communication skills. Take advantage of every opportunity to give a presentation. Work on your writing skills. Mattson used to say read more and write less—I think he meant write with impact and make it count. Most papers are rarely cited, so really strive to make your work impactful.



MSU CULTURE CHANGE OUR COMMITMENT

The crisis at Michigan State University that came to the forefront with the crimes of Larry Nassar and others highlighted a critical need for culture change on our campus. You can read about university level efforts at: <https://msu.edu/ourcommitment/>



Respect

Advancing a Culture of Respect, Awareness, and Compassion



Prevent

Protecting Students and the Campus Community



Respond

Building a Safer, More Responsive Campus

Within the Department, we are finding a path forward, too. MSU Entomology is taking steps to ensure people know they are welcome and respected as part of our diverse community. This takes multiple forms of training and discussion. All employees participate in the required Relationship Violence and Sexual Misconduct Training. We also invited representatives from the two MSU units that provide mental health assistance to speak and answer questions about what services are available to students and employees and how we can appropriately respond to those who ask for help.

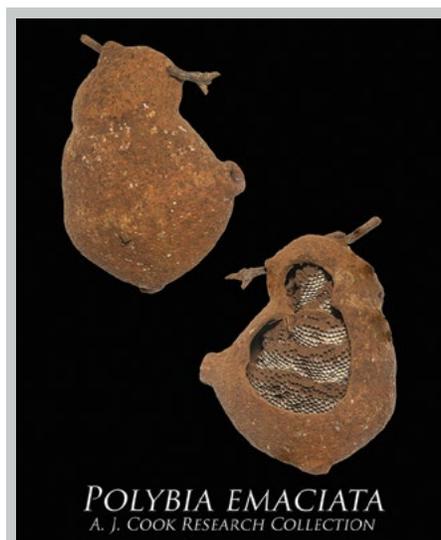
Our newly formed Diversity, Equity and Inclusion committee proposed updates to our bylaws to align with changes at university and college levels that reflect our heightened awareness of how people have been unintentionally excluded. The Department voted to amend the bylaws with these updates during our November meeting. Yes, this is just the start to changing culture. The good news is we have traction and interest in becoming better. Not only will we be a better community for each other, but also better at our work and discipline. — *Bill Ravlin.*

Continued Alumni News.

MSU Extension educator **Adam Ingrao's** (PhD 2018, Szendrei) work with veterans and beekeeping was featured in the video [Heroes to Hives: Helping veterans heal](#) by [MSUToday](#). MSU Extension recently announced the Dick L. Wendorf Endowment for Veteran Initiatives will support MSU Extension's veterans programs with priority for Heroes to Hives. An endowment gift like this creates a permanent fund with the university, which is invested to provide perpetual support for the program.

Andrew Myers (PhD 2019, Landis) is working in Marjorie Weber's lab as a research associate investigating the evolution and ecology of acarodomatia—plant structures that house beneficial

mites. In exchange for a safe home, the mites consume pests and pathogenic fungi on plant



Located by Gary Parsons, research collection manager, and photographed by Bill Ravlin.

leaves. Many woody plants across the world have independently evolved acarodomatia, and the lab is looking at the genetic, ecological, and evolutionary reasons why some plants have this mutualism and some don't.

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GOOD TRANSITIONS

Welcome, new 2019 graduate students

- **Brianna Alred**, MS student with Marianna Szucs
- **Colin Bailey**, MS student with Peter White
- **Amber Bosch**, MS student with John Wise
- **Ellie Camerato**, MS student with Anthony Cognato
- **Haosu Cong**, PhD student with Henry Chung
- **Elisabeth Darling**, MS student with Marisol Quintanilla
- **Lance Forsberg**, MS student with David Smitley
- **Ariana Hernandez**, MS student with Matt Grieshop, Larry Gut
- **Erica Hotchkiss**, MS student with David Smitley
- **Luisa Parrado Guevara**, MS student with Marisol Quintanilla
- **Omar Posos-Parra**, PhD student with David Mota-Sanchez and Barry Pittendrigh
- **Olivia Simaz**, MS student with Marianna Szucs
- **Jenna Walters**, MS student with Rufus Isaacs
- **Jennifer Zavalnitskaya**, MS student with Zsafia Szendrei

Congratulations, summer 2019 graduates

- **Emilie Cole**, MS student with Marisol Quintanilla
- **Patrick Engelken**, MS student with Deb McCullough
- **Erica Fischer**, MS student with Anthony Cognato
- **Andrew Myers**, PhD student with Doug Landis

