



Bugged

**MSU DEPARTMENT
OF ENTOMOLOGY**

**MICHIGAN STATE
UNIVERSITY**

Tricondyla by Bill Ravlin, MSU Entomology

FROM THE CHAIR

I'm pretty sure 2020 will go down as one of the more unique years. Aside from picking up mail and checking on things, I haven't worked out of my Natural Science office since March! I am presently located in my basement office with two of my bikes, camera equipment, coffee mugs, etc. Despite remote work for most, all of our programs have been up and running albeit in a COVID-19-modified way. Social distancing, masks, disinfectants, one person per vehicle and Zoom meetings are standard operating procedures.

All entomology courses were presented remotely except for "Immature Insects." Students came to campus and wore masks using workstations set up 6 feet apart with a one-way pattern of movement. Even that course was curtailed, as the week prior to

Thanksgiving stricter precautions required all classes to go remote. We made it to the end of the semester and like everyone, we're looking forward to getting some semblance of normalcy.

While Extension programs may have had less of a personal touch, they flourished with many experiencing significantly increased numbers of attendees. Most programming was recorded so people could view it at their convenience.

Our graduate students -- through GUESS -- are leading the Department in aggressively working to expand our numbers and importantly, to increase diversity and ensure equity. We will be reaching students from a wide array of experiences and nontraditional backgrounds through a new program titled, "Entomology Research and

Outreach Fellowship program" (EROF). Students, faculty and staff are fully committed to seeing this program succeed. We will recruit and engage pre- or early-baccalaureate students as fellows to engage with our world-class entomological research programs. Fellows will also experience committed and informed mentorship with Department members. Through EROF, we will support future entomologists from diverse backgrounds, thereby strengthening our department, the college, the university and the future of our science. More to come on this important initiative.

As you will read, 2020 was a great year for entomological recognition with many of our faculty, students and staff being recognized for their excellence. As we enter 2021, we offer you the fierce *Tricondyla* featured in the banner of this issue. This wingless tiger beetle lives in trees and searches for its prey in the canopy. We hope you'll find inspiration for renewed energy in this visual image of strength.

Undergraduate Andrew Jones and graduate student Jenna Walters discuss research into improving pollination in blueberries with professor Rufus Isaacs. The new EROF program will increase the diversity of students receiving these mentoring experiences.



Best wishes for the new year,



Bill Ravlin,
Chairperson

RESEARCH & PROJECTS

MSU's La Cosecha (a Spanish word for harvest) program has received new funding with a \$600,000 grant from the USDA's National Institute of Food and Agriculture (NIFA). The program provides training for first- and next-generation Latino/a farmers in Michigan. Assistant professor **David Mota-Sanchez** leads the project, which is part of NIFA's Beginning Farmer and Rancher Development Program. MSU researchers, outreach specialists and other partners have been working since 2018 to empower disadvantaged Latino/a farmers using previous NIFA funding. "We want to help Latino/a farmers improve the sustainability of their operations," Mota-Sanchez said.



Beginning farmer meeting.

"Equipping them with tools to ensure the long-term success of their farms will also bring the next generation into the fold."

Other co-leaders of La Cosecha are Entomology professor **John Wise**; Don Kuchnicki, Telamon Corporation; and Antonio Castro-Escobar, Michigan Department of Agriculture and Rural Development. Read more about La Cosecha: bit.ly/cosechaMSU

Been awhile since you were in the MSU Bug House?

TAKE A VIRTUAL TOUR



In a normal year at the Michigan State University Bug House, a school child would learn why cockroaches hiss, an MSU student would hold a tarantula and a parent would photograph their 4-year-old with a beetle. Many alumni fondly remember the Bug House, how visiting and volunteering helped them share and enjoy their passion for insects.

With the current pandemic conditions, the Bug House is closed to visitors. However, **Amanda Lorenz**, co-coordinator with **Gary Parsons**, has created a two-part video tour that lets viewers learn about and experience insects and other arthropods at the MSU Bug House any day of the week.

The first video focuses on the display room, showcasing hundreds of beautiful arthropod specimens from Michigan and around the world. The second video features the live room and introduces several of the residents including the blue beetles, hissing cockroaches and Goldie the tarantula.

The Bug House has more videos in the works that'll be available on our Bug House YouTube channel, as well as virtual events planned, including Darwin Discovery Day in February and the MSU Science Festival in April. Learn more about the Bug House by visiting: www.bughouse.msu.edu.

ADVANCING SCIENCE

DOUG LANDIS NAMED AAAS FELLOW



Doug Landis, a University Distinguished Professor, has been named a Fellow of the American Association for the Advancement

of Science (AAAS). Election as a AAAS Fellow is an honor bestowed upon AAAS members by their peers.

Landis was nominated for distinguished contributions to the field of ecology, particularly for uncovering the role of landscape structure in regulating insect biodiversity and ecosystem services. His research focuses on the ecology, conservation and management of insects in landscapes containing both natural and managed ecosystems.

The Landis lab's research themes include understanding the influence of landscape structure on insect ecology, design of sustainable landscapes to promote

ecosystem services, invasive species ecology and management, and conservation/restoration of rare species and communities. "I am very honored to be recognized by AAAS," Landis said. "I want to thank my many students, postdoctoral research associates, technicians and colleagues who have contributed to the lab's success over the years."

Landis is the author of more than 170 peer-reviewed journal articles, 25 book chapters and 58 MSU Extension bulletins. He has previously received the Recognition Award in Entomology from the Entomological Society of America for outstanding contributions to agriculture, an MSU Distinguished Faculty Award, and was named a Fellow of the Entomological Society of America.

Landis also serves on the leadership teams of the Kellogg Biological Station Long-Term Ecological Research Program and the Great Lakes Bioenergy Research Center.

OUTSTANDING IN HER FIELD ESA HONORS CHRIS DIFONZO

The Entomological Society of America (ESA) has named the winners of its 2020 professional and student awards, recognizing scientists, educators and students who have distinguished themselves through their contributions to entomology. Professor and field crop entomologist **Chris DiFonzo** was selected for the Excellence in Extension award. The recognition acknowledges her regional and national leadership in extension matters critical to growers, despite potential push-back from industry.

In one example, her work with western bean cutworm resistance to Bt was cited. When western bean cutworm damage to Cry1F Bt hybrids became widespread in the region, DiFonzo led a campaign to publicize the problem and ask industry to acknowledge field failures. She organized her extension colleagues in other states to publish an open letter to EPA which described the problem and asked seed companies to “acknowledge the reality of what is happening in the field.” She then developed a common set of extension materials for use in the region. Due to this organized effort, industry removed western bean cutworm control



from the Cry1F label, the first time an insect target was removed from a Bt trait.

DiFonzo is also the author of a popular annual publication, “The Handy Bt Trait Table.” Considered one of the most useful corn entomology extension publications in the country, it is a two-page summary of which traits are in each corn hybrid, what species they control and which species have displayed literature-documented resistance. It is an invaluable reference for entomologists, seed dealers and growers alike and has become the industry-standard reference.

In letters supporting her award application, colleagues noted she is an outstanding presenter, mentor and communicator whose insights are valued by her agricultural clientele, peers and students. She is known for sticking to her science-based facts to advocate for farmers in her region. Her appointment at MSU includes research, extension and teaching with specific crop responsibilities for insect pest problems in corn, soybean, dry beans, small grain, forages, sugarbeets and hemp. She also provides expertise in aphid biology and identification.

Professor Rufus Isaacs is the lead for a new four-year, \$2 million grant from the USDA’s Specialty Crop Research Initiative to improve blueberry pollination. The project team includes researchers from MSU, Oregon State University, the University of Florida and Washington State University. With research and outreach, the team aims to improve use of honey bees and wild bees by blueberry growers to produce optimal yields and profit. A board of stakeholders including growers, beekeepers and outreach specialists will help guide the project.

The U.S. highbush blueberry industry, valued at more than \$800 million, relies heavily on pollination for high yields of quality fruit. New cultivars and horticultural practices have increased the density of blueberry flowers per acre, but there has been little adjustment



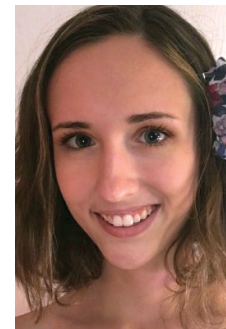
Rufus Isaacs, MSU Entomology

of recommendations on how to best manage pollination in these modern systems.

“There have also been changes in the bee world, with fewer feral honey bees and, in some regions, fewer wild bees,” Isaacs said. “This has increased grower dependence on renting managed honey bee hives to pollinate crops. Our project will lead to better recommendations on hive stocking strategies needed for adequate pollination of new cultivars.”

PEOPLE

Michigan’s fruit and vegetable industries have awarded two MSU Entomology undergraduate scholarships. **Osten Eschedor**, an entomology major, is a recipient of the Michigan Vegetable Council’s 2020 Vegetable Industry Scholarship and **Fletcher Robbins**, an entomology minor, was awarded a 2020 Fruit Industry Scholarship from the Michigan State Horticultural Society.



Eschedor



Robbins

FEATURED STUDENTS



BRENNA JEFFS

UNDERGRADUATE

Hometown: Bath, Michigan

Future study or career plans: I'd like to get a master's in entomology, and maybe include a specialization in ecology, evolution and behavior. Ultimately, my goal is to do some sort of community education and outreach about the importance of insects.

Tell us about Bug Club and serving as president. Bug Club is an undergraduate student organization for people who have an interest in arthropods or entomol-

ogy. For the most part it's students in the Department of Entomology, but anyone is welcome. As president, I was in charge of making sure we were registered with Student Life, communicating with our advisor **Amanda Lorenz**, helping the other board members to plan meetings and making sure those meetings happened. I really enjoyed being able to hold a space for the members to interact with each other and share their interest in bugs.

What's your favorite part about working in the Bug House? Some people come in feeling very hesitant about the creatures we have and aren't sure they want anything to do with them. I absolutely love when I can talk to them about the bugs and see them start to relax, and eventually agree to hold a cockroach or tarantula. It's amazing to be able to have that sort of impact on people.

What has been your best experience with entomology? In the Department, my favorite thing has been working at the Bug House. Best ever? Growing up, my parents and I always spent a couple weeks in June at the family cottage. One year on the day before we were supposed to come home, we were gathering up our swim gear and my mom found a monarch caterpillar on my dad's snorkeling mask. She moved it and brought the mask to the house. The next day when we went to load it in the car, we found the caterpillar had made its way back to the mask and made its chrysalis. We couldn't leave it behind but didn't know how to remove the chrysalis without damaging it, so we brought it home. We watched and waited for the butterfly to emerge and then released it into our backyard. It was so much fun and I learned a lot about monarchs and metamorphosis.

Advice for anyone interested in an entomology major? The Department is friendly—come talk to us! Learning the major insect orders before taking any entomology class is useful as well.

PEOPLE continued from page 3

The state's fruit and vegetable industries also awarded scholarships to two Entomology graduate students. **Luisa Parrado** is working on research with nematodes and potato pest management in the lab of assistant professor **Marisol Quintanilla**. **Ariana Hernandez** is earning a master's degree with professor **Larry Gut** and associate professor **Matt Grieshop** studying spotted wing *Drosophila*.

Amanda Lorenz, academic specialist and undergraduate advisor, is the 2020 recipient for the MSU College of Natural Science Ronald W. Wilson Endowed Teaching Award for Integrative Studies. **Gabe Ording**, director of the Center for Integrative Studies in General Science (CISGS), said Lorenz was selected for her voluntary partici-

pation and service on multiple CISGS committees, her consistent participation in Center curricular initiatives, but perhaps most importantly for her commitment to her students and graduate TAs in CISGS lab programs.

Max Helmberger, doctoral student with Matt Grieshop, was awarded the MSU College of Natural Science's Harlo Mervyn Mork Memorial Excellence in Teaching Award for Integrative Studies. CISGS director **Gabe Ording** said Helmberger goes beyond what is expected and is dedicated to enhancing the scientific literacy of undergraduate non-STEM majors. Helmberger created a game for use in class that helps students learn and appreciate a variety of ecological principles pertaining to food webs, population dynamics and ecosystem services.



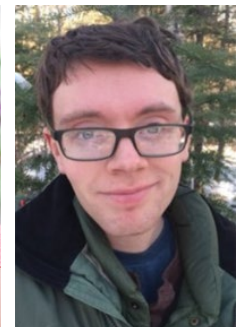
Parrado



Hernandez



Lorenz



Helmberger



HAOSU CONG

GRADUATE

Hometown: China, Shijiazhuang

Previous education: B.S. in plant protection, Northwest A&F University, China

Major professor: Henry Chung

What are you researching? I

am interested in insects' mating behavior, mate choice and underlying physiological and molecular mechanisms. I use *Drosophila* species, fruit flies, as a model system to investigate questions about mating. *Drosophila* have a wax layer

on their cuticle, working as contact pheromones to convey specific information for mating. Since I know the main composition of this wax layer is some hydrocarbons, which may contribute to sex recognition and species discrimination, I want to understand what kind of role these cuticular hydrocarbons would play in *Drosophila*'s mate choice across different species. I hope my study will give us a better understanding about the evolution of chemical communication and mating systems, especially when the chemicals are crucial for possible reproductive isolation.

What inspired your interest in entomology? I found insects are hidden in every stage of my life. When I was a young kid, I usually had cricket battles with my friends. My mom also bought me a grasshopper as a gift during summer, whose "song" is my childhood memory. When I went into education, that was my first time to get surprised in a science class because of the various type of mouthparts in insects. During Chinese lessons, I found insects are very popular in Chinese ancient articles and poems. When I truly started to learn fundamental entomology in college, I was impressed by the diversity of insects and entomology. The diversity in insect morphology, behavior and living environment reminds me of different adaptation stories in nature. The branches of entomological study are also very diverse, so I feel entomology is diversity itself.

What is your favorite thing about MSU? The people. As an international student, I can always feel supported in the MSU community because people here are nice and friendly. Everyone is trying hard to earn a life and be nice to each other. If there are ever problems like COVID-19 or some international student issues, the president, our college and department would stand out to protect our rights and benefits. MSU Spartans create a nice environment, a great study and research environment, making me feel less homesick and experience less culture shock.

Life as a postdoc

The *Bugged* newsletter is teaming up with Bug Talk podcasts to feature postdocs, highly valued partners in the Department who fill a wide range of responsibilities. In our first featured podcast, postdoc **Andrea Glassmire** talks to four other postdocs in the Entomology Department — **Eli Bloom**, **Kelsey Graham**, **Nate Haan** and **Benjamin Jarrett** — to share what life is like for a postdoc at Michigan State University. Their conversation spans many topics including how they found their current position, the importance of networking and balancing work and life. "We all took different strategies to get to where we are today. We are all successful because we are doing what we love, Entomology," says Glassmire. Listen to Bug Talk Episode 9: bit.ly/Talkpostdocs



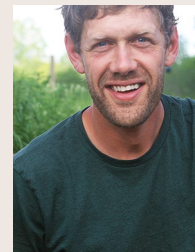
Glassmire



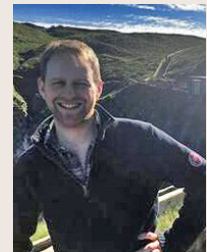
Bloom



Graham



Haan



Jarrett

ALUMNI PROFILES: MARIA DAVIS

Entomology alumna Maria Davis is provost of Olivet College in Olivet, Michigan. In this recent interview, she describes how teaching, field research and mentoring prepared her for her current work.

Why MSU, why entomology? I grew up in Michigan and participated in 4-H, so Michigan State University loomed large in my life. We did visits on campus, 4-H events and one of my favorites, Vet-A-Visit. For my bachelor's degree, I stayed closer to home. Part of my studies required an insect collection, which helped me realize I really liked insects and wanted to study entomology. Next, I headed to Bowling Green University and worked in a genetics lab that included rearing fruit flies and earned a masters in evolutionary biology. My last class was an entomology class and it reminded me that I really like insects!

Going forward, I knew I wanted to work on really practical problems like pest management and connected with **Dave Smitley**, a new MSU Entomology professor with a grant who was looking for graduate students. That got me to MSU studying with a supportive advisor. Eventually I also secured a teaching assistantship within the Lyman Briggs College. That's where I found my passion for teaching and the whole meta-discipline of teaching and learning. I had wonderful mentors at Lyman Briggs and continued teaching there as a visiting professor after graduation.

What led to joining the faculty at Olivet College? MSU Entomology's **Fred Stehr** had a tremendous impact on my career, connecting me with Lyman Briggs and introducing me to **Richard Fleming**, a former student of his who was a biology professor at Olivet. Dr. Fleming told me he was retiring soon and encouraged me to apply for his position when he did. I've been at Olivet now for 26 years, the past 10 years in senior leadership as provost, a new position created by our president when he arrived at Olivet. With that appointment, I became responsible for academic affairs, admissions, student services, student life and student success. I didn't teach for a couple of years after becoming provost, but at a small liberal arts college, we're all about the students

and I felt so separated from them without teaching. So I returned to teaching biostatistics, my favorite class of all time because we get to be scientists together, asking questions we don't already know the answer to, all while learning statistics. I taught this morning and it still feeds my soul! The time I spend with students keeps me energized.

Other work that influenced your career?

MSU Entomology's **Ed Grafius** was an amazing mentor for me, teaching me how to work with people and to do science. I worked summers for Ed in a sort of post-doc role with his celery IPM grant from the Campbell Soup company. I was a woman entomologist from campus going to celery farms in west Michigan and my mentors warned me I had to earn the respect of these long-time farmers who had generations of history with this crop.

The first year I scouted fields and told the farmers what was there. The second year, after scouting, they began to ask me what to do. That was such a rewarding and integrated experience: culturally, socially, based in agriculture and entomology. It was a wonderful way to hone skills for working with people, something I value for the kind of work I'm doing now, which is all people-focused.

You've got a real family connection to MSU. All of our blood runs green now! **Terry Davis**, my husband, finished his bachelors at MSU and was a technician for Dave Smitley. I earned my PhD at MSU and our daughter, Anna Davis, graduated this past May with her Doctor of Veterinary Medicine degree.

Advice for students? I tell my students that college is the key to doing something you love for the rest of your life, whatever that is. Find your passion and do *that*. My role is to help students, and my colleagues, envision the future and the change they want to see. And then help them make that a reality.



Maria Davis with daughter Anna Davis, a new MSU Veterinary Medicine graduate.

ALUMNI NEWS

Ashley Leach, an undergraduate alumna who worked in Rufus Isaac's lab, won an ESA John Henry Comstock Graduate Student award this fall. Leach received her PhD in entomology from Cornell University in 2019 under the direction of Brian Nault. She is currently a postdoc at Purdue University in Ian Kaplan's program, where she is researching interactions between pollinator and pest management practices.

Toby Petrice (PhD 2020, Bill Ravlin) has been promoted to be the new research entomologist for the U.S. Forest Service in Lansing, Michigan. Petrice has extensive experience conducting research on biology, ecology, detection and management of several other forest insects including pine shoot beetle and Asian longhorned beetle, and evaluating regulatory control of invasive species in solid wood packing material.

Kelsey Graham has completed her NIFA Postdoctoral Fellowship in the Isaacs Lab and has accepted a position as a research entomologist at the Pollinating Insects Research Initiative of the USDA-ARS in Logan, Utah. Her research program will focus on ecology and management of the alkali bee and other bees of relevance to crop production.

Bugged newsletter

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Multi-state expansion will bring Heroes to Hives to more veterans

Heroes to Hives (H2H) students participate in nine months of comprehensive beginning beekeeping training through a free, hybrid learning program that uses online lectures and hands-on educational experiences at six MSU Extension and education apiaries across Michigan.

The program was co-founded by Entomology alum **Adam Ingrao** and Lacey Ingrao and continues as part of MSU Extension. It has now expanded to be the largest agriculture training program for military service members in the U.S. Partnerships with University of Missouri Extension and the University of Central Missouri, University Nebraska-Lincoln and the University of Minnesota will offer students the chance to have hands-on training opportunities in these states and will serve as the basis for partnerships with other universities to launch hands-on H2H educational programming across the U.S. **Ana Heck** with the Michigan Pollinator Initiative is a partner with Adam Ingrao in the new multi-state effort.

Marissa Schuh (MS 2014, Doug Landis) is a new extension educator with University of Minnesota Extension. She leads a horticultural IPM program serving multiple audiences, including commercial produce growers, home gardeners, Extension Master Gardener volunteers and more.

Harry D. Niemczyk, Ohio State University professor emeritus of entomology, died Dec. 16, 2020, at his home. He was 91. Niemczyk received all three of his degrees from Michigan State and joined OSU in 1964.

John Hayden (MS 1985, then MSU employee until 1991) and **Nancy Hayden** (part-time employee for Gus Howitt, Fred Stehr and Ed Grafius) have published a book, "Farming on the Wild Side: The Evolution of a Regenerative



John and Nancy Hayden

Organic Farm and Nursery" (Chelsea Green Publishing 2019). The book highlights their pesticide free, no-till, perennial fruit farming adventures and pollinator sanctuary in northern Vermont. After 29 years on the farm, they recently moved to the coast of Maine and downsized to "Wild Side Gardens." Learn about their new garden experiences by searching in Facebook for @gardenonthewildside



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MICHIGAN STATE UNIVERSITY

Michigan State University
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East Lansing, MI 48824

MSU TINY PLANET

Most of us missed this jewel of a campus this fall. Can you locate the Natural Sciences building, Entomology's home base?

The answer is below the image. Thanks to photographer Ryan Bell (Instagram @bellphoto11) for sharing the image. He reports he is an MSU alum and die-hard fan!

#SpartanStrong #SpartanInsects

WCAG 2.0 AA



The Natural Sciences Building is located at the left, center edge.