

BUGGED

Winter 2023



Department of Entomology
MICHIGAN STATE UNIVERSITY



Photo Credit: Bill Ravlin

FROM THE CHAIR

Season of Change

Winter is a time of transition and reflection for us entomologists. Field season has truly ended, and students and faculty are taking stock of data collected. Grant reports are being written, papers are being planned, and results are being shared with grower communities at winter meetings. As fall semester concludes, students are transitioning to new classes and in some cases, graduating and moving on to entirely new adventures. In the Entomology Department office, I am reflecting on our 2023 accomplishments and looking forward to big plans for next year.

Recognizing Success

The faculty, staff, and students of the MSU Entomology Department continue to be highly productive. Last year, faculty generated over \$9.4 million in new grant funding, published 99 peer reviewed papers, and taught 98 student credit hours to more than 2000 students. In the following pages, you'll find information on two new significant USDA funded projects. Dr. Zsofia Szendrei will lead a new \$6 million USDA SCRI project to address critical insect management issues in potatoes, and Dr. David Mota-Sanchez will continue work in support of new Latino/a farmers with \$750,000 in support from USDA BFRDP. We also received over \$400,000 in gift and endowment funds, including the new Larry Gut Memorial Scholarship Endowment, which recognizes Dr. Larry Gut's passion for travel and supports students traveling to

international locations to attend meetings, build collaborations, or conduct research.

National Recognition

The MSU Entomology Department received significant national recognition at the 2023 Entomological Society of America Meeting. Dr. Rufus Isaacs was recognized with the Distinguished Achievement Award in Extension, Dr. Sarah Smith received the SysEB Thomas Say Award, three members from our department were part of the first-place debate team (Kayleigh Hauri, Natalie Constancio, and DeShae Dillard), and the MSU Entomology Games team (Laura Marmalejo, Chris Brown, Bill Smith, and Jordy Hernandez) placed third in their tournament.

Graduates

Congratulations to our graduates. We celebrate our undergraduate and graduate students completing their degrees this fall semester. Paige Alexander is graduating with an Entomology major from Lyman Briggs College, and our graduating grad students are: Elisabeth Darling (PhD, Quintanilla-Tornel Lab), Ali Zahoric (PhD, Landis Lab), Bethany Mikles (MS, Pechal Lab), Dalton Miner (MS, Wise Lab), and Charlotte Schuttler (MS, Burrack & Grieshop).

Elevating Excellence

We are preparing for the Excellence in Insect Science Symposium, scheduled for May 16 & 17, 2024. Our keynote speakers are highlighted inside, but I am also extremely

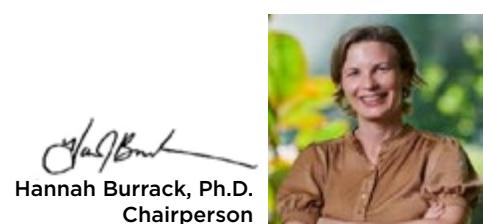
excited about the innovative and creative panelists who will be joining us. Panels under our three themes include Arthropods & Health and Insects as Food (One Health), Biodiversity and Agriculture and Plant Insect Interactions (Climate Resilience), and Increasing Diversity & Access and Science Communication & Outreach (STEM Education). You can learn more about these speakers and register here: <https://www.canr.msu.edu/ent/events/EIS-Symposium/index>

Remembering Our Community

Our Entomology community has experienced the loss of several members over the last year. Inside, you will find remembrances for these department alumni, staff, and graduates.

Thank you for being part of our team.

As we look to the end of the year and beyond, we continue to be thankful for the support our alumni and friends provide to our department. If you are interested in supporting Entomology at MSU as part of our 2023-2024 Academic Year support theme, Teamwork, you can find more information inside. Please also save the date and plan to join us April 25, 2024 to celebrate our Entomology Department award winners and recognize those who make our awards possible.



Hannah Burrack, Ph.D.
Chairperson



EXCELLENCE in **INSECT** SCIENCE SYMPOSIUM

Department of Entomology
MICHIGAN STATE UNIVERSITY

Advances and innovations in insect science can transform how we address the global grand challenges of Climate Resilience, One Health, and STEM Education.

As a leader in insect science, MSU Department of Entomology strives to connect researchers, industry leaders and policymakers to address these challenges through the Excellence in Insect Science initiative.

MAY 16-17, 2024

Kellogg Conference Center
East Lansing, Michigan
Registration Open Now!



Climate Resilience
Rufus Isaacs, Ph.D.
Michigan State University



STEM Education
Kristie Reddick, M.S. &
Jessica Honaker, M.S.
The Bug Chicks



One Health
Ben Beard, Ph.D.
U.S. Centers for Disease Control and Prevention



Closing Session
May Berenbaum, Ph.D.
University of Illinois Urbana-Champaign

Head of the Department of Entomology, Swanlund Chair of Entomology, and recipient of the National Medal of Science, Berenbaum will be the closing speaker to wrap up two days of learning, networking, and collaboration.



See the EIS 2-day schedule



Building A Buzz

A History of Beekeeping in the United States



A new exhibit exploring the relationship between beekeeping and bee culture in the United States is now on display at the Michigan State University Libraries Main Gallery through December 2023. The exhibit "Building a Buzz: A History of Beekeeping in the United States" stems from the recent donation of Roger A. Hoopingarner's bee book collection. The former MSU Department of Entomology Professor Emeritus was a world-renowned apiculture expert, and the donation of his materials has expanded the already impressive Bee Book Collection in the MSU Libraries Stephen O. Murray and Keelung Hong Special Collections.



Curated by Life Sciences Librarian Jodi Coalter, the exhibit showcases materials detailing the importance of beekeeping and bee culture to both MSU and the United States, including valuable contributions made by Hoopingarner and other MSU beekeepers. Coalter partnered with the Department of Entomology in the curation of this exhibit, specifically in showcasing the Hoopingarner collection materials.

Department of Entomology Chairperson Hannah Burrack shared her enthusiasm about the collaboration. "We are excited to

partner with MSU Libraries to highlight the history of beekeeping in the U.S.," Burrack said. "It's particularly meaningful that papers and books from the collection of emeritus faculty member Roger Hoopingarner have been utilized to tell this story."

The opening reception for the exhibit was held at the MSU Library on October 14, 2023. Don and Dottie Hoopingarner joined in for a celebration of his brother Roger's extraordinary contributions to the Michigan Beekeeping community. Veterans from the Heroes to Hives program as well as faculty and staff from the department were in attendance. There was also a honey tasting conducted by Emily Mayhew, Ph.D., from MSU Food Science and Human Nutrition and all the refreshments for the evening were made with honey. The evening was topped off with a panel discussion by MSU Faculty, Curator Jodi Coalter, and representatives of the Michigan Beekeeping Association.



"The Hive and the Honey Bee Revisited," (right) a 2014 annotated text that expands on another well-known book included in the exhibit, Lorenzo Langstroth's "Langstroth on the Hive and the Honey Bee" (center) (1853).

We Value Your Support

Just as insects create the biological foundation for ecosystems, you provide the basis of support that allows our entomological work to continue. To show our appreciation for your generous support this year, we will send the first of five commemorative coins, which features the



Honeybee (*Apis mellifera*), and represents the theme for this year - *Teamwork*.

Each year, when you submit your annual tax-deductible donation to the Entomology Department, we will send you the next coin in the series. Collect all five by committing your support over five years and we will send you a shadow box to display your collection.

Entomology is a gateway to a more inclusive scientific community. Not only

does your gift support the department, but you are changing lives in the process.

Become a part of **"Bugs Work!"**.

DONATE TODAY!



McCullough Appointed to FRAC



Deb McCullough, Ph.D.

Deb McCullough has been appointed to the Forest Research Advisory Council to the Secretary of Agriculture (FRAC) which is comprised of up to 20 members, appointed by the Secretary, drawn from federal, state, university, industry, and non-governmental organizations.

The FRAC focuses on developing and utilizing the Nation's forest resources, forestry schools, and forest industries. FRAC recommendations support states in carrying out forestry research at land-grant

colleges or agricultural experiment stations, along with other state-supported colleges and universities that offer graduate training in forestry. The FRAC also provides advice related to the Forest Service research program, as authorized by the Forest and Rangeland Renewable Resources Research Act of 1978.

FRAC meets 1-2 times a year then presents recommendations to the Secretary on regional and national planning for forestry-related research.

ESA National Award Winners

Distinguished Achievement Award in Extension

Rufus Isaacs, Ph.D.

SysEB Thomas Say Award

Sarah Smith, Ph.D.

Plant-Insect Ecosystem (P-IE) Integrated Pest Management Team Award

Sustainable SWD Management Team

MSU Members include:

Hannah Burrack, Ph.D.

Rufus Isaacs, Ph.D.

Phil Fanning, Ph.D. (former post-doc)

Larry Gut, Ph.D. (posthumously)

MSU-University of Florida-Purdue Debate Team

FIRST PLACE

MSU Members include:

Natalie Constancio

DeShae Dillard

Kayleigh Hauri

MSU Entomology Games Team

THIRD PLACE

Chris Brown

Jordy Herandez

Laura Marmolejo

Bill Smith



Safa Alzohairy, Ph.D.

WELCOME

SAFA ALZOHAIRY, PH.D.

PESTICIDE SAFETY EDUCATION PROGRAM COORDINATOR

BUG HOUSE LAUNCHES VIDEO SERIES



Funded by an NSF grant, The Bug House launched an engaging new video series. It consists of two videos per year for three years. Each video is led by an undergraduate student, who both writes

and stars in the video. The topics are driven by the students' own interests and unique perspectives.

The first two delve into [entomology careers](#) (*by Lauren Campbell*) and [conservation of native pollinators](#) (*by Taylor Horr*).



FEATURED UNDERGRAD **SABRINA HOBSON**

Hometown: Hanover, PA
Studies: Entomology major

FEATURED GRAD STUDENT **WILLIAM «BILL» SMITH**

Hometown: Cypress, CA
Previous education: BS in Agriculture Science, Oregon State University



What inspired your interest in entomology?

I think that interest has always been there, I remember in the summer our trees would fill up with the cicada molts and my sister and I would go around collecting buckets of them and sticking them to each other like a little game. My mom reminded me of that when I was heading out to Michigan and saw the opening for Bug House volunteers. Four years later and I'm on my way out of MSU, still volunteering for the Bug House but now majoring in entomology.

What has been your best experience with entomology?

The best experience I've had with entomology has been the people. Everyone I've met has been so kind and welcoming and I've instantly made so many friends. Did ten-year-old or even eighteen-year-old me think that I would be making some of the best memories knee-deep in a lake, dragging nets around and trying not to fall over in the mud? Oh absolutely not. But something about digging through decaying, wet logs with your pals is truly a blast.

What is your favorite activity/way to spend your time outside of your studies?

I love to do tours at the Bug House and seeing that innocence in kids. They aren't afraid of bugs because they have no reason to be. They'll gladly run up to their cowering parents and teachers with a cockroach in hand saying "look at what I have!" with the biggest grin on their face.

What is your favorite thing about MSU?

Since MSU is such a large school, there are so many resources at the disposal of students for no extra costs. As one of my stipulations for graduating, I'm completing two independent study projects and one of them is in collaboration with our Herbarium. The Herbarium is one of our wonderful resources that is open to students nearly all the time for academic, research, or just plain curiosity.

Do you have advice for anyone interested in an entomology major or minor?

One of the best ways I think to start is by collecting. Go outside, trap some insects in whatever you've got and pop 'em in the freezer with some information on date and location. A good chunk of my entomology classes require some sort of collection so even if you don't know what you're collecting for, it's a good way to get a feel for whether or not you enjoy it and what sorts of materials you might need.

What or who inspired your interest in entomology?

I originally started collecting insects as a form of stress relief for combat-related anxiety. My usual stress relief was sports and exercise, but several injuries left me unable to do those activities and collecting insects allowed me to still get outside, be active, and give me something to mentally focus on. Eventually, the hobby turned into a passion and I never looked back.

What is your favorite activity as part of your graduate studies?

My favorite class so far has been ENT 838 (Immature Insect Taxonomy). I enjoyed getting to go outside to explore and collect, then to challenge myself with their identification in the lab. I learned a lot and found the investigative nature of the course invigorating.

What are you researching?

I am currently working on reconstructing the phylogeny of a genus of day-flying moths in the family Sesiidae, using multiple genes.

What is your favorite thing about MSU?

I've particularly enjoyed working with the faculty. Anthony Cognato has been great at teaching me in the lab and is always responsive when I need help. The museum staff, Sarah Smith and Gary Parsons, have been great in their willingness to teach and mentor. Every member of the staff that I have met has been so willing to help answer questions and further teach and inspire me.

What is your favorite activity/way to spend your time outside of your studies? Our family tries to make the most out of every place we go to. We look for all the historical sites in a new location and try to visit as many of them as possible to learn about the history of our temporary home. Then when they go to bed, I try to find people to play board games and sports.

Any other thoughts about your experience in Entomology? I have been working towards this goal for 9 years. When I found out I could be an entomologist in my current career field (the military) I was ecstatic and started working towards it. My path here has been full of sacrifice and hardships for my family and me, but it has all been worth it. The future is bright.

Great Lakes Latino/a Farmers Program Receives \$750,000 NIFA Grant

David Mota-Sanchez, Ph.D., Director of LaCosecha, has secured a \$750,000 grant from the National Institute of Food and Agriculture's (NIFA) Beginning Farmer and Rancher Development Program (BFRDP). The funding will allow LaCosecha to continue its work supporting beginning Latino/a farmers throughout the great lakes area with a wide range of professional development activities and topics, such as managing capital, acquiring and managing land, and learning effective business and farming practices. This grant is part of a \$27.9 million investment across 45 organizations that teach and train beginning farmers and ranchers.

"This investment reflects USDA's commitment to helping new farmers and ranchers realize their dreams," said USDA Chief Scientist

and Under Secretary for Research, Education and Economics, Dr. Chavonda Jacobs-Young. "As the average age of our U.S. producers continues to increase, USDA is accelerating efforts to provide meaningful support to a rising cadre of farmers and ranchers so they can cultivate the skills needed to be productive, profitable and resilient."

According to USDA National Agricultural Statistics Service's Ag Census data, one-third of the United States' 3.4 million farmers are over the age of 65.

"Ensuring there will be a new generation of beginning farmers and ranchers - regardless of age or production choice - is essential to the continuation of agricultural production in the United States," said USDA NIFA Director Dr. Manjit

Misra. "Beginning farmers and ranchers have unique educational, training, technical assistance, and outreach needs. Access to capital, land, and knowledge that assists in ensuring profitability and sustainability are vital to farmers and ranchers in their first 10 years of operation."



David Mota-Sánchez, Ph.D.

IN REMEMBRANCE: COLLEAGUES AND FRIENDS



Guy Bush, Ph.D.

John A. Hannah Distinguished Professor of Evolutionary Biology Emeritus and a founder of MSU's Ecology, Evolution, and Behavior Program, died August 2, 2023 leaving a legacy of world-class scholarship in evolutionary biology and a tremendous impact to the university. He was 94.



Rachelle Gladding

A former staff member of the MSU Entomology Business Office, Rachelle was known by many for her positivity and optimism. She earned a B.S. in Human Resource Management from Davenport University. Rachelle's passions included traveling and MSU sports. She passed away on November 21, 2023. She was 33.



Ken Cummins, Ph.D.

Internationally known for his expertise in the structure and function of freshwater ecosystems, as well as a AAAS and Society for Freshwater (SFS) Fellow. He worked in the Department of Entomology, Department of Fisheries and Wildlife, and Kellogg Biological Station from 1968 to 1978. Ken passed away on June 8, 2023. He was 90.



Fred Hain, Ph.D.

Emeritus Professor of Entomology at North Carolina State University, Fred completed his PhD at MSU in 1972 under the direction of William Wallner and Dean Haynes. His work to sustain southeastern forest trees threatened by invasive species was recognized with the *Order of the Long Leaf Pine* in 2011. He passed away in July 2023.

Szendrei Leads Team to Study Pest-management Strategies for Potato Systems

A research team led by Zsofia Szendrei, a professor in MSU's Department of Entomology, has received a \$6 million grant from the U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) to study insect pest management strategies for U.S. potato production systems. The team will explore alternative management solutions in lieu of using neonicotinoids. This grant was initiated through discussions with growers and potato industry representatives who highlighted the need for a project like this in 2020.

Neonicotinoids are a class of insecticides that have been commonly used in agriculture since the 1990s. Neonicotinoid insecticides are commonly applied at planting. Plants absorb the chemicals through their roots and distribute them within themselves as they grow. As a result, insects feeding on the plants encounter the chemicals and die.

However, several factors have jeopardized the future use of these chemicals.

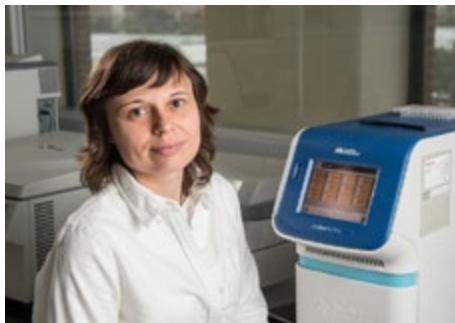
Insects can become resistant to neonicotinoids, having no effect on pests as they attack plants. Pollinators and other nonharmful organisms — even fish and amphibians — can be harmed by their toxicity as well.

Certain businesses and food retailers have stopped selling products that are grown using neonicotinoids in support of safeguarding pollinators and the environment.

In January 2020, the Environmental Protection Agency (EPA) proposed an interim decision that explores new limitations and safety measures for using the chemicals. While no final decision has been made, the EPA is still actively reviewing how to use neonicotinoid insecticides in ways that won't have unintended consequences for nontarget organisms.

Some states in the U.S. have restricted the use of neonicotinoids for recreational purposes. Globally, the European Union has banned them, and Canada has limited their use.

The USDA-funded project, part of the USDA Specialty Crop Research Initiative (SCRI), is a collaborative effort among institutions and agencies across the country to



Zsofia Szendrei, Ph.D.

evaluate alternative pest-control practices on potatoes.

Joining Szendrei from MSU are Dave Douches, a professor in MSU's Department of Plant, Soil and Microbial Sciences, and Steve Whittington, a field crops educator with MSU Extension.

The issues surrounding neonicotinoids have gradually progressed over time. While some information exists on alternative pest management options that exclude the use of neonicotinoids in potatoes, more extensive research into managing pests needs to be conducted. Szendrei said she's excited that the team is composed of researchers at the forefront of potato research in the U.S.

"Our team includes an outstanding group of experts who'll together make significant progress compared to some of the existing smaller efforts without substantial funding," Szendrei said.

The team is made up of entomolo-



gists, potato breeders, social scientists, economists and extension specialists who'll examine the shift away from neonicotinoids using multiple approaches, with outcomes strategically split into short-term and long-term goals.

In the short-term, entomologists will test insecticides that don't involve neonicotinoids. Some have already been registered and approved for use, while others are experimental. Szendrei said the hope is to create pest-management programs that are favorable to nontarget organisms and the environment.

"We'll test different tiers of insecticide programs that rank in how friendly they are to beneficial insects and how effectively they control key pests," Szendrei said. "It's like a menu of different pesticides that are put together into a season-long control program."

Working in multiple states will allow the team to target pest problems specific to particular potato-growing regions of the U.S.

Long-term goals include understanding how the shift away from neonicotinoids will impact the potato industry and what some of the barriers to adopting a system without the chemicals may be, as well as finding solutions for them.

Researchers will also create an interactive map growers can use to detect when crops are at risk of an upcoming pest attack. Similar maps have been created for apples in Washington. With funding from the USDA, the aim is to expand the map to potatoes and make it available to states outside of Washington — potentially the entire country. Szendrei said this type of technology will bolster the effectiveness of the insecticide programs she and other researchers will be developing because it'll give growers a better idea ahead of time for when and what type of insecticides to use.

Additionally, Douches will develop and test different varieties of potatoes that are resistant against insects.

"If you can breed plants that — to some extent — can withstand or resist attacks by pests, that's your first level of defense," Szendrei said.

The grant provides funding for at least three years, with the chance for additional USDA funds to be added at a later date. Szendrei said she's looking forward to continuing working with growers and providing them with information and strategies that emanate from the team's research.



Michigan State University
Natural Science Building
288 Farm Lane Room 243
East Lansing, MI 48824

Team Building

Fall 2023 Picnic

If there's one thing that entomologists like better than field season, it's gathering in the fall to share good food and stories of their summer research adventures. That's exactly what the Entomology department did on Friday, September 29, 2023 at the home of Chair Hannah Burrack. Everyone enjoyed the pumpkin decorating and insect collecting activities, as well as some tasty treats and tales from the field. What a way to celebrate the season!

