Boiler Buzz

IN THIS ISSUE...

Entomology alumnus combines best of business, education and public service

NANCY ALEXANDER, PURDUE AGCOMM https://ag.purdue.edu/news/2022/10/entomology-alumnus-combines-best-of-business-education-and-public-service.html

Like many students of his era, David Mueller (BS '75, Entomology) was influenced by Rachel Carson's 1962 book, Silent Spring. "She was one of my heroes," Mueller says. While he didn't agree with everything she wrote, Mueller notes that Carson's work triggered not only the environmental movement but also chemical companies' support of university research.

"It had a great impact for Purdue in funding and growth of the staff," Mueller says. "Dr. John Osmun (head of entomology at Purdue from 1956 to 1972 and one of Mueller's mentors) said there should be a statue of her in front of every entomology department."

In tandem with his Purdue mentors, the book also influenced Mueller's career path and advocacy for the use of pheromones in pest management. Board certified in urban and industrial entomology since 1982, Mueller is a longtime member of the Entomological Society of America and 2019 inductee into the Pest Management Professional Hall of Fame. Purdue honors include the 2001 John V. Osmun Alumni Professional Achievement Award in Entomology and the Distinguished Agriculture Alumni Award in 1999.

He first read about pheromones in an entomology department newsletter. "I understood there were communication processes called pheromones, but I didn't know I would spend 40 years working with them," he says.

With Osmun's support, Mueller landed a job with a California fumigation company as its Midwest safety trainer. He observed that the Indian meal moth, a common store product pest, was attracted to a sticky fly trap.

He took his finding to David Matthew, Purdue professor of entomology, who immediately handed Mueller a pheromone trap. "It was like magic,"

Dave, Tom and Pete Mueller at the 2022 Purdue Pest Management Conference.

Mueller recalls. "I couldn't believe this trapping system could do something like that." But back in California, his boss rejected its use: "He said, 'No, we're not in the pheromone business.'"

Mueller's response: "'Well, I am,' and I decided to start my own business."

In 1981 he founded Fumigation Service & Supply, Inc. and in 1982, Insects Limited, Inc. The two businesses became the foundation for Mueller's lifelong efforts to provide successful pest management and prevention with fewer chemicals.

Slow and steady won the race for Mueller's companies. "We're an overnight success that took 40 years to build," he says. "We weren't in the business of taking big risks. I'm not a risk-taker, even though I'm an entrepreneur."

Like his competitors, Mueller's businesses relied on products containing methyl bromide, a chemical in use since the 1930s and the go-to standard worldwide for killing pathogens, nematodes and insects. It also was among nearly 100 manmade chemicals named as ozone-depleting substances in the 1987 Montreal Protocol, the landmark environmental agreement that remains the only United Nations Treaty ratified by all 198 UN members.

Mueller was in the audience at a conference in the early 1990s when a NASA scientist offered compelling evidence that the chemical was harming the ozone layer, impacting both humans and plants. At the time, Mueller depended on its use for more than half of his business.

Phasing out methyl bromide would eventually reduce the number of fumigants on the market from more than 30 to two. "But most people were questioning the science and denying the problem," Mueller says. "A lot of people were protecting their jobs."

Mueller went home and connected with Purdue researchers to explore alternatives, including pheromones. Their collaboration led the UN to invite Mueller to join a global training team to help phase out the use of methyl bromide and introduce other pest management technologies and techniques.

Grzesiek Buczkowski, Rick Cooper, Mark VanderWerp and Dave Mueller take advantage of unseasonably warm January weather to visit The Entomologist sculpture during the 2023 Purdue Pest Management Conference.

Mueller's UN work took him to more than 40 developing countries in Africa, Asia, South America and Europe. His absences required sacrifices by his family and employees, "but we saw this as something important," Mueller says.

"Dave's career is impressive. Having built two Indiana businesses, he traveled the world to help play a role in saving the ozone layer," says Barry Pittendrigh, John V. Osmun Endowed Chair and director of the Center for Urban and Industrial Pest Management.

Mueller also helped convene a Fumigants and Pheromones Conference that since 1993 has taken the conversation about better pest management with reduced environmental impact around the world. The 14th conference will be held at Purdue — the first time ever — in June 2023 around a theme of Innovation Technology. The agenda will include insights into research in entomology, food science, and agricultural and biological engineering.

The conferences have reflected a shift in his industry over the past four decades, Mueller says. "Let's go back to Rachel Carson, who said man thought they were conquerors of nature. I believe that over time, that attitude has changed." The result, he adds, has been industry-wide acceptance of new technologies and approaches to monitoring and controlling insect pests.

Mueller retired four years ago, turning the fumigation company over to his son Pete, a Purdue alumnus, and the pheromone side of the business over to his son Tom. Daughter Francie, an entrepreneur, handles web and marketing functions. "I'm very proud of all three of them," Mueller says. "I get to sit back and watch them grow the businesses."

He never misses a chance to let smart, persistent Purdue entomology students know a job is waiting for them. Between retirement travel, fly fishing with his entomology buddies and carving duck decoys, Mueller continues to support Purdue entomology research and education.

In 2017, Mueller was among the lead donors who helped place the bronze sculpture "The Entomologist" outside the Agriculture Administration Building.

The sculpture portrays three individuals at the age they would have been in 1924, when entomology was emerging as a science: J.J. Davis, department head of entomology at Purdue from 1920 to 1956; his successor Osmun, as a boy; and, handing the boy a tiger swallowtail, Rachel Carson.

From the Head Bug
Purdue Entomology Alumni Newsletter, Spring 2023

May is a month of celebration, transition, and new beginnings. It feels like yesterday our campus was blanketed in snow and classes were getting underway, yet here we are with commencement behind us, and our 2023 graduates headed out to make their mark on the world!

What an exciting and rewarding experience it has been to work with the incredible faculty, staff, and students of Purdue Entomology to serve the land grant mission this past year. Also gratifying has been the opportunity to deepen our engagement with our alumni body. It's important to emphasize the value we place on strong and enduring relationships with the Purdue Entomology alumni of today and tomorrow. In that spirit, I am pleased to share some of the many alumni-focused activities we have embraced this spring semester.

Purdue Entomology celebrated the inaugural Virginia Ferris Memorial Endowment Graduate Student Research Award in March. The award honors the late Virginia Ferris, who was one of the first female faculty in the College of Agriculture. Dr. Ferris was a pioneer in nematology, distinguished academician and valued member of the department. The award recognizes a female graduate student considered an emerging leader in their field. We were delighted to welcome Susan and Terry Edgell who joined us to recognize the 2023 awardee, Hannah Kernen. Our guest speaker was alumnus Hongmei Li-byarlay, Associate Professor, Central State University, who shared insights to her leading work on the behavioral genetics of honeybees and fond memories of Virginia!

Left to right: Hannah Kernen, graduate student awardee, Susan Edgell, guest and daughter of Virginia Ferris, Hongmei Li-Byarlay, PhD '07 and guest speaker, Cate Hill, Professor and Head

The department hosted alumni Jody Green, Associate Extension Educator, University of Nebraska, Jonathan Larson, Assistant Professor, University of Kentucky and Mike Skvarla, Assistant Research Professor, Pennsylvania State University in April for a seminar on their collaborative efforts in science communications.

Left to right: alumni Jonathan Larson (BS '09), Mike Skvarla (BS '08) and Jody Green (MS '04, PhD '08).

Jody, Johnathon and Mike co-host the widely recognized Arthro-POD, a podcast series that offers ententaining and informative entomological content. May we recommend tuning in!

The 32nd Bug Bowl was coordinated by an exceptional team of faculty, staff and student volunteers and yet again, proved a fun family event for thousands of campus visitors. Entomology drew large crowds to the interactive Bug Zoo, K-12 Art Contest, exhibits on stored product pests, invasive species, pollinators and disease vectors, and crafts involving insect origami and painting with maggots. Dr. Tom Turpin obliged us with the return of the famous "Cockroach Colosseum". When I saw Tom holding court on the lawns outside Smith Hall in his bowtie and hat, surrounded by throngs of enthralled children and adults, it was clear - Bug Bowl was back!

Tom Turpin, Professor Emeritus hosting the Cockroach Colosseum, Bug Bowl 2023

The 14th Stored Products Protection Conference, organized by Insects Limited, takes place June 12-14 at the Beck Agricultural Center. Purdue Entomology is delighted to work with the Insects Limited team and alumnus Dave Mueller to host this conference centered on "Sharing through Education". The meeting brings to-

gether participants from across the globe to learn about technological advancements in the stored products protection space. Attendees will hear talks from research and industry leaders, and have an opportunity to tour departments, meet faculty and students, and learn about work at Purdue. For more information and to register, please see link on page 15.

The department is pleased to announce that Emily Justus (BS 2015) will commence as Outreach Coordinator, fall 2023. Emily brings considerable experience in outreach and engagement, a commitment to work with diverse and underserved communities, and background in the development and assessment of programming aligned with national science standards. We look forward to working with Emily to shape the future of Purdue Entomology outreach!

The department congratulates Laramy Enders, Aaron Smith and Dieudonne Baributsa who were notified of their faculty promotions in April! Brock Harpur received the Foundation for Food and Agriculture (FFAR) New Innovator Award for his work to advance bee breeding and pollination services for U.S. agriculture. Dieudonne Baributsa was appointed Faculty Engagement Scholar, Office of Engagement, and Christian Krupke, Dean's Fellow in Resilient Agriculture. Krystal Hans was certified by the American Board of Forensic Entomology (ABFE), becoming one of 23 ABFE certified entomologists in North America! Krispn Given received the prestigious Roger A. Morse Outstanding Teaching/Extension Service/Regulatory Award, supported by the Anita Weiss Foundation, from the Eastern Apicultural Society of North America. Lastly congratulations again to our 2023 graduates, our outstanding freshman, sophomore, junior and senior and all our student awardees. We could not be more proud of you!

Clockwise from left: Dieudonne Baributsa, Aaron Smith and Laramy Enders receiving their promotions letters from Interim Dean, Kenneth Foster

Sadly, we will farewell Dr. Tim Gibb who is retiring at the end June. Our thanks to Tim for his tireless work in insect diagnostics and extension, and his excellence in PK-12 and 4H programming. We will be busy over the summer to identify a Professor of Practice, Insect Diagnostics and Extension, and when we return in the fall, will commence a search for the next O. Wayne Rollins/Orkin Chair in Urban Entomology. Please stay tuned!

Purdue Entomology would like to acknowledge the many alumni and donors whose generous gifts facilitate student and faculty success. I am excited to announce gifts to establish the Jody Green Scholarship in Entomology, the Tom and Chris Turpin Outreach Endowment, and an Endowed Chair in Honey Bee research. Scholarships and gifts truly make a difference in the lives of young entomologists and enable delivery of excellence across the Purdue Entomology mission.

No doubt you are aware of recent exciting news that the College of Agriculture is ranked # 3 in the U.S. and # 5 globally (QS World University Rankings 2023). It's a shared success and it is inspiring. The 2023-2024 academic year will see renewed efforts towards discovery, learning and engagement initiatives to ensure the department remains one of the nation's leading Entomology programs. Our alumni are essential to success and are invited to join us for this journey! Please visit us for the John V. Osmun Alumni Achievement Award ceremony in September (consider nominating a colleague!) and the Purdue mixer at ESA in November, stop by the main office or drop me an email (hillca@purdue.edu). Whether you graduated this year or some years ago, we want to connect with you!

To all members of the Purdue Entomology community, here's wishing you a relaxing and enjoyable summer and see you in the Fall!

Catherine A. Hill, Ph.D.
Professor & Head

Resilient agriculture gets a fresh look

NANCY ALEXANDER, PURDUE AGCOMM

https://ag.purdue.edu/news/2023/04/resilient-agriculture-gets-a-fresh-look.html?fbclid=IwAR3slbJ3inA-

Harnessing the power of soil and plants to increase agriculture's resilience is more important than ever, says Christian Krupke, professor of entomology. "We're not making any more land," he explains. "We have to make do with what we have, and that means looking at every opportunity to ensure that every acre is productive for the long-term."

Farmers — many from families that have been farming for generations — are aware of this, he says. But the same growers are asking what terms like "resilient," "sustainable" and "regenerative" mean in their operations today and for the generations that will follow.

"Currently, if you're a farmer and you say you want to get involved in resilient agriculture and implement some novel approaches, it's very difficult to find out clearly and definitively what your next steps should be, and what the relative pros and cons of different approaches may be," Krupke says.

In August 2022 he was named the Dean's Fellow for Resilient Agriculture to provide research leadership aimed at making these steps clearer. He leads a multiyear initiative that brings together research faculty from different disciplines in the College of Agriculture. Their goal is twofold: to conduct long-term research that helps farmers make decisions based on reliable, field-scale data; and to demonstrate novel practices that bolster the durability of the entire agricultural system.

"Some of the practices either are not being tested in a rigorous and systematic way, or the results are not being clearly communicated to growers," Krupke says. "This is an area where Purdue research and Extension can have real impact. We are already working in these areas, but we can do a better job of working together and getting the information out."

For example, many farmers apply insecticides according to guidelines that may not be applicable, Krupke says. "Many of our action thresholds for pests were generated decades ago. But our hybrids and varieties are far different — they're much more competitive, durable and it's harder for pests to get a foothold. Our pest complex has also changed, and in many cases, pests are less abundant. "

Soil health also has become a priority and the College of Agriculture has invested in several faculty with expertise in this area. Actions to prevent erosion, sequester carbon and add organic matter make the soil a reservoir for plants to draw from to resist pests and environmental setbacks. "Many of these aren't new ideas, but we've drifted away from them in favor of quick, easy solutions that may have made sense at the time, often including additional inputs," Krupke says.

Working on dedicated land owned by the university, Purdue College of Agriculture researchers will describe what resilient agriculture looks like in practice using a systems approach, by combining their collective expertise to deploy tactics chosen in consultation with commodity producers and other stakeholders. Fields incorporating these techniques will occur at field scale over several years to compare traditional and resilient farming practices, and the approaches will change as new information comes to light.

"Our challenge is to do this effectively, consistently and profitably," he adds. "This group can address that challenge with our collective expertise. A long-term approach, including dedicated land to test our approaches, is necessary for current and future researchers to meet the challenge."

Baseline data collection in this inaugural year will occur on 102 acres at Purdue's Agronomy Center for Research and Education and on additional acreage at Purdue Agricultural Centers. It will include traditional crops like corn and soybeans, and horticultural crops that are economically important in the state. The overall study design will compare paired, adjacent fields: one farmed using common, traditional methods; and the other with techniques that researchers, farmers and conservation groups collectively characterize as resilient. Researchers will measure such parameters as soil health, soil carbon, beneficial and pest insects, pathogens, weeds and yields per acre over time.

The study will show if practices used as a matter of course from year to year are effective — a tie to Krupke's research and extension programs in Indiana and regionally for nearly 20 years. For example, some of his work has focused on the benefits and costs of neonicotinoid use on corn and soybeans, as well as research focused on how the efficacy of highly successful and popular Bt corn hybrids can be preserved.

Now Krupke hopes results from this wider study, as well as its interdisciplinary approach to "being more judicious about everything we do," will bring clarity and guidance for growers and other stakeholders who want to take next steps in resilient agriculture.

Dr. Krupke examines an alfalfa plot for weevil infestation. Photo: Tom Campbell

Award might help professor solve a mighty big mite problem

CHAD CAMPBELL

https://ag.purdue.edu/news/2023/04/award-might-help-professor-solve-a-mighty-big-mite-problem.html

Honey bees and mites may be small, but they leave a large footprint.

“Between five and eight percent of global crops by weight are pollinated by honeybees,” explained assistant professor of entomology Brock Harpur. “In the United States, Honey bees contribute around 18 billion dollars a year to the economy through pollination and honey production.”

While beekeeping can be economically and agriculturally rewarding, beekeepers must work hard to maintain their bees’ population.

“U.S. beekeepers lose about 30 percent of their colonies annually. And that can shoot up to 60 percent in a given year,” noted Harpur. “Most of the losses are a result of pests, the most common being the Varroa mite.”

Bee breeders have incorporated resistances to parasites and pathogens using largely unchanged methods for over a century, but Harpur thinks the time is right for innovation.

“In 2012, a single honeybee genome sequence cost around $10,000,” he recalled. “Today we can do it for about $50.”

With these cost-prohibitive tools now more accessible, Harpur hopes to capitalize on his recently earned award to work with his stakeholders to incorporate genomics into their practice.

Last week, Harpur was named one of 10 recipients of the 2022 New Innovator in Food & Agriculture Research Award. The Foundation for Food & Agriculture Research (FFAR) annually selects early-career scientists to receive the investment.

Dr. Harpur demonstrates to high school students how to care for bee hives.

To qualify for the award, faculty members must be in the first three years of their scientific career and conduct research that aligns with FFAR’s food and agricultural challenge areas.

“Bees and other pollinators are critical to the productivity of agricultural systems,” explained Bernie Engel, senior associate dean of research and graduate education. “Dr. Harpur’s research using cutting-edge science to help ensure healthy and productive bee populations is an important contribution to the sustainability of agricultural systems.”

“This will be among the first times genomics has been used for bee breeding efforts in the United States,” noted Harpur. “We pitched this for Varroa mite and disease resistance but the principles and practices we are developing can be used anywhere.

“I would not have received this award if I did not have our large stakeholder group behind me,” said Harpur, who noted stakeholders would also be important to the success of the database. “We need to form partnerships to help them take up the technology. Purdue, being a land-grant university, has that ability.”

"We are very excited by the work that Brock is leading at Purdue,” added Catherine Hill, professor of entomology and department head. “The FFAR award will help him to deliver leading-edge solutions to strengthen and better protect U.S. pollinator services and agricultural production."

Visionaries: Students help researcher keep forensics lab running

SKYLAR KREPTON

https://ag.purdue.edu/news/department/agricultural-sciences-education-and-communication/2023/05/students-help-researcher-keep-forensics.html

Crime shows excel in dramatizing and glamorizing difficult cases, giving viewers the idea that criminal case investigations can be started and solved within the hour. But that’s not the reality according to real-life forensic scientist Krystal Hans, assistant professor of entomology/forensics.

Students come to her classes ready to solve crimes, Hans explained, only to realize it is not as easy as Hollywood makes it seem. Hans said she is thankful that these shows can interest students in a possible career, but once people realize it is not all black-and-white, they are often disappointed.

A major problem with the preconceptions from TV is the process of being part of a jury, Hans said. In the shows, DNA and fingerprints are everywhere, and you know almost immediately who is guilty; however, this is not typically the case, Hans said. In trials, the narrative is not as clear as jurors expect, making the experience more of a letdown.

True crime shows have, over time, put this certain expectation on the field of forensic science that is not all true. It takes time to solve a case, as most times the evidence is not just handed to you, and that is where people like Hans come in.

Hans works in forensic entomology, meaning she uses the insects at the scene to help offer more information about the victim and possibly give officials more clues about what happened. She also can offer some sort of closure to the families and loved ones of victims of cases that seemed to have gone cold.

Watch on YouTube.

Researchers Aim to Understand Threats to Endangered Least Bell's Vireo

WENDY MAYER

https://ag.purdue.edu/news/department/forestry-and-natural-resources/2023/01/researchers-aim-to-understand-endangered-least-bell-vireos.html

The Least Bell's Vireo (LBVI, Vireo bellii pusillus), which has received federal protection under the Endangered Species Act (ESA) since it was listed as federally endangered in 1986, nests in narrow riparian areas surrounded by the heavily urbanized matrix of Southern California. Stressors - from nest parasitism by brown-headed cowbirds to habitat degradation via drought to invasion of exotic plants and insects - threaten this species and despite the accumulation of data, much is yet to be understood to address the challenges of developing management strategies for recovery and removal from federal ESA protection.

Pat Zollner, professor of wildlife science in the Purdue Department of Forestry and Natural Resources, is the principal investigator on a research project looking at "Alternative Management Strategies to Address Multiple Interacting Stressors on Least Bell Vireo Populations," thanks to $1.6 million in funding from the U.S. Army Engineer Research and Development Center (ERDC). This project is part of a larger grant of $2.6 million from the Strategic Environmental Research and Development Program (SERDP) to Dr. Rich Fischer of ERDC.

Map of Least Bell's Vireo range in CaliforniaThe U.S. Army Corps of Engineers and U.S. Department of Defense are heavily invested in species protection and recovery due to the fact that several of the largest remaining patches of LBVI nesting habitat occur on military installations and in the USACE's flood control basins.

Least Bell's Vireos are among the most costly endangered species to the DOD with expenditures exceeding $2 million annually. Cost-effective strategies for managing interacting stressors to the species are needed to achieve species recovery and sustain populations.

"This project is tailor-made for being addressed through the use of individual/agent-based modeling," Zollner said. "It is a very complex system where a lot of data has been collected about patterns, but synthesis of all of that information to understand the implications of different scenarios for outcomes for this species of concern are unclear. The model we develop for this research will integrate insights from a suite of sub-models each focused on individual stressors (e.g. invasive plants, invasive insects, hydrology changing due to climate change, etc.) to help us understand the mechanisms underlying the behavior of this system and ultimately identify pathways for recovering this endangered species."

Least Bell's Vireo, Photo credit: Judi Hwa, Macaulay Library.

Zollner, a specialist in developing models which identify the implications of interactions of behavioral and landscape ecology, will be joined in the research by Dakotah Shaffer, a PhD student in Zollner's lab, and a yet-to-be hired postdoctoral researcher. Dr. Jeffrey Holland, a specialist in beetle spatial ecology, and PhD student Rennie McIntosh from the Purdue Department of Entomology will provide expertise on the invasive beetle populations that threaten vegetation patches that provide LBVI habitat. This research project will be conducted in conjunction with the US Army ERDC, Conservation Science and Data Visualization LLC, and Rohde Environmental Consulting, LLC.

Researchers are developing an agent-based model (ABM) called RESET (Recovering Endangered Species with Emerging Threats) to understand the effects of individual stressors as well as interacting threats and stressors on the species populations. Through the modeling, they will be able to develop and recommend management strategies to address multiple threats and stressors by changing conditions across replicated models.

Researchers will take into account stressors related to groundwater extraction, loss of streamflow inputs due to water recycling programs, changing flood and fire regimes, nest parasitism by brown-headed cowbirds, and negative impacts on riparian vegetation by invasive, non-native plants and insects. In doing so, they look to see how each stressor as well as combinations of various stressors may impact the distribution and quality of nesting habitat as well as reproductive performance and metapopulation dynamics.

The model will allow researchers to create simulations based on current conditions as well as with added assistance from alternative management methods to see which actions improve nesting conditions, alleviate key threats and provide the least costly path to recovery. Researchers will work with local and regional stakeholders to develop simulation experiments that explore management alternatives available to each of the major federal action agencies in southern California as well as explore collaborative strategies between federal, state and local management authorities.

Results from the analysis will be used to create a conservation plan for the USACE, including the development of a framework to develop regional or watershed-based conservation plans for long-term management purposes. Results also could be used to inform U.S. Fish and Wildlife Service guidance for recovery such as the development of a cost-effective range-wide cowbird management plan or regional strategies for invasive exotic plant removal.

Work began on the least bell's vireo project in the fall of 2022 and will continue through fall 2026. production."

Dr. Jeffrey Holland

Visionaries: Researcher helps crack cases and bring closure to families

SHELBY WHITAKER
https://ag.purdue.edu/news/department/agricultural-sciences-education-and-communication/2023/05/researcher-helps-crack-cases.html

Dr. Hans in her insect-themed jewelry.

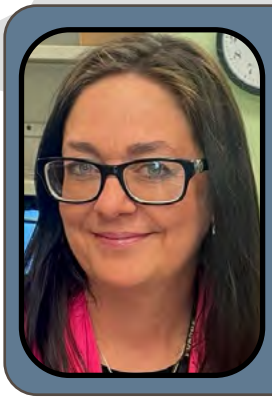
Flies and maggots are not the first thing people think of when it comes to wearing jewelry. However, Krystal Hans, assistant professor of entomology/forensics, finds these creatures to be some of the best statement pieces when personalizing her daily attire. While recording and interviewing Hans, she always came styled with her outfits featuring a bug hair piece, necklace, or bracelet to match.

Hans' passion for all things insects, hatched at an early age. While most of her friends were receiving furry or feathery pets, her allergies prohibited her from a similar experience, so instead she opted for less traditional animals. She recalls collecting insects and other arthropods to keep as pets. And while some parents may have tried to discourage that behavior, Hans' mom was always extremely supportive.

You may have also noticed in the photo Hans' one-of-a-kind jewelry, representing the stages of a fly, larvae, pupae, and adult. The larvae earrings were hand-crafted by her mom, and the fly was a gift from one of her students. It is no secret: Hans loves bugs and even in her everyday style she always incorporates her passion in some way. This form of expression always puts a smile on her students' faces and inspires a similar excitement for the science of entomology.

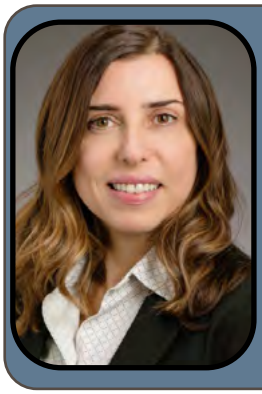
Watch on YouTube.

Welcome New Additions to the Department



SARAH HART

Business Office Account Clerk



SUZANA PALASKA

Global Lead for External Relations and Capacity Development (Urban Center)

Department Departures

TIM GIBB

Insect Diagnostician (Retiring June, 2023)

SEVERINA ADAMES-COX

Editorial Assistant (Urban Center)

Promotions

DIEUDONNÉ BARIBUTSA

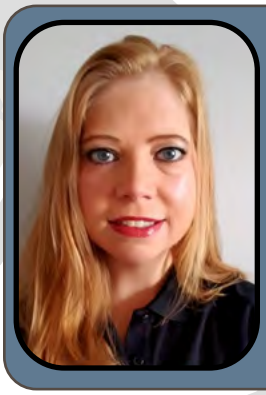
Professor of Entomology

LARAMY ENDERS

Associate Professor of Entomology

KRISPN GIVEN

Senior Apicultural Specialist



MARDELLE LORTON

Senior Administrative Manager

AARON SMITH

Associate Professor of Entomology

Faculty Awards

AMERICAN BOARD OF FORENSIC ENTOMOLOGY (AFBE)

DR. KRYSTAL HANS

Dr. Hans received certification from the American Board of Forensic Entomology.

DEAN'S FELLOW, RESILIENT AGRICULTURE

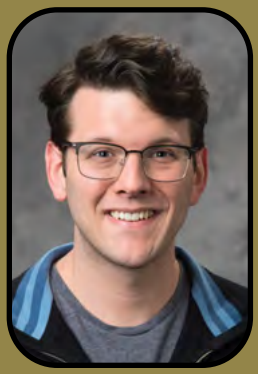
DR. CHRISTIAN KRUPKE

Dr. Krupke was announced as Dean's Fellow for Resilient Agriculture in April. Krupke will provide leadership for a multi-year, interdiscuplinary initiative focused on agricultural resilience. Working on dedicated land owned by Purdue University, Krupke will work with a team of researchers to describe what resilient agriculture looks like in practice.

Read more here.

USDA AFRI COMPETITIVE GRANT & FOUNDATION FOR FOOD AND AG RESEARCH NEW INNOVATOR AWARD

DR. BROCK HARPUR



The National Institute of Food and Agriculture awarded the AFRI grant to Dr. Harpur for his project titled: How to breed the best bees: Optimizing genomic studies, selection, and management of genetic diversity.

Read more here.

Dr. Harpur also received the New Innovator in Food and Agriculture Research Award which is designed to provide early-career scientists the investment needed to propel them into successful research careers.

Read more here.

FACULTY ENGAGEMENT SCHOLAR, OFFICE OF ENGAGEMENT

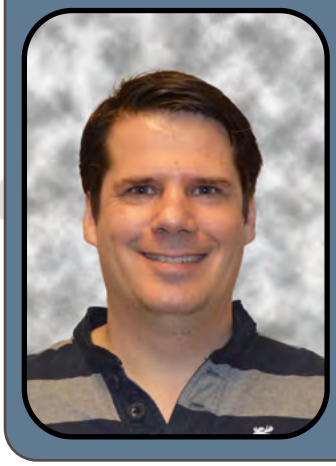
DR. DIEUDONNE BARIBUTSA

The Faculty Engagement Scholar Award goes to an assistant or associate professor with an outstanding record of early achievement in scholarship of engagement as well as a high indication of further contribution for his work with the PICS programs.
Read more here.

Staff Awards

ROGER A. MORSE OUTSTANDING TEACHING/EXTENSION SERVICE/ REGULATORY AWARD

KRISPN GIVEN



The Eastern Apiculture Society recognized Krispn Given for excellence in teaching/extension and/or regulatory activites in the apiculture field.
Read more here.

AGSEED

DR. LARAMY ENDERS
DR. ELIZABETH Y. LONG

Drs. Enders and Long were awarded the Agricultural Science and Extension for Economic Development program grant which focuses on advancing Indiana's leadership in plant and animal agriculture and rural development.

Dr. Enders received this grant for her project Wild-crop grafting as a tool to improve microbial partnerships and enhance plant protection against insect pests.

Dr. Long received this grant for her project Preliminary field testing of persistent strains of insect-parasitic nematodes as a sustainable management tactic for Asiatic garden beetle in commerical mint production.
Read more here.

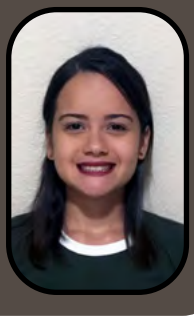
Student Awards

AMERICAN ASSOCIATION OF PROFESSIONAL APICULTURISTS (AAPA) EXCEPTIONAL STUDENT AWARD

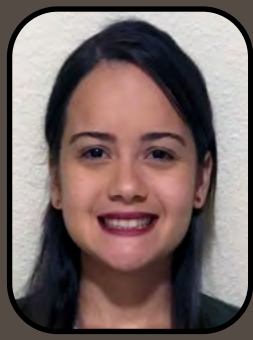
GARETT SLATER

PURDUE GRADUATE STUDENT GOVERNMENT (PGSG) TRAVEL GRANT

LILAC HONG

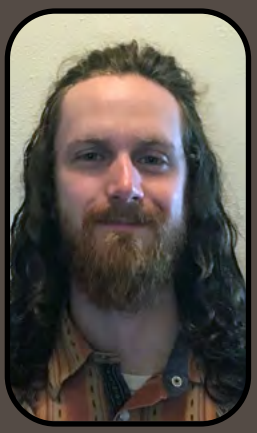


TEOMIE RIVERA-MIRANDA



2022 NORTH AMERICAN FORENSIC ENTOMOLOGY ASSOCIATION TRAVEL GRANT AWARD

TEOMIE RIVERA-MIRANDA



ROSS FELLOWSHIP & NSF GRADUATE RESEARCH FELLOWSHIP PROGRAM (GRFP) HONORABLE MENTION

DYLAN RYALS

FREDERICK N. ANDREWS ENVIRONMENTAL TRAVEL GRANT AWARD & ANDREWS FELLOWSHIP

CHRISTINE ELLIOTT

PURDUE UNDERGRADUATE RESEARCH CONFERENCE: BEST ABSTRACT IN THE LIFE SCIENCES

ELLIOTT MASTERSON

2023 THREE-MINUTE THESIS COMPETITION SEMIFINIALIST & DAVE MUELLER ENTOMOLOGY TRAVEL GRANT

MAKANI FISHER

UNDERGRADUATE AWARDS - OUTSTANDING STUDENTS IN ENTOMOLOGY

SENIOR

MAYA FULTON

JUNIOR

DANE STAHLHUT

SOPHOMORE

BRIANNA GAST

FRESHMAN

CONNER CHIPPS

Outstanding Undergrads with Amanda Wilson, Entomology Academic Advisor & Graduate Program Administrator

Bug Bowl 2023

All photos courtesy of John Obermeyer

Student Spotlight

OLIVIA GEARNER

NANCY ALEXANDER

https://ag.purdue.edu/news/department/agricultural-research-and-graduate-education/2023/04/graduate-spotlight-gearner.html

THE STUDENT

Olivia Gearner's academic path is rooted in her lineage. The daughter of two biologists grew up in the woods of Eastern Kentucky, "living in nature," she says. "I like creepy crawly things that other people might be freaked out by," says Gearner, who raised caterpillars into butterflies and collected beetles and moths with her family. "Insects are wildly diverse, and I've always found them interesting." She studied biology at Western Kentucky University, extending her undergraduate research in the taxonomy (classification) of spider beetles there to an MS degree. She was searching for relevant doctoral programs when she came across a notice that Aaron Smith, assistant professor of entomology, was searching for a graduate student to work on one tribe of darkling beetles. (More than 20,000 species of darkling beetles comprise the beetle family Tenebrionidae.) Gearner had collected spider beetles for her previous research in southern Africa, and this work appealed to her in part because tenebrionids are found in similar arid environments. Gearner came to Purdue in 2019 and will complete her degree this fall under Smith's advisorship.

THE RESEARCH

Gearner's research focuses on the taxonomy and phylogenetics of Sepidiini, a group of darkling beetles up to a couple inches in length and found primarily in African deserts. Using existing collections as well as her own collecting skills, Gearner is both describing new species and classifying currently described species by genus. "This is important for anyone who wants to study them," she explains. This group of flightless beetles has been studied for its desert adaptation, but many species have not yet been described. Gearner also is classifying closely related species into the same grouping based on common shapes or structures. She then combines this morphological information with genetic data. Eventually she will donate some of her specimens to Purdue and to collections near where she found them, especially new species she described.

"IT'S IMPORANT TO ME TO MAKE SURE THE SPECIES I DESCRIBE ARE MAKING IT BACK TO THE COUNTRIES WE COLLECTED THEM FROM"

OPPORTUNITIES

Gearner credits Smith with providing opportunities to expand her skill set, from research methods to field work. She also has taught an Introductory Entomology lab for four years. "It's good to get the teaching experience, especially since I want to become a faculty member," she says. "I enjoy trying to get undergraduates interested in entomology. Some are entomology majors, but I can also show students from other disciplines how cool insects are." She has presented her research and networked with other beetle taxonomists at the Entomological Society of American conferences, and has secured her own grant funding to travel for beetle collection.

FUTURE PLANS

Gearner plans to explore postdoc opportunities after completing her program this fall and hopes to then land a faculty position that combines her interest in research, teaching and mentoring graduate students. Outside of the lab, she enjoys trivia competitions and time outdoors — gardening, hiking and biking — as well as the company of four cats.

See the video on YouTube.

Student News

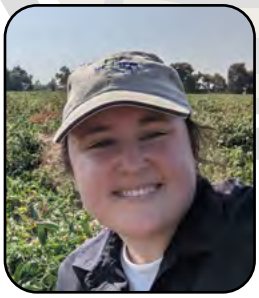
Maya Fulton (B.S. '23) was accepted into the Purdue College of Veterinary Medicine as a DVM candidate. She will be starting this program in the fall. Less than 100 out of 1500 applicants were accepted for fall 2023. Congratulations Maya!

Alumni News

Dr. Hongmei Li-Byarlay (Ph.D. '07) under John Lang (Lead PI) received a 10 million dollar grant from USDA Nextgen HBCU-HACU-RIU Consortium for A novel synergistic paradigm for training the next generation agriculture workforce for a sustainable future, 2023-2028. Hongmei is the CSU Lead PI on this program. She was also awarded a $500k grant under Marcus Nagle (PI) from USDA CBG for Innovative use of a perennial flower species as a new crop to improve honey production while advancing sustainability of agricultural production systems in Ohio. She is the Co-PI on this project.

Dr. Michael Skvarla (B.S. '08) was featured on various news outlets across the world for his discovery of a rare Jurassic-era flying insect. Skvarla happened upon the insect while entering a Wal-Mart in Arkansas and collected it thinking it was an antlion. Years later during an online course, as he was describing the insect to his class, he discovered it was not the insect he originally thought it was. He worked with a team to conduct molecular analyses on the insect which was determined to be a giant lacewing (*Polystoechotes punctata*). His research on the specimen was published in November of 2022 in the Proceedings of the Entomological Society of Washington. Read more here.

Stoy Hedges (B.S. '81) has a new book coming out titled: PCT Field Guide to Stinging & Biting Arthropods. Written with co-author Dr. Gerry Wegner, the field guide will be available this summer. Hedges is also serving as the Editorial Director for the 11th edition of the Mallis Handbook of Pest Control, a position he has served in for the past 3 editions.



Amber Vinchesi-Vahl (B.S. '09) began a new postion as the Extension State Specialist for Entomology and IPM at the University of New Hampshire on May 1, 2023.

Read more here.

Obituary

John Mumford, (B.S. '74) age 69, died suddenly of a pulmonary embolism at his family home in Windsor, England on December 29, 2022. Mumford was an entomologist and risk analyst whose work with invasive species and disease vector insects helped to reduce environmental damage thus transforming lives, both in terms of health and economic impacts, of hundreds of thousands of people across the globe.

Read his obituary here.

From the editor

With each issue of **Boiler Buzz** we keep you up to date on what's happening in the Department of Entomology and with Alumni. Please take a moment to let us know any of your own updates.

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Please include your name, address, degree, major and year of graduation. Digital photos (.jpg or .tif) are preferred. Photos received by mail will be returned upon request. To update your contact information online, go to:
www.purdueinsects.org

Calendar 2023

June

13-14 *2023 STORED PRODUCT PROTECTION CONFERENCE*

August

1 *2023 JOHN V.OSMUN AWARD NOMINATIONS DUE*

September

29 *2023 JOHN V. OSMUN AWARD CEREMONY*

Friends of Entomology

GIFTS TO THE DEPARTMENT (JANUARY, 2023 - MAY, 2023)

MONARCH CLUB ($1000 UP)

- A-Mark Pest and Bird Management Inc.
- Brian McCall
- David and Susan Hogg
- E. I. Dupont De Nemours & Company
- F. Thomas and Christine Turpin
- FMC Corporation
- Franklin Pest Solutions
- Harry Ballard Moore Jr.
- J.T. Eaton & Company Inc.
- John Lawrence Gedeon
- Katharine Watson
- MGK Insect Control
- Northern Trust Charitable Giving Program at the Chicago Community Foundation
- PBI/Gordon Corporation
- Purdue Federal Credit Union
- Robert and Karen Tarver
- Rodney and Jody Green
- Syngenta Crop Protection Inc.
- Syngenta Seeds Inc.
- University Book Store
- Valerie Markham
- William and Judith Jones

HONEY BEE CLUB ($500-$999)

- Mary Sue Torres
- Paul Erich Rensner
- Peter and Georgia Dunn
- Sharon Clare Porter

FIREFLY CLUB ($101-$499)

- Brandon Wayne Runyon
- Catherine A. Hill
- Colleen Knickerbocker
- David Wayne McCoy
- Dieudonne Baributsa
- Dominic Carreon
- Douglas Richmond
- Edward Stanley Saugstad
- Eldon R. Cutter
- Elizabeth Barnes
- Frederic and Dolores Theresa Goldberg
- Fritz and Anne Schumann
- Happy Hollow Garden Club
- Hongmei Li-Byarlay
- James and Mary Delaney
- Janet Deal
- John Kerr Bready
- John Lyon Obermeyer
- Kenneth Harold Kendall
- Larry and Janet Bledsoe
- Linda J. Mason
- Mark and Julie Thornburg
- Mark and Kathleen Shelton
- Mary R. Daniels
- Matthew D. Ginzel
- Ralph and Jane Killough
- Rick Lynn Brandenburg
- Robert and Judy Dold
- Ronnie and Mary Bitner
- Thomas and Waynetta Myers
- Vinnedge Moore Lawrence

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