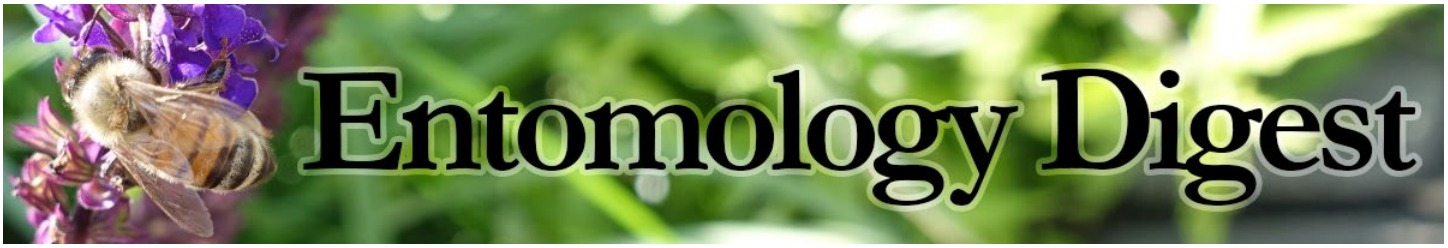


Entomology Digest – Spring 2024

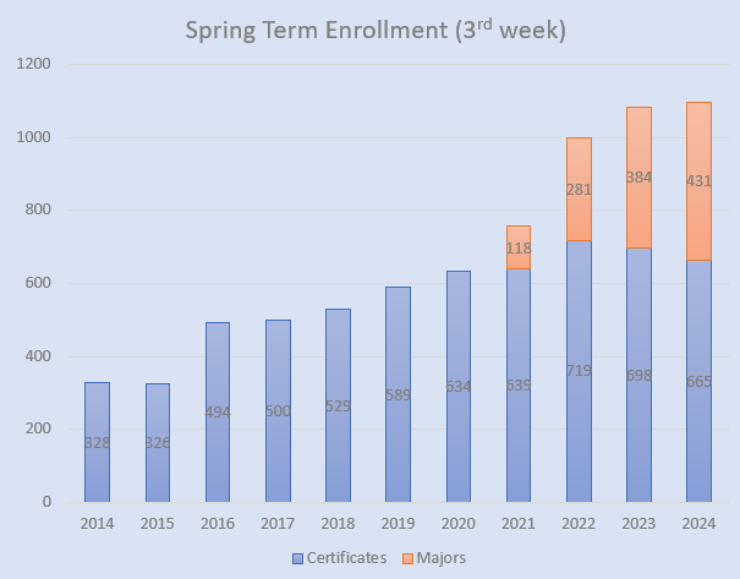
Letter from the Chair

Entomology Community and Friends of the Department,

Swarm to Table, Version 4. On Saturday, April 13 our Undergraduate Entomology Society (UES) together with support from Slow Food UW, and MIGHTi hosted the 2024 Swarm To Table (S2T) event, from 2:00-5:00 pm, at The Crossing Event Center. This event represented the fourth annual Swarm to Table event and the group was again able to sell out 300 tickets for the third year in a row. The S2T event celebrates insects in food, art and human culture. Highlights of this year's event include an insect food-tasting menu, an art gallery showcase including art from UW students and local community members, and an information expo with people from across the Midwest involved in entomophagy and agriculture. Entomophagy is the practice of humans consuming insects as food, and this encompasses a wide range of culinary traditions and is gaining recognition for its nutritional and environmental benefits. We learn and appreciate that worldwide, thousands of species of insects contribute to human diets, and many are prized as delicacies. For creative cooks, the vast biodiversity of insects offers a palette of unique flavors, unmatched in breadth throughout the animal kingdom.

UES's continual goal is to break the stigma around insects as a food source through exposure in a way that is fun, hands-on and attractive to both insect lovers and those who may not know much about insects. UES President Ava Schassler sees the event as the perfect opportunity to do that. "*We want people to come and see the atmosphere and be like, oh, this is actually pretty cool. If they can leave not feeling scared of insects or have the stigma around the idea, I think we did our job,*" Schassler said. Addressing stigma about insect eating was one of the major reasons S2T started in 2019. Co-founder and current partner of the event, Dr. Valerie Stull, aimed to highlight positive aspects of insects through art and comradery. Dr. Stull currently helps with two major research projects at UW involving entomophagy. The first is creating a black soldier fly colony on campus — a species increasingly used in agricultural practices by taking food waste or livestock manure and turning it into protein. They hope the colony can help manage on-campus food waste and produce protein for poultry feed. "Since our initial event in 2019, S2T invites the curious public to explore insect agriculture and cuisine, where we celebrate the role of insects in human health, sustainable agriculture, and existing food and artistic culture.", remarks Dr. Stull.

Global Health Program (major and certificate). Global health is about improving health for everyone, while considering the connections among people, animals, plants, and the planet. Students explore how human health intersects with economic development, healthcare access, food systems, environmental health, and climate change in order to address the root causes of disease around the world. The program helps students develop a broad, planetary-scale perspective that can be applied to community, state, national, and international health challenges. The program was launched in 2020, and has grown steadily under the direction of Dr. Susan Paskewitz, Faculty Director of the Global Health Program. Over the past three years, the Program has increased enrollments in both the major and the certificate and has become the second largest undergraduate major in all of the College of Agriculture and Life Sciences.



Students in the global health major study human health and well-being with an emphasis on empathy, cultural awareness, and collaborative approaches. The major, which covers bioscience and public health, provides students with foundational knowledge in disease and epidemiology, food systems, environmental health, and public health and policy. Majors are encouraged to pursue their own areas of interest through coursework and by participating in field experiences, laboratory research, internships, and volunteer work.

Global health students learn to take a broad, planetary-scale perspective, and apply it to challenges at community, state, national, and international levels. This big-picture perspective is interwoven through nearly all aspects of the global health major, including classes, capstone experiences, lab opportunities, and internships. Global health field experiences, which range from one week to a full semester, expose students first-hand to complex global health challenges in diverse settings, and give them the opportunity to learn from community members and practitioners who are working to address these issues. - *Russ Groves, Department Chair*

Awards and Recognition

Claudio Gratton receives Vilas Distinguished Achievement Professorship. Entomology professor Dr. Claudio Gratton was recently awarded the Vilas Distinguished Achievement Professorship from the UW-Madison Office of the Provost. The Vilas Distinguished Achievement Professorship recognizes UW–Madison faculty members whose distinguished scholarship has advanced the confines of knowledge, and whose excellence also includes teaching or service. Faculty members receiving this award keep the Vilas Distinguished Achievement Professorship title for the duration of their careers. These professorships for outstanding achievement are funded through the generosity of the Trustees of the William F. Vilas Estate.

Dr. Craig Brabant, Curator of the Wisconsin Insect Research Collection, received the 2023 Service Award from the 10th Congress of the International Society of Hymenopterists in Iaşi, Romania. This award is given in recognition of "individuals who have made significant contributions in service to the Society that went well beyond normal expectations." Congratulations, Craig!

North Central Branch – Entomological Society of America (2024). The delegation from UW-Madison to the Entomology Society of America's North Central Branch meeting in Fort Collins, CO made a splash with a first place finish by **Emma Terris** in the M.S. Student Ten Minute Paper competition and a third place finish by **Celeste Huff** in the M.S. Student Poster competitions (pictured, left). Emma's presentation was titled "Insecticide Resistance and Cross-Resistance in Populations of the Colorado potato beetle" with co-authors **Dr. Sean Schoville** and **Dr. Russ Groves**. Celeste's poster was titled "Beyond Pollination: Exploring bee-influenced fungal community composition in cranberry blossoms" with co-authors Dr. Shawn Steffan and Dr. Leslie Holland (Fruit Crop Pathology lab, UW-Madison Plant Pathology).

Zackary Sieb and **Victoria Salerno** (right) were among 11 finalists in the **Three-Minute Thesis (3MT)** international research communication competition, held on Feb 16, in which graduate students explain their research to a general audience. Students in research-based master's and PhD programs from all disciplines are eligible to compete, and prizes were awarded to the winners. The Department of Entomology was fortunate to have 2 finalists among the 11 selected for the campus competition.

Dan Young will receive the 2024 Michigan State University Distinguished Alumnus Award from his beloved alma mater:

The MSU Department of Entomology is proud to announce the 2024 Distinguished Alumnus Award will go to Daniel K. Young, Ph.D., University of Wisconsin-Madison. Young received his bachelor, master's, and Ph.D. in Entomology from MSU. He has been on the faculty at the University of Wisconsin since 1982. Over the course of his 41-year career, Young has advanced the study of beetle biodiversity; directed the University of Wisconsin Insect Collection; led national and international scholarly societies; and perhaps most significantly taught foundational entomology courses to countless college students.

Young is an internationally recognized expert in beetle taxonomy and systematics. He has also provided extensive service and leadership to professional societies including the Entomological Society of America, the Coleopterists Society, and a diversity of state and regional associations. Although his record of service is extensive, Young's true passion lies in teaching. Former students were very vocal in their support for Young's nomination for this award.

Brood XIII gets its own website!

Now that the solar eclipse has passed, the next big phenomenon will be our emergence of Brood XIII periodical cicadas later this spring. Since these insects emerge in Wisconsin every 17 years, you might only have a handful of opportunities to see them in the Badger State in your entire life. Despite having grown up in southeastern Wisconsin and turning 40 next year, I still have not witnessed an emergence myself and I'm really looking forward to this year's activity.

Since there will be so much "buzz" about these amazing insects, I recently launched a new Wisconsin Periodical Cicada website: **cicadas.wisc.edu**. The site covers the biology, ecology, and distribution of these insects, with lots of photos, cool historical videos, and other resources. This winter, I dug through 150+ years of books, newspaper columns, university/government reports, and specimens in our very own Wisconsin Insect Research Collection to develop an updated map of Wisconsin reports. While the map on the website is an improvement over older ones, there's still plenty to learn about the local distribution of these cicadas in the state. To that end, I created a community science project on the website (**cicadas.wisc.edu/community-science/**) for folks to submit their sightings from Wisconsin—it's a brief fillable form and photos can be uploaded right from your phone, tablet, or computer. And feel free to stop by the diagnostic lab—I've got some new Brood XIII stickers to give away! *- PJ Liesch, UW Insect Diagnostic Lab*

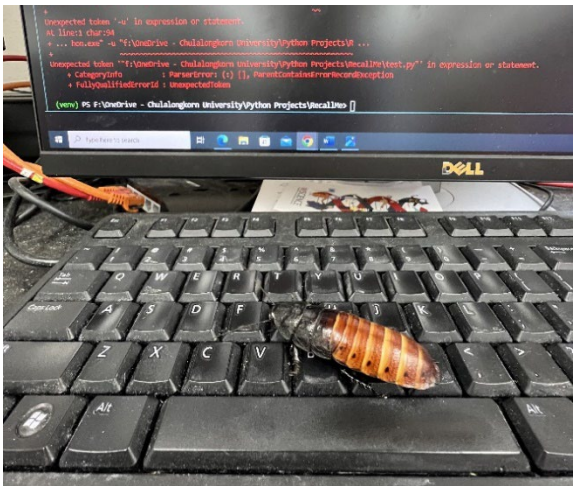
New Entomology merch for your head!

We are excited to announce that we now have embroidered baseball caps featuring three designs adapted from our on-demand t-shirt shop (uwegsa.myspreadshop.com/). Artwork for the hats was originally created by Kat Prince and Ben Bradford. Faculty, graduate students, and permanent staff can get one hat for free, additional hats are $20, payable to the EGSA Snack Room fund using their CashApp QR code. See Russ in the Chair's office (230 Russell Labs) to get yourself a lid!

Where are they now: The sponsored cockroaches from the holiday party

*Story by **Helen Oker** and **Morgan Weissner**, with special thanks to **Victoria Salerno** and **Emma Terris***

August Easton-Calabria's Cockroach, "Isabel": Isabel has had an exciting few months with the local bumblebees! Some say that Madagascar hissing cockroaches aren't meant to be pollinators and aren't meant to fly, but Isabel had a dream. Not only is she one of the first of her



kind to feel the breeze in her setae as she flies on the back of her bumblebee friends, but she has also developed incredible coding skills (no one can debug code like she can!). Isabel has had a fascinating journey, and she has a bright future ahead of her!

Sean Schoville's Cockroach, "Kafka" Even when he doesn't wake up on the right side of the bed, Kafka has made the most of the last few months. Kafka has always had a strong curiosity about genetics, but it wasn't until he came to Russell Labs that he had the tools to further explore the field. Doing good RNA extractions is particularly difficult when they don't make gloves for tarsal claws – but he makes it work! When asked about what he plans to do next, he says "I don't know, but I know that if I can use a micropipette, I can do anything."

Alyson Amenda's Cockroach, "Dusty": Dusty has been hard at work establishing a Human (or should I say Insect?) Resources department for the many six-legged inhabitants of Russell Labs. She has been taking a colony-minded approach to community enhancement. Longtime resident, the Colorado Potato Beetle, says "Dusty has exterminated so many of the issues I have been trying to deal with, I am so grateful for her help!" Whether she is scurrying around the building's ecosystem or using all her six legs to type at unprecedented speeds, you can be confident that she is working hard to make an organized habitat for all.

Lab updates

Bick Lab

The Bick Lab has been busy! Computer science graduate student **Dev Mehrotra** presented the insect eavesdropper at both the Falling Waters Competition and the World Agritech Innovation Summit. Graduate students **Helen Oker** and **Fletcher Robbins** presented at the Entomological Society of America's North Central conference. Helen also led the development of an insect model teaching tool which was successfully rolled out in the Principles of Economic Entomology class. Graduate student **Lauren Glynn** developed a large language model to assist with extension communications. **Dr Emily Bick** was granted a Draper TIFF award associative with the Insect Eavesdropper.

Additionally, Dr Bick is headed to Germany this month to speak at the Bayer headquarters as a finalist in the lab-to-field competition. In collaboration with biological systems engineer Dr Brian Luck, The second invention was accepted for disclosure by the Wisconsin Alumni Research Foundation, hopefully enabling heat mapping of insect pests via drone-mounted sensors in a field. We in the Bick Lab are launching the state of Wisconsin's first insect pest text alert service, which currently has 200 practitioners signed up to receive information. These days, we are deep in preparation for our field season.

Crall Lab

The lab had a busy winter and is excited to be starting summer field research for the year, which will include research on pollinators in local crop systems (apple, cranberry, and cucumber), as well as projects on comparative social behavior across bumblebee (Bombus) species in Wisconsin, the effects of drought and plant-pollinator interactions, and effects of ash on pollinator visitations and plant fitness in California!

Two lab members - postdoctoral Fellows **Dr. Olivia Bernauer** and **Dr. Matt Smith** - will both be leaving the lab in August to start new positions. Olivia will be starting as an Assistant Professor in the Department of Biology at the University of Wisconsin-Eau Claire. Matt will be starting as an Assistant Professor in the Department of Biology at the Illinois Institute of Technology. Congratulations Olivia and Matt, and we are thrilled for you both to be starting the next chapters!

Recent awards and grants. Congrats to **Victoria Salern**o for being a finalist in the three-minute thesis competition, and to **Anupreksha** for winning second place for lighting talks at the University of Minnesota Plant Science Symposium. Congrats also to **Gigi Melone** on receiving an Integrative Biology Summer Research. The lab is also excited to be supported by a new grant from Organic Valley's Farmers Advocating for Organic.

Recent publications from lab members:

- European Food Safety Authority (EFSA), Rortais, A., Alaux, C., ***Crall, J.,*** Duan, X., Focks, A., Linguadoca, A., Topping, C. and More, S., 2023. Environmental scenarios for ApisRAM version 3, a honey bee colony model for pesticides risk assessment (Vol. 20, No. 12, p. 8535E).
- Fisher, A., Tadei, R., Berenbaum, M., Nieh, J., Siviter, H., ***Crall, J.***, Glass, J.R., Muth, F., Liao, L.H., Traynor, K. and ***DesJardins, N***., 2023. Breaking the cycle: Reforming pesticide regulation to protect pollinators. BioScience, 73(11), pp.808-813.
- Fisher, A., Tadei, R., Berenbaum, M., Nieh, J., Siviter, H., ***Crall, J.,*** Glass, J.R., Muth, F., Liao, L.H., Traynor, K. and ***DesJardins, N.***, 2024. A call for clarity: Embracing the debate on pesticide regulation to protect pollinators. BioScience, p.biae009.
- ***Melone, G.G.***, Stuligross, C. and Williams, N.M., 2024. Heatwaves increase larval mortality and delay development of a solitary bee. Ecological Entomology.

Gratton Lab

Eliza Pessereau successfully defended their MS thesis in Entomology and Agroecology. They will be presenting their work in a public talk on Monday, April 29 at noon in 150 Russell Labs.

Claudio Gratton spent the month of March at Wageningen University and Research in the Netherlands where he gave some lectures and ran a graduate workshop on "Bridging science to practice: Exploring and developing decision support systems for ecological intensification of agricultural systems".

Jeremy Hemberger and **Claudio** were recently awarded money from the USGS Cooperative Ecosystem Studies Unit to start a long-term bumble bee monitoring program in the Upper Midwest. This project, focused primarily on the endangered Rusty Patched bumble bee, will establish a number of sites that are surveilled continuously for the next 4-5 (and hopefully more!) years. The aim of the project is to establish long-term occupancy and abundance measures of all species in the bumble bee community while also measuring the population health of target bumble bee species using genetic methods. These data can be used in species recovery efforts and in more targeted research questions by the Gratton lab and other interested research groups.

Guédot Lab

The Guédot Lab welcomed two new graduate students. **Elizabeth Hrycyna** and **Emilie Parkanzky** who both started in January 2024 on their MS degrees in Entomology. Elizabeth is working on assessing the impact of commercial nematodes on the red-headed flea beetle in cranberry. Emilie will expand the work conducted by previous MS student **Mitchell Lannan** on applying attract-and-kill as a management strategy for Japanese beetle in vineyards and will look into the presence and distribution across southern WI of the microsporidian *Ovavesicula popilliae* which is a biological control agent of Japanese beetle.

Mitchell Lannan, who is now the Forest Health Specialist for the Arizona Department of Forestry and Fire Management, had his article that was published in the Journal of Economic Entomology featured in Entomology Today on March 12, 2024 in the article "How luring beetles to field edges could reduce insecticide usage in vineyards". Well done Mitchell!

We wrapped up our winter webinar series "Organic Commercial Fruit Production Strategies for the Midwest Webinar Series" in collaboration with colleagues at MN, IA, and IL and are planning field days for the spring and summer.

Publications

- Lannan M.C. and **Guédot, C.** 2023. Attract-and-kill for managing *Popillia japonica* (Coleoptera: Scarabaeidae) abundance and leaf injury in commercial vineyards. *Journal of Economic Entomology* toae031, https://doi.org/10.1093/jee/toae031
- Hetheringon M.C., Brunet J., Nieto D., Ramirez R.A., Wenninger E.J., **Guédot, C.** 2023. Electrophysiological and behavioral responses of *Lygus Hesperus* Knight (Hemiptera: Miridae) to host plant volatiles. *Accepted by Chemoecology.*
- McIntosh H., Atucha A., and **Guédot C.** 2023. Plastic mulches reduce abundance of some arthropods but are not detrimental to pollinators in primocane raspberries. *Journal of Applied Entomology*. DOI: 10.1111/jen.13221. https://onlinelibrary.wiley.com/doi/epdf/10.1111/jen.13221

Presentations

- Parkanzky E., Lannan M., and Guédot C. Impact of attract-and-kill expansion on Popillia japonica (Coleopotera: Scarabaeidae) in Wisconsin Vineyards. Graduate Research Showcase: UW-Madison Day at the Capitol, Madison, WI. 17 April 2024.

- Hrycyna E., Weissner M., Steffan S.,and Guédot C. Biological control of the red-headed flea beetle with nematodes. Graduate Research Showcase: UW-Madison Day at the Capitol, Madison, WI. 17 April 2024.
- Miles-Kroening J., Atucha A., Guédot C. Evaluation of Film-Based Mulches to promote Day-Neutral Strawberry Production System in the Upper Midwest. Graduate Research Showcase: UW-Madison Day at the Capitol, Madison, WI. 17 April 2024.
- Miles-Kroening J., Atucha A., Guédot C. Evaluation of Film-Based Mulches to promote Day-Neutral Strawberry Production System in the Upper Midwest. Marbleseed Organic Farming Conference, La Crosse, WI. February 22-24, 2024.
- Trickle, C., Guédot C., Holland L. 2024. Distribution and diversity of the cranberry false blossom phytoplasma and leafhopper populations. Wisconsin Cranberry School. Wisconsin Dells, WI. January 23-24, 2023.

Oliva Chavez Lab

Adela was featured in an article for Science News Magazine (https://www.sciencenews.org/article/lyme-disease-sweat-protection-ticks-bacteria) and her student **Stephanie Guzman Valencia** arrived in Madison.

Paskewitz Lab

An undergraduate student who worked in the Paskewitz lab, **Magic Vang**, was recently profiled in CALS Grow Magazine (https://grow.cals.wisc.edu/priority-themes/health-and-wellness/greater-knowledge-healthier-people). Magic was the recipient of a Wisconsin Idea Fellowship in support of his project. Read about Magic's work to explore knowledge and practices related to tick-borne disease in the Hmong population in Wisconsin here:

Dr. Kristina Lopez, a recent postdoctoral associate with the Paskewitz lab, has just taken a new permanent position with the Northshore Mosquito Abatement District in the Chicago area. Kristina will be a Scientist and Entomologist with the district, working to improve practices for mosquito management. She brings a wealth of experience in evaluating efficacy of treatments as well as insecticide resistance bioassays for larvae and adults. Kristina's most recent paper is: Lopez, Kristina, et al. "Impacts of ground ultra-low volume adulticide applications on Culex pipiens and Culex restuans (Diptera: Culicidae) abundance, age structure, and West Nile virus infection in Cook County, Illinois." *Journal of Medical Entomology* (2024): tjae041.

Zack Sieb, a graduate student in the lab, was a top contestant in the 3-Minute Thesis competition on campus. His work was also highlighted at the recent VectorWeek conference at CDC in Fort Collins and presented at the American Mosquito Control Associations' annual meeting. Zack is investigating the efficacy of tick and mosquito treatments provided to homeowners by a commercial pest management company.

Katie Susong, co-advised with Dr. Lyric Bartholomay in the CBMS degree program, was awarded the prestigious 2024 **William C. Campbell Excellence in Parasitology and Vector Biology**. This award was made possible by a donation from Nobel Laureate William C. Campbell, who developed ivermectin as a drug for management of human filarial worm infections (think river blindness and elephantiasis).

The work of the Midwest Center of Excellence for Vector-Borne Disease got some good press from Wisconsin Public Radio, where our **Tick App** (https://tickapp.us/) was highlighted. https://www.wuwm.com/environment/2024-03-12/as-wisconsin-winters-warm-its-the-end-of-tick-season-as-we-know-it

Scientist Tela Zembsch and **Dr. Xia Lee** developed full-body mannequins as a tool to evaluate how well people perform tick checks. The tool was highlighted at CDC's VectorWeek and continues to generate a lot of interest from the health community.

Schoville Lab

Jillian Schat completed her PhD in Entomology in December 2023 and she is now teaching in San Diego, **Ebony Taylor** received the National Science Foundation Graduate Research Fellowship (2024), and **Sean Schoville** has been promoted to Full Professor.

Publications:

- Arango, Rachel A., Amy B. Bishell, Katie M. Ohno, Thomas G. Shelton, Sean D. Schoville, and Camila Carlos-Shanley. "Seasonal shifts in gut microbiota and cold tolerance metrics in a northern population of *Reticulitermes flavipes* (Blattodea: Rhinotermitidae)." Environmental Entomology (2024): nvae027.
- Cohen, Zachary, Michael S. Crossley, Robert F. Mitchell, Patamarerk Engsontia, Yolanda H. Chen, and Sean D. Schoville. "Evolution of chemosensory genes in Colorado potato beetle, *Leptinotarsa decemlineata*." Journal of Evolutionary Biology 37, no. 1 (2024): 62-75.
- Schoville, Sean D., Zachery Farrand, David H. Kavanaugh, Benton Veire, and Yi-Ming Weng. "Environmental stress responses and adaptive evolution in the alpine ground beetle *Nebria vandykei*." Biological Journal of the Linnean Society 141, no. 1 (2024): 51-70.

Young Lab

Ann Marsh. Ann is currently serving again as ENT 201 TA in a blended edition of ENT 201. She also continues preparation for her Ph.D. certification on her beloved staphylinids under the joint supervision of Drs. Schoville and Young. Specimen photo of a *Lordithon cinctus* (Gravenhorst) pictured right.

Dan Young. **Instruction.** My fall semester teaching schedule included ENT 302: Introduction to Entomology, as always; my "FIG" course, ENT 375: Biodiversity and the Sixth Mass Extinction; and ENT 331: Taxonomy of Adult Insects. The current (spring) rotation includes ENT 302 along with Advanced Taxonomy of Diptera (with a planned long weekend in the field back at Kemp and several collecting field trips to Hemlock Draw in the beautiful Baraboo Hills).

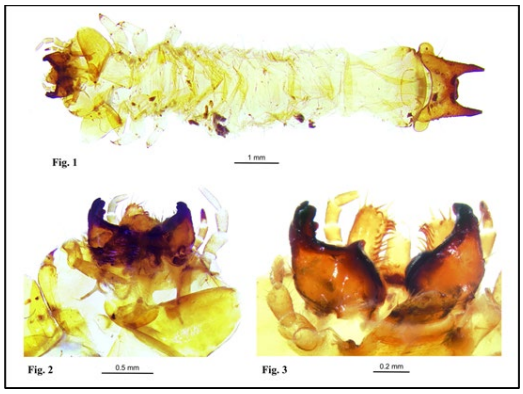
Outreach. As the Director of the WIRC, I have overseen educational and public service roles of the collection, including public collections tours, family visits, and maintaining biodiversity resources for outreach programs, including Insect Ambassadors, Insect Fest, and Natural Resources Foundation field trips. I recently provided insect specimens for a new exhibit at the Madison Children's Museum.

Research. Wisconsin-based summer 2023/2024 fieldwork focused on another year of Malaise trap sampling at Hemlock Draw (Baraboo Hills) and the Kemp Natural Resources Research Station.

Invited Research/Outreach Presentations:

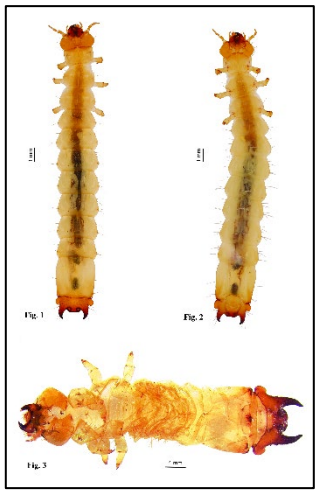
- Kemp Natural Resources Research Station, Woodruff, WI; 26 June 2023; Kemp Summer Seminar Program: "*Fire beetles, fireflies, and everything beetles*."
- Kemp Natural Resources Research Station, Woodruff, WI; 22 July 2024, Kemp Summer Seminar Program: "*Taxonomy, Natural History and Conservation of Wisconsin Fireflies*."

Research Publications:

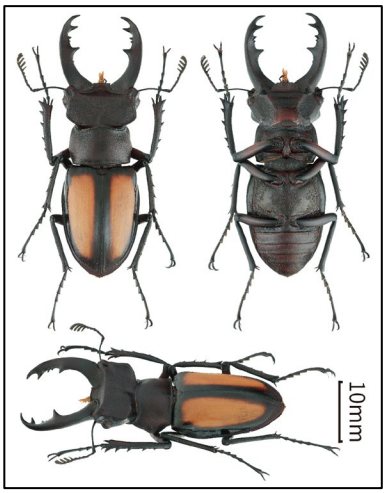


Publication 1

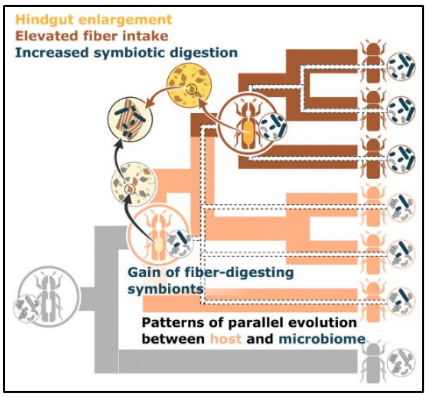
1. Zhan, Z., K. Jing, and **D. K. Young**. 2023. A new species of *Pseudopyrochroa* Pic, 1906 from Southwest China (Coleoptera: Pyrochroidae: Pyrochroinae) based on the last instar larva and adults, with natural history observations. Zootaxa 5323 (4): 577-586. https://doi.org/10.11646/zootaxa.5323.4.8
2. Zhan, Z., K. Jing, and **D. K. Young**. 2023. Descriptions of the mature larva and adult female of *Pseudopyrochroa girardi* Young from Southwest China (Coleoptera: Pyrochroidae: Pyrochroinae), with natural history observations. Zootaxa 5357 (3): 434–444. https://doi.org/10.11646/zootaxa.5357.3.6
3. Zhan, Z. and **D. K. Young**. 2023. A taxonomic assessment and redefinition of the *Lucanus fortunei* species group in China (Coleoptera: Lucanidae: Lucaninae). Zoological Systematics 48(4): 279–360. https://doi.org/10.11865/zs.2023401
4. Beza-Beza, C.F., Wiegmann, B.M., Ware, J.A., Petersen, M., Gunter, N., Cole, M.E., Schwarz, M., Bertone, M.A., **Young, D**., & Mikaelyan, A. 2024. Chewing through challenges: Exploring the evolutionary pathways to wood-feeding in insects. Bio Essays, e2300241. https://doi.org/10.1002/bies.202300241
5. Qi, G., **D. K. Young**, Z-H. Zhan, H-Y. Cheng, and Z. Pan. 2024. Revision of *Eupyrochroa* Blair, 1914 (Coleoptera: Pyrochroidae) based on morphological comparison and molecular phylogenetics. Zootaxa 5406 (2): 238–252. https://doi.org/10.11646/zootaxa.5406.2.2
6. Gao Q., Young D.K., Pan Z. 2024. *Oblatopyrochroa bellula*, an enigmatic new genus and species of Pyrochroinae (Coleoptera, Pyrochroidae) from Xizang, China. ZooKeys 1191: 369–377. https://doi.org/10.3897/zookeys.1191.118653



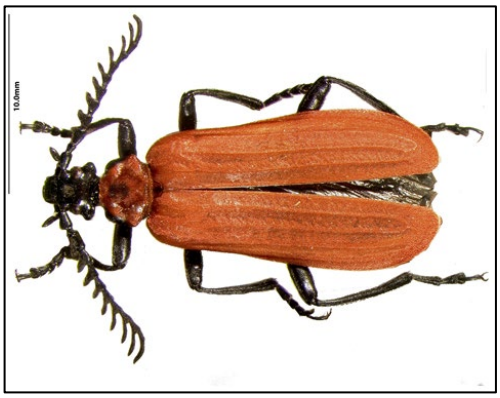
Publication 2



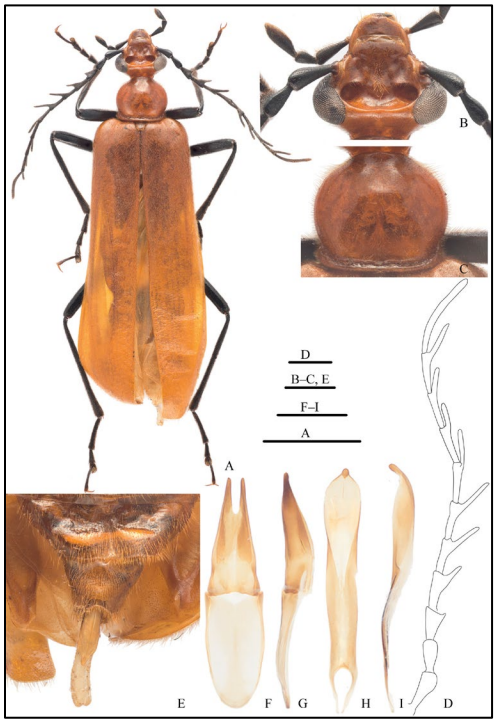
Publication 3



Publication 4



Publication 5



Publication 6

Bugs in the news

- Like Moths to a Flame? We May Need a New Phrase. Over time researchers have found fewer of the insects turning up in light traps, suggesting they may be less attracted to some kinds of light than they once were. *– NYTimes.com (gift article)*
- Leptanilla voldemort, a ghostly slender new ant species from the dark depths of the underground. In the sun-scorched Pilbara region of north-western Australia, scientists have unearthed a mysterious creature from the shadows -- a new ant species called Leptanilla voldemort.
- Oxidant pollutant ozone removes mating barriers between fly species. Researchers show that ozone levels, such as those found in many places on hot summer days today, destroy the sex pheromones of fruit fly species. As a result, some natural mating boundaries maintained by species-specific pheromones no longer exist.
- Ants in Colorado are on the move due to climate change. Ant species living in Boulder's foothills have shifted their habitat over the last six decades, potentially affecting local ecosystems, suggests a new study.
- How mosquito larva guts could help create highly specific insecticides. Did you know that the world's deadliest animal is the mosquito? And Aedes aegypti is one of the most dangerous. This bug spreads viruses that cause dengue fever, which was recently declared as an epidemic in Puerto Rico. Research reports new molecules that label proteins in the unique, alkaline environment of the *A. aegypti* digestive system that could help scientists develop insecticides to fight back.
- Rusty-patched bumblebee's struggle for survival found in its genes. The rusty-patched bumblebee, once common in the United States, has declined from about 90% of its former range. Researchers conducted the first range-wide genetic study of the endangered species to inform recovery efforts.
- Bees need food up to a month earlier than provided by recommended pollinator plants. Plant species which are recommended as 'pollinator friendly' in Europe begin flowering up to a month too late for bees, resulting in low colony survival and low production of queens. This research has quantified the decline in colony survival and queen production due to a shortage of early season food. Enhancing existing hedgerows with early blooming species has the potential to increase the probability that a bee colony survives from 35% to 100%.
- Honey bees at risk for colony collapse from longer, warmer fall seasons. The famous work ethic of honey bees might spell disaster for these busy crop pollinators as the climate warms, new research indicates. Flying shortens the lives of bees, and worker honey bees will fly to find flowers whenever the weather is right, regardless of how much honey is already in the hive. Using climate and bee population models, researchers found that increasingly long autumns with good flying weather for bees raises the likelihood of colony collapse in the spring.
- Research uncovers a rare resin fossil find: A spider that aspires to be an ant. Spiders that disguise themselves as ants live in many locations around the globe but until now most had been able to avoid detection from fossil researchers as well as predators.
- Sap beetles vs wind: What pollinates screw pines? Researchers have discovered the first species pollinated by sap beetles in the genus Pandanus, a group of palm-like plants native to the tropics and subtropics of Africa and Eurasia. The discovery overturned the long-held belief that these plants were pollinated by wind. The researchers also found that fragrant screw pines' male and female flowers produced heat at night stably, making them the first such species in the family Pandanaceae.
- In flies, a single brain cell can drive multiple movements of the body. Motor neurons are the cells the brain uses to command muscles to act. Scientists typically thought of them as simple connections, much like the cables that link computers with their accessories. Now, in fly studies, researchers have discovered that single motor neurons can each direct an insect's body to move in far more complex ways than previously thought.

All stories and summaries sourced from ScienceDaily.com unless otherwise indicated.