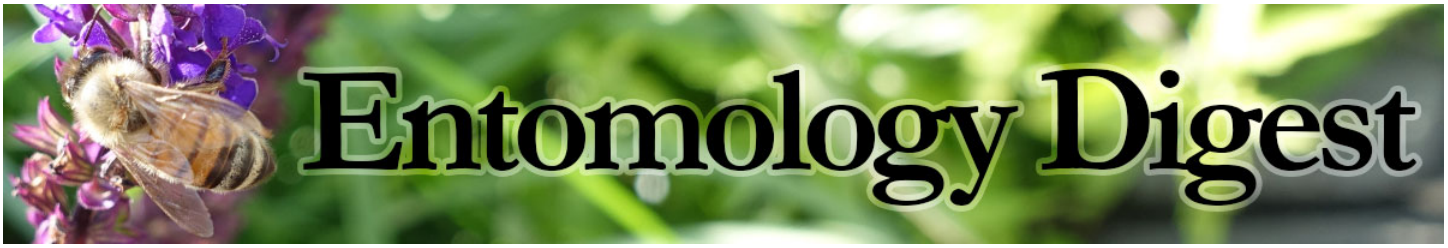


Entomology Digest – Spring 2023

Letter from the Chair

Entomology Community and Friends of the Department,

On Saturday, April 15 our Undergraduate Entomology Society together with support from Slow Food UW, and MIGHTi hosted the 2023 Swarm To Table event, from 2:00-5:00 pm, at The Crossing Event Center. Swarm to Table is a celebration of insects in food, art, and human culture, with a gourmet tasting menu, presentations, activities, prizes, and more! A special thanks to sponsors who included The Departments of Entomology, Life Sciences Communication, and Community and Environmental Sociology, The Nelson Institute, The Center for Integrated Agricultural Systems, The Sam Graham Catalyst Fund, TriCycle, Bachhuber Consulting, 3 Cricketeers, Hoppy Plant Foods, Origin Breads, and Thailand Unique. Food preparation was again supported by Chef Andrew Jack, a self-described experimental and private chef, and we also heard great presentations from Dr Barret Klein, Professor at UW-LaCrosse, and Dr. Valerie Stull, Environmental Scientist and Global Health Professional and advocate for planetary health and sustainable food systems. Dr. Stull is also the Executive Director, President, and Co-Founder of the Mission to Improve Global Health through Innovation.

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. As the global population increases and climate change intensifies, it is essential that we develop creative, sustainable, and resilient strategies for agriculture and food security. Compared to conventional livestock, insect agriculture typically requires less land, feed, and freshwater inputs to produce a comparable amounts of nutritious food. Some insects are adept recyclers, capable of turning inedible waste into something nutritious and digestible. Growing insects for human consumption and animal feed promises to be a part of developing equitable and sustainable food systems in the future.

Since our initial event in 2019, Swarm-to-Table 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.

In addition to Swarm to Table, these past few months have brought a number of awards and recognition to members of our department broader community, and many congratulations are in order. Read on to learn of these accomplishments.

- Russ Groves, Department Chair

Awards and Recognition

PJ Liesch, extension entomologist and director of the insect diagnostic lab, received **Best Communicator** in the 2023 UW-Madison Agriculture Institute staff and faculty awards! Congratulations, PJ! The Best Communicator award is for a colleague who has done an exceptional job communicating research-based information in an accessible, approachable way. The award notes that "PJ is an engaging speaker and our audiences love him! He always does an exceptional job of communicating his scientific expertise to the general public in ways that are not only understandable, but also in ways that are applicable to our audiences."

Scott Chapman, a scientist in the Groves Lab, and **Dan Heider**, a research program coordinator in the Department of Horticulture, were recently honored with national awards from the USDA's IR-4 Project. Scott Chapman was awarded the North Central Region Technical Service Award, which acknowledges outstanding technical service to the IR-4 program. Chapman has worked with IR-4 for over 20 years and has done excellent work with his greenhouse trials. The IR-4 Project was established in 1963 by the U.S. Department of Agriculture to ensure that specialty crop farmers have legal access to safe and effective crop protection products. While the crop protection industry focuses its research on major crops, such as corn, cotton and soybeans, growers of specialty crops are often left with fewer tools for effectively and safely managing pests. IR-4 conducts required research to meet this important need.

Ebony Taylor, MS student in the Schoville Lab, placed 3rd in the UW Graduate School's Three Minute Thesis competition! Twelve graduate students from across campus had advanced to the final round, held on Feb 17. Three Minute Thesis (3MT), which began at the University of Queensland in Australia, is an international research communication competition that challenges students to explain their research to an audience without specialized knowledge in their field – all in three minutes or less. Students who compete in 3MT have a chance to hone their presentation and research communication skills while also competing for cash prizes and a people's choice award.

The Fall 2022 issue of Grow Magazine, published by the UW College of Agriculture and Life Sciences, featured an article highlighting the recent work of **Dr. Shawn Steffan**. In spring 2021, associate professor of entomology Shawn Steffan and members of his lab hosted film company Day's Edge Productions. The crew shot extensive footage of the lab's bee-microbe projects, including installed nests and other locations in the UW Arboretum and Allen Centennial Garden. The final production, a short film entitled SymBeeOsis, was released earlier this year. It highlights the key role that microbes play in the lives of bees and offers insights into why these crucial pollinators are in decline, and also features Steffan's collaborators at other universities.

In late March, the UW CALS Award recipients were announced, and 2023 award winners will be celebrated May 2. The ceremony will take place Tuesday, May 2, 2022 at 3:00 p.m. in Ebling Auditorium in the Microbial Sciences Building. This year, **Dr. Todd Courtenay**, Global Health Undergraduate Program co-director and advisor, received an Academic Staff Excellence Award. Todd holds a BA in International Studies from University of Oregon and a doctorate in Geography from UW-Madison, with research and teaching interests in history, urban geography, sustainable development, and planetary health. The program helps students develop a broad, planetary-scale perspective that can be applied to community, state, national, and international health challenges. The major was inaugurated in 2020 and continues to grow rapidly with over 400 undergraduate students.

Announced in April, we just learned that **Dr. Sean Schoville** will be honored as a 2023 recipient of the Campus Teaching and Learning Center, Awards for Mentoring Undergraduates In Research, Scholarly and Creative Activities. The Office of the Provost offers awards to recognize the important role mentors play in fostering undergraduates' intellectual, personal and professional growth through participation in high-impact practices including research, scholarly and creative endeavors. These awards provide faculty members, groups of mentors, academic staff, post-doctoral fellows and graduate students with recognition for their excellence in mentoring undergraduates and their contribution to our students' Wisconsin Experience. Awardees will be recognized at the annual Undergraduate Symposium in late April.

Upcoming Events

Mark your calendars! The 2023 Wisconsin Insect Fest event is being planned as a one-day afternoon/evening event on **Saturday August 19th, 2023** at the **Upham Woods Outdoor Learning Center** near the Wisconsin Dells. Upham Woods is a 300+ acre UW/Extension-affiliated property along the Wisconsin River. UW-Entomology will have the conference center reserved at Upham Woods, which offers us two classrooms for activities and a kitchen area. Not only is Wisconsin Insect Fest a fun way to provide entomology-related outreach, but it can also serve as a community-building event for the department. This year's closer location will make it easier to get to from Madison as Upham Woods is only about an hour from campus. The later date (late August instead of July) was chosen so that many students will be back in the Madison area. Wisconsin Insect Fest can serve as a great kick-off event for the department before the semester begins. Stay tuned for upcoming announcements about planning for Wisconsin Insect Fest and recruiting participants and activity leaders. If you have any questions about Wisconsin Insect Fest, feel free to send PJ an email (pliesch@wisc.edu) or drop by the Insect Diagnostic Lab to chat!

Entomology Graduate Student Association Update

The **Entomology Graduate Student Association** has been busy this winter! We had our elections in December, and our new EGSA Officers have been working hard to develop and host events for our community. In February, **Michael Troutman** led a workshop on iNaturalist as a community science method and **Gigi Melone** hosted EGSA's second annual Bug Valentine making. In March, **Kristina Lopez** and **Eliza Pessereau** hosted two panels about careers beyond academia in industry and government or non-profits. Coming up in April, Insect Ambassadors and EGSA will be participating in Swarm to Table and EGSA is hosting a graduate student retreat to Trout Lake. In May, the whole entomology community is invited to join us for EGSA's Spring Picnic on May 5th at 4 PM (more information by email soon!).

This semester we welcomed our new **Insect Ambassadors Co-coordinators, Eliza Pessereau and Celeste Huff**. The new team is working on increasing participation at outreach events, and organizing a community science series at the Lakeshore Preserve over the summer. As spring begins there are a lot of events scheduled for April and May, so please sign up to volunteer! Anyone in the Entomology community is encouraged to participate, and Eliza and Celeste are here to help you feel prepared. To sign up, write your name in a volunteer slot in the "Scheduled presentations" tab. Booth presentations are great for first-time volunteers, and our co-coordinators will walk volunteers through presentation information and supplies. If you have other ideas for events Insect Ambassadors could do, feel free to contact us!

As usual, the **EGSA Snack Room** (Russell Labs 242) is stocked up for spring with some new snacks, so stop by if you're hungry! All proceeds go to supporting EGSA's programming. You can now pay with Venmo (there is a QR code in the Snack Room on the bulletin board)!

This is my last update as EGSA's President, since I will be graduating this summer. Please welcome our new EGSA President, Gigi Melone, who will be starting this summer. I know EGSA is in very good tarsi! *- Hanna McIntosh, EGSA President*

Diversity, Equity, and Inclusion Update

The Department's Diversity, Equity, and Inclusion (DEI) committee has been busy exploring ways to increase a sense of community and belonging through welcome events for incoming students, modifications of the seminar series, and other ways of creating more of a cohort experience for students. If you are interested in learning more reach out to Claudio (cgratton@wisc.edu), or come to meetings (first Monday of each month, 300-4:30pm, 237 Russell).

Wisconsin Insect Research Collection

Currently in the **Wisconsin Insect Research Collection** (WIRC), we are nearing the completion of one NSF-funded digitization project while simultaneously ramping up our efforts on a second. Our first collaboration, the Terrestrial Parasite Tracker TCN, has the ambitious goal to *"...mobilize non-digitally and digitally captured vector and ectoparasite collections to data aggregators (e.g., iDigBio Hub, GBIF) to help build a comprehensive picture of ectoparasite host-association evolution, distributions, and the ecological interactions of disease vectors which will assist scientists, educators, land managers, and policy makers."*

Our objectives for the second project are to digitize 68,000 butterfly and moth occurrence records from WIRC specimens and contribute these to the **Lepidoptera of North America Network** (or LepNet) project dataset. We will also capture and share 1,500 images of exemplar species with the scientific community.

***TeamWIRC**. Left to right, back row: Natalie, Skyler, Hazel; middle row: James, Julia, Mickayla; front row: Zephyr, Elizabeth, Nathan.*

These digitization efforts are happening concurrently with our ongoing, multi-year reorganization of the collection. The capacity of the WIRC increased roughly 30% overall, and nearly 80% in our Stock Pavilion space, following the completion of our infrastructure replacement project. Now that we have ample natural history cabinet and drawer space, we are working through our large backlog of multiple, significant specimen donations we have received during the past several years.

None of this progress would be possible without the tremendous effort of our dedicated student workforce. This spring, we added five new curatorial assistants to TeamWIRC—**Elizabeth Ehlert**, **Julia Cohen**, **Natalie Diller**, **Skyler Cousin**, and **Zephyr Henry**. They joined our seasoned crew of **Hazel Wintermantel**, **Mickayla Denis**, **Nathan Magenheim**, and our LTE digitization specialist, **James Holmquest**. WIRC Director **Dan Young** and I would like to acknowledge the dedication and invaluable contributions of our current (and former) undergraduate curatorial assistants!

Looking ahead, this summer is also shaping up to be a busy and productive time as well. In June, I will spend a week at the **U.S. Navy Entomology Center of Excellence** (NECE) in Jacksonville, Florida. Lieutenant Commander **James C. Dunford**, Assistant Officer in Charge at NECE, invited me as an advisor and consultant to him and his staff as they adopt collection management best practices and develop a digitization workflow for their relatively small—but globally significant—insect reference collection. Jim is also an alum of the Young Lab and therefore has a clear understanding of the crucial role natural history collections play in providing the baseline data needed to document the distributional and phenological changes of economically- and medically-important species on our rapidly changing planet.

Finally, at the end of July, I will travel to Iasi, Romania, to attend the 10th International Congress of Hymenopterists. I've been the Treasurer of the International Society of Hymenopterists (ISH) for the past 12 years and I am really looking forward to hearing about the latest research on ants, bees, and wasps around the world...as well as spending quality time with good friends and colleagues!

- Craig Brabant, WIRC Curator

Lab updates

Crall Lab

Milestones and congratulations: It has been a busy spring in the Crall lab! Grad student **August Easton-Calabria** just gave a great Masters' seminar, describing their work in developing the **BumbleBox** (a low-cost, open-source platform for quantifying behavior in bumble bees and other social insects). Congrats August!

Congratulations are also in order for lab members **Gigi Melone** (who was awarded a NSF Graduate Research Fellowship!) and undergraduate **Julia Prouse** (who recently received a Hilldale undergraduate research grant!), as well as incoming postdoctoral fellow **Nicole DesJardins** (currently at Arizona State University), who has received a NSF Postdoctoral Research Fellowship in Biology, and will be joining the lab in Fall 2023. Congrats all!

Personnel: We welcomed two new undergraduates researchers into the lab this semester; **Olivia Geisheker** is working with grad student **Anupreksha Jain** on the effects of resource limitation on foraging and search behavior, and **Allison Lopina** is working with August Easton-Calabria on individual variation in metabolism and behavior in bumble bee colonies. Welcome Olivia and Allison! We will bid *adieu* to two graduating undergraduates - **Julia Wiessing** and **Madalyn Laskowski** - who have been in the lab for multiple years, and are both moving on to exciting next steps!

Publications: James co-authored a chapter on the impacts of neonicotinoid exposure on social bees (currently in press at Advances in Insect Physiology), and grad student Gigi Melone was an author on a manuscript exploring the effects of resource limitation and insecticide exposure on a solitary bee (published in Science of the Total Environment).

Gratton Lab

The Gratton Lab will have some changes coming shortly. **Olivia Rooney** (currently at Cornell University), will be joining the Gratton Lab as an MS student to work on a project looking at the effects of cattle grazing on pollinators. **Dr. Jenny Pugesek**, who has been with our group for about 2 years, will leaving the lab in May to joining the Xerces Society as their Midwestern coordinator for the Bumble Bee Atlas project. Before leaving the lab though, Jenny will be working with Claudio on a recently funded North American Pollinator Protection Campaign Imperiled Bombus Grant, which will "focus on evaluating the effects of stressors on bumble bees, enhancing knowledge of bumble bee biology and ecology, contributing to improved monitoring practices, or utilizing emerging techniques to best conserve imperiled bumble bees." Congratulations to Jenny and welcome Olivia! Finally, PhD students **Ben Iuliano** and **Skye (Harnsberger) Bruce** will be defending their theses in a few short weeks!

Guédot Lab

The Guédot Lab welcomed PhD student **Fatma Besbes** last Fall. Fatma is conducting her PhD in Entomology and is co-advised by Leslie Holland in Plant Pathology. Fatma studies the interaction between social wasps and cluster rot pathogens in grape. **Mitchell Lannan** completed his MS degree in December 2022 and headed off to Arizona where he is now the Forest Pest Specialist for the entire state of AZ, congrats Mitchell! **Gregory Gelembiuk** just finished his postdoc with us and is working on a manuscript looking at gene flow amongst local and regional populations of spotted-wing drosophila in collaboration with Sean Schoville and colleagues at the INRA Centre de Biologie et Gestion des Populations. **Morgan Weissner** accepted a MS position with us for Fall 2023 to study the impact of different species of nematodes on the red-headed flea beetle in cranberry. Morgan will continue to work with us this summer before transitioning to her MS degree in Entomology. **Matt Hetherington** and **Hanna McIntosh** are working hard on their PhD dissertations and submitting their papers. Matt will be defending this Spring and Hanna this summer. Finally, Christelle will be coming back from her sabbatical in June.

To continue with our webinar series for fruit production, we are now partnering with MN, IL, and IA to offer two new webinar series: a "Beginner apple grower" series and a berry "High tunnel production" series that are both ongoing. You can view recordings from our webinar series on our YouTube channel. In addition, the Wisconsin Fruit News newsletter will resume this month and is issued every two weeks throughout the season to provide in-season recommendations and alerts to fruit growers.

New publications:

- Drier T., Foye S., and Guédot C. 2022. Y-Tube Olfactometer for Entomology Research. Fusion 70:2.
- Henden J. and Guédot C. 2022. Invited Paper in Invasive Insect Species special issue: Effect of surrounding landscape on *Popillia japonica* abundance and their spatial pattern within Wisconsin vineyards. Frontier in Insect Science 2:961437. doi: 10.3389/finsc.2022.961437. link

Recent presentations:

1. Hetherington M.C. and Guédot C. 2022. Alfalfa perimeter strips reduce tarnished plant bug populations in June-bearing strawberry fields. In Symposium Breaking Old Habits: New Strategies to Reduce Insecticide Inputs in Fruit and Vegetable Production. Annual Meeting of the North-Central Branch of the Entomological Society of America. March 20-23, 2022.
2. Lannan M.C. and Guédot C. 2022. Impact of attract-and-kill management on Japanese beetle *Popillia japonica* (Coleoptera: Scarabaeidae) in Wisconsin vineyards. Entomological Society of America Annual Meeting- Student Talk, Vancouver, BC. Nov 13-16, 2022
3. Hetherington M.C., Brunet J., Ramirez R. Wenninger E., and Guédot C. 2022. Chemical ecology of host selection in *Lygus hesperus*. Annual Entomological Society of America Conference, Vancouver, BC, Canada. Nov 13-16, 2022
4. Trickle C., Guédot C., Holland L. 2022. Re-emergence of the False Blossom Phytoplasma and its Vector in Wisconsin Cranberry. American Phytopathological Society Plant Health. Pittsburgh, PA. Aug 6-10, 2022
5. Lannan M.C. and Guédot C. 2022. Impact of attract-and-kill management on Japanese beetle *Popillia japonica* (Coleoptera: Scarabaeidae) in Wisconsin vineyards. Entomological Society of America North-central Branch Annual Meeting- Student Poster, Minneapolis, MN. March 20-23, 2022

Schoville Lab

Awards/honors to recognize: Robert Hall, an undergraduate working in the Molecular Ecology lab, received an NSF GRFP award. **Sean Schoville** received a University of Wisconsin–Madison Award for Mentoring Undergraduates in Research, Scholarly and Creative Activities. **Jillian Schat** received the CALS Norman F. Olson Family Scholarship.

Upcoming events: First, the Center for Ecology and the Environment will host its Spring Symposium Event May 1-2, 2:00-5:30. It features graduate student research in ecology. Learn more: https://ecology.wisc.edu/spring-symposium-2023/. Second, Sean Schoville will speak at the Evolution Seminar Series on May 4, 12:30-1:30, giving a talk entitled "Spatiotemproal genomic analyses and insights into pest evolution." Learn more: https://evolution.wisc.edu/seminars/seminars-info/.

New publications:

- Tunström, K., A. Woronik, J.J. Hanly, P. Rastas, A. Chichvarkhin, A.D. Warren, A. Kawahara, S.D. Schoville, V. Ficarrotta, A.H. Porter, W.B. Watt, A. Martin, C.W. Wheat. 2023. A complex interplay between balancing selection and introgression maintains a genus-wide alternative life history strategy. Science Advances. link

- Cohen, Z., J. Bamberg, S. Schoville, R. Groves, and B. Bradford. 2023. Colorado potato beetle (Leptinotarsa decemlineata) prefer *Solanum jamesii* populations on which they were originally observed in the wild. American Journal of Potato Research. link
- Cohen, Z. S.D. Schoville, and D.H. Hawthorne. 2023. The role of structural variants in pest adaptation and genome evolution of the Colorado potato beetle (Say). Molecular Ecology 32(6): 1425-1440. link
- Chen, Y.H., Z.P. Cohen, E.M. Bueno, B.M. Christensen, and S.D. Schoville. 2023. Rapid evolution of insecticide resistance in the Colorado potato beetle, *Leptinotarsa decemlineata*. Cur. Op. in Insect Science 55: 101000. link

Steffan Lab

Members of the Steffan Lab are preparing for a busy field season in the cranberry marshlands of Wisconsin!

Nolan Amon's dissertation work has converged on several interesting, discrete research questions. Currently, he is mailing out reeds to collaborators around the country who will be helping him collect mason bees. **Victoria Salerno** and **Celeste Huff**, the newest members of the lab, have narrowed down their projects and are getting ready for their first MS mentoring committee meetings. Victoria was admitted to the WISCIENCE (Wisconsin Institute for Science Education and Community Engagement) fellowship program, and as a Teaching Fellow, will be very busy in the coming months. Celeste has been coordinating many spring outreach events for Insect Ambassadors, including planning for an upcoming Community Science Series with support of the Lakeshore Nature Preserve Student Engagement Grant. This summer, she will be collecting field data in cranberry marshes, conducting a grower survey with the support of the CIAS Mini-Grant, and attending the 2023 Bee Course in Tucson, Arizona!

Prarthana Ghosh continues to conduct experiments that tease apart aspects of bee-microbe symbioses while giving invited talks and preparing manuscripts. Spring is the time of year when we have hundreds of bees shipped to us from our bee suppliers in the West. Shawn and Prarthana had a paper published recently on the impacts of microbes on the trophic identities of condors in the high Andean plateaus of South America (Barceló, et al. 2022, Functional Ecology). This work represented a long-term collaboration with colleagues in the Dept of Forest and Wildlife Ecology. Shawn also had a paper accepted last week on a new, sustainable method for mass-producing nematodes as bio-control agents (Oliveira-Hofman et al., 2023, J. Insect Sci, in press). Shawn recently hosted two workshops on nematode propagation for cranberry growers who want to grow their own nematodes as effective bio-control agents. This spring, he will be traveling to northern Utah to conduct a series of experiments looking at altitudinal effects on bees.

Paskewitz Lab

New graduate students in the Paskewitz lab (co-mentored by Dr. Lyric Bartholomay) are **Zack Sieb** and **Andie Forsythe**. Zack and Andie will work on problems related to peridomestic control of ticks. Graduate student **Kristina Lopez** will complete her doctoral work in Spring 2023 and take on a new position as a postdoctoral associate with the Midwest Center of Excellence for Vector-borne Disease. We recently received press coverage by Entomology Today on the use of mannequins as a novel tool for training the public to find ticks during a tick check. Read more here.

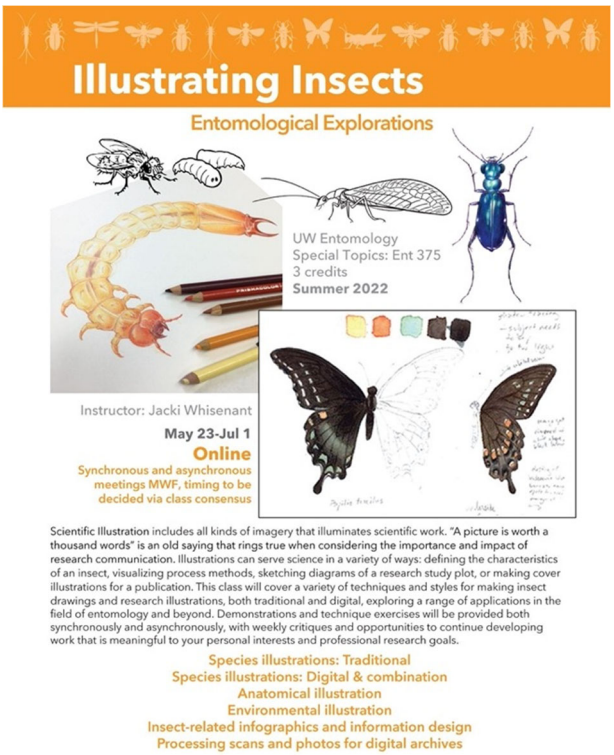
New publications:

- Paskewitz S. et al. US Patent. US-11603386-B2. Issued in 2023 Insect, tick, and mite repellent derived from *Xenorhabdus budapestensis*
- Kache, Pallavi A., et al. "Evaluating spatial and temporal patterns of tick exposure in the United States using community science data submitted through a smartphone application." *Ticks and Tick-borne Diseases* 14.4 (2023): 102163. link
- Johnson, Haley E., et al. "Assessment of Truck-Mounted Area-Wide S-methoprene Applications to Manage West Nile Virus Vector Species in the Suburbs of Chicago, IL, USA." *Journal of Medical Entomology* 60.2 (2023): 384-391. link

- Lee, Xia, George-Ann Maxson, and Susan Paskewitz. "Single Mowing Event Does Not Reduce Abundance of Ixodes scapularis (Acari: Ixodidae) and Dermacentor variabilis (Acari: Ixodidae) on Recreational Hiking Trails." *Journal of Medical Entomology* 60.1 (2023): 228-234. link
- Mandli, Jordan T., Susan M. Paskewitz, and Jorge E. Osorio. "Safety and immunogenicity of orally administered poxvirus vectored constructs in the white-footed mouse (*Peromyscus leucopus*)." *Vaccine: X* 13 (2023): 100259. link

Young Lab

Of course, most will know that the department offered **Insect Fest 2022** (29-30 July), hosted by Kemp Natural Resources Station. Among many other activities, Jacki Whisenant offered an insect illustration workshop. Jacki is planning to offer the Insect Illustration course once again this summer (as an ENT 375), see course announcement at right. Jacki completed their M.S. (27 May 2022): A Survey of the Tetratomidae of Wisconsin (Coleoptera: Tenebrionoidea), and is currently hopping back & forth between Madison and Cornell where assisting a collection reorganization project.



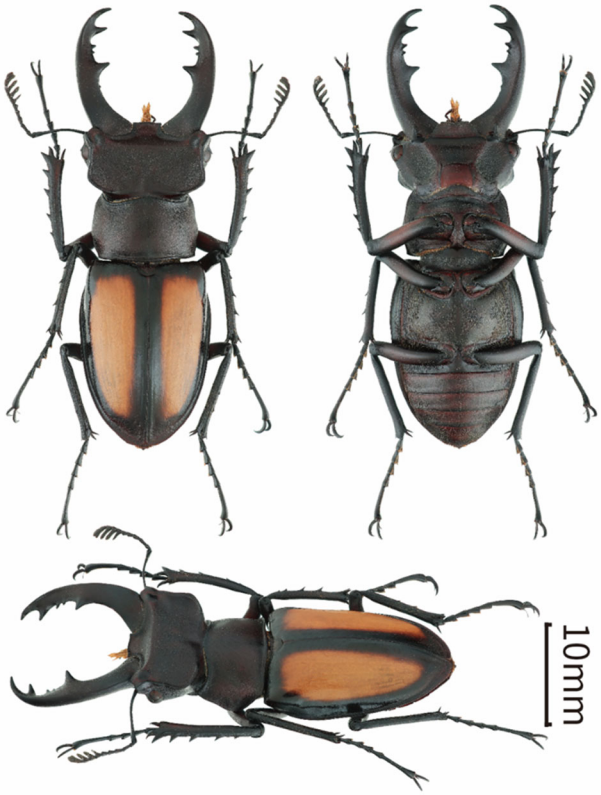
Dan's ENT 375/701 **Advanced Taxonomy of Coleoptera** class enjoyed September weekend field work at the Kemp, September 9-11, 2022. The setting, as many of you will know is on beautiful Tomahawk Lake, pictured below left. Many thanks also to our own Journey Prack for driving assistance and fantastic kitchen work in helping me feed the 10 member group!

Winter Fieldwork (?!) It was a rather different look when Dan & wife Joan visited in March, ostensibly to look for winter-active Diptera. We drove up in a blinding snowstorm and arrived at Kemp bedecked in 31 inches of snow! Not even our snowshoes were completely up to that task!

Ann Marsh continues as the (largely virtual) TA for ENT 201 alongside Drs. Schoville and Groves. She continues to develop her Ph.D. staphylinid research under the joint supervision of Drs. Schoville and Young, with one specimen illustrated, left photo.

Zhihong Zhan defended his (M.S.) thesis on November 4. His gargantuan 451 page thesis (yes, Master's!) is one of the largest from my lab, which is known for large theses! Zhihong is now back home in China working on his Ph.D. but we stay very much mutually engaged in beetle taxonomy and currently have three manuscripts submitted for publication. One incredible specimen is shown photographed below.

Instructionally, fall was a heavy lift for **Dan Young** with **ENT 302** (Introduction to Entomology – as always for going on 40 years)! Dan also taught **ENT 375/701** as noted above, along with **ENT 375** FIG: Global Biodiversity and the Sixth Mass Extinction. ENT 302 included our "normal" daylong, Sunday field collecting trips to the Mecan River (Marquette Co.) and Cruson Slough of the Lower Wisconsin River (Richland Co.). The ENT 375/701 gang enjoyed a couple day-tips to the Baraboo Hills area along with the Kemp weekend. Now approaching the end of Spring Semester with **ENT 302** and **ENT 432**.



Dan continues to serve as co-Chair of the UW Natural History Museums Council (NHMC), Liaison between the Society for the Preservation of Natural History Collections (SPNHC) and the Entomological Collections Network (ECN), and Director of the WIRC. Wisconsin-based summer 2023 fieldwork will focus on a 4th year of Malaise trap sampling at the Kemp Natural Resources Research Station.

Research manuscripts and book chapters submitted include:

- Young, D. K. Family Cupedidae. *In* Evans, A., A. Smith, P. Skelly, eds., Beetles of Canada and the United States. CRC Press, Inc., Boca Raton, FL. (book chapter)
- Philips, T. K. & D. K. Young. Family Micromalthidae. *In* Evans, A., A. Smith, P. Skelly, eds., Beetles of Canada and the United States. CRC Press, Inc., Boca Raton, FL. (book chapter)
- Young, D. K. & P. J. Johnson. Family Artematopodidae. *In* Evans, A., A. Smith, P. Skelly, eds., Beetles of Canada and the United States. CRC Press, Inc., Boca Raton, FL. (book chapter)
- Young, D. K. & P. J. Johnson. Family Brachypsectridae. *In* Evans, A., A. Smith, P. Skelly, eds., Beetles of Canada and the United States. CRC Press, Inc., Boca Raton, FL. (book chapter)
- Hájek, Jiří & D. K. Young. Family Callirhipidae. *In* Evans, A., A. Smith, P. Skelly, eds., Beetles of Canada and the United States. CRC Press, Inc., Boca Raton, FL. (book chapter)
- Keller, O. & D. K. Young. Family Prostomidae. *In* Evans, A., A. Smith, P. Skelly, eds., Beetles of Canada and the United States. CRC Press, Inc., Boca Raton, FL. (book chapter)
- Young, D. K. & K. R. Hinson. Family Stenotrachelidae. *In* Evans, A., A. Smith, P. Skelly, eds., Beetles of Canada and the United States. CRC Press, Inc., Boca Raton, FL. (book chapter)

- Keller, O. & D. K. Young. Family Synchroidae. *In* Evans, A., A. Smith, P. Skelly, eds., Beetles of Canada and the United States. CRC Press, Inc., Boca Raton, FL. (book chapter)
- Young, D. K. & D. A. Pollock. Family Tetratomidae. *In* Evans, A., A. Smith, P. Skelly, eds., Beetles of Canada and the United States. CRC Press, Inc., Boca Raton, FL. (book chapter)
- Young, D. K. Family Pyrochroidae. *In* Evans, A., A. Smith, P. Skelly, eds., Beetles of Canada and the United States. CRC Press, Inc., Boca Raton, FL. (book chapter)
- Young, D. K. Family Ischaliidae. *In* Evans, A., A. Smith, P. Skelly, eds., Beetles of Canada and the United States. CRC Press, Inc., Boca Raton, FL. (book chapter)
- Zhan, Z., K. Jing, and D. K. Young. 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 (Submitted 9 December 2022 to Zootaxa; 12 manuscript pages, 4 plates).
- Zhan, Z., and D. K. Young. Discovery and Description of the female of *Lucanus takeoi* Adachi (Coleoptera: Lucanidae) from Southwest China. (Submitted 13 December 2022 to The Coleopterists Bulletin; 5 manuscript pages, 1 plate, 2 figures).
- Zhan, Z., K. Jing, and D. K. Young. Descriptions of the mature larva and adult female of *Pseudopyrochroa girardi* Young from Southwest China (Coleoptera: Pyrochroidae: Pyrochroinae), with natural history observations. (Submitted 29 December 2022 to Zootaxa; 10 manuscript pages, 5 plates, 12 figures).
- Gao, Qi, D. K. Young, Zhan, Z-H., Cheng, H-Y. & Pan, Z. Revision of *Eupyrochroa* Blair, 1914 (Coleoptera: Pyrochroidae) based on morphological comparison and molecular phylogenetics. (Submitted 28 February 2022 to Zootaxa; 16 manuscript pages, 5 plates).

Bugs in the news

- Light pollution may extend mosquitoes' biting season. A new study's finding that urban light pollution may disrupt the winter dormancy period for mosquitoes that transmit West Nile virus could be considered both good news and bad news. The good news is that the disease-carrying pests may not survive the winter if their plans to fatten up are foiled. The bad news is they're biting humans and animals longer into the fall. – ScienceDaily.com
- Luna moths use their tails solely for bat evasion. Scientists recently discovered that Luna moths use their long tails as decoys to throw bats off their trail. But their tails also make Luna moths might also make them stand out to potential mates and make them more conspicuous to lurking predators. – ScienceDaily.com
- Male yellow crazy ants are real-life chimeras. Researchers discovered that males of the yellow crazy ant have maternal and paternal genomes in different cells of their body and are thus chimeras. – ScienceDaily.com
- Perfume component helps lure male moth pests. North Carolina State University researchers have shown that adding a small amount of a chemical used in perfumes (nonanal) to a two-chemical combination of other sex pheromones helped increase the cocktail's effectiveness in mimicking female fall armyworm calls to males. – ScienceDaily.com
- Engineered plants produce sex perfume to trick pests and replace pesticides. Tobacco plants have been engineered to manufacture an alluring perfume of insect sex pheromones, which could be used to confuse would-be pests looking for love and reduce the need for harmful pesticides. – ScienceDaily.com
- California's beetle-killed, carbon-storing pine forests may not come back. Ponderosa pine forests in the Sierra Nevada that were wiped out by western pine beetles during the 2012-2015 megadrought won't recover to pre-drought densities, reducing an important storehouse for atmospheric carbon. – ScienceDaily.com
- Surprising science behind bumblebee superfood. Sunflower family's spiny pollen vastly reduces prevalence of widespread parasite in bumblebees, increases production of queens. New research shows that the spiny pollen from plants in the sunflower family (Asteraceae) both reduces infection of a common bee parasite by 81-94% and markedly increases the production of queen bumble bees. – ScienceDaily.com