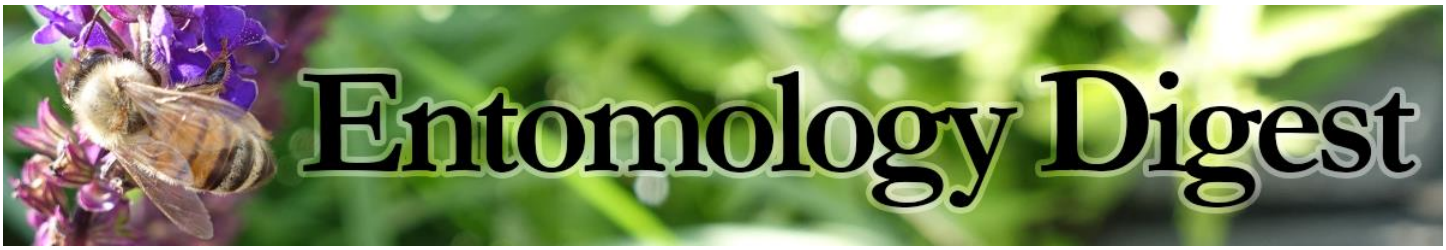

Entomology Digest – February, 2021

Letter from the Chair

Entomology Community and Friends of the Department, "*Tell me the Good News First*"

In my first 5 months of being chairperson in the Department of Entomology, so many things have been in flux and transition. Importantly, the face of the Department continues to change as we welcome the arrival of Dr. James Crall, currently a USDA-NIFA Postdoctoral Fellow, in the Department of Organismic and Evolutionary Biology, at Harvard University. James brings to the Department new skills, new ideas, and an emphasis on plant-pollinator interactions, with an applied interest in supporting pollinators and pollination in agroecosystems (https://entomology.wisc.edu/directory/james-crall/). In addition to new faculty, the Department has become the administrative center for the new Global Health major (https://guide.wisc.edu/undergraduate/agricultural-life-sciences/entomology/global-health-bs/), where students study human health and well-being through population-level and planetary health perspectives. Our own Dr. Susan Paskewitz (https://entomology.wisc.edu/directory/susan-paskewitz/) is the new Program Director for the major which allows students an opportunity to advance their understanding of disease biology, environmental health, or public health disparities and development.

Our Department continues to be one of the best (a Top 10 Department) entomology programs nationally as evaluated by Academic Analytics, and our success reflects the strength of our faculty, students, and staff. Recent recognitions within our own Department include Dr. Richard Lindroth (UW Biological Sciences, 2020 Hilldale Award; https://secfac.wisc.edu/awards-lectures/hilldale-awards/), Dr. Christelle Guedot (UW CALS, 2020 Pound Extension Award; https://cals.wisc.edu/about-cals/awards/cals-awards/), Dr. Dan Young (2020 WALSAA Outstanding Instructor Award; http://www.walsaa.org/), and Mr. PJ Liesch (2020 J.S. Donald Short Course Teaching Award; https://cals.wisc.edu/about-cals/awards/cals-awards/). The Wisconsin Insect Research Collection (WIRC) (https://wirc.wisc.edu/) was also recently awarded a Research Core Revitalization Program (RCRP) award through the Office of the Vice Chancellor for Research and Graduate Education, together with an Instructional Laboratory Modernization (ILM) grant administered through the UW College of Agricultural and Life Sciences (CALS). In addition to these awards, the WIRC has recently secured two NSF-supported, Thematic Collections Network awards totaling $250K and focusing upon the digitization and integration (1) of significant butterfly and moth collections from the upper Midwest Tension Zone region, and (2) tracing parasite-host associations and predict the spread of vector-borne disease.

The 2020 year has also been memorable in so many ways, and now it appears that a watershed moment is upon us. Importantly, we continue to join, as a Department, in the calls to unequivocally acknowledge the racial inequities and injustices that exist in our society, our institutions and our discipline; and to enact necessary changes that will heal the wounds and establish new platforms for change. It appears that there is now a critical mass to push for and enact such change, and we are committed to maintaining equal opportunities for all, and to encouraging diversity in our ranks.

The UW-Madison also continues to monitor the coronavirus pandemic and our collective response in terms of research and instruction. Both campus and the College continue to stress adherence to our Phase II Research Reboot guidelines (https://research.wisc.edu/research-reboot-phase-2/), together with course transitions to virtual and hybrid in-person formats guided by the UW's Smart Restart plan (https://covidresponse.wisc.edu/plan/). In the face of this ongoing pandemic, and the

last few budget cycles, we are preserving, and I remain very hopeful that with our recent successes and new investments, we will navigate these challenges.

– Russ Groves

Upcoming Friday Colloquia

- Nov 6 – Entomology Towne Hall
- Nov 13 – Open
- Nov 20 – No colloquium (ESA)
- Nov 27 – No colloquium (Thanksgiving)
- Dec 4 – Open
- Dec 11 – Entomology Towne Hall

Lab updates

Gratton Lab

The Gratton Lab has been an integral part of a USDA-funded CAP (Coordinated Agricultural Project) called Grassland 2.0. This is a collaborative project which brings together farmers, supply chains, natural resource managers, university researchers and others to envision and help transition agricultural systems that currently support dairy and beef using annual cropping systems, to ones based more on perennial grasslands. We are one year into a 5 year, $10M grant and Claudio is co-director along with Randy Jackson in Agronomy. Here is some recent press in Morning AgClips.

Guedot lab

We will welcome a new MS student starting in January, Mitchell Lannan, who will work on implementing an Attract and Kill strategy for managing Japanese beetle in commercial vineyards.

Paskewitz lab

- The Paskewitz lab congratulates Tela Zembsch, MS Entomology 2020, who has just accepted a position with the New York Department of Health to focus on surveillance and research on the blacklegged tick and associated diseases in New York. Tela will be moving to Albany at the end of November and will start her new position in mid-December.
- Dr. Bieneke Bron, also with the Paskewitz Lab, recently departed for a position at Wageningen University in the Netherlands, where she will be working on modeling the transmission of Rift Valley Fever virus.
- Recent publications from us include using a resin block tool for investigating how well people recognize ticks and Lyme disease vectors and an evaluation of a granular pyrethroid for tick control in residential lawns.
- Lieutenant Commander Ryan Larson successfully defended his dissertation Oct 30 on the importance of the deer mouse on Lyme disease transmission in the Upper Midwest.

Young lab

It has been a summer and autumn of cancellations and plans daily revised and scraped. Nonetheless, some good news (and we all need that)!

Ann Marsh, M. S. 2020. Yes, Ann completed and defended her master's thesis this summer: A Survey of Mycetoporini of Wisconsin (Coleoptera: Staphylinidae: Tachyporinae). Hot on the heels of this success, she was hired as a Lecturer in the department and is currently at the helm in the Fall, 2020 virtual edition of ENT 201. Ann intended to continue here on a Ph.D. on her beloved staphylinids under the joint supervision of Drs. Schoville and Young.

Jacki Whisenant. Jacki continues her master's research: A Survey of the Tetratomidae of Wisconsin (Coleoptera: Tenebrionoidea). She continues sorting through the 2019 backlog of statewide samples, not finding as many tetratomids as hoped, but still adding vouchers from under-collected counties. For Dr. Oberhauser's monarch monitoring project, all parasitoid tachinid fly samples have been mounted and data entered, just in time for this year's batch to arrive! In non-entomological news, Jacki completed a project for the UW Radiology Department with Dr. Tabassum, creating 160 images for educational material, showing medical students how to interpret radiology images of the head and neck (one overview image is included here). The pandemic took a big bite out of Jacki's thesis progress and has, thus far, completely stymied her work on the 3rd floor "Phylogeny of the Insects" mural.

Dan Young. Instructionally, this included teaching our "Studies in Field Entomology" entomology capstone, ENT 468, remotely – *sans* the field visits to the Wyoming Rockies and Black Hills of South Dakota. Student scattered from Los Angeles to a variety of locations around Wisconsin. Much of the summer was spent working from home to reimagine course content for virtual as well as blended offerings of fall semester classes. The fall docket has included ENT 302: Introduction to Entomology, as always; the "FIG" course, ENT 375: Biodiversity and the Sixth Mass Extinction; and ENT 701: Advanced Taxonomy of Coleoptera. The COVID-19 summer did provide opportunities to work socially distanced. Research focused on maintaining Malaise traps at Hemlock Draw in the Baraboo Hills, as well as beginning a new WI beetle survey project at the Kemp Natural Resources Research Station in northern Wisconsin.

Insect research collection

This year has been exceptional in many ways. WIRC staff, like everyone else, has been adjusting to life during the global Covid-19 pandemic. Despite these extraordinary times, progress has continued apace in the WIRC. Director Dan Young is currently teaching three courses simultaneously, adapting their curricula to shifting modalities on a nearly daily basis. Curator Craig Brabant is overseeing two ongoing NSF-funded digitization projects while finding time recently to submit a proposal for a third. WIRC technician James Holmquest is currently focused on transcribing label data for blood-feeding insects as part of our Terrestrial Parasites Tracker TCN collaboration.

In 2020, WIRC staff was also awarded a combination of UW-Madison grants (RCRP, ILM, and McIntire-Stennis) that will support the complete overhaul of our collection infrastructure. We are currently working with vendors on a plan to replace every pinned insect cabinet in the WIRC—both in Russell Labs and in our Stock Pavilion collection space (aka "the annex"). These grants will also allow us to add many additional cabinets for current expansion and future grown of the collection. The WIRC's instructional capacity will also increase with the purchase of new computer workstations and dissecting microscopes.

This summer, Curator Brabant completed the migration of our existing specimen relational database from a Russell Labs virtual server to its current host, DoIT Shared Web Hosting service. He also created and launched a new WIRC website (wirc.wisc.edu). Visit our new website to learn more about these and other significant WIRC milestones in 2020.

Entomology Graduate Student Association

Highlights from October

- New graduate student representatives were elected for the Diversity, Equity, and Inclusion Committee: Taylor Tai and Skye Harnsberger.
- Hanna McIntosh and Erin Barnes Lowe were elected as "at large" members.
- EGSA meetings will now begin with a land acknowledgement.
- At the start of each meeting, one member will give a brief land acknowledgement and/or history of how their research interacts with, is influenced by, and/or has affected American Indians or Indigenous Peoples abroad.
- Three Amendments to the EGSA Constitution were passed.
- We deleted the statement that the President selected graduate student representatives to serve on faculty committees.
- We added language stating that graduate student representatives are elected by a simple majority to serve one-year terms with the possibility of reelection.
- We changed "Linnean Games" to "Entomology Games" anywhere it appeared in the document.

Looking forward to November

- We will vote on additional amendments to our constitution.
- Proposed: adding language that states officers must have attended 50% of the previous semester's meetings to be eligible for election.
- Proposed: editing the document for typos.
- Proposed: adding language which more clearly states the role of graduate student representatives on faculty committees.
- Proposed: adding a land acknowledgement statement to our constitution – the same statement that is posted on the Entomology Department's Website.

Committee activity

DEI committee

The Entomology Department created a new standing committee, the Diversity, Equity, and Inclusion (DEI) Committee that advises the Department on matters of diversity, equity and inclusion affecting the Department. The committee is composed of faculties, students, and staff. The committee's responsibilities and goals are to keep abreast of DEI issues affecting the

department, to develop and implement DEI initiatives for the department, and to communicate information to the department on DEI activities initiated in the Department, College and Campus. – *Christelle*

Research committee

The research committee worked over the summer to help coordinate space requests for our side of Russell Labs. We approved space for our new faculty, Dr. James Crall, on the 4th floor (437 and 444 complexes), and space for our building manager John Wipperfurth to move his office to the 246 Russell Labs. In addition, the research committee advised the department to consider the request to house the advisors for the Global Health Majors in the 345 area as a departmental-wide decision, which was ultimately approved. In the coming months, the Research committee will be working to update the Departmental guidelines for Tenure and for promotion to Full professor, both of which require updates every 5 years. – *Claudio*

Web committee

The web committee recently completed a few updates and additions to the department's website. We added a Mission and Values page, which includes the Department's Code of Conduct, Diversity Statement, Statement on Racial Inequality and Injustice, and Land Acknowledgement Statement. We completed the migration of all faculty and staff personnel profiles to a new and improved directory listing structure. And finally, we gained access to the Google Analytics account for the website and can report the site had about 1100 visitors over the past month, mostly visiting the faculty and graduate student information pages. – *Ben B.*

Recent publications

Gratton lab

- Iuliano, B., and C. Gratton. 2020. Temporal Resource (Dis)continuity for Conservation Biological Control: From Field to Landscape Scales. Frontiers in Sustainable Food Systems. https://doi.org/10.3389/fsufs.2020.00127

Groves lab

- Clements et al. 2020. Genetic Variation Among Geographically Disparate Isolates of Aster Yellows Phytoplasma in the Contiguous United States. Journal of Economic Entomology. https://doi.org/10.1093/jee/toz356

Guedot lab

- Kamiyama et al. 2020. Degree day models to forecast the seasonal phenology of Drosophila suzukii (Diptera: Drosophilidae) in Midwest U.S. PLoS ONE. https://doi.org/10.1371/journal.pone.0227726
- Lois et al. 2020. Supplemental feeding solution do not improve honey bee (Hymenoptera: Apidae) foraging on cranberry (Vaccinium macrocarpon). Journal of Apicultural Research. https://doi.org/10.1080/00218839.2020.1716472
- Olazcuaga et al. 2020. A whole-genome scan for association with invasive success in the fruit fly Drosophila suzukii using contrasts of allele frequencies corrected for population structure. Molecular Biology and Evolution. https://doi.org/10.1093/molbev/msaa098
- Stockton et al. 2020. Seasonal polyphenism of Spotted-wing Drosophila is affected by variation in local abiotic conditions within its invaded range, likely influencing survival and regional population dynamics. Ecology and Evolution. https://doi.org/10.1002/ece3.6491

Schoville lab

- Cohen et al. 2020. Elevated rates of positive selection drive the evolution of pestiferousness in the Colorado potato beetle (Leptinotarsa decemlineata, Say). Molecular Ecology. https://doi.org/10.1111/mec.15703

Paskewitz lab

- Bron et al. 2020. Assessing recognition of the vector of Lyme disease using resin-embedded specimens in a Lyme endemic area. Journal of Medical Entomology. In Press.
- Bron et al. 2020. Context matters: Contrasting behavioral and residential risk factors for Lyme disease between high-incidence states in the Northeastern and Midwestern United States. Ticks and Tick-borne Diseases. https://doi.org/10.1016/j.ttbdis.2020.101515
- Bron et al. 2020. Do-It-Yourself Tick Control: Granular Gamma-Cyhalothrin Reduces *Ixodes scapularis* (Acari: Ixodidae) Nymphs in Residential Backyards. Journal of Medical Entomology. https://doi.org/10.1093/jme/tjaa212
- Larson et al. 2020. Immature *Ixodes scapularis* (Acari: Ixodidae) Collected from *Peromyscus leucopus* (Rodentia: Cricetidae) and *Peromyscus maniculatus* (Rodentia: Cricetidae) Nests in Northern Wisconsin. Journal of Medical Entomology. https://doi.org/10.1093/jme/tjz133
- Stauffer et al. 2020. Detection of zoonotic human pathogens from *Ixodes scapularis* in Wisconsin. Journal of Vector Ecology. https://doi.org/10.1111/jvec.12384

Young lab

- Young, D.K. 2019. New state record and range extension for *Mycterus youngi* Pollock (Coleoptera: Mycteridae) – but is it really rare? The Great Lakes Entomologist 52 (2): 176-178. https://scholar.valpo.edu/tgle/vol52/iss2/13
- Arango, R. A. and D. K. Young. 2020. New records and antennal variation of the elusive *Ctenobium antennatum* Leconte (Coleoptera: Ptinidae) from Massachusetts and Wisconsin, USA. Coleopterists Bulletin 74(2): 337–339. https://doi.org/10.1649/0010-065X-74.2.337
- Young, D. K., D. A. Pollock, D. Telnov. 2020. Family Pyrochroidae, p. 565-596. ***In*** Löbl, I. and A. Smetana, eds. Catalogue of Palearctic Coleoptera. Volume 5. Tenebrionoidea. Brill Publishers, Leiden Netherlands (book chapter)

Bugs in the news

20 million-year-old winged ant trapped in amber. Dr. Yuan Ji, Shanghai, China. Via The Atlantic.

- Asian giant hornet nests located and destroyed in Washington state – https://apnews.com/article/scientists-remove-98-murder-hornets-616a95fe52901a21e2e018a7b2a4a1e5
  https://www.nytimes.com/2020/10/23/us/-murder-hornet-nest-washington.html
- This beetle can survive getting run over by a car; Engineers are figuring out how. October 21, 2020. Purdue University.
  Getting run over by a car is not a near-death experience for the diabolical ironclad beetle. How the beetle survives could inspire the development of new materials with the same herculean toughness, engineers show.
  Article: https://www.sciencedaily.com/releases/2020/10/201021112341.htm. Purdue YouTube video: https://www.youtube.com/watch?v=NS3AqJB5SfU
- Chemists create new crystal form of insecticide, boosting its ability to fight mosquitoes and malaria. October 12, 2020. New York University.
  Through a simple process of heating and cooling, researchers have created a new crystal form of deltamethrin — a common insecticide used to control malaria — resulting in an insecticide that is up to 12 times more effective against mosquitoes than the existing form. Article: https://www.sciencedaily.com/releases/2020/10/201012152049.htm
- Losing flight had huge benefits for ants. October 19, 2020. Okinawa Institute of Science and Technology (OIST) Graduate University.
  Researchers have taken detailed scans of worker ants to examine the hypothesis that the loss of flight is directly connected to the evolution of strength.
  https://www.sciencedaily.com/releases/2020/10/201019082912.htm
- The Atlantic: Photographing the Microscopic: Winners of Nikon Small World 2020.
  https://www.theatlantic.com/photo/2020/10/photographing-microscopic-winners-nikon-small-world-2020/616699/