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# ENTOMOLOGY Stridulations

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A Newsletter of The Ohio State University Department of Entomology  
January 2020

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## DEPARTMENT ANNOUNCEMENTS



Dr. Ellen Klinger has joined the faculty as an Assistant Professor of Professional Practice. Dr. Klinger comes to us from the USDA-ARS where she was an insect pathologist working on diseases of bees for 15 years. Ellen earned her BS from Lycoming College, her MS from University of Maine and her PhD from Utah State University. She is teaching Entomology 1101 Insect Biology and 5604 Capstone Course in Spring 2020. Join us in welcoming Ellen to The Ohio State University.

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## FEATURED LABS



**Dr. Jamie Strange** joined the Department of Entomology as the new chair in September of 2019. He came to The Ohio State University from USDA-ARS where he worked on developing management systems for using bumble bees as commercial pollinators, understanding the distribution of parasites and pathogens across bumble bee communities, and the population genetics of wild bumble bee species. At OSU he is continuing to study how landscape influences parasite prevalence and the genetic structure of bumble bee populations, and how those factors influence the health of pollinators at the individual, colony, population and community levels. In addition to his administrative duties, he is currently recruiting graduate students to work on grant funded projects and developing a graduate level course in laboratory management.



**Dr. Andy Michel** came to the Department of Entomology in 2007. Based on the Wooster Campus, he serves as Associate Chair, as well as Associate Director of the Center for Applied Plant Sciences. His interests include using genetic and molecular ecological techniques to understand how insects adapt to their environments. Most of his research focuses on pest adaptation in agroecosystems, including the soybean aphid, western bean cutworm and the fall armyworm. This research is driven by connections with OSU Extension, agronomic crop producers and commodity organizations. In 2017, his research group published the soybean aphid genome, which, at the time, was the 4th aphid with a complete genome sequence. He is also collaborating with research in other insects, such as the Antarctic midge.

## OUTREACH

Outreach staff Denise Ellsworth, Jeni Filbrun and Jeni Ruisch held **177 outreach programs, conferences and events in 2019 with 12,865 participants**, reaching students and teachers (preschoolers thru college age), home school families, insect enthusiasts, beekeepers, Master Gardeners, Ohio Certified Volunteer Naturalists, farmers, green industry professionals, park professionals, and the general public.

### Upcoming outreach Events, spring or summer 2020

- A Bugs World, Wooster Campus, March 3-4

### Favorite 2019 outreach events, from our Outreach Specialists

- **Denise Ellsworth:** One Day Insect University, a new day-long program for insect enthusiasts taught by OSU entomology faculty, staff and students, featured a keynote address by Gretchen LeBuhn, San Francisco State University. Program returns October 27!
- **Jeni Filbrun:** “Firefly meet and greet” activity at Kingwood Center evening Firefly program. Each person assigned sequence of light blinks and flashlight, then just like a firefly, they had to find

- OSU Pollinator Summit, Columbus Campus, 4-H Center, April 1
- Nature's Best Hope workshop with Doug Tallamy, April 8
- Bees in Your Ohio Backyard, multiple workshops week of June 14th
- Beautiful Bugs day camp, Columbus Campus, Waterman, week of June 8th
- BugZooWoo program, Wooster Main Library, June 25

their "mate" - the person displaying the same light blink sequence.

- Jeni Ruisch: First farm tour at Waterman, riding on the wagon with a group of students for the first time, acquainting them to life here at the farm, and the research and outreach we are so proud of at OSU.

## Featured Bug Zoo Arthropods:

### COLUMBUS

Tailless Whip Scorpion, *Damon diadema*

Habitat: caves in central Africa

Fun Fact: cave-dwelling arachnid that can maneuver itself into tiny crevices by folding up its long legs and flattening itself out. Not actually a scorpion!



### WOOSTER

Australian Walkingstick, *Extatosoma tiaratum*

Habitat: Arboreal eucalyptus trees

Fun Fact: They can reproduce parthenogenetically, meaning the female can lay viable eggs that will hatch into female nymphs.



### Additional Photos

## PUBLICATIONS + GRANTS

Publications selected from ~40 published in 2019

**Esquivel C.J.**, Ranger C.M., **Phelan L.**, Martinez E.J., Hendrix W.H., **Cañas L.A.**, and **Michel A.P.** 2019. Weekly survivorship curves of soybean aphid biotypes 1 and 4 on insecticidal seed-treated soybean. *Journal of Economic Entomology*. 112: 712–719. doi: 10.1093/jee/toy410

**Meuti, M.E.** and **S.M. Short.** 2019. Physiological and Environmental Factors Affecting the Composition of the Ejaculate in Mosquitoes and Other Insects. *Insects*. 10 (74): 2-18. doi:10.3390/insects10030074

## COURSES

Selected courses recently taught by Dr. Megan Meuti and Dr. Pete Piermarini

ENTMLGY 4607:  
*Veterinary Entomology* Online; ~300 students per semester; 2 credit hours.  
Instructor: Piermarini

ENTMLGY 6310:

**Strange, J.P.** and Tripodi, A.D. 2019. Characterizing bumble bee (*Bombus*) communities in the United States and assessing a conservation monitoring method. *Ecology and evolution*, 9(3), 1061-1069. doi.org/10.1002/ece3.4783

**Turo, K.T** and **M.M. Gardiner**. 2019. From Potential to Practical: conserving bees in urban public green spaces. *Frontiers in Ecology and the Environment*. 17(3): 167–175. doi:10.1002/fee.2015

Yang, L., **Turo, K.J.**, **Riley, C.R.**, **Inocente, E.A.**, Tian, J., Hoekstra, N.C., **Piermarini, P.M.** and **M.M. Gardiner**. 2019. Can urban greening increase vector abundance in cities? The impact of mowing, local vegetation, and landscape composition on adult mosquito populations. *Urban Ecosystems*. 22: 287-839. doi.org/10.1007/s11252-019-00857-7

Musetti, L., Moltievskiy, N. and **N.F. Johnson**. 2019. Beetle Heritage: Cataloguing the Primary Types of Coleoptera in the C. A. Triplehorn Insect Collection. *The Coleopterists Bulletin*. 73(3):561-590. doi.org/10.1649/0010-065X-73.3.561

Wade, A., Lin, C., Kurkul, C., Ravasz Regan, E. and **R.M. Johnson**. 2019. Combined Toxicity of Insecticides and Fungicides Applied to California Almond Orchards to Honey Bee Larvae and Adults. *Insects*. 10 (20): 2-11. doi:10.3390/insects10010020

Conzemius, S.R., Hesler, L.S., Varenhorst, A.J. and **K.J. Tilmon**. 2019. Resistance of Soybean Plant Introductions to Three Colonies of Soybean Aphid (Hemiptera: Aphididae) Biotype 4. *Journal of Economic Entomology*. 112(5): 2407–2417. doi: 10.1093/jee/toz116

### Grant Award Highlights

**A. Michel**, Professor. NSF Polar Programs: Mechanisms of adaptation to terrestrial Antarctica through comparative physiology and genomics of Antarctic and sub-Antarctic insects. PI: N. Teets. Co-PI: A. Michel, P. Convey, S. Heyward. \$726,070; \$296,994 to A. Michel. 08/2019-07/2022.

**M. Gardiner**, Professor. NIFA: Landscape legacy and urban agriculture: Understanding the impact of heavy metal contamination on pollinator health and pollination services, Subaward Univ Iowa. \$78,893 to M. Gardiner. 09/2019-05/14/20.

**R. Johnson**, Associate Professor. NIFA: Benefits and risks for bees in the corn-soybean agroecosystem. \$458,004. 05/2019-04/2021.

**M. Meuti**, Assistant Professor. NIH/NIAID: Evolution of non-biting in mosquito disease vectors. PI: Peter Armbruster. Co-PIs: M. Meuti, C. Holzapfel. \$444,155; \$93,141 to M. Meuti. 02/2019-01/2020.

Ruiz-Arce, R., Islam, M. S., Aluja, M. and **McPheron, B. A.** (2019). Genetic Variation in *Anastrepha obliqua* (Diptera: Tephritidae) in a Highly Diverse Tropical Environment in the Mexican State of Veracruz. *Journal of economic entomology*, 112(6), 2952-2965.

*Insect Physiology and Molecular Biology Lab*; 13 students; 3 credit hours.  
Instructor: Meuti

ENTMLGY 6320:  
*Experimental Insect Physiology and Molecular Biology*; 10 students; 1 credit hour.  
Instructors: Meuti and Tae Lee

ENTMLGY 2101:  
*Pests, plagues, pollinators and poisons: Insects in Human Affairs*; 62 students; 3 credit hours.  
Instructor: Meuti

ENTMLGY 4999:  
*Undergraduate research in entomology*; 4 students; 1-3 credit hours.  
Instructor: Meuti

ENTMLGY 4999H:  
*Honors undergraduate research in entomology*; 1 student; 2 credit hours.  
Instructor: Meuti

ENTMLGY 8999:  
*Graduate research in entomology*; 3 students; 10-12 credit hours.  
Instructor: Meuti

ENTMLGY 8000:  
*Graduate Seminar*; 1 credit hour; 6 students.  
Instructor: Meuti

## FEATURED EDUCATOR



**Dr. Peter Piermarini** is an Associate Professor based on the Wooster Campus and has been with the department since 2011. His laboratory studies the molecular physiology and toxicology of mosquitoes to facilitate the development of novel insecticides and repellents for mosquito control. His primary teaching responsibility is an on-line undergraduate course in Veterinary Entomology (ENTMLGY 4607), which introduces students to the impacts that insects and arachnids have on the health and productivity of domestic animals. This 7-week course is offered each semester and is accessible to both science and non-science majors, allowing for a diverse audience to enroll. Since 2013, the course has reached over 1,500 OSU students, including science majors specializing in pre-professional programs (e.g., pre-med), non-science majors (e.g., finance, communication), and those in the Exploration Program. The first two learning modules introduce students to the epidemiology of vector-borne diseases and the evolution of blood feeding, a common route of pathogen infection. The last five learning modules provide specific information on major insect and arachnid groups (e.g., fleas, ticks, mites, flies) that have negative impacts on animal health. The first two introductory modules of the course have also been repackaged into an on-line certificate course that was recently approved by The Ohio Veterinary Medical Licensing Board for continuing education credit. [Register for certificate course](#)

## HIGHLIGHTED AWARDS

### FACULTY HONORS

**James I. Hambleton Award for Outstanding Research, Eastern Apiculture Society**  
Reed Johnson

**Fellow of the UC Davis Agricultural Sustainability Institute**  
Casey Hoy

**ESA NCB Award of Merit**  
Kelley Tilmon

**CFAES Distinguished Junior Faculty Research Award**  
Mary Gardiner

**GRADUATE STUDENT AWARDS**  
**CFAES Annual Conference Poster Award**  
Sarah Scott

**Ohio Supercomputing Center Poster Award**  
Harper McMinn-Sauder

### ESA Student Awards

**President's Prize for the Student Competition**

1<sup>st</sup> Place: Adrian Pekarcik, Chris Riley, Sarah Scott

2<sup>nd</sup> Place: Yvan Delgado de la Flor, Kendall King, Harper McMinn Sauder

**Infographic Competition**

1<sup>st</sup> Place: Grace Sward

### UNDERGRADUATE STUDENT AWARDS

**CFAES Undergraduate Research Forum Awards**

Luke Hearon, Hilary Kordecki, Karissa Smith

**Denman Undergraduate Research Forum Award**

Hilary Kordecki

# GRADUATE STUDENT DEFENSES

## December 2019

- **Carlos Esquivel Palma, Ph.D.**, “Toxicological interactions between thiamethoxam, aphids, and predatory natural enemies”. *Advisor: Michel*
- **Chris Riley, Ph.D.**, “Quantifying the ecosystem services and functions of forests across diverse urban landscapes”. *Advisor: Gardiner*
- **Ashley Yates-Stewart, Ph.D.**, “Molecular interactions among soybean aphids and aphid-resistant soybean”. *Advisor: Michel, Blakeslee (TPS program)*
- **Stephanie Murray, M.S.**, “Effects of used brood comb and propolis on honey bees (*Apis mellifera* L.) and their associated microbe, *Melissococcus plutonius*”. *Advisor: R. Johnson*
- **Emily Trejo Sypolt, M.S.**, “The impacts of soil degradation on plant pest suppression in cities”. *Advisor: Gardiner*

## Upcoming Spring 2020

- **Edna Alfaro Inocente, M.S.** defense. *Advisor: Piermarini*

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# STUDENT GROUPS

## EGSA

Entomology Graduate Student Association

EGSA kicked off the Accountabilibuddies program which pairs new graduate students with more senior students to act as a friendly resource. The goal of the program is to provide resources to new students and connect them with a student who can help answer questions about graduate school.

Along the same lines, EGSA established a resources folder for incoming students with quick reference sheets to a handful of topics. The resources are meant to provide one location with helpful information that can be consulted.

EGSA designed and sold insect themed t-shirts this year at the annual meeting and a handful of local events.

We had 5 EGSA members graduate this semester: Carlos, Ashley, Stephanie, Chris, and Emily. Congratulations all!!!

## CHRYSLALIS

Entomology Undergraduate Student Association

The Chrysalis group held educational events during the Fall semester, including a Bee Lab Tour, a Collecting Trip and a Collection Demonstration.

On September 9, Dr. Reed Johnson hosted a tour of the bee yard at the Rothenbuhler Honey Bee Research Lab. The group learned about bees and beekeeping through hands-on interaction with the hives.

On October 7, the undergraduate students visited the Chadwick Arboretum to collect insect specimens and learn about various collection techniques and how to use collection equipment.

On November 18, the undergraduate students learned how to pin insects to make an insect collection using specimens collected from the previous event at Chadwick.

Chrysalis has a number of upcoming events this Spring, including a trip to the Columbus

In the Spring, EGSA will host the following events.

- Bugs n' Brew - late January/ early February
- DeLong Seminar - February 13
- Social Trip - Late Spring
- Biweekly Craft Nights - January 7 & 21

campus insectary to handle live specimens and learn about rearing arthropods.



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