

HEXAPOD HERALD

Spring 2022

Moore selected Meigs Distinguished Teaching Professorship by UGA

Dr. Patricia Moore has been selected by the University of Georgia as a Meigs Distinguished Teaching Professor. This honor is the university's highest recognition for excellence in instruction.

"Meigs Professors are an elite group of faculty members at an institution that places a great value on outstanding instruction," said S. Jack Hu, the university's senior vice president for academic affairs and provost.

Moore incorporates evidence-based teaching methods into her classroom and is dedicated to promoting student engagement and academic development. She is committed to providing experiential learning experiences through her mentorship of undergraduate research projects that produce tangible outcomes.

"The primary objective of higher education is to teach people to learn how to learn. Our students need the skills to adapt and develop along with a changing world if they are going to be successful in their careers," she said.

Moore views research and teaching as integrated activities. Her academic research often incorporates her undergraduates and graduate students. "I try to focus on the process by which we understand the natural world, helping students to develop the analytical and critical thinking skills necessary to evaluate



new information and assess its quality. In my experience, moving to a student-centered learning environment has gone a long way in nurturing student confidence in their own knowledge and abilities as critical thinkers," she said.

Moore has achieved an international reputation in the field of evolutionary biology with more than 60 peer-reviewed publications in top journals. She is a facilitator in the Department and Leadership Teams for Action (DeLTA) project. This project, funded by the National Science Foundation, involves over 100 faculty over five years to transform undergraduate STEM education at UGA. Through the DeLTA team, Moore is working with faculty to develop a cohesive and impactful student experience in introductory biology.

Moore is the recipient of the D.W. Brooks Excellence in Teaching Award. She is a National Academy of Education Fellow in the life sciences. She is also a Senior Teaching Fellow and Innovative Teaching Fellow in the UGA Center for Teaching and Learning.



Department of Entomology
College of Agricultural & Environmental Sciences
UNIVERSITY OF GEORGIA

From the desk of S. Kristine Braman ...

Our Entomology Department at University of Georgia is delighted to congratulate Drs. Moore, Batzer and Adang on their recent recognitions in teaching and research. We welcome Samantha Murphy to our front office as she works to support our faculty, students and graduate and undergraduate coordinators. It was wonderful to gather in person at the Georgia Entomological Society Meeting last



week on Jekyll Island after a two-year hiatus. A highlight for me was being asked to give the Founders presentation honoring our retired Associate Dean, Dr. Beverly Sparks. "Dr. Sparks has led with grace and poise, gentility and a soft quiet voice but garnered great respect. Her understanding and appreciation of Extension programs and passion for education had an impact on Georgia Cooperative Extension and the National Cooperative extension system which will be evident for years to come. "

We were saddened to learn that Dr. Alton (Sparky) Sparks has passed away at the age of 90. Alton's service to the United States Department of Agriculture as a Research Entomologist and administrator stretched over a twenty-six-year period and took the family to Pecos, Texas, Stillwater, Oklahoma and Tifton, Georgia.

The Sparks Family requests that in lieu of flowers, gifts be made to the Sparks Family Enrichment Fund at the University of Georgia Department of Entomology in memory of Alton N. Sparks, Sr. The fund honors Sparky's passion for entomology, education, and providing educational enrichment support to students. Donations can be made on line at <https://t.uga.edu/7Za> or by mailing a check to UGA CAES, 117 Four Towers, Athens, Ga 30602. Please make checks payable to the UGA Foundation and include "Sparks Family Enrichment Fund" in the memo. Gifts are tax deductible.



Inside this issue

Meigs honor for Moore.....	1
Calendar reminders	19
Student awards.....	4
Faculty honors	4
Harris wins poster contest.....	18
Student Spotlight	6-7

Special points of interest

- Publications, pages 8-16
- ESA Highlights , page 5
- Kissing Bugs, pages, 3-4

BREAKING NEWS!!

Jon Golan, undergraduate entomology student, was just awarded The Mid-Term Foundation Fellowship. This award is UGA's most prestigious undergraduate scholarship program . It provides a stipend that helps cover full annual

cost of attendance for two years plus grants for travel study and research and a variety of additional enrichment activities. Only 2-4 fellowships are awarded each year. Jon is a undergraduate researcher in Dr. Carmen Blubaugh's Lab where he is searching for predators of a new invasive crop pest, the Yellow Margined Leaf Beetle. **Congratulations Jon!**



Vogel Lab Conducts Critical Kissing Bug Research

A kiss has such romantic appeal, yet some kisses just end in heartbreak.

A smooch from the *Rhodnius prolixus*, or the blood-sucking “kissing bug,” could be characterized more like the kiss of death — the insect is a primary vector for Chagas disease, a parasitic infection that kills more than 10,000 people annually around the globe. According to the [U.S. Centers for Disease Control and Prevention](#), victims with chronic cases of Chagas can suffer from life-threatening heart or digestive malfunctions.



“Chagas disease is the single most neglected tropical disease in the Americas,” said [Kevin Vogel](#), assistant professor in the University of Georgia [Department of Entomology](#), explaining why he was drawn to perform critically needed research on the insect.

“In fact, about three times the people die each year in the Americas from Chagas disease than all the other insect-borne diseases combined,” he added. “Five to ten million people are infected with the parasite worldwide at any given time.”

Considering the populations affected most, these numbers could be on the low side.

The insect is a carrier of the parasite *Trypanosoma cruzi*, which is spread through the feces of the insect, not the bite. However, evidence that a kissing bug has used someone for a meal is in the “hickey” type markings on the face of its victim or swelling around the eye.

The insect transfers the disease-causing parasite when the kissing bug finds a victim for a necessary blood meal, which usually happens through human or animal interaction during nighttime hours while the target host is sleeping in its nest or bed.

Besides humans, animals such as dogs and opossums suffer from the effects of the parasite transferred by a bite from the insect.

To learn more about the kissing bugs’ ability to transmit the parasite, Vogel is focusing on how the insect’s microbiome, or gut environment, influences the ability of the kissing bug to pass the parasite to its unsuspecting victims.

“If we really understand the biology of the kissing bug, then we may be able to see improved control strategies for the transmission of the parasite,” said Vogel, who established his kissing bug colony in 2018. It is one of only a handful of thriving research colonies for the insect in the U. S.

One of Vogel’s primary reasons for pursuing this direction of research is to hopefully turn the tide of the disease’s progression.

“Since there are limited treatment options for those who contract Chagas disease, the primary way of controlling the disease is through reducing or eliminating the kissing bug vectors,” he emphasized.

Although kissing bugs are found in the Southern U.S., fortunately most species found in North America are not efficient at spreading disease. However, species in other parts of the world are of great concern in terms of disease transmission.

“For a variety of reasons, the U.S. species do not seem to be good vectors of Chagas. There are around 100 species of kissing bugs and only 25 to 30 are excellent disease vectors,” Vogel said. Answering the question of why certain species are more effective vectors is part of what drives his research.

[College of Agricultural and Environmental Sciences](#) doctoral students [Nia Keyes-Scott](#) and [Carissa Gilliland](#) are both researching aspects of the insect’s microbiome. Keyes-Scott’s research focuses on how the microbiome may influence reproduction and metabolism — for example what factors influence the number of eggs produced by each insect. Gilliland is investigating how different bacteria influence the kissing bugs’ development and how the host organism’s immune system responds to those different bacteria.

(continue on page 4)

Vogel Lab from page 3

“Our overall goal is to establish a baseline understanding of what the microbes (bacteria) are doing. We know they are essential, but we would like to understand the unknown factors in the variations of bacteria in the gut of the kissing bug,” Vogel said.



©JenaJohnson

In **his lab** checking on the colony, Vogel further describes his personal and scientific perspective on studying the kissing bug.

“I just really like working with kissing bugs. They are one of the few model systems where we can easily control the microbiome and manipulate the insect for research purposes,” he said.

With interest in Chagas disease growing worldwide, Vogel hopes to eventually expand his lab, accelerating his promising research. The more he understands the biology of the kissing bug, the more lives may be saved from this disease in the future.

“It is kind of ironic, really ... This insect gives a kiss that could literally break your heart,” Keyes-Scott said of the insect at the core of her research efforts.

Batzer named SWS Fellow

Dr. Darold Batzer was recently named a Fellow for the Society of Wetland Scientists (SWS). The Fellow Award is the highest recognition of membership bestowed by the society.

The mission of SWS is to promote understanding, conservation, protection, restoration, science-based management and sustainability of wetlands.



Adang elected NAI Senior Member

The National Academy of Inventors has elected Dr. Michael Adang to the 2022 class of senior members. NAI Senior Members are active faculty, scientists and administrators who have demonstrated remarkable innovation producing technologies that have brought real impact on the welfare of society. This latest class comes from 41 research universities and are named inventors on over 1093 issued U.S. patents.

Student Shout Outs

Congratulations to the following students:

Outstanding Teaching Assistants for Entomology — **Gabriela Cardona-Rivera** and **Roy Kucuk**

CAES Undergraduate Research Symposium — **Taylor Pearson** — 1st place Oral presentation B and 1st place Oral presentation C

ESA Puerto Rico — **Julia Berliner**, 1st place MS Paper Talk competition; **Sudeep Pandey**, 1st place PhD student paper talk competition

UGA at ESA Puerto Rico



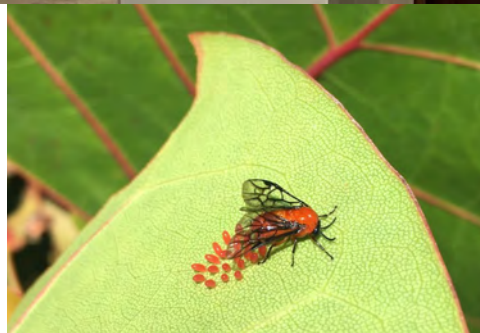
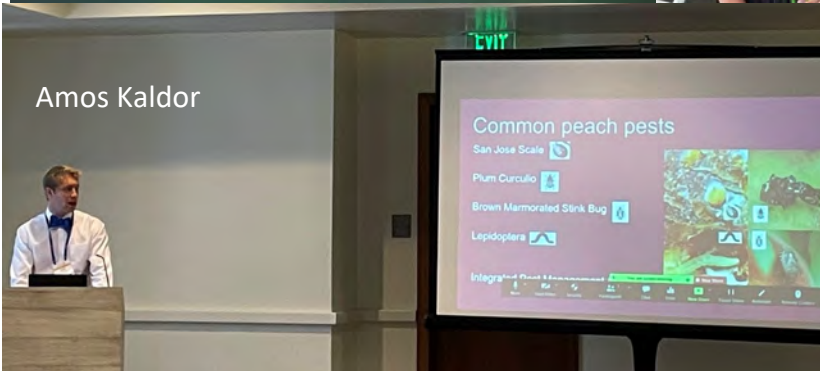
Seaglass Searchers



Sawfly Larvae!!



Amos Kaldor



Congratulations!

Sudeep Pandey — First Place PhD Student 10 minute paper presentation — Babu Srinivasan Lab

Julia Berliner — First Place MS Student 10 minute paper presentation — Carmen Blubaugh Lab

Emily Shelby





Swikriti Pandey

I am Swikriti Pandey, graduate student at Schmidt Biocontrol lab at UGA in Tifton. I joined the lab to work with Dr. Jason Schmidt in the Fall of 2019 and now I am almost at the end of my program. My work here is focused on understanding the role of arthropod-resistant tomato plants and biological control agents for the control of whiteflies.

I was born and raised in a small city in eastern Nepal. Nepal is predominantly an agricultural country so I was exposed to the culture of farming and growing produce since an early age. But, I was never aware that a career in the field of agriculture was a viable option. I always knew I wanted to be in the field of science specifically biology, so, I completed my high school studies as a biology major. Until that point, I was set on pursuing a career in medicine but I quickly realized, I had neither the interest or acumen for the field. I was then introduced to agriculture studies and decided to take my chances and

I am glad that everything has fallen into place ever since.

I knew I was in the right path when I got an opportunity to work in an organization that helped reinstate the victims of earthquake into their new homes. Most people affected by the disaster had their farms, which was the basis of their livelihood, uprooted. In addition to building homes, the organization was also providing the people with knowledge and materials on modern agriculture practices to start afresh. I worked on providing trainings on agriculture practices, facilitating when needed, connecting people to individuals that could help them and estimating what was needed to help them restart their livelihoods. Seeing what I studied have an actual impact on people who needed it the most, made me get rid of any reservations I had.

I have always said, I am in entomology not because I particularly like insects, but because I love plants and I wanted to be in a field where I could explore my interest of saving and conserving them. Needless to say, I have no cool origin story about how I got introduced to insects and entomology as a field of study. It just fell into place as I was discovering my interests for plants, crop systems and integrated pest management systems in agriculture. I feel fortunate to be able to work in a field that caters to my interests and I am forever grateful to Dr. Schmidt for providing me this opportunity. Being in entomology and surrounded by people who are so passionate about what they do, I am awed every day by the scope of research this field has to offer. It did take me a little time and a couple of insect courses, but the part about not being too keen on insects is also a part of me I don't recognize anymore.

In my free time, I love reading fiction of any kind really. I am always haunted by the fear of "there are too many books and not enough time to read". Food is a huge part of the culture where I am from so, I love trying new food. You will most definitely catch me watching movies or series in my free time.

Thanks to the Department of Entomology at UGA for letting me introduce myself here and thank you for reading along!



Carissa Gilliland



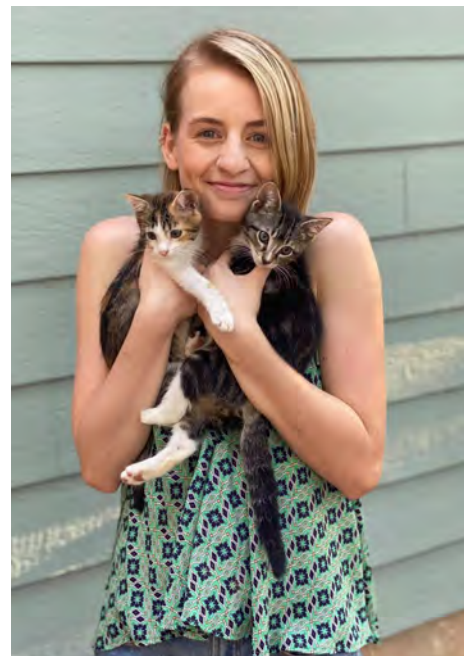
My name is Carissa Gilliland and I'm a fourth year PhD student in Kevin Vogel's lab. I am working on studying insect microbe interactions in kissing bugs. I'm particularly interested in researching how the microbiome impacts key aspects of insect physiology such as development and immune function.

I suppose I was always interested in insects since I was a kid. I used to love to watch ants on the sidewalk go about their ant business and I would catch and collect insects that got trapped in our pool. As I got older my interest in insects was less apparent, but I became extremely interested in science. I realized in high school during my AP biology course that I loved learning about all things biology and especially conducting experiments. During this class we went on a behind the scenes tour of the Field Museum in Chicago where I was able to tour a bunch of different research labs. I was particularly fascinated by all the insect collections at the museum. When I went to college, I already knew that I wanted to be a biological researcher. In my second year I began working in a moss taxonomy lab. While I didn't fall in love with bryophytes, I did fall in love with collecting data and working

in a lab. During this time, I decided to take a general entomology course for one of my upper-level electives. I was fortunate enough that my very small liberal arts school had a resident entomologist and I learned how to collect and identify insects.

During the summer of my junior year in under grad I participated in an REU program at the University of Idaho. There I worked in a microbiology lab looking at the effects of glyphosate, the active ingredient in Roundup, on soil dwelling bacteria. I learned so many valuable skills during that summer but the best might have been when my mentor suggested I look into the field of insect-microbe interactions. When I started digging into the literature, I was fascinated by all of the different microbial associations found in insects and the current research being done on this topic. I quickly concluded that this was something that I wanted to keep researching in the future. This interest in insect-microbe interactions quickly led me to the Entomology Department at UGA. I was immediately excited about the number of faculty that worked on some type of insect-microbe association. The work that Dr. Kevin Vogel was just starting with kissing bugs seemed particularly exciting to me. My current work is continuing to investigate the role of the microbiome in kissing bug biology. I'm particularly interested in learning more about how the microbiome impacts key aspects of host physiology like development and immune function.

I'm not in the lab, I love to knit and crochet and foster super cute kittens for a local rescue.



Publications 2021

- Abram, P. K., Wang, X., Hueppelsheuser, T., Franklin, M. T., Daane, K. M., Lee, J. C., . . . Buffington, M. L. (2022). A Coordinated Sampling and Identification Methodology for Larval Parasitoids of Spotted-Wing Drosophila. *J Econ Entomol*. doi:[10.1093/jee/toab237](https://doi.org/10.1093/jee/toab237)
- Aigner, B. L., Crossley, M. S., & Abney, M. R. (2021). Biology and Management of Peanut Burrower Bug (Hemiptera: Cydnidae) in Southeast US Peanut. *JOURNAL OF INTEGRATED PEST MANAGEMENT*, 12(1), 8 pages. doi:[10.1093/jipm/pmab024](https://doi.org/10.1093/jipm/pmab024)
- Arvin, M. J., Lorenzi, A., Burke, G. R., & Strand, M. R. (2021). MdBVe46 is an envelope protein that is required for virion formation by *Microplitis demolitor* bracovirus. *JOURNAL OF GENERAL VIROLOGY*, 102(3), 20 pages. doi:[10.1099/jgv.0.001565](https://doi.org/10.1099/jgv.0.001565)
- Babu, A., Rodriguez-Saona, C., Mafra-Neto, A., & Sial, A. A. (2021). Efficacy of Attract-and-Kill Formulations Using the Adjuvant Acttra SWD TD for the Management of Spotted-Wing Drosophila in Blueberries, 2020. *Arthropod Management Tests*, 46(1). doi:[10.1093/amt/tsab082](https://doi.org/10.1093/amt/tsab082)
- Babu, A., Neupane, S., Williams, Z., & Sial, A. A. (2021). Efficacy of Selected Insecticides for Managing Spotted-Wing Drosophila in Blueberries, 2020. *Arthropod Management Tests*, 46(1). doi:[10.1093/amt/tsab075](https://doi.org/10.1093/amt/tsab075)
- Babu, A., DiLorenzo, C. L., & Sial, A. A. (2021). Efficacy of Attract-and-Kill Formulations Using the Adjuvant ACTTRA SWD OR1 for the Management of Spotted-Wing Drosophila in Blueberries, 2020. *Arthropod Management Tests*, 46(1). doi:[10.1093/amt/tsab074](https://doi.org/10.1093/amt/tsab074)
- Barman, A. K., Roberts, P. M., Prostko, E. P., & Toews, M. D. (2022). Seasonal Occurrence and Reproductive Suitability of Weed Hosts for Sweetpotato Whitefly, *Bemisia tabaci* (Hemiptera: Aleyrodidae), in South Georgia. *JOURNAL OF ENTOMOLOGICAL SCIENCE*, 57(1), 1-11. Retrieved from <http://gateway.webofknowledge.com/>
- Barnes, E., Morgan, G., Hake, K., Devine, J., Kurtz, R., Ibendahl, G., . . . Holt, G. (n.d.). Opportunities for Robotic Systems and Automation in Cotton Production. *AgriEngineering*, 3(2), 339-362. doi:[10.3390/agriengineering3020023](https://doi.org/10.3390/agriengineering3020023)
- Blubaugh, C. K., Asplund, J. S., Judson, S. M., & Snyder, W. E. (2021). Invasive predator disrupts link between predator evenness and herbivore suppression. *BIOLOGICAL CONTROL*, 153, 6 pages. doi:[10.1016/j.biocontrol.2020.104470](https://doi.org/10.1016/j.biocontrol.2020.104470)
- Blubaugh, C. K., Asplund, J. S., Smith, O. M., & Snyder, W. E. (2021). Does the "Enemies Hypothesis" operate by enhancing natural enemy evenness?. *BIOLOGICAL CONTROL*, 152, 7 pages. doi:[10.1016/j.biocontrol.2020.104464](https://doi.org/10.1016/j.biocontrol.2020.104464)
- Blubaugh, C. K., Carpenter-Boggs, L., Reganold, J. P., & Snyder, W. E. (2021). Herbivore-herbivore interactions complicate links between soil fertility and pest resistance. *BASIC AND APPLIED ECOLOGY*, 52, 57-67. doi:[10.1016/j.baae.2021.02.002](https://doi.org/10.1016/j.baae.2021.02.002)
- Bowers, C., Toews, M. D., & Schmidt, J. M. (2021). Winter cover crops shape early-season predator communities and trophic interactions. *ECOSPHERE*, 12(7), 14 pages. doi:[10.1002/ecs2.3635](https://doi.org/10.1002/ecs2.3635)
- Boyd, B. M., Chevignon, G., Patel, V., Oliver, K. M., & Strand, M. R. (2021). Evolutionary genomics of APSE: a tailed phage that lysogenically converts the bacterium *Hamiltonella defensa* into a heritable protective symbiont of aphids. *VIROLOGY JOURNAL*, 18(1), 18 pages. doi:[10.1186/s12985-021-01685-y](https://doi.org/10.1186/s12985-021-01685-y)
- Boyd, B. M., Chevignon, G., Patel, V., Oliver, K. M., & Strand, M. R. (2021). Evolutionary genomics of APSE: a tailed phage that lysogenically converts the bacterium *Hamiltonella defensa* into a heritable protective symbiont of aphids. *VIROLOGY JOURNAL*, 18(1), 18 pages. doi:[10.1186/s12985-021-01685-y](https://doi.org/10.1186/s12985-021-01685-y)
- Braman, C. A., Pfaller, J. B., Williams, K. L., & Forschler, B. T. (2021). Presence of Native and Non-native Ants Linked to Lower Emergence Success of Loggerhead Sea Turtle Nests: Implications for Management. *ENVIRONMENTAL ENTOMOLOGY*, 50(3), 649-657. doi:[10.1093/ee/nvab021](https://doi.org/10.1093/ee/nvab021)
- Brown, M. S., Blubaugh, C. K., & Chong, J. H. (2021). Biology and Management of Eriophyid Mites in Turfgrass. *JOURNAL OF INTEGRATED PEST MANAGEMENT*, 12(1), 9 pages. doi:[10.1093/jipm/pmab020](https://doi.org/10.1093/jipm/pmab020)
- Burke, G. R., Hines, H. M., & Sharanowski, B. J. (2021). The Presence of Ancient Core Genes Reveals Endogenization from Diverse Viral Ancestors in Parasitoid Wasps. *GENOME BIOLOGY AND EVOLUTION*, 13(7), 23 pages. doi:[10.1093/gbe/evab105](https://doi.org/10.1093/gbe/evab105)

Publications 2021

- Candian, J. S., Coolong, T., Dutta, B., Srinivasan, R., Sparks, A., Barman, A., & Ribeiro da Silva, A. L. B. (2021). Yellow Squash and Zucchini Cultivar Selection for Resistance to Cucurbit Leaf Crumple Virus in the Southeastern United States. *HORTTECHNOLOGY*, 31(4), 504-513. doi:[10.21273/HORTTECH04877-21](https://doi.org/10.21273/HORTTECH04877-21)
- Carpenter, M., Peng, L., Smith, A. H., Joffe, J., O'Connor, M., Oliver, K. M., & Russell, J. A. (2021). Frequent Drivers, Occasional Passengers: Signals of Symbiont-Driven Seasonal Adaptation and Hitchhiking in the Pea Aphid, *Acyrthosiphon pisum*. *INSECTS*, 12(9), 37 pages. doi:[10.3390/insects12090805](https://doi.org/10.3390/insects12090805)
- Cardona-Rivera, G. A., Clark, B., McHugh, J., Bush, B., & Batzer, D. P. (2021). Wetlands Provide a Source of Arthropods Beneficial to Agriculture: A Case Study from Central Georgia, USA. *JOURNAL OF ENTOMOLOGICAL SCIENCE*, 56(3), 424-440. Retrieved from <http://gateway.webofknowledge.com/>
- Catto, M. A., Shrestha, A., Abney, M. R., Champagne, D. E., Culbreath, A. K., Leal-Bertioli, S. C. M., . . . Srinivasan, R. (2021). Defense-Related Gene Expression Following an Orthotospovirus Infection Is Influenced by Host Resistance in *Arachis hypogaea*. *VI-RUSES-BASEL*, 13(7), 17 pages. doi:[10.3390/v13071303](https://doi.org/10.3390/v13071303)
- Coffin, A. W., Olson, D. M., Seymour, L., Bosch, D. D., Schmidt, J. M., & Strickland, T. C. (2021). Responses to environmental variability by herbivorous insects and their natural enemies within a bioenergy crop, *Miscanthus x giganteus*. *PLOS ONE*, 16(2), 25 pages. doi:[10.1371/journal.pone.0246855](https://doi.org/10.1371/journal.pone.0246855)
- Crossley, M. S., Smith, O. M., Davis, T. S., Eigenbrode, S. D., Hartman, G. L., Lagos-Kutz, D., . . . Snyder, W. E. (2021). Complex life histories predispose aphids to recent abundance declines. *GLOBAL CHANGE BIOLOGY*, 27(18), 4283-4293. doi:[10.1111/gcb.15739](https://doi.org/10.1111/gcb.15739)
- Crossley, M. S., Smith, O. M., Berry, L. L., Phillips-Cosio, R., Glassberg, J., Holman, K. M., . . . Snyder, W. E. (2021). Recent climate change is creating hotspots of butterfly increase and decline across North America. *GLOBAL CHANGE BIOLOGY*, 27(12), 2702-2714. doi:[10.1111/gcb.15582](https://doi.org/10.1111/gcb.15582)
- Crossley, M. S., Snyder, W. E., & Moran, M. D. (2021). M. S. Crossley et al. reply. *NATURE ECOLOGY & EVOLUTION*, 5(5), 595-+. doi:[10.1038/s41559-021-01429-9](https://doi.org/10.1038/s41559-021-01429-9)
- Cunningham, C. B., Khana, D., Carter, A., McKinney, E. C., & Moore, A. J. (2021). Survey of neurotransmitter receptor gene expression into and out of parental care in the burying beetle *Nicrophorus vespilloides*. *ECOLOGY AND EVOLUTION*, 11(20), 14282-14292. doi:[10.1002/ece3.8144](https://doi.org/10.1002/ece3.8144)
- Daane, K. M., Cooper, M. L., Mercer, N. H., Hogg, B. N., Yokota, G. Y., Haviland, D. R., . . . Boyd, E. A. (2021). Pheromone Deployment Strategies for Mating Disruption of a Vineyard Mealybug. *JOURNAL OF ECONOMIC ENTOMOLOGY*, 114(6), 2439-2451. doi:[10.1093/jee/toab198](https://doi.org/10.1093/jee/toab198)
- Dai, Z., Trettin, C. C., Burton, A. J., Jurgensen, M. F., Page-Dumroese, D. S., Forschler, B. T., . . . Lindner, D. L. (2021). Coarse woody debris decomposition assessment tool: Model development and sensitivity analysis. *PLOS ONE*, 16(6), 35 pages. doi:[10.1371/journal.pone.0251893](https://doi.org/10.1371/journal.pone.0251893)
- Dai, Z., Trettin, C. C., Burton, A. J., Jurgensen, M. F., Page-Dumroese, D. S., Forschler, B. T., . . . Lindner, D. L. (2021). Coarse Woody Debris Decomposition Assessment Tool: Model validation and application. *PLOS ONE*, 16(7), 18 pages. doi:[10.1371/journal.pone.0254408](https://doi.org/10.1371/journal.pone.0254408)
- Delaplane, K. S., Given, J. K., Menz, J., & Delaney, D. A. (2021). Colony fitness increases in the honey bee at queen mating frequencies higher than genetic diversity asymptote. *BEHAVIORAL ECOLOGY AND SOCIOBIOLOGY*, 75(9), 12 pages. doi:[10.1007/s00265-021-03065-6](https://doi.org/10.1007/s00265-021-03065-6)
- De Marchi, B. R., Smith, H., Turechek, W., & Riley, D. (2021). A Maximum Dose Bioassay to Assess Efficacy of Key Insecticides Against *Bemisia tabaci* MEAM1 (Hemiptera: Aleyrodidae). *JOURNAL OF ECONOMIC ENTOMOLOGY*, 114(2), 914-921. doi:[10.1093/jee/toab016](https://doi.org/10.1093/jee/toab016)
- Dial, D. T., Weglarz, K. M., Aremu, A. O., Havill, N. P., Pearson, T. A., Burke, G. R., & von Dohlen, C. D. (2021). Transitional genomes and nutritional role reversals identified for dual symbionts of adelgids (Aphidoidea: Adelgidae). *ISME JOURNAL*, 13 pages. doi:[10.1038/s41396-021-01102-w](https://doi.org/10.1038/s41396-021-01102-w)

Publications 2021

- DiLorenzo, C. L., Powell, G. S., Cline, A. R., & McHugh, J. (2021). Carpophiline-ID: an interactive matrix-based key to the carpophiline sap beetles (Coleoptera, Nitidulidae) of Eastern North America. *ZOOKEYS*, (1028), 85-93. doi:[10.3897/zookeys.1028.59467](https://doi.org/10.3897/zookeys.1028.59467)
- Disi, J. O., & Sial, A. A. (2021). Laboratory Selection and Assessment of Resistance Risk in *Drosophila suzukii* (Diptera: Drosophilidae) to Spinosad and Malathion. *INSECTS*, 12(9), 12 pages. doi:[10.3390/insects12090794](https://doi.org/10.3390/insects12090794)
- Drezen, J. -M., Bézier, A., Burke, G. R., & Strand, M. R. (2021). Bracoviruses, ichnoviruses, and virus-like particles from parasitoid wasps retain many features of their virus ancestors.. *Curr Opin Insect Sci*, 49, 93-100. doi:[10.1016/j.cois.2021.12.003](https://doi.org/10.1016/j.cois.2021.12.003)
- Dunn, T. P. S., Champagne, D. E., Riley, D. G., Smith, H., & Bennett, J. E. (2021). A Target Site Mutation Associated With Diamide Insecticide Resistance in the Diamondback Moth *Plutella xylostella* (Lepidoptera: Plutellidae) is Widespread in South Georgia and Florida Populations.. *J Econ Entomol*. doi:[10.1093/jee/toab223](https://doi.org/10.1093/jee/toab223)
- Fu, Z., Crossley, M. S., Epstein, B., Bates, C., Crowder, D. W., Elling, A. A., . . . Snyder, W. E. (2021). Using fine-scale relatedness to infer natural enemy movement. *BIOLOGICAL CONTROL*, 160, 7 pages. doi:[10.1016/j.biocontrol.2021.104662](https://doi.org/10.1016/j.biocontrol.2021.104662)
- Fue, K. G., Porter, W. M., Barnes, E. M., & Rains, G. C. (2021). ENSEMBLE METHOD OF DEEP LEARNING, COLOR SEGMENTATION, AND IMAGE TRANSFORMATION TO TRACK, LOCALIZE, AND COUNT COTTON BOLLS USING A MOVING CAMERA IN REAL-TIME. *TRANSACTIONS OF THE ASABE*, 64(1), 341-352. doi:[10.13031/trans.13112](https://doi.org/10.13031/trans.13112)
- Gibson, K., Fortner, A., Lamm, A., Wilson, M., & Moore, A. (2021). Examining Inter Examining Interdisciplinary Research Collaborations to Inform Agricultural and Environmental Science Communication: A Metasynthesis Approach. *Journal of Applied Communications*, 105(2). doi:[10.4148/1051-0834.2381](https://doi.org/10.4148/1051-0834.2381)
- Gimmel, M. L., Cave, R. D., Clarke, D., Ferro, M. L., Gillett, C., MacRae, T., & McHugh, J. (2021). Thanks to Our 2020 Reviewers. *The Coleopterists Bulletin*, 75(1). doi:[10.1649/0010-065x-75.1.160](https://doi.org/10.1649/0010-065x-75.1.160)
- Gireesh, M., & Joseph, S. V. (2021). Influence of Abiotic Factors on Walking Behavior of Hunting Billbugs (Coleoptera: Curculionidae).. *J Econ Entomol*. doi:[10.1093/jee/toab217](https://doi.org/10.1093/jee/toab217)
- Gireesh, M., & Joseph, S. (2021). Surface Movement of Billbugs (Coleoptera: Curculionidae) in Harvested and Nonharvested Sod. *JOURNAL OF ECONOMIC ENTOMOLOGY*, 114(1), 231-237. doi:[10.1093/jee/toaa277](https://doi.org/10.1093/jee/toaa277)
- Grant, J. A., & Sial, A. A. (2021). Evaluation of Wild Flora Surrounding Blueberry Fields as Viable Hosts of *Drosophila suzukii* (Matsumura, 1931) (Diptera: Drosophilidae) in Georgia. *INSECTS*, 12(8), 12 pages. doi:[10.3390/insects12080667](https://doi.org/10.3390/insects12080667)
- Griffin, B., & Braman, S. K. (2021). School and Community Garden Pollinator Census: A Pilot Project in Georgia. *JOURNAL OF ENTOMOLOGICAL SCIENCE*, 56(3), 287-304. Retrieved from <http://gateway.webofknowledge.com/>
- Gulzar, S., Usman, M., Wakil, W., Wu, S., Oliveira-Hofman, C., Srinivasan, R., . . . Shapiro-Ilan, D. (2021). Virulence of Entomopathogenic Nematodes to Pupae of *Frankliniella fusca* (Thysanoptera: Thripidae). *JOURNAL OF ECONOMIC ENTOMOLOGY*, 114(5), 2018-2023. doi:[10.1093/jee/toab132](https://doi.org/10.1093/jee/toab132)
- Harris, B. A., Poole, E. M., Braman, S. K., & Pennisi, S. (2021). Consumer-Ready Insect Hotels: An Assessment of Arthropod Visitation and Nesting Success. *JOURNAL OF ENTOMOLOGICAL SCIENCE*, 56(2), 141-155. doi:[10.18474/0749-8004-56.2.141](https://doi.org/10.18474/0749-8004-56.2.141)
- Harrison, R. E., Brown, M. R., & Strand, M. R. (2021). Whole blood and blood components from vertebrates differentially affect egg formation in three species of anautogenous mosquitoes. *PARASITES & VECTORS*, 14(1), 19 pages. doi:[10.1186/s13071-021-04594-9](https://doi.org/10.1186/s13071-021-04594-9)
- Hinkle, N. C., & Hogsette, J. A. (2021). A Review of Alternative Controls for House Flies. *INSECTS*, 12(11), 18 pages. doi:[10.3390/insects12111042](https://doi.org/10.3390/insects12111042)
- Hunt, B. G., & Goodisman, M. A. D. (2021). Editorial overview: Social insects as invasive species. *CURRENT OPINION IN INSECT SCIENCE*, 46, 3 pages. doi:[10.1016/j.cois.2021.08.003](https://doi.org/10.1016/j.cois.2021.08.003)
- Jackson, C. R., Sytsma, C., Sutter, L. A., & Batzer, D. P. (2021). Redefining Waters of the US: a Case Study from the Edge of the Okefenokee Swamp. *WETLANDS*, 41(8), 10 pages. doi:[10.1007/s13157-021-01512-8](https://doi.org/10.1007/s13157-021-01512-8)

Publications 2021

- Joseph, S. V., Wolverton, R., & Chong, J. H. (2021). Efficacy of Selected Insecticides in Reducing Rhodesgrass Mealybug (Hemiptera: Pseudococcidae) Density on Golf Course Putting Greens. *Journal of Agricultural and Urban Entomology*, 37(1). doi:[10.3954/jaue21-07](https://doi.org/10.3954/jaue21-07)
- Joseph, S., Chong, J. -H., Campbell, B., Kunkel, B., Lauderdale, D., Jones, S., . . . Del Pozo-Valdivia, A. (2021). Current Pest Status and Management Practices for *Systema frontalis* (Coleoptera: Chrysomelidae) in Ornamental Plants in the Eastern United States: An Online Survey. *JOURNAL OF INTEGRATED PEST MANAGEMENT*, 12(1), 10 pages. doi:[10.1093/jipm/pmab012](https://doi.org/10.1093/jipm/pmab012)
- Joseph, S. V. (2021). Transovarial effect of novaluron: persistence and residual effects on *Stephanitis pyrioides* (Hemiptera: Tingidae). *CANADIAN ENTOMOLOGIST*, 153(6), 702-713. doi:[10.4039/tce.2021.33](https://doi.org/10.4039/tce.2021.33)
- Joseph, S., & Koike, S. T. (2021). Could Broccoli and Cauliflower Influence the Dispersal Dynamics of Western Flower Thrips (Thysanoptera: Thripidae) to Lettuce in the Salinas Valley of California?. *ENVIRONMENTAL ENTOMOLOGY*, 50(4), 995-1005. doi:[10.1093/ee/nvab050](https://doi.org/10.1093/ee/nvab050)
- Joseph, S., Chong, J. -H., Campbell, B., Kunkel, B., Lauderdale, D., Jones, S., . . . Del Pozo-Valdivia, A. (2021). Current Pest Status and Management Practices for *Systema frontalis* (Coleoptera: Chrysomelidae) in Ornamental Plants in the Eastern United States: An Online Survey. *JOURNAL OF INTEGRATED PEST MANAGEMENT*, 12(1), 10 pages. doi:[10.1093/jipm/pmab012](https://doi.org/10.1093/jipm/pmab012)
- Joseph, S., & Jespersen, D. (2021). Influence of relative humidity on the expression of twolined spittlebug (Hemiptera: Cercopidae) feeding injury in turfgrass genotypes. *ARTHROPOD-PLANT INTERACTIONS*, 15(2), 197-207. doi:[10.1007/s11829-021-09808-6](https://doi.org/10.1007/s11829-021-09808-6)
- Kard, B. M., Oi, F. M., Thorne, B. L., Forschler, B. T., & Jones, S. C. (2021). Performance standards and acceptable test conditions for preventive termiticide and insecticide treatments, termite baiting systems, and physical barriers for new structures or buildings under construction (pre-construction; during construction; post-construction). *FLORIDA ENTOMOLOGIST*, 104(3), 195-204. Retrieved from <http://gateway.webofknowledge.com/>
- Kavalappara, S. R., Milner, H., Konakalla, N. C., Morgan, K., Sparks, A. N., McGregor, C., . . . Bag, S. (2021). High Throughput Sequencing-Aided Survey Reveals Widespread Mixed Infections of Whitefly-Transmitted Viruses in Cucurbits in Georgia, USA. *VI-RUSES-BASEL*, 13(6), 17 pages. doi:[10.3390/v13060988](https://doi.org/10.3390/v13060988)
- Kavalappara, S. R., Milner, H., Sparks, A., McGregor, C., Wintermantel, W. M., & Bag, S. (2021). First Report of Cucurbit Chlorotic Yellows Virus in Association with Other Whitefly-Transmitted Viruses in Yellow Squash (*Cucurbita pepo*) in Georgia, USA. *PLANT DISEASE*, 105(6), 1 page. doi:[10.1094/PDIS-11-20-2429-PDN](https://doi.org/10.1094/PDIS-11-20-2429-PDN)
- Khan, F. Z. A., Manzoor, S. A., Gul, H. T., Ali, M., Bashir, M. A., Akmal, M., . . . Joseph, S. (2021). Drivers of farmers' intention to adopt integrated pest management: a case study of vegetable farmers in Pakistan. *ECOSPHERE*, 12(10), 16 pages. doi:[10.1002/ecs2.3812](https://doi.org/10.1002/ecs2.3812)
- Khan, F. Z. A., & Joseph, S. V. (2021). Influence of the Color, Shape, and Size of the Clay Model on Arthropod Interactions in Turfgrass.. *J Insect Sci*, 21(5). doi:[10.1093/jisesa/ieab070](https://doi.org/10.1093/jisesa/ieab070)
- Kheirodin, A., Sayari, M., & Schmidt, J. M. (n.d.). Rapid PCR-based method for herbivore dietary evaluation using plant-specific primers. *PLOS ONE*, 16(11), e0260105. doi:[10.1371/journal.pone.0260105](https://doi.org/10.1371/journal.pone.0260105)
- Krause, T., Ling, A., Warner, A., Duggin, J., Heins, B., Hinkle, N., . . . Rekaya, R. (2021). Association between thrombin and horn fly abundance in beef cattle. *Journal of Animal Science*.
- Krey, K. L., Smith, O. M., Chapman, E. G., Crossley, M. S., Crowder, D. W., Fu, Z., . . . Snyder, W. E. (2021). Prey and predator biodiversity mediate aphid consumption by generalists. *BIOLOGICAL CONTROL*, 160, 8 pages. doi:[10.1016/j.biocontrol.2021.104650](https://doi.org/10.1016/j.biocontrol.2021.104650)
- Lai, P. -C., Abney, M. R., Chen, Y. -J., Bag, S., & Srinivasan, R. (2021). Discrepancies in Serology-Based and Nucleic Acid-Based Detection and Quantitation of Tomato Spotted Wilt Orthotospovirus in Leaf and Root Tissues from Symptomatic and Asymptomatic Peanut Plants. *PATHOGENS*, 10(11), 12 pages. doi:[10.3390/pathogens10111476](https://doi.org/10.3390/pathogens10111476)
- Lai, P. -C., Abney, M. R., Bag, S., Culbreath, A. K., & Srinivasan, R. (2021). Impact of Host Resistance to Tomato Spotted Wilt Orthotospovirus in Peanut Cultivars on Virus Population Genetics and Thrips Fitness. *PATHOGENS*, 10(11), 28 pages. doi:[10.3390/pathogens10111418](https://doi.org/10.3390/pathogens10111418)

Publications 2021

- Lampasona, T., Acebes-Doria, A., Leskey, T. C., & Nielsen, A. L. (2021). Behavioral Effects and Retention of Protein Immunomarkers on Plum Curculio Conotrachelus nenuphar (Coleoptera: Curculionidae).. *J Insect Sci*, 21(6). doi:[10.1093/jisesa/ieab086](https://doi.org/10.1093/jisesa/ieab086)
- Lewald, K. M., Abrieux, A., Wilson, D. A., Lee, Y., Conner, W. R., Andrezza, F., . . . Chiu, J. C. (2021). Population genomics of *Drosophila suzukii* reveal longitudinal population structure and signals of migrations in and out of the continental United States. *G3-GENES GENOMES GENETICS*, 11(12), 11 pages. doi:[10.1093/g3journal/jkab343](https://doi.org/10.1093/g3journal/jkab343)
- Lewis, R. O., & Joseph, S. V. (2021). Transovarial Activity of Novaluron on the Sweetpotato Whitefly (Hemiptera: Aleyrodidae). *JOURNAL OF ENTOMOLOGICAL SCIENCE*, 56(3), 470-473. Retrieved from <http://gateway.webofknowledge.com/>
- Ling, A. S., Krause, T., Warner, A., Duggin, J., Heins, B., Hinkle, N., . . . Rekaya, R. (2021). PSVIII-5 Genetic parameters of thrombin as a proxy for horn fly abundance in beef cattle. *Journal of Animal Science*, 99(Supplement_3), 239. doi:[10.1093/jas/skab235.435](https://doi.org/10.1093/jas/skab235.435)
- Lorenzi, A., Strand, M. R., Burke, G. R., & Volkoff, A. -N. (2021). Identifying bracovirus and ichnovirus genes involved in virion morphogenesis.. *Curr Opin Insect Sci*, 49, 63-70. doi:[10.1016/j.cois.2021.11.006](https://doi.org/10.1016/j.cois.2021.11.006)
- Lu, K., Batzer, D. P., & Wu, H. (2021). Aquatic invertebrate assemblages during the spring-thaw season in wetlands of Northeastern China. *HYDROBIOLOGIA*, 848(17), 3943-3953. doi:[10.1007/s10750-021-04615-9](https://doi.org/10.1007/s10750-021-04615-9)
- Lynch, C. A., Smith, O. M., Chapman, E. G., Crossley, M. S., Crowder, D. W., Fu, Z., . . . Snyder, W. E. (2021). Alternative prey and farming system mediate predation of Colorado potato beetles by generalists. *PEST MANAGEMENT SCIENCE*, 9 pages. doi:[10.1002/ps.6553](https://doi.org/10.1002/ps.6553)
- Marchant, W., Gautam, S., Dutta, B., & Srinivasan, R. (2021). Whitefly-mediated transmission and subsequent acquisition of highly similar and naturally occurring Tomato yellow leaf curl virus variants.. *Phytopathology*. doi:[10.1094/PHYTO-06-21-0248-R](https://doi.org/10.1094/PHYTO-06-21-0248-R)
- Martins, E. F., Franzin, M. L., Perez, A. L., Schmidt, J. M., & Venzon, M. (2021). Is *Ceraeochrysa cubana* a coffee leaf miner predator?. *Biological Control*, 160, 104691. doi:[10.1016/j.biocontrol.2021.104691](https://doi.org/10.1016/j.biocontrol.2021.104691)
- Martinson, V. G., & Strand, M. R. (2021). Diet-Microbiota Interactions Alter Mosquito Development. *FRONTIERS IN MICROBIOLOGY*, 12, 16 pages. doi:[10.3389/fmicb.2021.650743](https://doi.org/10.3389/fmicb.2021.650743)
- Mbata, G. N., & Toews, M. D. (2021). Recent Advances in Postharvest Pest Biology and Management. *INSECTS*, 12(6), 3 pages. doi:[10.3390/insects12060543](https://doi.org/10.3390/insects12060543)
- Mergoum, M., Johnson, J. W., Buck, J. W., Sutton, S., Lopez, B., Bland, D., . . . Cambron, S. E. (2021). 'GA JT141-14E45': A new soft red winter wheat cultivar adapted to Georgia and the US Southeast region. *JOURNAL OF PLANT REGISTRATIONS*, 15(3), 471-478. doi:[10.1002/plr2.20070](https://doi.org/10.1002/plr2.20070)
- Mergoum, M., Johnson, J. W., Buck, J. W., Sutton, S., Lopez, B., Bland, D., . . . Cambron, S. E. (2021). A new soft red winter wheat cultivar, 'GA 07353-14E19', adapted to Georgia and the US Southeast environments. *JOURNAL OF PLANT REGISTRATIONS*, 15(2), 337-344. doi:[10.1002/plr2.20113](https://doi.org/10.1002/plr2.20113)
- Mergoum, M., Johnson, J. W., Buck, J. W., Sutton, S., Lopez, B., Bland, D., . . . Boyles, R. (2021). Soft red winter wheat 'GA 051207-14E53': Adapted cultivar to Georgia and the US Southeast region. *JOURNAL OF PLANT REGISTRATIONS*, 15(1), 132-139. doi:[10.1002/plr2.20102](https://doi.org/10.1002/plr2.20102)
- Mermer, S., Pfab, F., Tait, G., Isaacs, R., Fanning, P. D., Van Timmeren, S., . . . Walton, V. M. (2021). Timing and order of different insecticide classes drive control of *Drosophila suzukii*; a modeling approach. *Journal of Pest Science*, 94(3), 743-755. doi:[10.1007/s10340-020-01292-w](https://doi.org/10.1007/s10340-020-01292-w)
- Mineo, E. C., Gazula, A., & Joseph, S. (2020). Phenology of *Anthonomus eugenii* Cano1 in the Central Coast Pepper-Production Region of California. *SOUTHWESTERN ENTOMOLOGIST*, 45(4), 863-872. doi:[10.3958/059.045.0403](https://doi.org/10.3958/059.045.0403)
- Mishra, S., Dee, J., Moar, W., Dufner-Beattie, J., Baum, J., Dias, N. P., . . . Jurat-Fuentes, J. L. (2021). Selection for high levels of resistance to double-stranded RNA (dsRNA) in Colorado potato beetle (*Leptinotarsa decemlineata* Say) using non-transgenic foliar delivery. *SCIENTIFIC REPORTS*, 11(1), 12 pages. doi:[10.1038/s41598-021-85876-1](https://doi.org/10.1038/s41598-021-85876-1)

Publications 2021

- Monfort, W. S., Culbreath, A., Abney, M., Brandenburg, R., Royals, B., Jordan, D., . . . Malone, S. (2021). Effect of thiamethoxam seed treatment in peanut. *Crop, Forage and Turfgrass Management*, e20135. doi:[10.1002/cft2.20135](https://doi.org/10.1002/cft2.20135)
- Monterrosa, A., Acebes, A. L., Blaauw, B., & Joseph, S. (2021). Effects of Trap, and Ethanol Lure Type and Age on Attraction of Ambrosia Beetles (Coleoptera: Curculionidae). *JOURNAL OF ECONOMIC ENTOMOLOGY*, 114(4), 1647-1654. doi:[10.1093/jee/toab089](https://doi.org/10.1093/jee/toab089)
- Monterrosa, A., Iriarte, F. B., Paret, M. L., & V. Joseph, S. (2021). Effects of relative humidity on the vector of rose rosette disease, *Phyllocoptes fructiphilus* (Eriophyidae), and incidence of disease symptoms. *FLORIDA ENTOMOLOGIST*, 104(3), 173-177. Retrieved from <http://gateway.webofknowledge.com/>
- Moore, A. J., McGlothlin, J. W., & Wolf, J. B. (2021). Runaway evolution from male-male competition. *ECOLOGY LETTERS*, 12 pages. doi:[10.1111/ele.13921](https://doi.org/10.1111/ele.13921)
- Moss, J. B., & Moore, A. J. (2021). Constrained flexibility of parental cooperation limits adaptive responses to harsh conditions. *EVOLUTION*, 75(7), 1835-1849. doi:[10.1111/evo.14285](https://doi.org/10.1111/evo.14285)
- Murillo, A. C., Hubbard, C. B., Hinkle, N. C., & Gerry, A. C. (2021). Big Problems With Little House Fly (Diptera: Fanniidae). *Journal of Integrated Pest Management*, 12(1). doi:[10.1093/jipm/pmaa023](https://doi.org/10.1093/jipm/pmaa023)
- Myer, A., Myer, M. H., Trettin, C. C., & Forschler, B. T. (2021). The fate of carbon utilized by the subterranean termite *Reticulitermes flavipes*. *ECOSPHERE*, 12(12), 15 pages. doi:[10.1002/ecs2.3872](https://doi.org/10.1002/ecs2.3872)
- Nair, S., Braman, S. K., & Raymer, P. (2021). Susceptibility of Zoysiagrasses to the Fall Armyworm (Lepidoptera: Noctuidae). *JOURNAL OF ENTOMOLOGICAL SCIENCE*, 56(1), 24-31. doi:[10.18474/0749-8004-56.1.24](https://doi.org/10.18474/0749-8004-56.1.24)
- Olson, D. M., Gibbs, J., & Schmidt, J. M. (2021). Wild bee pollinators foraging in peanut and cotton adjacent to native wildflower strips. *FLORIDA ENTOMOLOGIST*, 104(3), 165-172. Retrieved from <http://gateway.webofknowledge.com/>
- Olson, D. M., Tillman, G., & Toews, M. (2021). Biopesticide and Parasitoid Effects on *Megacopta cribraria* (Hemiptera: Plataspidae) Life Stage Density and Egg Parasitism in Soybean. *JOURNAL OF ENTOMOLOGICAL SCIENCE*, 56(2), 272-277. doi:[10.18474/0749-8004-56.2.272](https://doi.org/10.18474/0749-8004-56.2.272)
- Parkash, V., Sharma, D. B., Snider, J., Bag, S., Roberts, P., Tabassum, A., . . . Chee, P. (2021). Effect of Cotton Leafroll Dwarf Virus on Physiological Processes and Yield of Individual Cotton Plants. *FRONTIERS IN PLANT SCIENCE*, 12, 13 pages. doi:[10.3389/fpls.2021.734386](https://doi.org/10.3389/fpls.2021.734386)
- Pires, M. M., Grech, M. G., Stenert, C., Maltchik, L., Epele, L. B., McLean, K. I., . . . Batzer, D. P. (2021). Does taxonomic and numerical resolution affect the assessment of invertebrate community structure in New World freshwater wetlands?. *ECOLOGICAL INDICATORS*, 125, 7 pages. doi:[10.1016/j.ecolind.2021.107437](https://doi.org/10.1016/j.ecolind.2021.107437)
- Randell, T. M., Roberts, P. M., & Culpepper, A. S. (2021). Palmer Amaranth (Amaranthaceae) and At-Plant Insecticide Impacts on Tarnished Plant Bug (Hemiptera: Miridae) and Injury to Seedling Cotton Terminals. *JOURNAL OF ENTOMOLOGICAL SCIENCE*, 56(4), 487-503. doi:[10.18474/JES20-75](https://doi.org/10.18474/JES20-75)
- Schmidt, J. M., Acebes-Doria, A., Blaauw, B., Kheirodin, A., Pandey, S., Lennon, K., . . . Grabarczyk, E. E. (2021). Identifying Molecular-Based Trophic Interactions as a Resource for Advanced Integrated Pest Management.. *Insects*, 12(4). doi:[10.3390/insects12040358](https://doi.org/10.3390/insects12040358)
- Schmidt, J. M., Whitehouse, T. S., Neupane, S., Rezende, S. M., Sial, A., & Garipey, T. D. (2021). Parasitoid Communities in the Variable Agricultural Environments of Blueberry Production in the Southeastern United States. *JOURNAL OF ECONOMIC ENTOMOLOGY*, 114(4), 1480-1488. doi:[10.1093/jee/toab134](https://doi.org/10.1093/jee/toab134)
- Schmidt, J. M., Acebes-Doria, A., Blaauw, B., Kheirodin, A., Pandey, S., Lennon, K., . . . Grabarczyk, E. E. (2021). Identifying Molecular-Based Trophic Interactions as a Resource for Advanced Integrated Pest Management.. *Insects*, 12(4). doi:[10.3390/insects12040358](https://doi.org/10.3390/insects12040358)
- Schmidt, J. M., Whitehouse, T. S., Neupane, S., Rezende, S. M., Sial, A., & Garipey, T. D. (2021). Parasitoid Communities in the Variable Agricultural Environments of Blueberry Production in the Southeastern United States. *JOURNAL OF ECONOMIC ENTOMOLOGY*, 114(4), 1480-1488. doi:[10.1093/jee/toab134](https://doi.org/10.1093/jee/toab134)

Publications 2021

- Sedhain, N. P., Bag, S., Morgan, K., Carter, R., Triana, P., Whitaker, J., . . . Roberts, P. M. (2021). Natural host range, incidence on overwintering cotton and diversity of cotton leafroll dwarf virus in Georgia USA. *CROP PROTECTION*, 144, 9 pages. doi:[10.1016/j.cropro.2021.105604](https://doi.org/10.1016/j.cropro.2021.105604)
- Sharanowski, B. J., Ridenbaugh, R. D., Piekarski, P. K., Broad, G. R., Burke, G. R., Deans, A. R., . . . Hines, H. M. (2021). Phylogenomics of Ichneumonoidea (Hymenoptera) and implications for evolution of mode of parasitism and viral endogenization. *MOLECULAR PHYLOGENETICS AND EVOLUTION*, 156, 19 pages. doi:[10.1016/j.ympev.2020.107023](https://doi.org/10.1016/j.ympev.2020.107023)
- Shen, G. -M., Ou, S. -Y., Li, C. -Z., Feng, K. -Y., Niu, J. -Z., Adang, M. J., & He, L. (2021). Transcription factors CncC and Maf connect the molecular network between pesticide resistance and resurgence of pest mites. *INSECT SCIENCE*, 16 pages. doi:[10.1111/1744-7917.12970](https://doi.org/10.1111/1744-7917.12970)
- Slusher, E. K., Hudson, W. G., Halliday, P. L., Acebes-Doria, A. L., & Prischmann-Voldseth, D. (2021). Multisite Seasonal Monitoring of Pecan Aphids and Their Parasitoid in Commercial Pecan Orchards. *ENVIRONMENTAL ENTOMOLOGY*, 50(5), 1045-1055. doi:[10.1093/ee/nvab069](https://doi.org/10.1093/ee/nvab069)
- Slusher, E. K., Cottrell, T., & Acebes-Doria, A. L. (2021). Effects of Aphicides on Pecan Aphids and Their Parasitoids in Pecan Orchards. *INSECTS*, 12(3), 12 pages. doi:[10.3390/insects12030241](https://doi.org/10.3390/insects12030241)
- Smith, A. H., O'Connor, M. P., Deal, B., Kotzer, C., Lee, A., Wagner, B., . . . Russell, J. A. (2021). Does getting defensive get you anywhere?-Seasonal balancing selection, temperature, and parasitoids shape real-world, protective endosymbiont dynamics in the pea aphid. *MOLECULAR ECOLOGY*, 30(10), 2449-2472. doi:[10.1111/mec.15906](https://doi.org/10.1111/mec.15906)
- Smith, O. M., Olimpi, E. M., Navarro-Gonzalez, N., Cornell, K. A., Frishkoff, L. O., Northfield, T. D., . . . Karp, D. S. (2021). A trait-based framework for predicting foodborne pathogen risk from wild birds.. *Ecol Appl*, e2523. doi:[10.1002/eap.2523](https://doi.org/10.1002/eap.2523)
- Smith, O. M., Taylor, J. M., Echeverri, A., Northfield, T., Cornell, K. A., Jones, M. S., . . . Kennedy, C. M. (2021). Big wheel keep on turnin ' : Linking grower attitudes, farm management, and delivery of avian ecosystem services. *BIOLOGICAL CONSERVATION*, 254, 15 pages. doi:[10.1016/j.biocon.2021.108970](https://doi.org/10.1016/j.biocon.2021.108970)
- Stumpf, S., Leach, L., Srinivasan, R., Coolong, T., Gitaitis, R., & Dutta, B. (2021). Foliar Chemical Protection Against *Pantoea*
- Suiter, D. R., Gochnour, B. M., Holloway, J. B., & Vail, K. M. (2021). Alternative Methods of Ant (Hymenoptera: Formicidae) Control with Emphasis on the Argentine Ant, *Linepithema humile*. *INSECTS*, 12(6), 13 pages. doi:[10.3390/insects12060487](https://doi.org/10.3390/insects12060487)
- Tabassum, A., Bag, S., Suassuna, N. D., Conner, K. N., Chee, P., Kemerait, R. C., & Roberts, P. (2021). Genome analysis of cotton leafroll dwarf virus reveals variability in the silencing suppressor protein, genotypes and genomic recombinants in the USA. *PLOS ONE*, 16(7), 17 pages. doi:[10.1371/journal.pone.0252523](https://doi.org/10.1371/journal.pone.0252523)
- Tait, G., Mermer, S., Stockton, D., Lee, J., Avosani, S., Abrieux, A., . . . Walton, V. M. (2021). *Drosophila suzukii* (Diptera: Drosophilidae): A Decade of Research Towards a Sustainable Integrated Pest Management Program. *JOURNAL OF ECONOMIC ENTOMOLOGY*, 114(5), 1950-1974. doi:[10.1093/jee/toab158](https://doi.org/10.1093/jee/toab158)
- Towles, T. B., Buntin, G. D., Catchot, A. L., Gore, J., Cook, D. R., Caprio, M. A., & Daves, C. (2021). Quantifying the Contribution of Seed Blended Refugia in Field Corn to *Helicoverpa zea* (Lepidoptera: Noctuidae) Populations. *JOURNAL OF ECONOMIC ENTOMOLOGY*, 114(4), 1771-1778. doi:[10.1093/jee/toab097](https://doi.org/10.1093/jee/toab097)
- Traylor, C. R., Hoebeke, E. R., Ulyshen, M. D., & McHugh, J. (2021). FIRST REPORT OF DERE THORACICA WHITE (COLEOPTERA: CERAMBYCIDAE: CERAMBYCINAE) IN THE UNITED STATES, WITH NOTES ON ITS DISCOVERY, RECOGNITION, BIOLOGY, AND HABITS. *COLEOPTERISTS BULLETIN*, 75(4), 859-865. doi:[10.1649/0010-065X-75.4.859](https://doi.org/10.1649/0010-065X-75.4.859)
- Uyi, O., Mukwevho, L., Ejomah, A. J., & Toews, M. (n.d.). Invasive Alien Plants in Sub-Saharan Africa: A Review and Synthesis of Their Insecticidal Activities. *Frontiers in Agronomy*, 3. doi:[10.3389/fagro.2021.725895](https://doi.org/10.3389/fagro.2021.725895)
- Usman, M., Wakil, W., Pinero, J. C., Wu, S., Toews, M. D., & Shapiro-Ilan, D. I. (2021). Evaluation of Locally Isolated Entomopathogenic Fungi against Multiple Life Stages of *Bactrocera zonata* and *Bactrocera dorsalis* (Diptera: Tephritidae): Laboratory and Field Study. *MICROORGANISMS*, 9(8), 18 pages. doi:[10.3390/microorganisms9081791](https://doi.org/10.3390/microorganisms9081791)

Publications 2021

Virk, S. S., Prostko, E. P., Kemerait, R. C., Abney, M. R., Rains, G. C., Powell, C. T., . . . Tyson, W. G. (2021). On-Farm Evaluation of Nozzle Types for Peanut Pest Management Using Commercial Sprayers. *Peanut Science*, 48(2), 87-96. doi:[10.3146/ps21-2.1](https://doi.org/10.3146/ps21-2.1)

Virk, S., Prostko, E., Kemerait, R., Abney, M., Rains, G., Powell, C., . . . Tyson, W. (2021). On-Farm Evaluation of Nozzle Types for Peanut Pest Management Using Commercial Sprayers. *Peanut Science*, 48 (2), 87-96

Virk, S., Porter, W., Snider, J., Rains, G., Li, C., & Liu, Y. (2021). Cotton Emergence and Yield Response to Planter Depth and Downforce Settings in Different Soil Moisture Conditions. *AgriEngineering*, 3(2), 323-338. doi:[10.3390/agriengineering3020022](https://doi.org/10.3390/agriengineering3020022)

Virk, S. S., Porter, W. M., Li, C., Rains, G. C., Snider, J. L., & Whitaker, J. R. (2020). On-farm evaluation of planter downforce in varying soil textures within grower fields. *PRECISION AGRICULTURE*, 22(3), 777-799. doi:[10.1007/s11119-020-09755-x](https://doi.org/10.1007/s11119-020-09755-x)

Wang, Y., Eum, J. H., Harrison, R. E., Valzania, L., Yang, X., Johnson, J. A., . . . Strand, M. R. (2021). Riboflavin instability is a key factor underlying the requirement of a gut microbiota for mosquito development. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*, 118(15), 11 pages. doi:[10.1073/pnas.2101080118](https://doi.org/10.1073/pnas.2101080118)

Washington, J. T., Cavender, K. R., Amukamara, A. U., McKinney, E. C., Schmitz, R. J., & Moore, P. J. (2021). The essential role of Dnm1 in gametogenesis in the large milkweed bug *Oncopeltus fasciatus*. *ELIFE*, 10, 18 pages. doi:[10.7554/eLife.62202](https://doi.org/10.7554/eLife.62202)

Wissinger, S. A., Klemmer, A. J., Braccia, A., Bush, B. M., & Batzer, D. P. (2021). Relationships between macroinvertebrates and detritus in freshwater wetlands. *FRESHWATER SCIENCE*, 18 pages. doi:[10.1086/717487](https://doi.org/10.1086/717487)

Wu, H. T., Yang, M. Y., Lu, K. L., & Batzer, D. P. (2021). Effects of Ecological Restoration on Trophic Dynamics in Estuarine Wetlands. *WETLANDS*, 41(1), 7 pages. doi:[10.1007/s13157-021-01408-7](https://doi.org/10.1007/s13157-021-01408-7)

Wu, S., Toews, M. D., Castrillo, L. A., Barman, A. K., Cottrell, T. E., & Shapiro-Ilan, D. I. (2021). Identification and Virulence of *Cordyceps javanica* Strain wf GA17 Isolated From a Natural Fungal Population in Sweetpotato Whiteflies (Hemiptera: Aleyrodidae). *ENVIRONMENTAL ENTOMOLOGY*, 50(5), 1127-1136. doi:[10.1093/ee/nvab061](https://doi.org/10.1093/ee/nvab061)

Wu, S., Blackburn, M. B., Mizell, R. F., Duncan, L. W., Toews, M. D., Sparks, M. E., . . . Shapiro-Ilan, D. I. (2021). Novel associations in antibiosis stemming from an insect pupal cell. *JOURNAL OF INVERTEBRATE PATHOLOGY*, 184, 9 pages. doi:[10.1016/j.jip.2021.107655](https://doi.org/10.1016/j.jip.2021.107655)

Zeng, H., Millar, J. G., Chen, L., Keller, L., & Ross, K. G. (2021). Characterization of Queen Supergene Pheromone in the Red Imported Fire Ant Using Worker Discrimination Assays. *JOURNAL OF CHEMICAL ECOLOGY*, 12 pages. doi:[10.1007/s10886-021-01336-0](https://doi.org/10.1007/s10886-021-01336-0)

Zhang, J., Maleski, J., Schwartz, B., Dunn, D., Mailhot, D., Ni, X., . . . Toews, M. (2021). Assessing spatio-temporal patterns of sugarcane aphid (Hemiptera: Aphididae) infestations on silage sorghum yield using unmanned aerial systems (UAS). *Crop Protection*, 146, 105681. doi:[10.1016/j.cropro.2021.105681](https://doi.org/10.1016/j.cropro.2021.105681)

Zhang, R., Li, X., Zhang, J., Li, Y., Wang, Y., Song, Y., . . . Yang, W. (2021). Toll9 from *Bombyx mori* functions as a pattern recognition receptor that shares features with Toll-like receptor 4 from mammals. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*, 118(19), 11 pages. doi:[10.1073/pnas.2103021118](https://doi.org/10.1073/pnas.2103021118)

BOOKS

Delaplane, K. S. (2021). *Crop Pollination by Bees, Volume 1 Evolution, Ecology, Conservation, and Management. 2nd Edition*. CABI.

Waltz, F., Mccullough, P., Martinez-Espinoza, A., Joseph, S., Hudson, W., Bennett, R., & Wood, B. (2021). *2022 Turfgrass Pest Control Recommendations for Professionals*. F. Waltz (Ed.), Georgia Urban Ag. Council.

Drake, J. (2021). *Population Biology of Vector-borne Diseases*. J. Drake, M. Bonsall, & M. Strand (Eds.), Oxford University Press.

Publications 2021

CHAPTERS

Drake, J., Bonsall, M., & Strand, M. (2021). Current topics in the population biology of infectious diseases. In *Population Biology of Vector-borne Diseases*. Croydon, CR0 4YY, UK: Oxford University Press.

Oliver, K., & Higashi, C. (2021). Symbiosis in a rapidly changing world. In C. Hurst (Ed.), *Microbes: the foundation stone of the biosphere* (pp. 263-296). Springer International Publishing. doi:[10.1007/978-3-030-63512-1_16](https://doi.org/10.1007/978-3-030-63512-1_16)

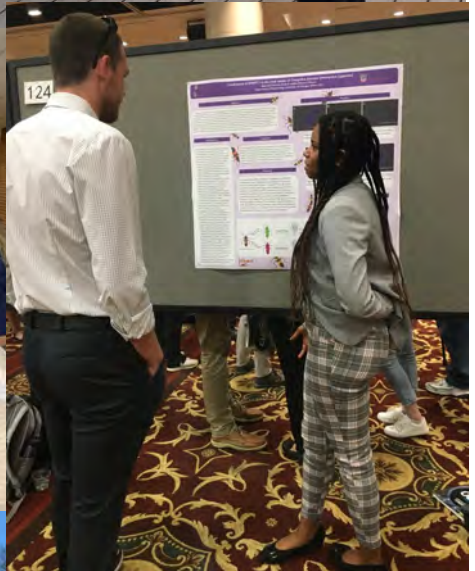
Suiter, D., & Ames, L. (2021). Structural and Household Pests. In S. Dorn, & S. Sawyer (Eds.), *Georgia Master Gardener Handbook, Eighth Edition* (8th ed., pp. 749-784). University of Georgia College of Agriculture and Environmental Sciences.

Wallace, R., Barger, C., Laforest, J., & Carroll, R. (2021). Citizen Scientists' Role in Invasive Alien Species Mapping and Management. In T. Pullaiah, & M. Ielmini (Eds.), *Invasive Alien species: Observations and Issues around the world* (pp. 325-338). John Wiley & Sons. doi:[10.1002/9781119607045.ch50](https://doi.org/10.1002/9781119607045.ch50)

Wallace, R., Barger, C., Laforest, J., & Carroll, R. (2021). The Life Cycle of Invasive Alien Species Occurrence Data: Mapping, Sharing, and Re-use. In T. Pullaiah, & M. Ielmini (Eds.), *Invasive Alien Species Observations and Issues from Around the World* (Vol. 4, pp. 308-324). John Wiley & Sons. doi:[10.1002/9781119607045.ch49](https://doi.org/10.1002/9781119607045.ch49).



SNAPSHOTS



Hexapod Herald Subscriptions

Michele Hatcher—Editor

The Hexapod Herald will be issued in **Spring, Summer** and **Winter** of each year. We ask that you share this issue with friends and neighbors, and anyone who is interested in UGA Entomology. Electronic subscription is preferred.

To subscribe to the Hexapod Herald, contact us



Write to Hexapod Herald, 413 Biological Sciences Bldg, UGA Campus, Athens, GA 30602 or



send e-mail to entodept@uga.edu



Or Call 706-542-2816.



Congratulations to Shannon Harris for being selected Best Graduate Student Poster at UGA Genetic's SE Population Ecology and Evolutionary Genetics conference. Shannon is a master's student in Allen Moore's lab.

Great effort by UGA Team at ESA Puerto Rico



Members of the UGA Entomology Games Team are (left to right) undergraduate student Ashley Dombrowski, graduate student Julia Berliner, undergraduate student Lance Fountain and graduate student Rehan Arshad.

by Dr. Nancy Hinkle

The 2022 Southeastern Branch meeting of the Entomological Society of America was held in San Juan, Puerto Rico, March 27-30. In the Entomology Games competition, the University of Georgia was represented by a team composed of Julia Berliner, Ashley Dombrowski, Rehan Arshad, and Lance Fountain.

The UGA team lost to Auburn in the semi-finals, but put a solid 60 points on the board. Considering

they were beaten by only one team, Auburn, which went on to be named the 2022 SEB Champions, the UGA team has considerable bragging rights!

The team members were all enthusiastic about the experience and glad they had the opportunity to participate this year. Despite the preparation time required for studying and practicing, they all eagerly look forward to competing in next year's Entomology Games.

Calendar Reminders

April 18-22 — LUND WEEK

April 26—CAES Student Awards and Leadership Banquet — GA Center—6-8pm

May 13 — UGA Commencement



We don't mean to bug you but . . .



Your investment in our entomology program helps assure our continued student recruitment success. No gift is too small. Your support is just the means needed to help our students spread their wings and fly!

The Donate button to the left may be used to donate online or, if you prefer, checks may be made payable to the "UGA Foundation" and should be sent to UGA CAES Office of External Relations, 117 Four Towers, Athens, GA 30602-7072. Please indicate the program area or fund you wish to support.

If you have any questions about making a gift to CAES, please contact the Office of External Relations at 706-542-3390 or email external@uga.edu.



Happy Spring from UGA Entomology graduate students!