

HEXAPOD HERALD

Fall 2021

Invasive Joro spiders cloak North Georgia

By Michele Hatcher

Millions of palm-sized **Joro spiders** have suspended themselves in three-dimensional golden webs on porches, power lines and mailboxes in roughly 25 counties in the state — and counting.

It seems Georgia residents will need to get comfortable with this new arachnid in town because, according to scientists, it's not going anywhere.

Three years ago, University of Georgia entomologist **Will Hudson** was excited when two big, beautiful Joro spiders appeared on his property in Winterville, Georgia. He enjoys watching spiders, and this new species was exceptional with its unusual golden web.

"Last year, there were dozens of spiders, and they began to be something of a nuisance when I was doing yard work," he explained.

"This year, I have several hundred, and they actually make the place look spooky with all the messy webs — like a scene out of 'Arachnophobia,'" he said, extending an invitation to come to his home to view the creepy scene.

Joros were first identified in the state in 2014 by **Rick Hoebeke**, **Georgia Museum of Natural History** collections manager, when a call came in about an unusual spider found by a citizen. Hoebeke then led an effort to identify the East Asia native spider and track the Joro as it spread throughout Georgia.

"Our best guess is that it came in a shipping container and dropped off here somewhere on I-85 in the Braselton area," Hoebeke said of his tracking research. "They are great little hitchhikers!"

As far as invasive species go, Hoebeke believes this one is "not so bad." In fact, he has tried to convince the hundreds of people who have sent emails this year concerned about how many spiders are in their yards that paying exterminators will not give them the desired result or solve the problem.

UGA scientists have not noticed any negative effects on any native species, which was one concern. The only negative effect concerning the spiders seems to be the nuisance caused by their extreme numbers this year. All experts agree that, over time, Mother Nature will take its course and the numbers will settle down to a more moderate amount.

"I think people need to make peace with Joros and accept the spiders because they are not going anywhere. Halloween is coming up, so we all have fine, natural decorations for the kiddos to enjoy," Hoebeke said. *(continued on page 3)*



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

From the desk of S. Kristine Braman ...

As the Fall Semester comes to a close we look back on the excitement of being able to be in face to face classes again and have our research and extension efforts also returning to full capacity. We appreciate all those who have gone the extra mile to accommodate the extra duties required by the pandemic to keep everyone safe and still productive.

A highlight was certainly being able to attend **national ESA** in person again and we are proud of all those who attended in person or virtually and congratulate our student award winners.

We were also able to participate in the **Sunbelt Ag Expo** this year, sharing our enthusiasm for Entomology and Insect Science with thousands of visitors at this regional event.

Our faculty and staff continue to bring new ideas to the classroom. This semester marked the inaugural class of **Bees, Beekeeping and Bee Conservation** with Jennifer Berry. This hands

-on class was fully subscribed and very well received.

Joro spiders certainly captured everyone's attention this semester as our communications efforts logged **over a billion hits** since they went out in October!

As we all head out on well-deserved break we wish you all **Happy Holidays** and will see you in the New Year!



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Natural pest control

UGA entomologist **Nancy Hinkle** sees the Joro as a “beautiful creature that provides free pest control.” “Joro spiders present us with excellent opportunities to suppress pests naturally, without chemicals, so I’m trying to convince people that having zillions of large spiders and their webs around is a good thing!” she said.

Hinkle said they help suppress mosquitoes and biting flies, and Joros are one of the few spiders that will catch and eat brown marmorated stink bugs, which are serious pests to many crops. Scientists are hopeful that the Joro spiders will help make a dent in these populations.



Handling a Joro and allowing it free reign on her arm, Hinkle, who was invited to Hudson’s property for the Joro tour, assured onlookers that the leggy arachnid was not interested in biting her at all.

“As with all orb weavers, it has small mouth parts ... Right now she is just using me as substrate,” Hinkle said as she watched the large spider drop off her arm.

Joros to come

For those truly concerned, most will have died off come late November, Hinkle assured, but they will leave behind egg sacs full of eggs. When the hatchlings emerge in the spring, they will hitchhike again, but this time they will be riding the wind on a strand of silk, perhaps extending their habitat.

Joros are harmless to humans and generally large enough to avoid, unless, like Hudson, hundreds are enjoying life around your home.

Walking up the steps to Hudson’s front porch, visitors are greeted not by the seasoned entomologist but by a gigantic, beautiful spider grace-

fully posing in her golden web.

Looking to the left and to the right, you can see that she has lots of company.

Hudson walks out his front door to greet those hesitantly standing on the steps gazing at the collection of spiders adorning the front of his home.

“I know. They are gorgeous spiders,” he said, chuckling. “But there are just too damn many of them.”

Selective elimination

Giving the tour around his property, Hudson described the different methods he had used to eliminate only the necessary offenders.

“Now that they are larger, you can take a leaf rake or a stick and wrap the spider in her web in a ball. Lay the web on the ground and step on the spider. Repeat as necessary. Spraying individual spiders with an aerosol product is also an option,” he explained.

He also strictly focuses on eliminating the large, colorful females and ignores the smaller, brown males — “since the males are a waste of time.” Hudson stressed that the best anyone can do is reduce numbers in areas where people walk or spend time. Given the numbers of calls he receives, he wants to be clear to the public that eradication is not an option.

“Let me reiterate, I have eliminated more than 300 females this year,” he said, glancing toward a path leading to another part of his yard.

“Have you seen 'Lord of the Rings'?” he asked with a smile, as he invited his guests to enter the pathway.



Johnson blends science and art

Most people try to swat them away, but **Jena Johnson** welcomes the beauty in the wings of a mosquito. Johnson, a lab manager in the **College of Agricultural and Environmental Sciences (CAES) Department of Entomology**, fell in love with the study of insects during her junior year of college at Nicholls State University. She was majoring in plant science and had to make an insect collection for an entomology class.



“It was the clearest a-ha moment of my life,” she said. “I fell in love with the beauty and fascinating life histories of insects.”

That led to a career working with insects — and a habit of including them in her own art.

After graduation, she became an entomology technician at the University of Florida. She wanted to learn more and went on to earn her master’s degree in entomology at Clemson University. Johnson met her husband, **Michael Strand**, H.M. Pulliam Chair and professor of entomology in CAES, there. Later, they both accepted positions in entomology at the University of Wisconsin-Madison. They moved to Athens for their current positions in 2001.

In her role, Johnson is responsible for everything from hands-on research and data collection to managing the organization and cleanliness of the laboratory. Some days might include setting up an experiment. Other days might include working with offices across campus to gather supplies or check on a grant. Regardless of what she’s doing day to day, she considers herself a facilitator for the 12-15 scientists on the team, making sure they have everything they need to succeed in their research. Furthermore, she contributes significantly to the department’s outreach programs and coordinating the rearing activities of the insect zoo while mentoring undergraduates across multiple labs.

“The job of lab manager in an active research lab is full of variety,” Johnson said. “Looking back over many years, it has been interesting, stimulating and varied, and I feel fortunate to do this work.”

Her favorite part of her job is overseeing live insects, particularly when she has a new insect to rear. There are two particular insects the lab studies — wasps and mosquitos. Johnson helped rear many different species of parasitic wasps and currently maintains seven different species of mosquitos, which she said can be labor-intensive and requires attention six days per week.

“There is a lot of science, but there’s a lot of art to it, too,” Johnson said.

That blend of science and art is where her skill set blooms. Part of the study of insects is looking at them under magnification, which Johnson said is when their true beauty is revealed. She wants others to see the magnificence of the moment when a mosquito emerges from its pupa at the water’s surface. According to Johnson, it is through **macro photography** that this beauty can be captured and shared with others.

“You want to show people bigger than life-size images so that they can see all the details and the beauty — the hairs, the colorations and the symmetry,” she said. “My ambitions lie in the interface between biology and art.” Johnson belongs to a group of insect photographers called **BugShot**. She started as a participant in its macrophotography workshops, has traveled with the group, and now is on the list of instructors. She’s also been part of a two-person photography exhibition at the **State Botanical Garden of Georgia**. In the department, Johnson’s art has been integral to recruitment, marketing and publicity efforts.

Her interest in insect photography began when she was in graduate school. A fellow student had a camera and showed her some of his photos. She was fascinated by what that 35mm camera and film produced and began taking her own photos for research. As digital cameras became affordable, she began pursuing it as a hobby.

Strand and Johnson also maintain a horticultural garden with various conifers and perennials that has been featured on local garden tours. Additionally, Johnson crafts handmade books that she embellishes with insect prints and graphics.

Whether it’s in the lab, in the garden or behind the camera, Johnson finds a way to be imaginative and inventive.

“I think I’ve made the most out of my job,” Johnson said. “I think I’ve succeeded at making a long-term career interesting and creative.”

UGA Represents at ESA — Denver

UGA Entomology members spent several days in Denver, CO representing the department at the National ESA meeting last month. Winners in the Student divisions were:

Virtual Graduate 1– minute papers

Ben Aigner

First Place

P-IE and SysEB: Biocontrol and IPM

Kelly Tims

First Place

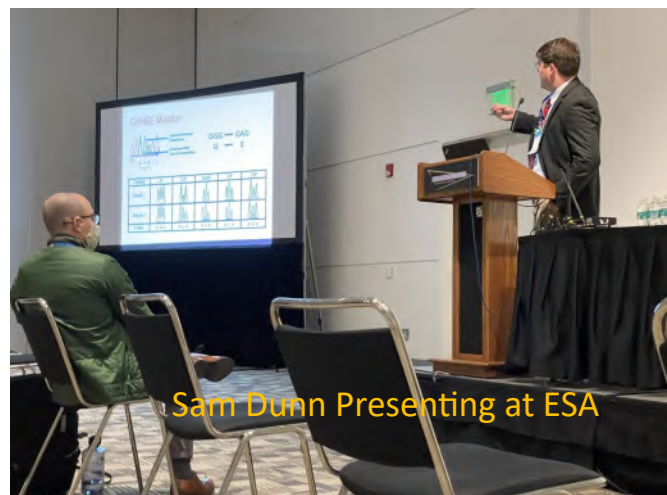
PBT: Physiology, Molecular and Cellular Biology

Virtual Undergraduate 10 minute papers

Noora Chandasir

First Place

P-IE: Biodiversity, Biocontrol and Resistance



Sam Dunn Presenting at ESA



Nancy Hinkle presented with the IPM Lifetime Achievement Award from Friends of Southern IPM





Priscilla Howard

My name is Priscilla Howard and I'm a second-year masters graduate student studying pollinators in the blueberry agricultural systems of southeast Georgia. My interest in nature and science began as a young child, like many, but evolved and shifted in many ways as life led me in variable directions. I worked in avian rehabilitation as an undergraduate and garnered research experience volunteering at Phinizy Swamp and the Georgia Sea Turtle Center. But as if all this wasn't interesting enough, I also dove headfirst into my most challenging (and rewarding) adventure...motherhood. Eventually, I was able to complete my bachelor's degree in biology but had little foresight or mentorship on where to go from there. In my attempt to build a "sensible" career with financial stability, I went on to earn my PTA license and practiced physical therapy for over 7 years. I enjoyed studying human anatomy and physiology but found the everyday monotony of the medical field to be un-inspiring. I missed

studying ecology, conservation, and wildlife. So, with a little push from my friends and family, I began to explore graduate programs around the US.

I was immediately drawn to the Ecology and Entomology Departments at UGA. I wanted to study pollinators, but more specifically, I wanted to contribute to the conservation of native bees. Dr. William Snyder and Dr. Kris Braman's research inspired me and ultimately sold me on the UGA Entomology program. My current research compares pollinator biodiversity between organic and conventional blueberry farming systems within varying degrees of natural landscape, from small town urban farming to largely forested natural settings. My



hope is to paint a clearer picture of the pollinator network residing in and around these farms and to make sense of the variables that may be affecting their biodiversity. In turn, I aim to promote the conservation of native bee communities in Georgia while simultaneously supporting our local farmer's pollination needs.

As I inch closer to completing my research and graduating, my future plans remain somewhat fluid. First and foremost, I plan to take a long sigh of relief and spend some much-missed time with friends and family. Ultimately, my goal is to find work that gets me outdoors, involves outreach, and continues to challenge me intellectually. With that in mind, I wouldn't put it past me to end up back in school, working towards a PhD (although I curse the idea at the very moment!)

Having been given this opportunity, I'd like to extend a special "thank you" to Dr. Trish Moore and Dr. Oliver for opening the door for me here in Entomology. As well, to both Dr. Trish and Allen Moore for their invaluable mentorship and advice throughout the program. Last but not least, to Dr. Snyder, Dr. Braman and Dr. Ash Sial for agreeing to put up with me- and guide me- as I give "saving the bees" a go.





Clayton Traylor

Growing up in rural Indiana, I had no idea that science or entomology would become a major focus of my life. In high school, the only classes that interested me were art and French, due in part to great teachers and in part to my other courses lacking applicable significance. High school science courses were rigid and dull—memorizing facts without using them. Therefore, in college I was surprised to learn that biology wasn't a history class and instead a valuable subject with broad applications. Sure, we still learned about long-ago experiments and the ramblings of dead guys. But beyond that, it was the first time I was exposed to the intricacies of life from molecules to the biosphere, and how much there is left to be learned.

Fueled by my desire to pay rent, I worked several jobs while attending college at Xavier University. Very fortunately, one opportunity arose in Dr. Ann Ray's lab working with woodboring beetles. Up to that point in my life, I had never given much thought to insects other than the cockroaches in my dorm. However, as with others who suffer from chronic Beetlemania, I was quickly captivated by the over-

whelming diversity of form and habits seen in Coleoptera. Under the wonderful guidance of Dr. Ray, I formed and tested hypotheses about how cerambycid communities respond to forest management. Little did I know, these same types of questions would follow me to my next step at the University of Georgia.

I began my PhD at UGA in Spring 2019 under the advisement of Dr. Joe McHugh and Dr. Mike Ulyshen. I came here to study the ecology and conservation of saproxylic (deadwood dependent) beetles, and I was very fortunate to have been given the flexibility to form a project that fit my own interests. My research now looks at the processes that shape the diversity and composition of saproxylic beetles in forests, especially in regard to human disturbance. I'm most interested in how changes in land use and habitat availability over space and time leave observable differences in the saproxylic communities, and I've conducted field work in Athens to investigate this subject. I'm also working on how the same factors have formed contrasting distributions of two fungus beetles in the southern Appalachian Mountains. Finally, my work with fungus beetles in the mountains doubles as a chance to investigate how their populations may have become isolated and re-connected from distribution shifts during the climate oscillations in the Pleistocene. I hope that I can use my research experience as a graduate student to begin a research-focused position at a university or government agency.

I love both hiking and running. Proximity to the mountains have provided ample opportunity for the first, while Athens itself is a great place for the latter—gotta love a robust sidewalk system. I also love seeing live music, for which Athens also has a great atmosphere. Though I've been holding out on going to a football game, I will eventually see UGA play in person—Go Dawgs!



Sial receives NIFA grant to support IPM program

By Emily Cabrera, IPM Communications Coordinator at the University of Georgia

A multidisciplinary team of University of Georgia researchers has received \$765,000 from the U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA) Crop Protection and Pest Management Program to support the continuation of integrated pest management (IPM) programming throughout the state over the next three years.



[Ash Sial](#), blueberry entomologist and coordinator of the [UGA IPM program](#), serves as the primary investigator on the IPM grant and said this achievement has been his goal since he assumed the IPM coordinator role in 2013.

“To my knowledge, this is the all-time highest funding amount the UGA IPM program has received, which is incredible because this is a highly competitive national grant,” Sial said.

The grant proposal, titled “Implementation of systems-based IPM programs in key production systems in Georgia,” was ranked in the “Outstanding” category and boasts a comprehensive approach to addressing some of the most significant challenges Georgia agricultural producers face across a wide array of commodity areas due to the hot and humid climate.

The members of the UGA IPM team are a group of nationally recognized research scientists and UGA Cooperative Extension specialists who provide a critical service to the agricultural industry by delivering state-of-the-art IPM programs to effectively manage diseases, insect pests and weeds.

Extension and outreach programs offered by the UGA IPM team have helped growers adopt management programs that minimize crop losses due to pest issues.

Over the next three years, the team will continue to work in partnership with Georgia growers to expand existing management programs and develop new approaches that are more economically affordable, environmentally friendly, and sustainable for long-term implementation.

The members of the UGA IPM team joining Sial on the grant include Mark Abney, Emran Ali, Bochra Bahri, Brett Blaauw, Kris Braman, Phil Brannen, Bhabesh Dutta, Becky Griffin, Nancy Hinkle, Shimat Joseph, Bob Kemerait, Jonathan Oliver, Phillip Roberts, Amanda Smith, Alton Sparks, Babu Srinivasan, Sharon Kane and Emily Cabrera.

To learn more, visit the [UGA IPM program website](#) and stay up-to-date with the latest happenings across the state from the [UGA IPM blog](#).

Barbosa awarded NIH T32 Training Grant

Sabrina Barbosa has been awarded the highly competitive NIH T32 Training Grant which was given to only six PhD students across UGA.

The NIH T32 training grand provides students from across campus with training in genetics and opportunities for career development. The program is committed to creating a supportive, inclusive, and diverse training environment for all members of the science community.

In addition to the university stipend, Sabrina will also receive \$700 to use for travel and supplies. The traineeships are awarded for one year, and may be renewed for a second year.

The curriculum helps trainees gain both broad and specialized genetics knowledge and quantitative skills within a generally flexible framework. It is also intended to interface and synergize with other department curricula to enhance training in genetics.

Barbosa is a student under the direction of Dr. Brendan Hunt. The Hunt lab studies *Solenopsis invicta*, the red imported fire ant, to better understand how chromosomal rearrangements, namely inversions, influence complex trait variation.

“Major unanswered questions concern how gene regulation and protein evolution collectively influence trait variation among the different genotypes of queens and workers from monogyne and polygyne colonies and, more broadly, how chromosomal inversions themselves influence the evolutionary processes that act on variation in gene regulation and protein structure,” Barbosa explained about her research.

Barbosa is excited about the award and the opportunities it presents to her as a graduate student.

“The NIH Training Grant will provide me with the opportunity to focus on my research, free up funding in the Hunt lab to advance in my exploration of these novel research questions, and enable me to network with other scientists through attending seminars in the genetics department as well as provide funding to attend conferences related to the molecular evolution of social behavior,” Barbosa said.

Emphasizing the importance of this grant to her academic future, Barbosa said, “these experiences are necessary to prepare me for a future in academia to develop a top tier genetics research program.”



CONGRATULATIONS Sabrina!

SNAPSHOTS



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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.

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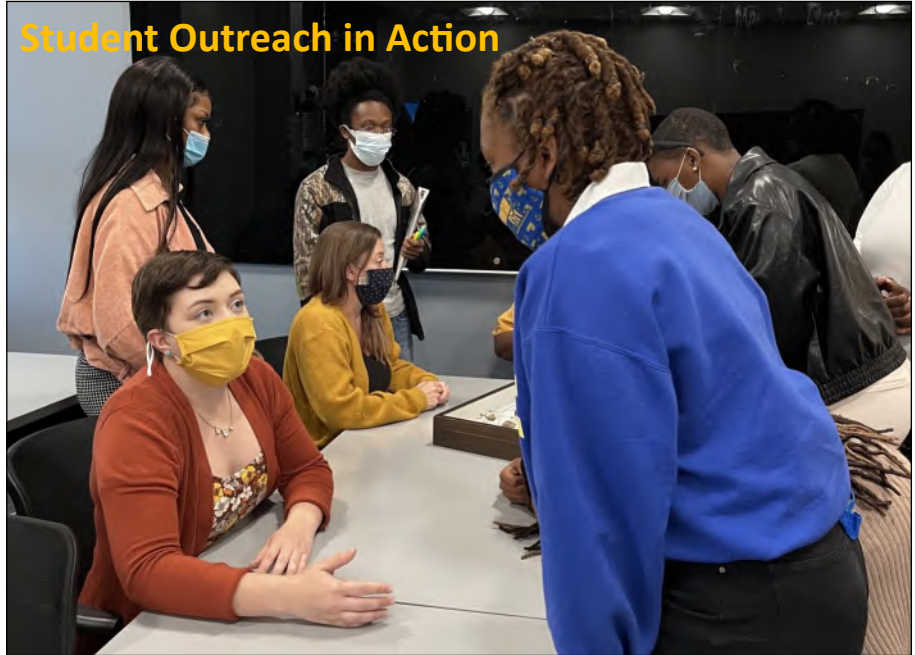
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*In all things of nature
there is something
of the marvelous.*

-Aristotle



Student Outreach in Action



Graduate students Emily Shelby, Shannon Harris, Priscilla Howard and Jamal Hunter speak with Fort Valley students about graduate studies in entomology.

UGA Students awarded scholarships

Congratulations to the following graduate students who were awarded departmental scholarships recently. Students are selected based on their history of research, academics, work ethic and departmental citizenship.

Kelly Tims – R. Barclay McGhee Scholarship in Parasitology

Emily Shelby and Kyle Slusher – Horace Odin Lund Scholarship

Dustin Dial, Roy Kucuk and Ben Aigner – Herbert H. Ross Scholarship

Gabriela Cardona-Rivera and Priscilla Howard – Sparks Awards in Outreach

Jennifer Berry and Thomas “Sam” Dunn – Department of Entomology Outstanding Students in Research

Kelly Tims and Dustin Dial are PhD students in Gaelen Burke’s lab in Athens. Emily Shelby is a PhD student in Patricia Moore’s lab in Athens. Kyle Slusher is a PhD student in Jason Schmidt’s lab in Tifton. Roy Kucuk is a PhD student in Kerry Oliver’s lab in Athens. Ben Aigner is a PhD student in Mark Abney’s lab in Tifton. Ga-



Pictured above is Priscilla Howard, Dustin Dial, Roy Kucuk, Kelly Tims and Gabriela Cardona-Rivera.

briela Cardon-Rivera is a PhD student in Darold Batzer’s lab in Athens. Jennifer Berry is a PhD student in Kris Braman’s lab in Athens. Sam Dunn is a PhD student in Donald Champagne’s lab in Athens and David Riley’s lab in Tifton.

Calendar Reminders

December 17— UGA Fall Commencement, Sanford Stadium;
Undergraduate ceremony—10 am
Graduate ceremony — 2:30 pm

December 17 — CAES Convocation Ceremony, Performing Arts Center; 12:30 pm

December 27-31 — UGA Holiday

January 10— Spring classes begin



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