



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

HEXAPOD HERALD

Summer 2020

Participation needed in GA Pollinator Census

By Michele Hatcher

The world feels very different to the human population than it did a year ago. But to the natural pollinators of the planet, it is business as usual and Becky Griffin likes to get a good look at how they are doing here in Georgia.

On August 21-22, Georgians across the state will join together to count pollinators as part of the second Great Georgia Pollinator Census. Last year, over 4,500 participants documented over 131,000 insect visits as part of the inaugural census and the hope is to see that number increase this year.



“The pandemic has changed the census from an initiative that was centered around events to a more at-home experience,” said Griffin, Community and School Garden Coordinator and Pollinator Health Program Associate for the University of Georgia. With the unknowns surrounding the coronavirus, this count looks different than last year with participants encouraged to plan on counting at home with their families.

According to Griffin, participants are asked to count pollinators on a favorite pollinator plant for 15 minutes. A “favorite” pollinator plant is one that shows an abundance of insect activity. Counters place the insects they find into one of eight categories: bumble bees, carpenter bees, small bees, honey bees, wasps, flies, butterflies/moths, other insects.

“This year I have increased the number of resources on the website <https://ggapc.org/> and we are working on insect identification on the Georgia Pollinator Census Facebook group right now,” Griffin said. “We will have an online training event for anyone who wants more information on how to count and some additional insect identification training. Also, citizens can check with their local Extension offices to see how they are participating.”

The primary goals of the project are to gather data on the Georgia pollinator insect population, to create pollinator habitat and to increase entomological literacy around these insects.

“I have heard from Georgians who were unable to count last year who are excited to participate for the first time this year,” Griffin said. So, even with the lack of public events and open schools participating, organizers are hoping to beat last year’s participation numbers.

The slogan for this year is “Protecting Georgia’s Pollinators One Count at a Time!”

“With all of the negative, stressful news, this project is something positive anyone can enjoy doing . . . anyone can participate with confidence,” Griffin said, with a smile.

From the desk of S. Kristine Braman ...

Greetings from the UGA Department of Entomology. It is always a pleasure to share with you the impact of our faculty, staff and students on the world around us through their research and education efforts. Notable recognitions highlighted in this issue include awards received by Elmer Gray, Darold Batzer, Brett Blaauw, and Mickey Taylor.



We are excited to welcome **Dr. Carmen Blubaugh** to our faculty as Assistant Professor and Undergraduate Coordinator!

We are extremely proud of our graduate students (66 in Fall 2020- 21 MS, 39 PhD, 6 MPPPM) who have persevered through unexpected and difficult circumstances on all of our campuses. Though we can only highlight a few each issue they are all doing tremendous work. We also appreciate our 26 Entomology and 90 Applied Biotechnology undergraduate students.



Congratulations to our Spring 2020 graduates who did not get to experience a traditional graduation: MPPPM: **John E. Bennett, Timothy R. Weredyk**, MS: **Tyler J. Simmonds, Nathan R. Spaulding**; BSAB: **Parker J. Jamieson, Sara H. Browning, Ben T. Parker, Benjamin G. Jones, Kimberly J. Beck, Emily L. Jenkins, Austin T. Bryan, Travia A. Clemons, Hailey V. Goldberg, Michaela R. Lubbers, Cori F. Mbonzo**, BSES: **Mackenzie N. Goss, Julianna F. Putman, Kelly M. Tims, Hunter MacConnell**.

29th Annual Insectival! One of our largest and most well-known festivals, Insectival, held at the State Botanical Garden on our UGA Campus is going virtual this year. Participants will receive a virtual package full of information, activities, tours, crafts, puppet shows and the popular butterfly release from our favorite entomology experts. Join garden staff and partners as we celebrate our beloved insects and six-legged neighbors. Insectival is sponsored by the State Botanical Garden of Georgia, UGA Lund Club, UGA Department of Entomology and Georgia Museum of Natural History.

Registrants will receive the Insectival virtual package beginning September 19th. This will include six videos and resources package with information, craft and education activities to do at home. On **September 26th**, the original date of the festival, registrants are invited to join a family friendly Q&A webinar via Zoom with entomology experts. At 11 am, following the live Q&A, registrants will get the view the first ever virtual butterfly release. Registrants have the option to add-on several items which include a grow your own bug kit, Bug Box and UGA Department of Entomology t-shirt. The Bug Box will contain produce from the Alice H. Richards Children's Garden and insects to prepare the meals in the Insect Café video.

While this is new for all of us it is sure to be a buggy good time!

For additional information visit www.botgarden.uga.edu

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UGA BLACK FLY RESEARCH AND RESOURCE CENTER



By Elmer Gray

The University of Georgia Black Fly Rearing and Bioassay Laboratory has been awarded a contract with the National Institutes of Health (NIH), National Institute of Allergy and Infectious Diseases (NIAID) to provide partial support for the world's only black fly colony. This support forms a collaborative effort between NIH/NIAID and the University of Georgia Entomology Department to continue the operation of this unique and one of a kind resource. Dr. Darold Batzer of the Entomology Department is the Principal Investigator for this funding effort with Dr. Danny Mead of the Southeastern Cooperative Wildlife Disease Study being a Co-Principal Investigator and Elmer Gray being the Assistant Project Director. Dr. Ray Noblet, the former Entomology Department head, will serve as scientific advisor to the project. The current funding is for one year at \$109,790 with a related task order value of \$449,481 which would include the possibility of three years of renewal.

This laboratory has been in operation at UGA since 1999 when Dr. Noblet and the Laboratory Manager, Elmer Gray established the site upon their arrival from Clemson University. The black fly colony is a unique resource that was initiated in 1981 at Cornell University. Black flies (Diptera: Simuliidae) require flowing water to complete their life cycle. The colony simulates this environment with 9 aquatic rearing units that create miniature rivers for the larval and pupal stages to develop. Each unit can support approximately 300,000 larvae. Adult flies emerge within the rearing units and are captured, mated and provided moistened substrates to serve as egg laying sites. A particular advantage of *Simulium vittatum* cytospecies IS-7 is that they can deposit their first batch of eggs without a blood meal. Consequently, no animal resources are required to maintain the colony.

The colony has been used for a variety of research projects through the years including a wide range of vector transmission studies, environmental monitoring, vector control and larval feeding studies. The laboratory continues to conduct and collaborate in a wide range of research projects and provides all stages of the black fly life cycle to collaborating laboratories. Current research being conducted in the laboratory involves larvicidal efficacy evaluations, topical repellent evaluations and growth studies related to climate change. The laboratory has also served as a preferred site for teaching and educational outreach visits for a wide range of students. This site will now operate as the NIH/NIAID supported **Black Fly Research and Resource Center**. The center will work in parallel with the NIH supported Filariasis Research Reagent Resource Center (FR³) that is operated through the University of Georgia College of Veterinary Medicine under the direction of Dr. Andy Moorhead. The mission of FR3 is to provide filarial-related biological products to researchers across North America. The Center for Tropical and Emerging Global Diseases also has a new program, "The SporoCore" which can provide mosquitoes infected with routine or custom strains of rodent malaras to various research groups across the US. These centers demonstrate the University of Georgia's commitment to be a world leader in vector biology and disease transmission.

Suiter gives Ranger Nick tips to stop termites

By Ashley Biles for CAES News

University of Georgia entomologist Dan Suiter, a College of Agricultural and Environmental Sciences professor on the UGA Griffin campus, and Nick Fuhrman, a CAES professor on the Athens campus — better known as “Ranger Nick” to viewers of the monthly Georgia Farm Monitor television show — appeared together on the July episode of the show with tips to stop termites. The two joined forces to show viewers the proper steps to help keep their homes pest free.

After reading one of Suiter’s articles about termites, Fuhrman thought Suiter would make a great guest on the show to inform the public on the essential ways to help prevent termites from working their way into homes. He and Ray D’Alessio, who serves as the senior producer and cameraman for the show, traveled to UGA-Griffin in June to meet with Suiter and film a segment for the July show.



“Dr. Suiter and I have worked together on a few Extension-related committees over the years and I have always appreciated his sincerity and genuine, warm personality,” said Fuhrman. “When I think about guests for our Ranger Nick television segment, I often think about the personalities of my colleagues and who would be fun to hang out with for a segment. I try to envision my viewers sitting at home, smiling and getting excited along with me and my guests. I have these sudden bursts of enthusiasm that I can’t help and that hopefully get them excited too.”

Suiter was thrilled to be part of the program and is excited to show off what programs are available at the Griffin campus.

“Dr. Nick Fuhrman’s Ranger Nick program is a fantastic service he provides for the several million viewers of the Farm Monitor. His program provides short, interesting articles that provide viewers of the program with some help in their lives,” said Suiter. “Filming some of the basics of termite biology and management to provide content to his large viewership is highly impactful for my Urban Pest Management Extension program and sheds important light on the diversity of programs on the UGA Griffin campus.”

Throughout the two-hour filming, the trio — who wore masks and practiced social distancing as much as possible — showed off the Structural Pest Training Facility located on the Griffin campus. Suiter explained that the facility, one of only a few in the Southeast U.S., gives those who work in the pest control industry the chance to practice the steps they learn in training before performing them on the job. The training facility is set up to simulate the crawlspace under a house, a commercial kitchen, and a hotel room for dealing with termites and other urban pests.

During the episode, Suiter explained the preventive measures homeowners can take to keep termites out while showing Ranger Nick the areas of a house or building that are most susceptible to infestation.

For more information on the Structural Pest Management Program, visit extension.uga.edu/programs-services/structural-pest-management.

Blaauw named to 40 under 40 class by Fruit Growers News

By Sean Montgomery for CAES News

University of Georgia researcher and peach entomologist Brett Blaauw landed a coveted spot on the Fruit and Vegetable 40 Under 40 Class of 2020, announced by Fruit Growers News.

“I would like to think that the previous award winners from UGA, and Dario Chavez and myself this year, demonstrate the strength of UGA’s extension faculty,” Blaauw said of the honor.

“This award recognizes the next generation of agricultural leaders representing the U.S. fruit and vegetable industries, from farmers to extension personnel, and I am grateful to receive such an accolade.”

Blaauw, an assistant professor and UGA Cooperative Extension specialist in the Department of Entomology at UGA’s College of Agricultural and Environmental Sciences, holds a joint appointment in Clemson University’s College of Agriculture, Forestry and Life Sciences.

Blaauw’s research and extension programs focus on addressing grower needs through a combination of laboratory studies, research farm trials, on-farm research, and collaboration with colleagues and county Extension personnel.

“Dr. Blaauw is an outstanding junior faculty member who has a robust research and extension program that is supported by a wide variety of sponsors,” said Kris Braman, head of UGA’s Department of Entomology. “To support his growers, he and his students develop, evaluate and communicate strategies to manage pests of peaches and several other commodities. We are indeed fortunate to have him in our department.”

Currently, Blaauw’s primary initiative zeroes in on reducing the burden caused by the No. 1 pest concern for peach growers in Georgia — San Jose scale. Through a collaborative effort, Blaauw’s lab has tackled this pest head on.

Addressing real-world issues growers face each day allows Blaauw to give his students valuable experience focusing on real-time concerns, including supporting the vineyards in Georgia’s blossoming wine industry.

“It is my strong belief that the futures of science and agriculture will heavily rely on the excellent education of our communities,” said Blaauw. “With its university and extension services, UGA is an amazing resource for educating our students and communities.”

A native of southwest Michigan, Blaauw earned a bachelor’s degree in biology from Kalamazoo College, a master’s degree in science from Western Michigan University, and a doctorate from Michigan State University. His doctoral research focused on the evaluation of plant composition and habitat size on the effectiveness of native plant conservation strips for sustainable enhancement of beneficial insect communities and their ecosystem services in agroecosystems.

Blaauw hopes to inspire the next generation of applied scientists by providing students hands-on experience in fruit production within the region, hiring undergraduate students to perform research in his lab and orchard each summer.

“It is amazing to watch the students grow, even over just the course of a summer, as they experience entomology in real-world agricultural contexts,” said Blaauw. “These students may not ever become applied scientists, but I can tell that they leave the lab with a newfound appreciation for entomology and agriculture, and that makes me feel good.”



For more information on Fruit Growers News’ 2020 Fruit and Vegetable 40 Under 40 class, visit fruitgrowersnews.com/40under40.

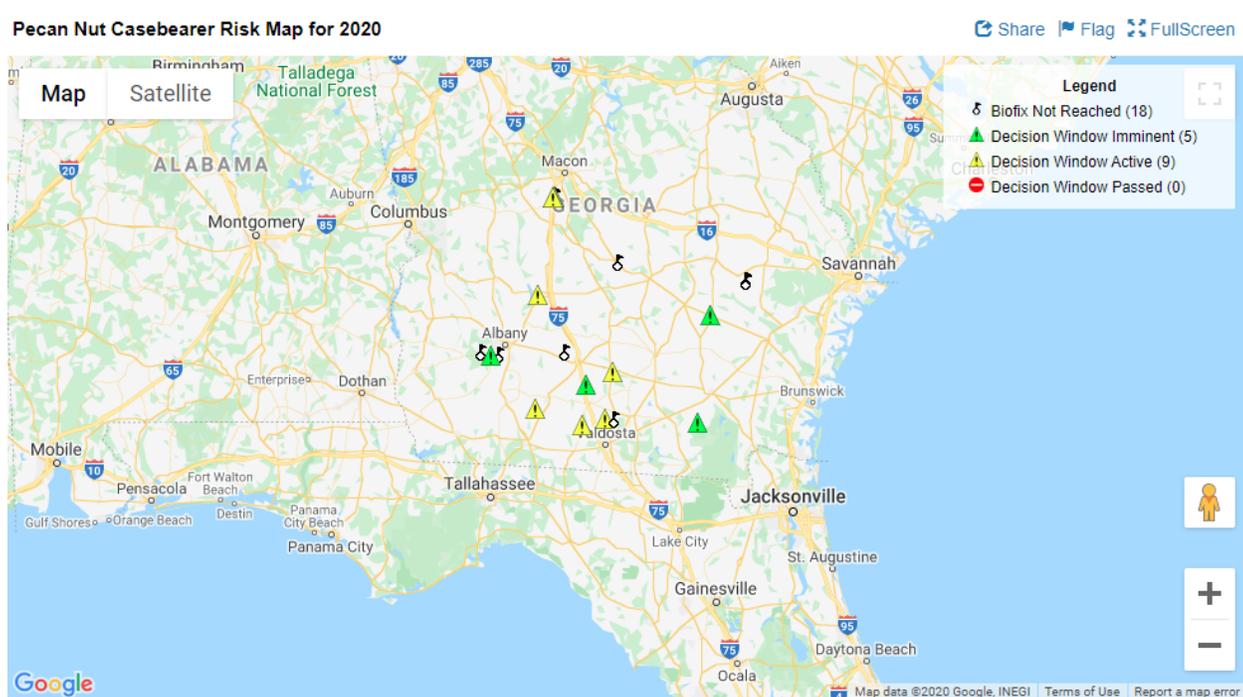
Acebes' work key to successful launch of AgPest Monitor

By Joe LaForest and Rebekah Wallace
Center for Invasive Species and Ecosystem

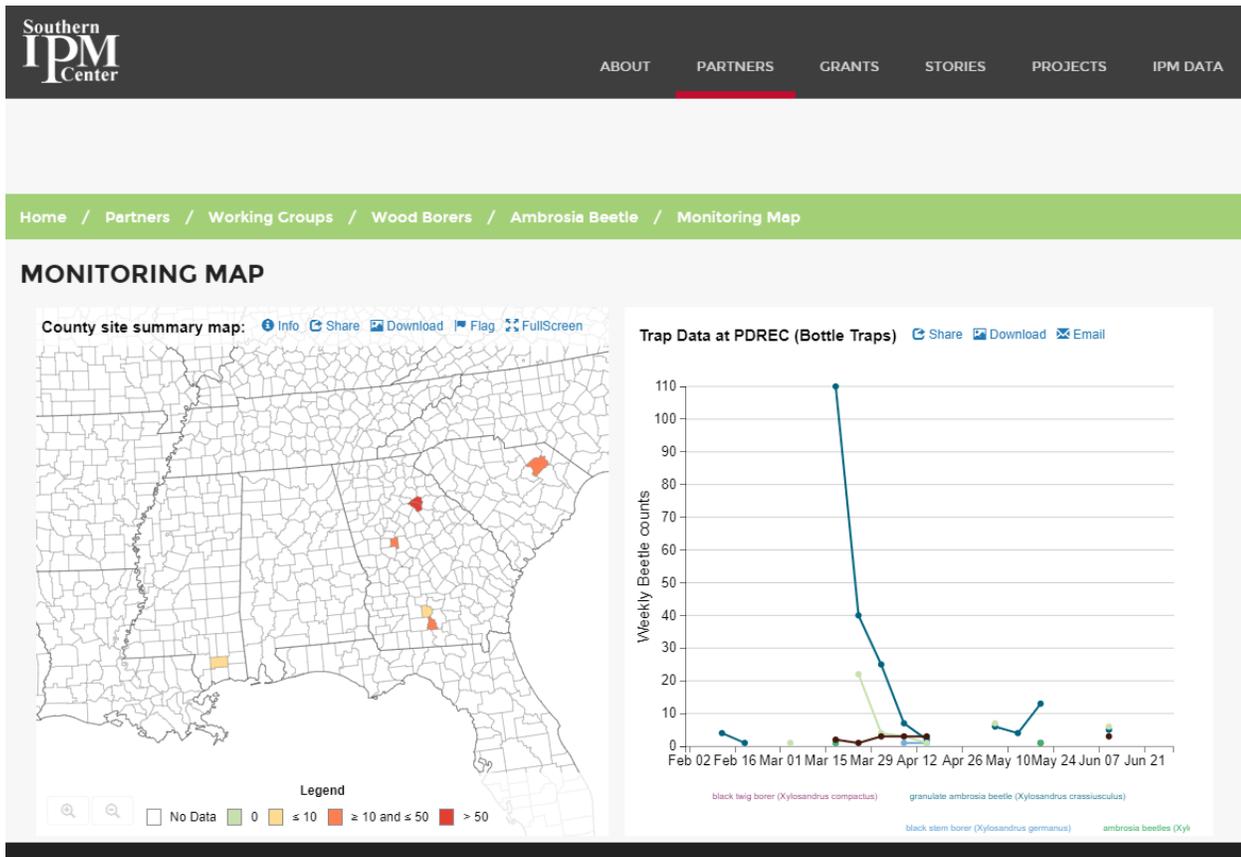
In February 2020, the Center for Invasive Species and Ecosystem Health (Bugwood) launched AgPest Monitor (<https://agpestmonitor.org/>). It is an evolution of the iPIPE and ipmPIPE systems that serves as a platform for pest data collection, verification, sharing, and visualization. It provides a secure way for different projects to manage reporting agricultural pests from varied sources across geographic, institutional, and professional boundaries without burdening individual programs with handling their own technological needs. The researchers and working groups develop their monitoring programs and collaborate with Bugwood for the technology. There are dozens of projects spanning multiple commodities and disciplines across the US and Canada.

One of our own UGA Entomologists, Dr. Angel Acebes, has helped to organize and promote the Pecan Nut Casebearer and Ambrosia beetle projects through AgPest Monitor, and worked with Bugwood to streamline the data collection forms, alerts, and data visualizations. Dr. Acebes can focus on coordinating the multi-state trapping network and can easily add reporters to the project, manage sites, assign user roles, and retrieve the resulting data. As data come in, the maps, and websites for each project update automatically.

For example, the Pecan ipmPIPE website (<https://pecan.agpestmonitor.org>), includes a Pecan Nut Casebearer (PNC) risk map with the current status of the decision window for all sites participating. The decision window is when 25-50% of all first-generation pecan nut casebearer PNC eggs are expected to be present in an orchard. That forecast is based on accumulated growing degree days after a biofix of two consecutive trap catches of PNC adults. While there is a risk tool on the site that anyone who traps can use to inform when they should be scouting, the volunteers that Dr. Acebes is coordinating help growers that may not be trapping for PNC while also sharing the current state of the pest across the region.



Similarly, the Ambrosia Beetle working group has a page with Southern IPM Center (<https://bit.ly/33tPR6W>) to not only show what counties are currently trapping for ambrosia beetles, but to let users click on a county and see what the trend has been in that county. While this effort is only in its first year of coordinating and sharing ambrosia beetle data, it has the potential to keep nursery, tree nut, and tree fruit growers throughout the US aware of pest population trends.



Collaborations between different programs allows a pooling of resources and talents, which increases the capacity of the overall project and provides better information and services to the public. Historically, these collaborations would have been more for the purposes of increasing a geographic sampling area or to add another dimension to a project (e.g., economic, sociological, etc.). As technology grows by leaps and bounds, collaboration with programs that specialize in these areas brings additional value and capacity to working groups and research programs.



Joshua Washington

My introduction into the world of insects was completely serendipitous. As a prospective medical student, I sought research experience because it made me more of a well-rounded applicant. In doing so, I knew I wanted to be advised by someone with incomparable pedagogical approaches. Luckily, Dr. Patricia Moore existed. After my inquiry was met with an acceptance, projects soon commenced.

When I was an undergraduate student, I focused on the evolution of DNA methyltransferase 1 (DNMT1) in the

large milkweed bug, *Oncopeltus fasciatus*. Now, I use that work as the foundation upon which my time in graduate school is built. Specifically, I'm interested in the relationship between male fertility and DNMT1. More broadly, there exists an entire class of methyltransferase proteins: DNMT1a, DNMT1b, DNMT2, and DNMT3. They all function to methylate nucleic acid, but differ in the mechanism by which they achieve this epigenetic regulation and, sometimes, in the kind of nucleic acid being methylated. DNA methyltransferase 2 (DNMT2) is responsible for RNA methylation, but the rest of the aforementioned proteins target DNA. DNMT1 is the protein around which my work revolves and I want to know whether or not it has a subsidiary contribution. It mainly functions to methylate the cytosine base in CpG dinucleotide bridges, but there's evidence to support another function specific to embryogenesis and gametogenesis. The red flour beetle, *Tribolium castaneum*, doesn't have a methylated genome, but requires DNMT1 for viability since a deficiency in the protein compromises their embryonic development, thus leading to a lethal phenotype. Because DNMT1 is believed to have little to no effect in male insects, evolutionary work on DNMT1 mainly used female insects as models. In the brown planthopper, *Nilaparvata lugens*, and *O. fasciatus*, DNMT1 is necessary for oogenesis. With respect to spermatogenesis though, there have been claims of DNMT1 having no essential role in the process. However, my lab found evidence to support the contrary. We found that downregulating DNMT1 yields a phenotype of decreased testis size, testis content, and quality of testis structure in *O. fasciatus*. This proportional relationship between DNMT1 levels and spermatogenic integrity suggests similarity in the function of DNMT1 across the sexes of the *O. fasciatus* species and, more importantly, further advocates for the evolution of DNMT1 within insect phylogeny.

As of now, I'm extending my work to seek a more causal than correlational relationship. DNMT1-deficient males have a decreased amount of germ cells and those that remain have abnormal structures within their nuclei. This could be indicative of apoptosis, so I'm creating an assay to assess cell death.

When I think about my time as an entomologist, all I can do is smile. I'm not an outside kind of girl, so developing a love for bugs still leaves me in disbelief. My sensitivities grew so much that the bugs are now my phone's background. However, such a memorable research experience wouldn't be possible if it weren't for my principal investigator, Patricia Moore. In collaborating with her, I begin to understand why I'm a better scientist. Under her guidance, the quality of my scientific communication increased exponentially. My skills in scientific writing, oral presentations, and project management are ever-growing thanks to her. In this light, I will forever be grateful for Patricia Moore.





Haolin Horace Zeng

Like many biologists, I always had a strong passion for nature and knew that I would want to work with animals in the future. Growing up in a major city in China prohibited me from frequently interacting with big mammals and birds, so I turned my attention to arthropods and reptiles. Before college, most of my extracurricular time was spent observing whatever creatures I can find and keeping arthropods as pets. Meanwhile, I formalized my life goal to conserve the remaining ecosystems and inspire more people to appreciate the beauty of nature.

During my early undergraduate years I tried to explore different options to achieve my goal. At first, I wanted to be rich and build a world-class natural museum. Then I took an anthropology course in a rainforest of Costa Rica. The biodiversity of the rainforest made me realize that the best natural museum is nature itself.

The following summer, I worked as an intern for The Nature Conservancy in southwest China, as part of a project to conserve the highly endangered Yunnan snub-nosed monkey. My team mostly worked on the human dimension of conservation: converting local hunters into national park rangers and helping local villagers sell their organic products, hoping to stop wildlife poaching. Even though I was a biology major, the variety of skills in communication, designing and simple data analysis made me a valuable team member.

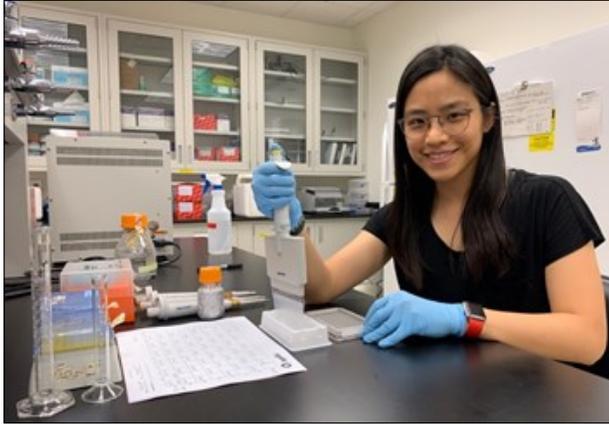
During my internship, I got to know Dr. Long, who is the lead primateologist of The Nature Conservancy-China. It is only after many decades of on-site ecological research and interacting with local people that Dr. Long was able to establish a conservation framework involving government, scientists, and the business sector. His scientific expertise is the key to gain the trust of people and the government. At that point I came to understand that a bachelor's degree was not enough to establish my credibility, so I decided to up my game for graduate school.

When I was exploring graduate school options, I initially looked for conservation related topics. In my late undergraduate years, as I interacted with many great entomologists at the University of Illinois-Urbana-Champaign, my interest in insects fortified. Eventually I decided on studying ants. Looking back, my first lab experience in undergraduate years was measuring the head size of the fire ants. It is remarkable but somewhat unsurprising that I end up studying fire ants for my Ph.D. My thesis aims to reveal how the multiple queen social form is manifested in the red imported fire ant on chemical and behavioral levels. I spent most of my working time maintaining ant colonies and running behavioral assays. I am still debating if I want to pursue an academic career or find a path in nature conservation and science communication. Wherever I end up, I will probably be working with insects and other arthropods.



II-

PhD Student Spotlight



Pin-chu Lai

I am from Taiwan, a beautiful island in the Pacific Ocean. Growing up, life science has always been my favorite subject in school. I was always fascinated by what life is made of and all the wonders happening in the nature. However, studying insects was something that I have never imagined before college, being that kind of kid who would take interests in a great deal of things and is good at almost everything without really knowing what to do in the future. The ranking of my college entrance exam along with my preference list paired me up with the entomology department. Not knowing what to expect, I stepped on a journey with bugs. Before becoming an entomology major, bug was never my thing. However, as I learned more about all kinds of roles insects play in nature and human society, my passion for science began to reveal. When I was introduced to the topic of insect vectors of plant diseases, I was so fascinated and so into learning about the transmission mechanisms and the interactions among insect vectors, pathogens, and host plants. In my junior year in college, I worked as an undergraduate assistant in the Vector Lab and the Pesticides Lab in the Department of Entomology at the National Taiwan University. Little by little, I started to learn what research is about by conducting small projects and assisting graduate students with their experiments. I also started to read and present scientific papers in weekly meetings of a journal club. I realized that I really enjoyed conducting experiments and learning interesting science from literature. Those valuable experiences prepared and motivated me to pursue graduate study after college. Filled with curiosity for exploring the rest of the world, I was determined to leave my comfort zone and tried studying abroad.

With great passion and excitement, I came to the U.S. and joined Dr. Srinivasan's lab in our department in 2013 and received my master's degree in 2015. I am currently a PhD candidate under Dr. Srinivasan and Dr. Abney. My research projects are centered in tobacco thrips (*Frankliniella fusca*) and spotted wilt disease in peanut caused by thrips-transmitted tomato spotted wilt orthotospovirus (TSWV). I studied the economic status of tobacco thrips and developed decision-making thresholds for this pest in peanut. I also studied the epidemiology of spotted wilt disease and its impacts on peanut yield. Other objectives in my dissertation include the study of selected detoxifying enzymes in tobacco thrips through transcriptomic and phylogenetic approaches and the study of population genetics of TSWV isolates in field resistant peanut cultivars. The complexity of the insect vector-pathogen-host plant systems still fascinates me as it did from the very beginning. In the future, I would like to devote myself to agriculture research as a professional entomologist focusing on vector-borne plant diseases and managements. In my spare time, I enjoy watching movies and playing sports such as basketball and soccer. I like to go shopping, hiking, and camping with friends on weekends. Also, I love to travel around the world to see exquisite scenery and experience different cultures, especially cuisines. It has now been 7 years since I left my hometown, which is 8000+ miles away, for my graduate study here at UGA. Although nostalgia hit me hard sometimes, I have enjoyed my journey and the people I met along the way so much that I believe I have made great progress both mentally and professionally. I can't wait to move on to the next chapter of my life and see what is waiting for me in the brave new world.



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. Due to printing & mailing costs, a limited number of hard copies will be produced & mailed. Electronic subscription is preferred. To subscribe to the Hexapod Herald, contact us



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Or Call 706-542-2816.

The hum of bees is the voice of the garden.— Elizabeth Lawrence



Won't you join us this year? We are protecting pollinators one count at a time! For more information contact your local UGA Cooperative Extension office.

Taylor receives support for pesticide education

Mickey Taylor, Pesticide Safety Education Program Coordinator for UGA Department of Entomology recently received a \$5000 unrestricted gift from Syngenta as part of the National Stakeholder Team for Pesticide Safety Education's Adopt a PSEP Initiative. The funds are in support of pesticide education for all agricultural and commercial pesticide users throughout Georgia. This is the third year in a row that Mickey's training program has been recognized through the Adopt a PSEP Initiative. Mickey also received an unrestricted gift from the National Pesticide Safety Education Center to support the program.



You will be missed



UGA Entomology is heartbroken by the sudden loss of our graduate student Amy Joy Janvier this summer. Amy was a second year master's student under the direction of Kris Braman, professor and Entomology department head and Mike Ulyshen. Amy believed in the collective impact of individuals and that our responsibility is to restore

native ecosystems, according to her family. Amy's faculty mentors have committed to continuing her research on the effects of land use and residential landscaping practices on the biodiversity of pollinators. "Mike and I hope to bring Amy's project to completion this fall," Braman said about the research Amy was conducting. Amy had recently been elected Vice President of the Lund Club and was passionate about encouraging undergraduate participation in entomology education and outreach. The club which raises funds to support travel for undergraduates to meetings plans to continue this effort in Amy's name. Family and friends will gather in October to celebrate her life at the Shoal Creek Sanctuary in Athens, Georgia where she enjoyed collecting insect samples in the fields and forests.

Calendar Reminders

August 20 — Classes begin

August 21-22 — Second Annual
Great Georgia Pollinator Census

September 7— Labor Day — UGA
Holiday

September 26— Virtual Insectival!

November 10— D.W. Brooks Lec-
ture and Awards



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



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Entomology student research soared on all campuses as field research and lab research continued throughout the summer.