Insectival
25th annual event celebrates and educates all things insect

For twenty five years, volunteers have shared their passion for the world of insects with the thousands that gather at the UGA Botanical Gardens to see, hear, touch and taste all that insects have to offer.

This year’s creepy, crawly fun family festival served up loads of educational entertainment through discovery stations, roach and beetle races, an insect café, puppet shows and, of course, LOTS of live insects to touch and observe.

Students and faculty from the UGA department of entomology spent the beautiful fall day interacting with the public, speaking to those in attendance about the significance of the insect world in our daily lives.

Little kids and big kids alike were thrilled!

One of the highlights of the day was the annual butterfly release where dozens of native butterflies were freed, flapping their wings above the heads of the delighted crowd.

Insectival was sponsored by the Garden, The UGA Lund Club, the UGA Department of Entomology and the Georgia Museum of Natural History.
Fall greetings from the UGA Department of Entomology. It is such 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 national and international awards received by faculty in our department, Brian Forschler and Wayne Gardner. Marianne Shockley is one of nine UGA faculty selected as Service-Learning Fellows. Already a leader in developing service-learning courses, she will receive a grant to incorporate reflections by community participants and to use multi-modal ongoing reflection strategies for students enrolled in her entomology outreach service-learning courses.

Our graduate students (18 PhD, 26 MS and 9 MPPPM) excel in similar fashion; congratulations to Ruby Harrison for her CTEGD, NIH-funded fellowship and to Annie Rich as a recipient of a 2018 International IPM graduate student award and a MUVE travel grant to this year’s national ESA meeting. Sam Arsenault, Michael Arvin and Pin-Chu Lai also received travel grants to attend the ESA meeting in Denver.

The Lund Club has been very active and provides leadership in many of our outreach and recruitment efforts in the Department. We appreciate our 26 Entomology and 58 Applied Biotechnology undergraduates and enjoyed an informal mix and mingle session where they were encouraged to join the Lund Club.

It is with great sadness that we inform you of the passing of Nick Stewart on October 5, 2017. Nick was a dear friend and valued staff member who worked as a Research Technician III under the direction of Dr. Brett Blaauw in the Peach Entomology Lab. While studying at Georgia Gwinnett College, Nick gained considerable experience in assessing the native bee communities of Georgia. This work brought him recognition across the state, with numerous invitations to participate in presentations, interviews and outreach activities. He had a remarkable passion for science and wildlife with an impressive propensity for native bee identification. While at UGA, Nick quickly became the backbone of the Peach Entomology Lab by helping Dr. Blaauw establish his research and extension programs.

“Nick was an astonishingly kind person who made friends with everyone he met. He never shied away from talking about his work and was always eager to learn. He was an invaluable employee and a dear friend that will be greatly missed,” said Dr. Blaauw.
The Georgia Mosquito Control Association (GMCA) held their 40th annual educational conference in Athens this Fall. The conference provides an opportunity for members to interact with colleagues and obtain the latest information concerning all aspects of mosquito control. It was a pleasure to see the support and participation by our Entomology faculty, staff and students again this year. Elmer Gray, Nancy Hinkle, Dan Suiter and Annie Rich helped things run smoothly on the program and behind the scenes. Elmer also represented us well at the 7th International Congress of the Society for Vector Ecology on a travel grant to Spain in October with representatives from over 40 countries in attendance. His presentation, “Integrated Black Fly Suppression Through Targeted Applications of Bti-based Larvicides” highlighted the concept of using an integrated approach to target vector and nuisance populations through surveillance, biology and targeted applications of a biological larvicide. Elmer Gray and Ray Noblet’s colony of black flies is currently the only one in existence; they conduct a variety of field and lab evaluations of Bacillus thuringiensis subsp. israelensis (Bti) based larvicides and have recently completed ground-breaking studies related to how water quality affects larval black fly feeding behavior and program success.

We continue to reach more broadly with our educational efforts, adopting rapidly changing tools and technologies in collaboration with the Center for Urban Agriculture. A great example of this can be seen in Mickey Taylor’s Pesticide Safety Education program – visit http://extension.uga.edu/programs-services/pesticide-safety-education.html for more information and training opportunities. Dr. Dan Suiter’s webinar series “Getting the Best of Pests” is an online, live, interactive training program that allows Urban Pest Management and Green Industry professionals to obtain continuing education credits (CEUs) virtually anywhere. Webinars are now serving well over 550 attendees per session! Check out the website https://gtbop.com/ for the latest webinar schedule and archived sessions.

http://www.caes.uga.edu/departments/entomology.html
Gardner and his Kudzu Bug Working Group win IPM Award

Dr. Wayne Gardner and the Megacopta (Kudzu Bug) Working Group has been selected as a recipient of the International IPM Award of EXCELLENCE by the 9th International IPM Symposium Awards Committee. The award will be presented during the opening reception at the Symposium in March in Baltimore, MD.

Gardner and his group have been heavily involved in documenting the spread of the *Megacopta cribraria* as the invasive insect has expanded its North American range. The group works evaluating the potential of entomogenous fungi as biological control agents of overwintering adults, defining the minimal critical temperature limits of the insect, providing content and support for the website [www.kudzubug.org](http://www.kudzubug.org) managed by the Center for Invasive Species and Ecosystem Health, and addressing concerns of U.S. international trade partners concerned with the potential introduction of the pest from infested areas of the U.S.

Besides Gardner, the group includes Phillip Roberts, Daniel Suiter, David Buntin, John All, Tracie Jenkins, Alton Sparks, Jr., Joe LaForest, Charles Barger and Michael Toews of the University of Georgia. Additionally, John Ruberson of Kansas State University, Jeremy Green of Clemson University and Xing Ping Hu and Jim Langcuster of Auburn University were added forming the Megacopta Working Group. Additional collaborators enlisted were from the USDA-ARS, US Forest Service, USDA-APHIS-PPQ, Georgia Department of Agriculture, private industry and other institutions, states and countries.

UGA entomologists led by Gardner are proud of how resources were rapidly pulled together and focused to address a pest emergency created by the invasion of this exotic insect. Their efforts provided growers, property owners, pest management professionals, county agents, inspection officials, and the general public with up-to-date information on the spread, occurrence, impact and management of this new insect. The Megacopta Working Group provides an excellent case study of pulling together resources and talent to cooperate to solve an immediate and pressing problem with an invasive insect pest to yield pest positive economic and environmental outcomes.
Like most of my entomologist friends, we are often tasked with identifying an insect from a grainy cell phone picture, or my favorite, a vague explanation of an insect. Known as the “bug lady” on Wingate University's campus, I often get many of these inquiring emails.

I am currently an Associate Professor in the Biology Department at Wingate University, which is located 30 miles east of Charlotte, NC. My main teaching responsibilities are microbiology, an introductory freshmen course, and an upper-level entomology course.

If you are wondering why an entomologist would teach microbiology, you are not alone. I joined the entomology department as a graduate student working with Dr. Wayne Gardner. My project with Wayne consisted of using *Beauveria bassiana* and *Metarhizium anisopliae* to control pecan weevils in orchards. This project bridged my love for both entomology and microbiology.

However, after I graduated in 2006, I decided to pursue a Ph.D. in plant pathology (or as Wayne affectionately referred to it – the dark side) so that I could continue my research goals with fungal pathogens. But, when I started working at Wingate in 2010, I knew that I wanted to develop a research program that focused on both entomology and microbiology. My research largely consists of all things related to the kudzu bug, *Megacopta cribraria*. I have had about 20 students work on various projects related to kudzu bug biology or biological control strategies. Of those students, four have pursued terminal degrees in entomology, two of whom pursued their degrees at Georgia.

One of my fondest memories of my entomology experience was our group field trip to Sapelo Island with Dr. Joe McHugh for our insect taxonomy course. Because of the impact that this trip had on me – both from an education perspective, but also from a personal growth and team building perspective – I knew that I had to share this with my entomology students. So, each fall semester that I teach my entomology course, I take a group of students to Sapelo Island on an insect collecting trip. The overall experience during my Sapelo Island trip inspired me to pursue teaching (which also had a lot to do with the great education experience provided by Joe and his lab), as well as to share the beauty and nature of this island. Not only does this allow me to share my love for entomology with my current group of students, but this allows me to team up with our department’s herpetologist in the future to start an outreach seminar regarding insects and other invertebrates that will be geared toward local schools.

While teaching at the collegiate level is very rewarding, it is even more rewarding to inspire our younger generation to participate in everything bug-related to demonstrate that there can be a bona fide future in the field of entomology.

http://www.caes.uga.edu/departments/entomology.html
My name is Abigail Grant and I am currently a senior at UGA with a double major in Applied Biotechnology and Entomology. The story of how I chose my major is actually quite a funny one. Following a meeting with Dr. Shockley about my plans for graduate school, I decided to change my major to something that would stand out when sending my applications. I scrolled through the bulletin’s list of majors in search for the most difficult sounding subject and immediately “Applied Biotechnology” stuck out to me. I had heard things about how biotechnology was being further developed in medicine but had never truly looked into it, much less looked into majoring in it. The next semester I registered for a seminar taught by Dr. Adang. His passion about the subject and his willingness to truly teach and connect with his students is what sealed the deal for my decision to major in biotechnology. When it came to my second degree of entomology, the thought of being able to go out and catch bugs for class credit was enough to get me on board. As I write this now, I have a front seat view of two petri dishes of “unknowns” that I am currently taking care of. They are pretty easy insect pets as they require feeding only one every three or four days. Although I have attempted to stay emotionally detached from them, each and every one has received a name so far.

When I am not in the science learning center attempting to understand every detail of Sanger and shotgun DNA sequencing, I love volunteering with MedLife and WIT UGA. I tutor a kindergarten class with WIT throughout the week. The service learning entomology class brought some insects for us to play with but unfortunately the day ended in more tears than smiles. I would say that 5 years old is possibly too young for someone to appreciate a hissing cockroach as much as I do. I also traveled to Lima, Peru and Tena, Ecuador within the past two years for medical mobile clinics through MedLife. We were able to completely integrate ourselves into the communities and experience hands-on how their medicine works. These trips helped solidify my decision to begin my career in medicine because I saw how important it is for us to infiltrate communities who are less-fortunate than us.

I plan to graduate in December of 2017 and am currently in the process of applying to various graduate programs. I would love to go into either neonatal medicine or orthotics and prosthetics. My ultimate goal is to work in one of these specialties and travel to third-world and developing countries for medical mission work. In the meantime, you can find me out on the lake fishing or hiking up the side of a mountain!

http://www.caes.uga.edu/departments/entomology.html
I began my journey at the University of Georgia in 2010, pursuing a B.S. in Wildlife through the Warnell School of Forestry and Natural Resources, and discovered my passion for Entomology after taking Dr. Forschler’s Urban Entomology class as an elective. I was so enchanted by insects I used my remaining elective to take the Insect Natural History course in Costa Rica. I then jumped on the opportunity to work in the Forest Entomology lab as a technician, and completed my senior thesis project studying subcortical insect assemblages associated with hemlock woolly adelgid infestations in North Georgia.

I continued pursuing my interests in forest entomology, working on a Master of Forest Resources degree (M.F.R.), studying the impacts of various silviculture techniques on subcortical insect communities. While working on my M.F.R., I noticed a disconnection between scientists and the landowners who could apply the knowledge being gained from research to solve their issues. This ultimately led me to pursue my M.S. in Entomology, allowing me to tailor my research, coursework, and professional development to prepare me for a career in extension. As a member of Dr. Joseph McHugh’s Lab, I currently research the taxonomy of Nitidulidae (“sap beetles”) in the subfamily Carpophilinae. I am developing an online, user-friendly identification key for the southeastern species and providing the first descriptions of the larval stage for some species. Upon graduating, I hope to continue working in the state of Georgia as an Agriculture and Natural Resource Extension Agent. This will allow me to pursue my passion for bringing university research to the public so that it can make a real world difference.

Courtney teaches Girl Scouts about the importance of pollinators at a recent outreach event.
New Face in the Office

Michele Hatcher recently joined the staff in the Entomology office in Athens as administrative specialist for the department. Having worked for several years in the assistant provost’s office on the Griffin campus, Michele was thrilled to have the opportunity to work at UGA again, and especially for the Entomology department.

With a degree in journalism, Michele hopes her background as a journalist will be beneficial in her support of the department’s research, instruction and extension efforts. Besides her previous administrative work at UGA, she is a former newspaper reporter and editor who has also worked in agricultural communications for Extension at the University of Tennessee. Michele has deep roots in agriculture having grown up on a commercial cattle farm in Louisiana. It is also where she has memorable experiences with pests such as fire ants, flies and mosquitoes as her family attempted to control their proliferation.

Although she has a checkered past concerning certain “pests,” (having murdered her fair share of six and eight legged critters), she has gained great respect for the insect world through her work at UGA.

“Who knew a wasp could be a beneficial insect?” She may not be a fan of certain insects but one of her fondest childhood memories is of observing and collecting “lightning bugs” at dusk during southern summers.

And just like her jar of bugs, Michele will be collecting information for the departmental newsletter so please send any story ideas or current news, photos, honors and awards to her at dmichele@uga.edu.

Student Spotlight

Sam Arsenault is a 3rd year Ph.D. candidate in the Department of Entomology under the advisement of Dr. Brendan Hunt. His research focusses on exploring the genetic and epigenetic basis for social polymorphisms in Hymenoptera. In particular, he is interested in exploring the genetic regulation of queen number in the red imported fire ant, Solenopsis invicta.

Sam was a late-comer to the field of entomology. He attended the University of Georgia for his undergraduate studies and obtained degrees in mathematics and biology with a focus on neuroscience. He worked with Dr. Jonathan Arnold in the Department of Genetics computationally modelling circadian rhythms in the fungus Neurospora crassa. During the last semester of his senior year, he took an Insect Behavior class taught by Dr. Patricia Moore and became interested in social insects. At the suggestion of Joanie King, Sam decided to do a rotation with Dr. Hunt during his first semester in the Integrated Life Sciences graduate program. At the end of the semester, Sam joined the Hunt Lab and began to explore the field of Entomology in earnest.

Aside from his research, Sam enjoys catching Pseudophasmatidae while camping, taking his cat for walks, and playing Dungeons and Dragons. He has two younger brothers, one of whom he lives with here in Athens.

http://www.caes.uga.edu/departments/entomology.html
Lunch Time... Fun Time!!

Undergrad “mix and mingle” held recently to introduce students to faculty and grad students. Good food, great company!
Brandt and Rich win awards at National ESA Meeting

Two UGA Entomology graduate students brought home silver and gold from competitions held at the Entomological Society of America’s national meeting held in Denver, CO. Jayce Brandt earned a first place award and Annie Rich snagged second place in her competition. Brandt, a PhD student in Dr. Michael Strand’s lab, edged out stiff competition as he was selected Best Student Paper in Physiology, Biochemistry and Toxicology at the annual meeting. Brandt received the award for *Diversity and function of a phage-infected bacterial symbiont, Hamiltonella defensa*, from pea aphids. Jayce W. Brandt (jayce@uga.edu), Germain Chevignon, Kerry M. Oliver and Michael Strand, University of Georgia, Athens, GA. Annie Rich, a Master’s student in Dr. Nancy Hinkle’s lab, earned second place in the student poster competition. Rich received the award for *Use of long term endectocide in cattle for control of the malaria mosquito, Anopheles quadremaculatus*. Annie Rich (aerich@uga.edu), Nance C. Hinkle and Seth Irish, University of Georgia, Athens, GA, Centers for Disease Control and Prevention, Atlanta, GA.

Jayce and Annie were selected winners from hundreds of competitors present at the national meeting.

Congratulations Jayce and Annie!!

Annie is pictured above with 2017 ESA President Dr. Susan Weller and 2018 ESA President Dr. Mike Parella at the student awards ceremony.

Go confidently in the direction of your dreams.

Live the life you have imagined.

—Henry David Thoreau
Program launched by MPPPM entomology student to teach teachers and students ecological importance of beneficial insects

Written by Merritt Melancon

Calling the class roll is a time-tested way for teachers to start the school year, but when Georgia students head back to school this year, some of them will complete a roll call of their own.


Georgia students and teachers at 50 school and community gardens across the state launched the inaugural Pollinator Census Project this August. The data will shed light on pollinator populations in Georgia and how well the native ground cover — the ‘Snow Flurry’ aster — can support them.

The counting starts when class reconvenes, but the project actually began last May when Becky Griffin, University of Georgia Cooperative Extension community and school garden coordinator, crisscrossed the state to visit participating schools and deliver insect study kits and flats of ‘Snow Flurry’ asters. This aster is a native plant that blooms in the fall and is known to support a number of pollinators.

“This is a really great citizen-science project that included students in 25 counties across the state,” Griffin said. “It’s a win for us because we’re going to gather great, widespread data about pollinator health and how this native plant helps to support pollinators.

“The teachers win because they’re being recognized as part of this study and it’s a great way to help their students relate the science they’re learning in the classroom to the real world.”

Over the summer, teachers and students cared for the aster patches. They agreed to watch them for 15 minutes once or twice a week for four weeks and to record the types of pollinators they see visiting the plants. Griffin believes they should have all the data recorded by November.

In exchange, UGA Extension will provide lesson plans and learning materials to help students learn about the role of pollinators in the ecosystem and to help them identify the different types of insects common in Georgia landscapes.

Teachers will receive pollinator identification training in August as well as training on how to integrate the census project into the new Georgia Standards of Excellence curricula.

“My agricultural science class at East Paulding High School is taking part in the Georgia Pollinator Census Project to foster a deeper understanding about beneficial pollinators and their importance to the functioning of our ecosystem,” said Kyle Chapman, agricultural science teacher at East Paulding High School in Dallas, Georgia. “Additionally, the project will offer students the opportunity to collect and submit data that has real-world applications, which, I think, will have more of an impact and increase their engagement.”


http://www.caes.uga.edu/departments/entomology.html
The U.S. Postal Service pays tribute to the beauty and importance of pollinators with stamps depicting two of our continent’s most iconic: the monarch butterfly (Danaus plexippus) and the western honeybee (Apis mellifera), each shown industriously pollinating a variety of plants native to North America.

The stamps feature:
- A monarch and a coneflower
- A western honeybee and a golden ragwort
- A monarch and a zinnia
- A western honeybee and a New England aster
- A monarch and goldenrod

The self-proclaimed mosquito wrangler, Ruby Harrison’s hard work has paid off with a pre-doctoral training fellowship award from the Center for Tropical and Emerging Global Diseases.

The admissions committee and program directors selected Harrison for the one-year training grant which is awarded yearly to graduate students and postdoctoral fellows interested in training in a collegial, highly interactive training program in interdisciplinary areas of parasitology, vector biology and emerging infections.

The third year Ph.D. candidate in Entomology said that the award “has been invaluable to me.”

“It has not only given me the means with which to focus on my research during a critical period, but has also given me opportunities to interact more with faculty and students in the CTEGD,” she said.

Harrison’s research is focused on finding what factors allow mosquitoes to utilize blood as a resource for egg formation. Previously, her reseach examined nutritional aspects of blood, especially proteins, and how they influence mosquito reproductive physiology. Currently, she is researching the role of the mosquito gut microbiota in the reproductive processes of these insects.

“Thanks to the T32 training grant, I am now working in collaboration with Dr. Courtney Murdock (Ecology) to infect my axenic mosquitoes with dengue virus,” said Harrison who is co-advised by Drs. Michael Strand and Mark Brown of Entomology.

Also, Harrison recently gave a presentation of her research to the CTEGD for their Monday morning “Research in Progress” series and received valuable feedback.

“It is really important for a vector biologist to exchange ideas and learn from researchers who focus on parasitology or on different insect vector species. This funding has greatly enhanced my ability to do this,” she said.

“I have not failed. I’ve just found 10,000 ways that won’t work.”
Thomas A. Edison

http://www.caes.uga.edu/departments/entomology.html
SNAPSHOTS

“Alone we can do so little; together we can do much.” - Helen Keller

http://www.caes.uga.edu/departments/entomology.html
In July, the UGA Collection of Arthropods (UGCA) received a large donation of insects from Dr. Henry P. Stockwell, a retired pediatrician from Charlotte, North Carolina. Dr. Stockwell’s gift includes more than 12,400 pinned specimens representing nearly 2,500 species. Also included were 26 paratypes which are critically important voucher specimens for zoological nomenclature.

Beetles make up the vast majority of the donation. The material is especially rich in weevils, which are Dr. Stockwell’s taxonomic specialty. From 1969 through the 1990s, he collaborated on major studies of Neotropical weevil diversity in Panama where he was a research associate of the Smithsonian Tropical Research Institute (STRI). During his long career, Dr. Stockwell published research papers in medicine as well as entomology. He is a Museum Associate of the UGCA and makes regular visits to Athens to work in the collection.

-Joe McHugh, Curator, UGA Collection of Arthropods
Forschler’s innovative research wins national recognition

University of Georgia entomologist Brian Forschler built his career studying termites, a pest that many homeowners don’t care to think about.

For the last 25 years, Forschler’s research on termite behavior and termite damage prevention formed the basis for treatments and preventive measures on which Southern homeowners rely.

This November, Forschler’s colleagues will recognize his efforts through the Entomological Society of America’s (ESA) Recognition Award in Urban Entomology. Forschler, a professor in the UGA College of Agricultural and Environmental Sciences Department of Entomology, will receive his award on Nov. 7 at the ESA’s Entomology 2017 conference in Denver.

“Dr. Forschler is internationally recognized for his contributions and leadership in the field of urban entomology,” said Kris Braman, professor and UGA entomology department head. “His career-long contributions have significantly and positively impacted the industry. His dedicated mentorship has provided our next generation of scientists and practitioners (with knowledge) in this critical area of entomology.

“His innovation, tireless effort and integrity have resulted in the sound science trusted by industry professionals and regulatory officials who have shaped policy.” Forschler is the second UGA entomologist to receive the ESA’s national urban entomology recognition award. Professor Nancy Hinkle, a UGA veterinary entomologist, took home the prize in 2014.

Forschler came to UGA in 1991 and currently works with the UGA entomology department’s Household and Structural Entomology Research Program. He has taught undergraduate and graduate courses in urban entomology, mentored students and served on the Georgia Department of Agriculture Structural Pest Control Commission. He has also served on the national Association of Structural Pest Control

Regulatory Officials’ Termicide Scientific Review Panel and Termicide Label Review Committee, which help to approve new termite treatments and termicide uses.

In addition to his work with the U.S. termite control community, he has collaborated with international termite researchers in Europe and Asia and organized training sessions for industry and regulatory officials in the U.S., Europe, Australia and Asia.

He has organized 13 national and interna-
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.

Entomology at UGA wishes you a very Happy Thanksgiving!

Thanks to Linden Pederson, undergraduate student and resident chalkboard artist, for keeping our bulletin board in the holiday spirit!