



Two early career faculty receive large grants

Two University of Georgia Entomology faculty members have received significant funding awards which will help keep their research on the forefront of solving critical entomological issues.

Dr. Gaelen Burke was awarded the Faculty Early Career Development Program grant from the National Science Foundation (NSF) which is a five-year grant. These grants have greater emphasis on education compared to other grants in order to develop research-based learning materials to distribute to local middle schools.

Burke focuses her research on the parasitoid wasp, a natural enemy of agricultural pest insects. She studies the relationships the wasps have with certain viruses that help the wasp kill insect pests to learn how those relationships originate and how they function. Once the five-year grant research period is over, Burke believes her team might be able to manipulate these viruses to better kill pest insects.

“If we didn’t have grants from the National Science Foundation or other funding sources, we wouldn’t be able to hire the people to do the work. We wouldn’t be able to afford the reagents (substances used for chemical analysis) that we need. If you compared the lab to a small business, this would be like the bread and butter to keep us going,” Burke said.

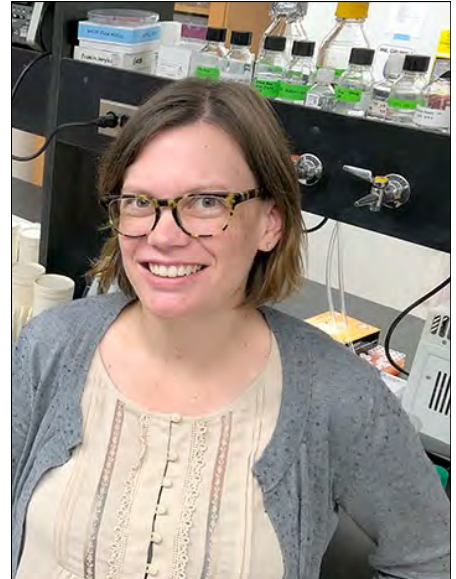
Dr. Ashfaq Sial, coordinator of UGA Integrated Pest Management (IPM), has been awarded a \$2 million grant from the U.S. Department of Agriculture National Institute of Food and Agriculture to develop organic methods of controlling the Spotted-Wing Drosophila (SWD). Sial, blueberry entomologist at the UGA College of Agricultural and Environmental Sciences, is leading this multi-regional research project.

A major blueberry pest, SWD can destroy an entire crop and can cause up to \$718 million in damage annually. Due to the lack of organic SWD management tools, many growers drop their organic certification and abandon production of susceptible fruit crops.

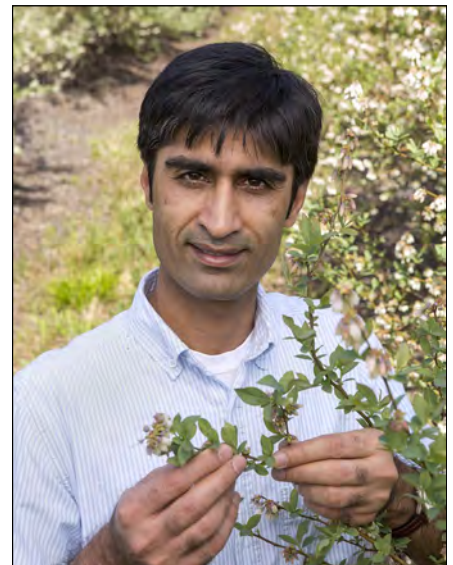
“In order to maintain organic production of susceptible crops, it is critical to develop new tools to effectively manage SWD in organic production systems, allowing growers to continue organic fruit production while providing society at large with sustainable supplies of organic fruit in the market,” Sial said.

“Our long term goal is to develop, implement and evaluate systems-based organic SWD management programs that are organically acceptable and true to the ethos of organic agriculture.”

Selections from articles by Cristina deRevere and Clint Thompson for CAES News



Dr. Gaelen Burke
Assistant Professor



Dr. Ashfaq Sial
Assistant Professor

From the desk of S. Kristine Braman ...

Our faculty retreat this month was held on the Athens Campus. The two-day session included presentations and conversation updating each other on the accomplishments of our diverse research programs. We believe the grand challenges facing our world can be addressed in many ways by gaining a better understanding of insects and their complex roles in our environment. I hope you will take a minute to scan our 2018 publications in this issue, which reflect the breadth and balance of our programs here at UGA Entomology.

Among the **grand challenges** of our day is the increasing impact of **invasive species**. The UGA Center for Invasive Species and Ecosystem Health addresses this challenge directly. Co-Director **Mike Toews** and Associate Director **Joe LaForest** provide the following update:



Toews

The Center for Invasive Species and Ecosystem Health at the University of Georgia is an international leader in invasive species reporting, education, research and management. With a staff of 19, the Center serves a lead role in development, consolidation and dissemination of information and programing focused on invasive species, forest health and protecting natural resources. Partnerships with NIFA, APHIS Port Identifiers, the Southern IPM Center, Georgia Department of Agriculture, Georgia Forestry Commission, Georgia Department of Natural Resources and many other stakeholders enable significant leveraging of public and private dollars. In 2018, active grants and contracts at the Center exceeded \$3 M.

Specializing in use of information technology to support its programs, Center staff create websites and smartphone apps to empower citizen scientists and mobilize extension agents to provide real-time intelligence on pest distribution and abundance for a rapid response to outbreaks and continued management. Comprehensive systems enable state, national and international users to upload and map species distributions and implement new practices. Georgia agricultural stakeholders thrive supported by Center research and

dissemination of information on recent invasives such as kudzu bug, sugarcane aphid, brown marmorated stink bug, silverleaf whitefly and bermudagrass stem maggot. Georgia timber producers

benefit from Center research and programming focused on reducing multiple invasive plants such as Chinese privet, kudzu, cogongrass, and Japanese climbing fern. The First Detector program has engaged citizen scientists, Master Gardeners, conservationists and mobilized extension agents to provide real-time intelligence on pest activity and discovery of new invasive species. In the past 5 years, over 16,000 reports from 508 reporters on 338 pests and invasive have been received and verified to provide timely information to Georgians and direct rapid response or management programs.

Graduate students and post docs associated with the Center put classroom theory to practice and gain valuable skills for future careers. Recent graduates now hold faculty, post doc, graduate student and County agent positions. Please visit the bugwood websites (<https://www.bugwood.org/index.cfm>) for a wealth of information and resources.

We are so proud of our faculty, staff and student award winners that you will see highlighted in this issue. Congratulations to **Babu Srinivasan, Ash Sial, Gaelen Burke, Phillip Roberts, Jennifer Berry, Ruby Harrison, Clesson Higashi and Linden Pederson**. It is great to see your hard work recognized!



LaForest

Inside this issue

Student Awards	5
Calendar reminders	20
Degrees Conferred	9
Faculty Highlight	4
Staff Highlight	3
Student Spotlight	6, 7, 8

Special points of interest

- Publications, pages 10–16
- MyIPM App, page 18
- Facebook LIVE, page 19

Apicultural Society honors Berry

Jennifer Berry, Research Professional IV and manager of the honey bee lab, has been recognized by the Eastern Apicultural Society (EAS) as its 2019 recipient of The Roger A. Morse Outstanding Teaching/Extension/Regulatory Award sponsored by the Anita Weiss Foundation. In a career spanning more than 20 years, Jennifer has earned international recognition for her effectiveness as an applied researcher, speaker, and educator on all matters of applied beekeeping and honey bee health. She is an engaging and in-demand lecturer at beekeeping educational events all over North America, the Caribbean, and Britain and a regular columnist in *Bee Culture* magazine. As former president of EAS, she organized the group's 2006 sell-out convention at Young Harris College, convincing the group to "come south" for the first time in its 50-year history. More recently, Jennifer has made headlines in statewide press, including *UGA Research* and *Southscapes* magazines, for bringing the Georgia Master Beekeeper training and testing program to inmates across Georgia's prisons. The wildly popular program has seen over 80 inmates from six prisons earn grades of Certified beekeeper or higher under Jennifer's tutelage. Jennifer is co-PI on research grants involving the search for new active ingredients for the control of the parasitic bee mite, *Varroa destructor* and actively involved in managing other sponsored research at the bee lab. She was 2015 recipient of the D.W. Brooks Outstanding Staff award. The Roger A. Morse award is the highest of its kind in the country for workers in apicultural extension and regulatory entomology. **Congratulations Jennifer!**



NEW FACES IN THE DEPARTMENT



Lucas Michelotti joined the UGA Entomology Department in January as Research Professional in Bill Snyder's lab, which is currently moving from Washington State University to UGA. Lucas received his masters in Forestry and Ecology, Evolution, and Behavior from Michigan State University. After which he worked as a Research associate for Tim James' fungal genetics lab at the University of Michigan. Lucas loves to explore the nature world as a hiker, climber, and backpacker.

Amanda Meier joined the UGA Entomology Department earlier this year as a postdoctoral research associate in Bill Snyder's lab. Amanda is investigating how soil management practices, by altering microbial communities in soil, may enhance natural pest control in crop plants. Amanda recently earned her PhD in Ecology and Evolutionary Biology from the University of Michigan with Mark Hunter, where she studied how arbuscular mycorrhizal fungi shape multitrophic interactions aboveground by altering plant chemistry in milkweeds (*Asclepias*). Amanda enjoys spending every free moment outside hiking, climbing, kayaking, backpacking and gardening.



Entomology Faculty Receive Awards

Several faculty members in the UGA department of entomology were honored recently with awards for excellence in entomology.

Dr. Phillip Roberts, Professor and Extension Entomologist, received the **2018 Southern Region IPM Center Friends of IPM – IPM Implementer Award**. His primary responsibilities include developing and implementing comprehensive extension education programs in integrated pest management (IPM) for cotton and soybean production systems. Since 1996, the year Dr. Roberts began his tenure at the University of Georgia, he has conducted 118 county agent training programs preparing them to address producer questions. He has also conducted 731 county based educational programs with 25,786 attendees addressing IPM principles and practices at the request of county agents. Dr. Roberts has



authored or co-authored 32 refereed journal articles, two book chapters, and 48 Extension bulletins. Additionally, he conducted 53 statewide meetings and 87 field tours and special programs, served as invited speaker at 34 industry group meetings and participant speaker at another 104 such meetings, participated 131 radio programs and 43 TV programs; and served as resource for 355 news releases. He is an active member of the Southeast Row-Crop Entomology Working Group (SERCEWG) and the Megacocta Working Group.

Dr. Ashfaq Sial, an assistant professor, was recognized by the ESA SEB with the **Excellence in Early Career Award** at the 2019 annual meeting. Sial has research, extension and teaching appointments with statewide responsibilities for blueberry pest management and IPM Coordinator for the state of Georgia. His research program seeks to investigate biology and ecology of economic pests and utilize that information to develop more sustainable IPM programs. Currently, spotted –wing dro-sophila, an invasive pest of small and stone fruits, is primary focus of research projects in his lab. His research program has successfully secured \$6.9 million in competitive grants through federal and state agencies as well as private industry.



Dr. Rajagopalbabu Srinivasan, an associate professor of entomology, was recognized by the ESA SEB with the **Recognition Award in Entomology** at the 2019 annual meeting. Srinivasan who is also an Adjunct Associate Professor in the Department of Plant Pathology, conducts basic and applied research on important thrips, whitefly and aphid-transmitted plant viruses affecting several row and vegetable crops in



southeastern United States. His goal is to understand these viral pathosystems at micro and macro levels, and his lab is currently involved in studying the processes of virus transmission by vectors, component (vector-virus-host plant) interactions, and the various factors that mediate these interactions. His lab is also focused on sustainable management of insect-transmitted viruses and vectors. He has served as a PI and/or Co-PI on grant projects totaling over \$7.5 million from federal, regional, state and industry funding sources since 2009. Srinivasan is an associate editor for two entomology journals, and has been a member of several national and international grant reviewing committees.

Dr. Gaelen Burke, assistant professor, was selected as **the 2019 Society of Invertebrate Pathology Early Career Scientist Award**. This award recognizes the outstanding contributions from invertebrate pathologists who are in the early stage of their scientific/academic career.

Harrison Wins Broadus Browne Award



Ruby Harrison, Ph.D. student in Entomology, has been chosen as the recipient of the 2019 First Place PhD E. Broadus Browne Award. Given in honor of the former Director of the Georgia Agricultural Experiment Stations, the award is presented to the outstanding MS and PhD students in the College, based on both their research and effective communication. The award includes a certificate, \$2000 and support to attend a professional meeting.

Congratulations Ruby!



Linden Pederson won the Joshua Laerm Award of Excellence for her art piece titled "Optics." The piece was part of the 2019 Student Scientific and Medical Illustration Juried Exhibition. Linden is a graduating senior majoring in entomology and scientific illustration. **Congratulations Linden!**



Clesson Higashi, PhD student, won second place in the 10-minute Oral Competition at the Southeastern Branch Entomological Society of America Meeting in Mobile, AL. Clesson also recently was received the Outstanding Teaching Assistant Award by the VP for Instruction. **Congratulations Clesson!**

Undergraduate Student Spotlight

Linden Pedersen

The tarantulas in the Insect Zoo have been moody for a while now. **Linden Pedersen** has been taking care of all the insects in the zoo for the past four years as the Insect Zoo Husbandry Coordinator and their behavioral changes have not escaped her. They have never missed a meal, she tries to make certain no insects are overstimulated by outreach activities and she monitors their daily lives. But, somehow, they know that change is coming. Linden is graduating. As a double major in Entomology and Scientific Illustration, Linden has shown those in the department not only a love of the insect world through her work but the beauty of the entomological world through her art. She recently was selected as the Joshua Laerm Award of Excellence winner at the 2019 Student Scientific and Medical Illustration Juried Exhibition for her art piece titled “Optics.”

But, perhaps, she is most known around the entomology halls for her funky and humorous chalkboard art.

“I have had so much fun coming up with insect related puns for the chalkboard and I appreciate how happy people are when they see me update it,” Linden said, with a smile.

Another favorite experience during her years at UGA has been organizing the Tar-Ran-Tula 5K. This annual event is Linden’s brainchild created to help support the UGA Insect Zoo which provides free insect educational outreach programs to Athens and the surrounding area.

“Race day is one of my favorite days of the year. It’s satisfying to see the result of all the hard work leading up to the race and the community’s participation is exciting. It is a great opportunity to expose both children and adults to insects and arachnids. I enjoy seeing the change in their perception of insects as they learn more about them and have the chance to personally interact with them,” she said.



One life changing opportunity Linden experienced through her entomology education was being a teaching assistant for the study abroad trip to Ecuador and the Galapagos last summer. “It was really incredible to experience the diversity of life (and insects in particular) in the tropics and visit the place that had such an impact on Charles Darwin, one of my heroes. I would love to be able to travel and study tropical insects in the future,” she said, wistfully.

For her immediate future, Linden is headed in the fall to the Medical Illustration Graduate Program at Augusta University to pursue interests in anatomy and cellular biology as well as hone her artistic proficiency. Her two primary medical illustration interests are illustrating and animating surgical procedures for medical and patient education as well as creating facial reconstruction prosthetics.

“I intend to make a future career merging medical illustration, scientific illustration and entomology,” Linden emphasized, confident in using all her many talents in the future.

As she looks ahead with tremendous excitement for her future, she also feels a bit of heartbreak as she takes these steps to move forward.

“I will miss taking care of the insects in the zoo the most as I have grown rather attached to them – watching them hatch and following their whole life cycle, feeding and caring for them along the way,” she said.

And it appears the feeling is mutual.



Carson Bowers

Like many kids, I grew up with an interest in animals, nature, and especially dinosaurs. As I got older, my interest in the natural world developed into scientific curiosity, which led me to pursue an undergraduate degree in Environmental sciences at Georgia College and State University in Milledgeville, GA. This became a double major in environmental science and biology due to my indecision and desire to take as many interesting courses as possible. I realized I had a strong interest in ecology and began looking for opportunities in undergraduate research. I was able to begin helping in a lab that focused on plant-insect interactions, where I worked with other students on a project studying a recently invasive pest, the Kudzu bug. The following year, I started an independent research project comparing ground dwelling insect communities between two forest types. This project working with insect communities really highlighted the diversity of insects and arthropods in our environment, and I was hooked on insect ecology.

After graduating from Georgia College, I took a semester off to take a road trip across the US with some friends, but soon found myself looking for graduate programs related to insects and community ecology. I am currently an M.S. student working in the Jason Schmidt Biocontrol lab at UGA in Tifton. My current research focuses on the use of cover crops in agricultural systems, and how adding habitat to these systems influences arthropod communities and the services they provide. My research involves time in cotton

fields collecting, and time in the lab extracting DNA from arthropod predators using molecular gut-content analysis to understand trophic interactions within this system.

Our primary goal is understanding how different agricultural management techniques such as cover crops can improve the sustainability of food and fiber production by increasing our reliance on naturally provided ecosystem services, such as the biological control. In the future, I hope to continue working toward agricultural sustainability, promoting biodiversity, and doing community outreach.

When I am not in the lab, I spend most of my time outside with my dog, playing disc golf, or reading a good fantasy book.



PhD Student Spotlight

Conor Fair is a PhD student studying pollinator and prescribed fire ecology under the advisement of Dr. Michael Ulyshen and Dr. Joe McHugh. He earned his MS from our department in December of 2015 where he worked on squash bug pest management with Dr. Braman. His current research focuses on how large prescribed burns in the Southeastern United States affects native pollinator communities. His research has taken him from the loblolly pine forests in the Piedmont National Wildlife Refuge to the long-leaf pine forests of the Red Hills region of South Georgia and North Florida.



As an undergraduate at Simpson College in Iowa, Conor became interested in entomology during a study abroad trip to Ecuador and the Galapagos Islands. Seeing the amazing diversity of insect life there inspired him to pursue a graduate degree. While studying at Simpson College, Conor worked with his advisor Dr. Clint Meyer to study macroinvertebrate communities affected by nitrogen run-off in tile-drainage farms. Conor was also selected for a Research Experiences for Undergraduates (REU) position at Texas A&M University to study endophytic entomopathogenic fungi and their role in managing leaf miner flies in greenhouse plants under the advisement of Dr. Kevin Heinz and Dr. Greg Sword.

While here at UGA, Conor has also been an active member in the Graduate Student H.O. Lund Club, serving as president of the organiza-

tion during the 2015-2016 academic year. In addition to his work with the Lund Club, Conor has also represented UGA as a member of the Linnean team and is the department's representative on the Student Affairs Committee for the Southeastern Branch of the Entomological Society of America.

Conor has enjoyed many teaching and mentoring opportunities during his time at the University of Georgia. He has served as a mentor to high school student through the Young Dawgs and Young Scholar programs. He has been a teaching assistant for both the introductory biology and the insect taxonomy labs. After graduating, Conor hopes to find a job teaching biology, ecology, and/or entomology at a small university or college. Conor loves to travel and is a food and beer enthusiast. In his free time, he can often be found exploring the brewery scenes in Athens, Atlanta, and even Asheville NC.



2018 FALL COMMENCEMENT



University of Georgia Entomology graduates enjoyed a moment together celebrating their academic accomplishments during the fall commencement ceremony with their faculty advisors. Graduates and faculty are from left to right, Dr. Marianne Shockley, Courtney Brissey, M.S. Entomology; Annie Rich, M.S. Entomology; Dr. Kris Braman, Dept. Head Entomology; Rebecca Griffin, MPPPM; Dr. Nancy Hinkle;



Annie Rich and Kelly Murray-Stoker soak up the moment on the floor during fall commencement.

**Congratulations to all
UGA Entomology fall
graduates 2018!**

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SNAPSHOTS



"Do anything, but let it produce joy." - Walt Whitman



MyIPM Smartphone App *On the Forefront of Pest Management*

Walking through his peach orchard one morning, a farmer notices something odd he has not seen before on the leaves of a couple of trees. Quickly, he pulls out his phone and accesses a new App to see just how good it will work. . .

MyIPM Smartphone App is a free, mobile application and tool designed to promote Integrated Pest Management for commercial fruit crop production. Through a series of descriptions, audio and images, the app can help users diagnose crop diseases, insect pests and disorders of fruit crops grown in the Eastern USA, including apple, blackberry, blueberry, bunch grape, cherry, cranberry, peach, pear and

strawberry.

According to Dr. Brett Blauw, assistant professor and peach specialist with UGA entomology, the app was first developed by plant pathologists at Clemson University to give growers a “one-stop shopping” place where they could access all of the resources they might need for disease management. After a couple of years, a separate insect pest focused app was developed and an app specifically for the Northeast US.

“When I came aboard, I worked on merging the three separate apps into one master app, which included new tools, crops and functionality. The single MyIPM app currently has 9 crops with disease diagnostic tools and 6 crops for insect diagnostic tools,” Blauw said of the app which currently has been downloaded 2,181 times and updated 1,323 times. One of Blauw’s favorite aspects to the app is how “jam packed” the app is with useful information for users of both Apple iOS and Google Android mobile operating systems.

“Not only is a large list of chemistries that are labeled for each disease or insect pest, but users also have the ability to view high-resolution pictures to identify symptoms and signs of disease and insect injury,” he said.

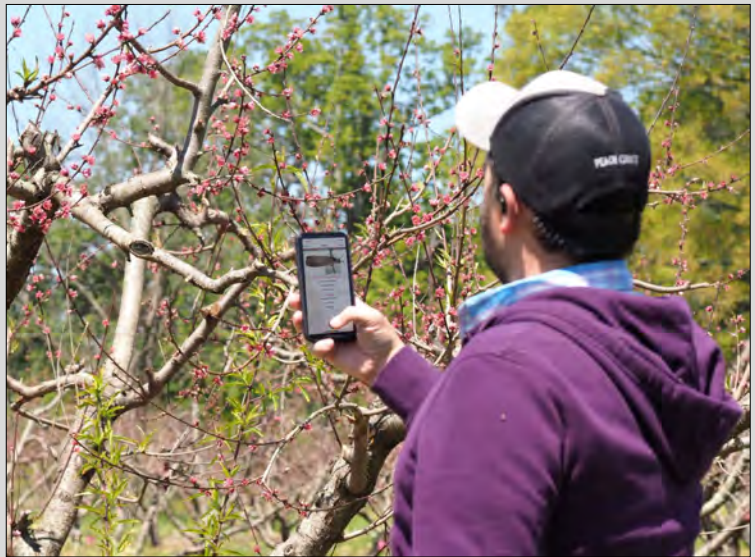
Then smiling, he added, “With that said, my real favorite aspect is that the app is free!” The app is also continually updated by leading Extension Specialists at seven Land-Grant Universities and the Southern IPM Center.

And feedback from users has been very positive. According to Blauw, of users surveyed, 65% agreed that the app has helped them manage pests and 70% agreed that it has increased their knowledge of pests and IPM. “Nearly everyone I talk to about the app is pleased with its functionality and ease of use.”

Most surprising outcome? That the app has been downloaded from people from over 70 different countries, including India, Mexico and Canada.

“I hope the app continues to grow and include additional crops. I am currently working on adding in a section that includes beneficial insects to help users learn more about them and how to identify these ‘good bugs,’” Blauw explained. Meanwhile, back at the peach orchard, the app has identified a pest through the zoomable photo gallery and offered the user biological and chemical control solutions.

Smart, handy and free. And for farmers, that’s about as good as it gets.



Brett Blauw uses the MyIPM app in peach orchard.

By Michele Hatcher

For more information on the MyIPM app, please visit <https://apps.bugwood.org/apps/myipmseries/>

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Michele Hatcher Editor

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Or Call 706-542-2816.

The third annual Ta-Ran-Tula 5K run will be held on the beautiful trails of the State Botanical Gardens of Georgia on Saturday, April 6. The event, hosted by the University of Georgia Insect Zoo, begins at 9 am with all proceeds going to support the efforts of the zoo which provides free insect educational outreach programs. After the race, everyone will have the opportunity to interact with their favorite furry friends . . . tarantulas!



Facebook LIVE came to the Black Fly Lab! Great job Elmer Gray answering participants questions about the important research your lab does every day.



Calendar Reminders

April 1-5 — Lund Week

April 6 — Ta-ran-tula 5K run hosted by the UGA Insect Zoo at the State Botanical Gardens of GA.

April 10-12— 83st Annual Meeting of the Georgia Entomological Society at Lake Blackshear Resort & Golf Club, Cordele, GA.

April 19 — International Agriculture Day Lecture & Awards, Georgia Museum of Art

May 9 — CAES Convocation ; 6 pm Classic Center Theatre

May 10 — Spring Commencement; 9:30 am Stegeman Coliseum—graduate; 7 pm Sanford Stadium—undergraduate

May 27 — Memorial Day Holiday

July 4 — UGA Holiday

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Entomology at UGA wishes you a very Bright and Happy Spring!