



Entomology

NEWSLETTER



College of
Agriculture

2023

News from the LSU Department of Entomology

FROM THE DEPARTMENT HEAD

Alumni, supporters, and friends of LSU Entomology,

The LSU Department of Entomology has a distinguished history of providing innovative solutions to the insect-related problems faced by Louisiana and the world. This tradition of service continued in 2022, and I am pleased to provide this overview of the activities and accomplishments of faculty, staff and students of the LSU Department of Entomology. As we reflect on these achievements, we are grateful for the opportunity to serve the citizens of Louisiana, and we look forward to another successful year in 2023.



The publications, grants, honors and awards of our faculty staff, and students in 2022 attest to the excellence of our programs. Faculty productivity remained strong, with more than 50 refereed journal articles published and almost \$2 million in new extramural funding obtained in 2022. The Department graduated 16 students in 2022 (eight M.S. and eight Ph.D. students), showing the continuing strength of our graduate programs. Several of our faculty members delivered presentations internationally, demonstrating the global reputation of our faculty. We welcomed two new faculty members in 2022: Dr. Aaron Ashbrook (85% extension, 15% teaching), whose areas of responsibility will include extension and teaching related to insect pests in urban and peri-urban areas, and Dr. Todd Johnson (75% research, 25% teaching), our new forest entomologist. We continue to advocate

See more, Page 2 ►



Apple snail egg mass on a rice plant. Photo by Blake E. Wilson

Mitigating apple snail impact in rice and crawfish production

Julian M. Lucero and Blake E. Wilson

The apple snail, *Pomacea maculata*, is a global invasive rice pest. Within the past decade, the apple snail has established itself in Louisiana but has only recently begun infesting rice farms in the southwestern region. Adult snails have large brown-green or gold shells and lay large pink egg masses. Their fast-reproductive rate and voracious appetite allow the snails to reach high population densities in natural bodies of water as well as in rice and crawfish ponds. The snails are so disruptive to crawfish trapping that some ponds have been drained early and fishing terminated. Initial observation suggested impacts to rice production in Louisiana would be minimal, but more recent evidence suggests water-seeded rice, approximately 15% of the state's acreage, can be devastated if high snail populations are

See more, Page 2 ►

Grants.....	4
Meet Todd Johnson.....	5
Grant to study jewel scarabs	7
James Villegas earns ESA award	7
Spotlight on the Davis Lab	8

Colin Bonser receives scholarship.....	13
Entomology Club activities	14
Award winners	15
Graduates	17
Faculty activities	18

Continued from Page 1

present at planting. Because of the potential of apple snails to become pests, it is important to determine the locality of apple snails in Louisiana and study their expansion into rice and crawfish production systems.

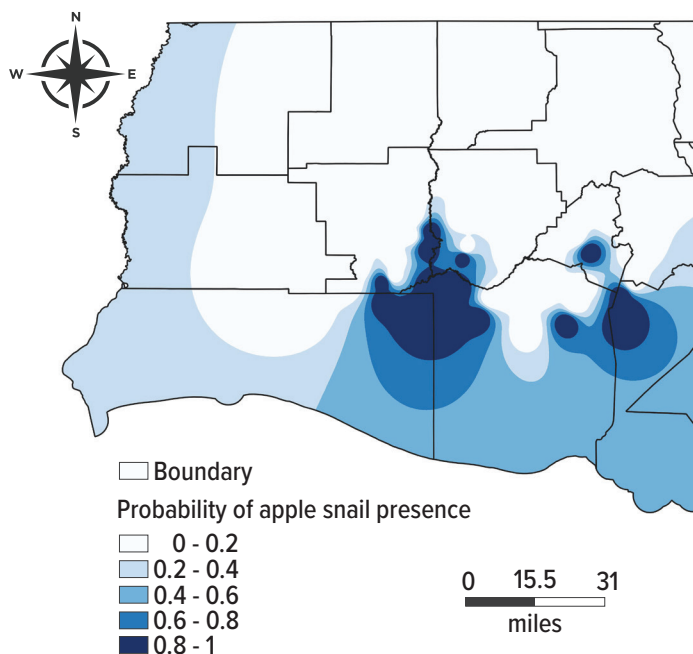
Rice and crawfish ponds surrounding natural waterways — including the Mermentau River, Vermilion River and Bayou Lacassine in Iberia, Vermilion, Jefferson Davis, Lafayette, Cameron and Acadia parishes — are known to harbor apple snails. These ponds have been monitored for the presence of apple snails since 2018. Spatial analysis with ArcGIS mapping software is being used to map current data, and this data is then used to extrapolate future expansion. To date, expansion into new farms has only been detected at 11 sites across the study area, a relatively low rate of expansion for invasive species.

Irrigation with well water rather than surface water is thought to be the primary factor preventing introduction into new ponds. Severe weather events such as floods and hurricanes can create opportunities for the snails to expand into new areas. Some of the newly invaded farms were discovered following Hurricane Laura in 2020. Fortunately, for now, it appears that establishment of the snails across the rice and crawfish production region will be a relatively gradual process. Once the snails become established, getting them under control poses another challenge.

Toxicity assays investigating potential chemical controls are being conducted on the LSU Baton Rouge campus as well as at the crawfish laboratory at the Rice Research Station South Farm in Crowley, Louisiana. The aim of these studies is to identify chemicals that are highly toxic to snails, but safe for crawfish. Insecticides are frequently highly toxic to crawfish because insects and crustaceans are both arthropods and closely related. Apple snails, however, are mollusks and can be targeted with different chemicals (known as molluscicides), which may be less toxic to crawfish.

One chemical that has been identified as a potential solution is copper sulfate. Laboratory assays revealed that rates that cause high mortality of snails did not have any effect on adult crawfish. Research into nonlethal effects on crawfish, such as reduced growth or feeding, is needed before the product can be used commercially, however.

See more, Page 3 ►



Estimated distribution of apple snails in rice and crawfish production regions of southwest Louisiana as of 2021. Apple snails are widely distributed in natural waterways across south Louisiana.



Apple snail toxicity assays are being conducted at the crawfish laboratory at the Rice Research Station South Farm, Crowley, Louisiana. The aim of these studies is to identify chemicals that are highly toxic to snails but safe for crawfish. Photo by Blake E. Wilson

Continued from Page 1

for the establishment of an undergraduate Plant Health Management curriculum through which we can better serve the undergraduates at LSU.

We appreciate the interest and support of our alumni and friends, and we welcome opportunities to visit with you by email, phone, remote conference, or, even better, in

person. Suggestions for improving our programs are always welcome. Finally, if you would like to donate to support any of our programs, details for doing so can be found in this newsletter.

Again, the Department of Entomology sincerely appreciates your support of our efforts.

Michael J. Stout

Continued from Page 2

Other research is examining chemical control of apple snail eggs. Preliminary results suggest solutions of inexpensive and widely available crop oil can greatly reduce egg hatch rates. Heavily infested ponds may see thousands of new egg masses laid nightly, however, so spraying for eggs on a large scale may not be practical.

As rice and crawfish producers continue to struggle to manage this invasive pest, LSU AgCenter researchers are looking for solutions. It is unlikely any silver bullet that can stop the snails in their tracks will be identified, but preliminary findings suggest some relief may be coming. Slowing the spread of these snails is critical to mitigating their impact. Farmers and boaters alike are encouraged to check equipment for apple snails and snail eggs before moving it between locations. It is important that people contact the local LSU AgCenter extension office to report expansion of apple snails into new rice and crawfish ponds to assist this research.

Julian M. Lucero is a graduate research assistant in the Department of Entomology, and Blake E. Wilson is an assistant professor and field crops entomologist at the Sugar Research Station, St. Gabriel, Louisiana.

This article appears in the winter 2022 issue of Louisiana Agriculture.



A large apple snail in the entrance of a crawfish trap. Photo by Mark Shirley

HELP US TO ENSURE EXCELLENCE IN ENTOMOLOGY

While the department receives some monetary support for its core research, extension, and teaching programs, private financial support is vital for enhancing our existing programs, providing additional financial support for our students, and beginning new initiatives. Please consider contributing to help support our programs.

You may help to support the Entomology Department by donating to one of the funds below:

- #100162 — Entomology Development Fund
- #100166 — Entomology Research Support Fund
- #104122 — Jeffery P. La Fage Memorial Assistantship
- #104124 — D. Michael Chambers Endowed Scholarship
- #104126 — Extension Entomology Development Fund
- #104131 — Louisiana State Arthropod Museum Fund
- #104132 — 4-H Entomology Awards Account Fund
- #104133 — Entomology and Alternate Uses
- #104134 — Integrated Pest Management Research Fund
- #104135 — Arthropod Pest Management Program Support Fund
- #105260 — Louisiana Mosquito Control Association Endowed Scholarship

Donations can be made by accessing the LSU Foundation site at www.lsufoundation.org/give or by sending a personal check made out to the LSU Foundation with a letter stating which fund you would like to donate to. Address the letter to:

Entomology Department
404 Life Sciences Building
LSU Campus
Baton Rouge, LA 70810
225-578-1628

For more information contact:
Michael J. Stout
Professor and Department Head
mstout@agcenter.lsu.edu

Population Genetics and Adaptive Change in Gradual and Rapid Range Expansion of an Invasive Insect Herbivore

USDA NIFA, Foundational and Applied Science

PI: Blake Wilson

Co-I: Claudia Husseneder

Co-I: Rodrigo Diaz

Co-I: Michael Stout

Co-I: Julien Beuzelin (University of Florida)

The Mexican rice borer (*Eoreuma loftini*) is an invasive insect feeding on sugarcane, rice, corn, sorghum and other grasses. The insect was first reported as a pest on sugarcane in 1980 following its introduction into southern Texas and has spread in a northeastern direction along the Gulf Coast into Louisiana. The species has also become established in central Florida, with the first detection reported in 2012. Expansion in North America has been extensively documented for nearly 30 years with records from pheromone trapping networks. Northward expansion has been aided by evolution of improved cold tolerance. This historic range expansion provides an ideal system for study of the interactions of population genetic structure, invasion dynamics, and adaptive change. Specifically, this system will allow for comparison of changes in genetic structure among populations with varying invasion dynamics within the same species.

Specific objectives are to (1) characterize *E. loftini* genetic structure from eight geographic populations using Genotyping-by-Sequencing (2) determine fine-scale genetic structure at the leading edges of expansion and assess the influence of selection pressure on expansion dynamics (3) compare cold tolerance among geographically distinct *E. loftini* populations and predict future North American range expansion. The benefits of this project are two-fold. In addition to serving as a model system for the study of population genetics during biological invasions, this project will help mitigate impacts of an economically important crop pest.

Enhancing Sustainability in Insect Management in Furrow-Irrigated Rice in the U.S. Mid-South

USDA-NIFA, Crop Protection and Pest Management

PI: Blake Wilson

Co-I: Tyler Towles

Co-I: Nick Bateman (University of Arkansas)

Co-I: Don Cook (Mississippi State University)

Co-I: Jeff Gore (Mississippi State University)

Adoption of furrow-irrigated rice (FIR) has increased rapidly across the U.S. Mid-south in recent years, often outpacing research efforts. Insect pest management will be altered in FIR relative to traditional flood-irrigation where the permanent presence of the flood controls pest dynamics. Studies suggest the rice water weevil, *Lissorhoptus oryzophilus*, will be reduced in economic importance in FIR, while billbugs, *Sphenophorus* spp., will be more damaging. However, the prevalence and impact of these and other pests across the study region are unknown. Further, insecticidal seed treatments are widely used despite inconsistent evidence they are economically justified. This project aims to fill these knowledge gaps through commercial field surveys and research station experiments across the Mississippi Delta rice production region. Area-wide surveys and untreated sentinel plots of FIR will determine pest dynamics as affected by geographic region, irrigation tactics, and other production practices. Research station experiments will determine economic returns on insecticidal seed treatments as influenced by geographic region and production conditions. Results will be developed into an insecticidal seed treatment selection guide to assist growers in judicious selection of the optimal products for maximizing farm revenue. Collectively, this project will provide the first coordinated insect pest research in FIR and allow for initial development of integrated management strategies. The project will enhance sustainability in an emerging crop system that is expected to increase in future years.

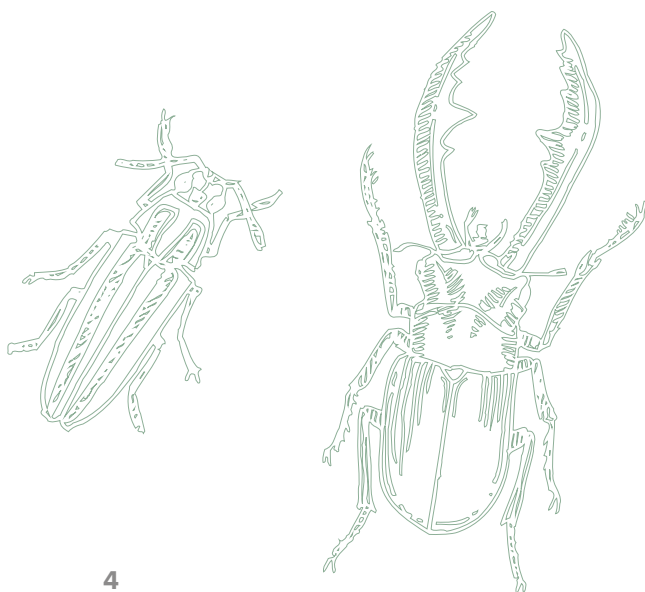
Apple Snail (*Pomacea maculata*) Integrated Pest Management Tactics for Crawfish and Rice Crop Production

PI: Blake Wilson

Co-I: Brad Richardson (USDA ARS, Stoneville, MS)

Co-I: Amy Roda (USDA-APHIS-PPQ, Miami, FL)

The primary purpose of this agreement is to mitigate the impact of invasive apple snails (*Pomacea maculata*) to rice and crawfish production systems in the southern U.S. Research aims include (1) examination of ecology of apple snails in rice and crawfish production systems in Louisiana (2) Evaluation of management strategies to mitigate impacts of apple snails in agriculture (3) assessment of factors associated with apple snail expansion into new rice and crawfish fields and (4) investigation of potential health risks of consuming seafood from snail infested waters.



Meet Todd Johnson, assistant professor of forest entomology

In September 2022 I began an appointment in the Department of Entomology at Louisiana State University as an assistant professor of forest entomology (80% research, 20% teaching). The goal of my research program is to understand how natural variation impacts the production and use of chemicals by insects and plants in tri-trophic systems. I am interested in generating fundamental knowledge about these interactions, as well as using what we learn to optimize management of invasive or pestiferous insects, especially with respect to optimizing biological control.

I received my B.S. in biology from Moravian College (now University) in 2009. My M.S. in entomology was obtained at the University of Wisconsin-Madison in 2013. While at UW-Madison, I was advised by Dr. Kenneth Raffa, where I conducted field and laboratory studies on the invasive emerald ash borer, as well as its introduced biological control agents. I received my Ph.D. in entomology in 2019, under the tutelage of Dr. Lawrence Hanks, at the University of Illinois at Urbana-Champaign. In the Hanks lab, my doctoral work focused on characterizing the response of natural enemies such as predators and parasitic wasps to the pheromones of



their prey through a process known as eavesdropping. Prior to starting at LSU, I spent three years as a postdoctoral research

associate in Dr. Jeff Garnas' lab at the University of New Hampshire. At UNH, I led a large field study investigating the role of size in predicting

a tree's defensive capacity against the emerald ash borer, and the success of its biological control agents in the Northeast.

By Ellyn Couvillion, staff writer from *The Advocate*

There are more than 100 species of jewel scarab beetles — so named for their iridescent color — but they all possess one property: they glow.

Jewel scarabs emit a soft, colorful radiance that humans can't see, unless they're wearing 3D glasses like the ones you get at the movies.

Nathan Lord, an assistant entomology professor and director of the State Arthropod Museum at LSU, is studying the beetles and how humans could learn from them. And his work has attracted interest from the U.S. Air Force.

"These beetles bounce light in a different way than what humans can see," he said recently in his office at LSU's Life Sciences building. "We're learning about the design rules of these really reflective surfaces of nature."

Those design rules could translate one day into new technology for humans, he said, particularly in the making of more sensitive light sensors, which are found in such everyday objects as mobile phones, smoke detectors and remote control devices.

Earlier this year, Lord's lab at LSU received a \$75,000 seed grant for his research on the jewel scarabs from the Air Force Research Lab (AFRL), through its basic research program.

Laura Bagge, a senior biologist with the AFRL, said



COULD THESE GLOWING BEETLES IMPROVE HUMAN TECHNOLOGY?

An LSU professor is researching it.

Two jewel scarabs collected during an international research expedition, as part of a University Day grant funded to Dr. Nathan Lord by the Air Force Research Lab.

university researchers who receive these grants "are doing something discovery-based, they don't know what the outcomes will be and the actual applications are not known."

"These are one-year efforts," Bagge said of the university grants the Air Force Research Lab, based

at Eglin Air Force Base in Florida, awards every year. "It's planting the seed of this research, and we'll see what comes next."

In May, Lord was in Costa Rica, home to a diverse population of jewel scarab species, working with the University of Costa Rica to collect specimens.

"The more we learn about surfaces and light refraction in nature will help us design better surfaces and sensors," Lord said.

"Most light sensors are built on human visual senses," he said. "But it goes much farther than that in animals."

Reprinted with permission from Sep 24, 2022.

Nathan Lord awarded grant to study jewel scarabs

Dr. Nathan Lord was awarded a \$75,000 grant from the Air Force Research Lab (AFRL) as a recipient of their competitive University Day program. The award, titled “Circular polarization in *Chrysina*: understanding design rules for novel visual signals and their applications” hopes to better understand the visual signals produced by a unique group of metallic beetles. Together with a team of physicists and chemists from the University of Costa Rica, and physicists, computer engineers and biologists from the AFRL, Lord traveled to Costa Rica this past May on a field expedition to collect jewel scarabs. Lord and the collaborators were successful on their mission and will return to collect additional species this coming summer. Forthcoming research at LSU on the structural components of these metallic gold, silver and green beetles will include better understanding their visual systems through transcriptomics, color production mechanisms via advanced microscopy, and visual signature profiles through optical physics and biophotonics. This research has the potential to inform novel sensor design and provide foundations for the development of novel bioinspired materials. Recently the team visited LSU and the Department of Entomology to strengthen the collaboration and discuss next steps in larger projects.



An international team of collaborators visits Mike the Tiger's habitat at LSU. From left are Dr. Esteban Bermudez, of the University of Costa Rica; Dr. Laura Bagge, of the Air Force Research Lab; Dr. Marcela Hernandez and Dr. Eduardo Libby, of the University of Costa Rica; Dr. Nick Rummelt, of the Air Force Research Lab; and Dr. Nathan Lord, of LSU.

2022 Entomological Society of America Southeastern Branch J.H. Comstock Award for Outstanding Ph.D. Student – James Villegas

This award is given to one graduate student from each branch to promote interest in entomology and to stimulate interest in attending the annual meeting of the Entomological Society of America.

Dr. James Villegas is an assistant professor of field crops entomology at the Louisiana State University AgCenter. He has statewide extension and research responsibilities working in all field crops, including soybean, cotton, corn, grain sorghum and wheat. His general research interests involve both applied and fundamental aspects of plant-insect interactions in crop agroecosystems. He takes a holistic approach to insect pest management by integrating various control tactics that can help maximize grower profitability and promote sustainable approaches.



Villegas received his doctorate in entomology at LSU in the fall of 2021, where he investigated the role of plant tolerance and cultural tactics for the management of rice water weevil and the invasive stem-boring species, the Mexican rice borer. He also obtained a master's in entomology with a minor in applied statistics at LSU in 2017. His master's thesis was focused on the interactive effects of nitrogen fertilization and soil silicon amendment on insect pest complexes.

Prior to joining LSU in 2015, Villegas was a researcher at the International Rice Research Institute, where he was involved in a countrywide project utilizing ecological engineering approaches to restore and conserve ecosystem services. Villegas received his bachelor's degree in life sciences with a specialization in molecular biology and biotechnology from Ateneo de Manila University, Philippines, in 2012. In his free time, Villegas likes to explore new places with his wife and two kids, who are growing up way too fast.

DYNAMIC DOZEN

Davis Lab members focus on integrated pest management

The Davis Lab in the Department of Entomology at the Louisiana State University Agricultural Center has focused on basic and applied research to establish and maintain sustainable and resilient integrated pest management (IPM) programs for soybean, hemp, and sweetpotato. The goal of the 12-member team is to reduce grower costs and improve yields by utilizing biological, cultural, physical and chemical tools to regulate pest populations while minimizing environmental risks. In addition, the team studies plant virus vector epidemiology. Their research generates the necessary data on pest density, distribution and biology that is critical for the application of tools and tactics to predict, manipulate and manage pest population dynamics. Let's meet Team Davis:



The Davis team works to plant a field.



Dr. Jeffrey A. Davis

■ **Dr. Jeffrey A. Davis** is a full professor in the Department of Entomology at the Louisiana State University Agricultural Research Center. Davis grew up on a 100 head dairy farm in Wisconsin. As an undergraduate, he attended the University of Wisconsin-Madison where he received a B.S. in agronomy in 1996. He joined the Peace Corps in 1997 and served as a sustainable agriculture extension agent in Senegal, Africa, from 1997 to 1999. In 2002, he became a graduate student at the University of Minnesota and received his M.S. in entomology in 2004 and his Ph.D. in entomology in 2006. He joined the Department of Entomology

at LSU in November 2007 and was promoted to full professor in July 2018. As of 2022, he has written 118 publications, given more than 250 presentations, advised 23 M.S. and Ph.D. students, and has accumulated more than \$6 million in external funds for his program.

Of course, Team Davis could not function without its two awesome research associates and its exceptional postdoctoral researcher:

■ **Mark (Jeff) Murray** is originally from Massachusetts and has a B.A. in anthropology and an M.A. in geography. He joined the

See more, Page 9 ►



Mark (Jeff) Murray

Continued from Page 8

Department of Entomology at LSU AgCenter in 1990 when he began working with Dr. Larry Rolston on sweetpotato breeding, IPM of sweetpotato weevil and taxonomic catalogs for several families of Hemiptera. From 1994 until 2012, he worked in sweetpotato IPM, particularly chemical control of root feeding insects with Drs. Abner Hammond and Rick Storey. In 2012, he joined the Davis Lab and has worked on multiple soybean and sweetpotato IPM projects.

■ **Sara Navarro** was born in Chile, where she got her B.S. in biological sciences. She moved to United States in 2004 with her family and joined the Davis Lab in September 2018. She has worked in different areas, including human immunology, in her native country; virology, in the School of Veterinary Medicine; and animal studies, in the Biological and Engineering Department at LSU. Navarro was hired as the technician on our multidisciplinary project, Fear No Weevil, coordinated jointly by AgBiome and the



Sara Navarro

LSU AgCenter and funded by the Bill and Melinda Gates Foundation. This research aimed to identify

beneficial microbes for deployment to smallholder farmers in African nations to control sweetpotato weevil.

■ **Dr. Nupur Sarkar** was born in India and received her B.S., M.S. and Ph.D. in zoology from the University of Burdwan in West Bengal, India. For her Ph.D. work, Sarkar isolated volatiles from bitter melon, analyzed them by gas chromatography–mass spectrometry and tested in Y-tube olfactometer bioassays their response

See more, Page 10 ►



Dr. Nupur Sarkar



Nathan C. Arey

Continued from Page 9

by *E. dodecastigma*. Sarkar then joined Dr. Oscar Liburd's lab at the Entomology and Nematology Department, University of Florida, Gainesville, Florida, as a postdoc in 2017. She worked on developing IPM strategies in berry crops for *Drosophila suzukii*. She joined the Davis Lab in March 2020 and worked on developing and optimizing the use of microbial biological control for sweetpotato weevil, *Cylas formicarius* (F.) until November 2022. Sarkar now works for Dr. Lina Bernola at Texas A&M AgriLife Research in the Department of Entomology.

Finally, Team Davis would not exist without its many graduate students:

■ **Tyler Ray T. Musgrove** was born in Anchorage, Alaska. In 2001, his family returned to his father's childhood home in Forest Hill, Louisiana. He attended Louisiana Tech University from 2013 to 2017 where he received a B.S. in agricultural business and a minor in plant science. Musgrove joined the Davis Lab in the fall of 2019. His project focused on early season management of threecornered alfalfa hopper, *Spissistilus festinus* (Say), with neonicotinoid seed treatments and re-evaluating late-season action thresholds of this same pest. Musgrove



Tyler Ray T. Musgrove

successfully defended his M.S. thesis entitled "Re-evaluation of Late Season Action Thresholds and the Effect of Seed Treatments on Early Season Colonization of Threecornered Alfalfa hopper, *Spissistilus festinus*

(Say), in Louisiana Soybean, *Glycine max* (L.) Merr" and graduated May 2022. He is working on his Ph.D. in entomology with Dr. Blake Wilson.

■ **Nathan C. Arey** was born in Tallahassee, Florida. He spent his formative years in Johnson City, Tennessee, and adolescence in Seneca, South Carolina, where he developed a passion for nature and insects. He attended Clemson University from 2016 to 2020 where he received a B.S. in biological sciences with an emphasis in entomology and a minor in microbiology.

See more, Page 11 ►

Continued from Page 10

Arey joined the Davis and Lord Labs (co-advised) in summer 2020. His project focused on hemp, *Cannabis sativa* (L.), and the lack of information on insect related pests and natural enemies in this reemerging crop system in Louisiana. His study aimed to conduct a faunistic survey of hemp in Louisiana, evaluate hemp as an alternative host plant for polyphagous lepidopterans in the family Noctuidae that are present in the Louisiana agroecosystem, and conduct laboratory-based efficacy tests of registered pesticides available to growers against these noctuid pests. Arey successfully defended his M.S. thesis entitled “Identifying the Components of a Hemp (*Cannabis sativa* (L.) (Rosales: Cannabaceae) Integrated Pest Management Program in Louisiana” and graduated August 2022. He is working as a field sciences intern with Corteva Agrosience in the Crop Protection Discovery and Development Division in Leland, Mississippi.

■ **Alex E. Leede** was born in Denver, Colorado, and states, “I’ve always had a fascination with the natural world.” After receiving a B.S. in natural sciences from the University of Louisiana at Lafayette, Leede worked as a contractor surveying the swamps of Louisiana with the U.S. Geological Survey. His work in

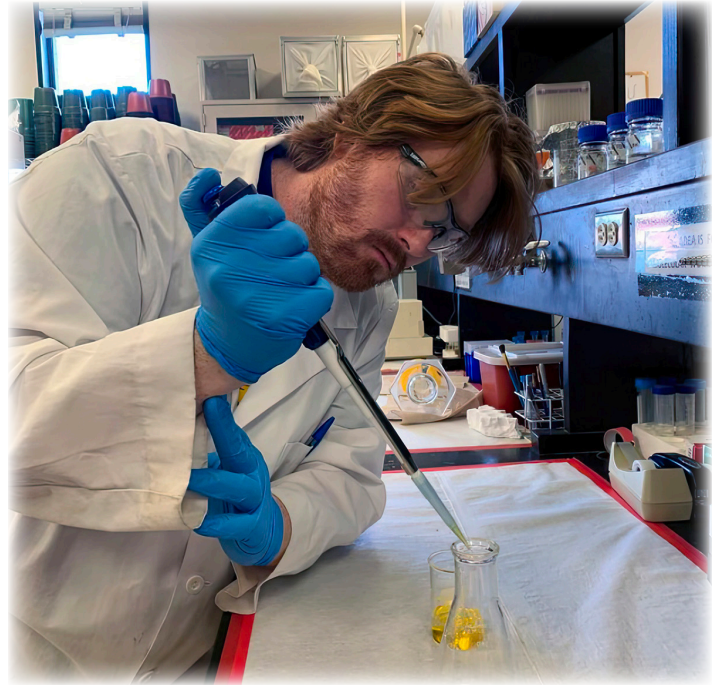


Alex E. Leede



Flinn O'Hara

the swamps reignited his interest in ecology, biodiversity, and the role of insects in ecosystems. He joined the Davis Lab in the fall of 2020. His project focused on understanding the impact of previous crops on soil microbial communities, hemp growth and development, and aphid colonization. Leede successfully defended his M.S. thesis entitled “Aphid Herbivory on Industrial Hemp, *Cannabis sativa* L., and the Impact of Plant-Soil Feedbacks on Hemp Performance in Louisiana” and graduated August 2022. He is currently working in Colordao.



Colin A. R. Bonser

■ **Flinn O'Hara** was born in London and raised on the south coast of the United Kingdom. He attended The University of Manchester from 2014 to 2018 where he graduated with a B.S. in developmental biology (honors) with industrial or professional experience. He spent two years working as a science graduate for Rentokil Pest Control before joining the Davis and Swale Labs (co-advised) in the summer of 2020. His project created a baseline understanding of how commercial aphicides affected survivorship and feeding behavior of cotton aphid and compared these results to inward rectifier potassium channel inhibitors as a novel antifeedant aphicide. O'Hara successfully defended his M.S. thesis entitled “Development of Hemipteran KIR Channels into Antifeedant Target

Sites” and graduated August 2022. He is working on his Ph.D. in entomology with Dr. Daniel Swale at the University of Florida-Gainesville.

■ **Colin A. R. Bonser** was born in Poughkeepsie, New York, and raised in Conifer, Colorado. Following high school, Bonser enlisted in the U.S. Navy from 2007 to 2012. During his enlistment as a Navy corpsman, Bonser trained as a surgical technologist. His first duty station at U.S. Naval Hospital Guam, specializing on surgeries (routine and traumatic) related to oral and maxillofacial surgery (2008-2010). He then went to Camp LeJeune, North Carolina, in 2011 where he became attached to the 2nd Medical Battalion of the U.S. Marine Corps. Bonser then

See more, Page 12 ►



Scott T. Lee

Continued from Page 11

deployed to Afghanistan as part of Operation Enduring Freedom (OEF 11-2) to the 2nd Supply Battalion of the Marines, where he helped perform lifesaving surgeries to Afghan and NATO Forces at Camp Bastion (2011-2012). Following his enlistment, Bonser used the G.I. Bill and went back to school to receive an A.A. in general studies from Red Rocks Community College. He then transferred to University of Colorado, Boulder, where he received his B.A. in ecology and evolutionary biology in 2017. He joined the Davis Lab in the fall of 2018. Bonser's dissertation focused on understanding the use of

zein and lignin nanoparticles in agricultural settings as carriers of insecticides. He successfully defended his Ph.D. dissertation entitled "The Applied Use of Zein Nanoparticles in Agriculture" and graduated fall 2022. He recently accepted a job with the U.S. Forest Service.

■ **Scott T. Lee** is originally from Minnetonka, Minnesota, and received his B.S. in entomology at the University of Wisconsin–Madison in 2013. He joined the Davis Lab in summer 2018. He recently defended his dissertation entitled "Evaluating the pesticide-induced outbreak of soybean looper,



Schylar M. Lee

Chrysodeixis includens (Walker) in Louisiana soybean" and is set to graduate May 2023. The goal of his project is to identify the mechanisms behind soybean looper outbreak after insecticide application in soybean. Much of his research centers around the impact of insecticides on natural enemy populations as well as the effect on soybean defense responses. Additionally, part of his project is a reassessment of predator and parasitoid populations in soybean, which will provide a baseline of residing arthropod community. His research hopes to provide more sustainable

approaches to integrated pest management in soybean production. In general, he is interested in basic and applied research relating to pest ecology and management in crop systems. He hopes to find a postdoc soon and continue his pursuit of joining academia.

■ **Schylar M. Lee** was born and raised in Baton Rouge, Louisiana. She attended Louisiana State University from 2016 to 2021 and graduated with a B.S. in animal science and a B.S. in plant and soil

See more, Page 13 ►



Santosh Bhandari

Continued from Page 12

systems with a minor in music. Lee joined the Davis Lab in the fall of 2021. Her M.S. project focuses on enhancing integrated management of sweetpotato for the sweetpotato weevil, *Cylas formicarius elegantulus* (Summers). Her experiments focus on incorporating host-plant resistance and entomopathogenic fungi to induce mortality and determine ovipositional preferences. Further, the project explores the effect of environmental growing conditions on adult emergence. With these skills acquired in the Davis lab, Lee hopes to pursue a career in agricultural consulting post-graduation.

■ Santosh Bhandari

was born in Nepal. He completed his B.S. in agriculture from the Agriculture and Forestry University in Chitwan, Nepal in 2019. He worked as an instructor in plant science for a secondary school from 2020 to 2021. He joined the Davis Lab in the fall of 2021. His M.S. research project is entitled “Optimizing the virulence and understanding the endophytic colonization of *Metarhizium* sp., in sweetpotato for the control of *Cylas formicarius elegantulus* (Summers)”, a collaboration with AgBiome LLC and the LSU AgCenter. He works with selected strains of *Metarhizium* sp. and is testing their potential use in controlling sweetpotato weevil.

DOCTORAL SCHOLARSHIP: COLIN BONSER

2022 Louisiana Agricultural Consultants Association Scholarship Recipient
funded by [Belchim Crop Protection](#)

If anything can be said about Colin Bonser, it is that he is dedicated to his goals and driven to excel, shown by his academic history and achievements as a nontraditional student. He joined the U.S. Navy following his graduation from high school in 2007. For five years, he proudly served as a hospital corpsman where he received training as a surgical technologist to provide life-saving care. He was stationed at the U.S. Naval Hospital Guam, then at Camp LeJeune, North Carolina, with the 2nd Medical Battalion. In 2011, he deployed to Afghanistan as part of Operation Enduring Freedom. The U.S. Navy taught him invaluable experience in leadership, time management and working under pressure.



His academic career began at Red Rocks Community College in Lakewood, Colorado, after separating from the Navy. He completed three semesters there and then transferred to the University of Colorado Boulder where he was awarded an associate degree in general studies. While at CU Boulder, he traveled to Germany to study abroad, and then moved to Poland where he worked as a language tutor and lecturer at a private firm.

In 2018, he began his Ph.D. program at LSU in Dr. Jeffrey A. Davis' Soybean Entomology Lab where his research interests include the use of nanoparticles as pest control tools. More specifically, he is looking at biopolymeric nanoparticles as an alternative pesticide and vehicle for administration of chemical active ingredients, while also elucidating the chronic effects and possible mechanisms of their action. His goal is to incorporate applied entomology and nanoscience to create a new field of study, which he has coined as “nanoentomology.” As his mentor, Davis taught him that the goal of an applied entomologist in agriculture is to aid the farmer. Thus, Bonser's current research is focused on nanoparticles as alternative pest control tools and the lasting effects of the particles in the field and on the insect. Hopefully, his research will be able to benefit consultants by adding a new technology for their use as a tool in integrated pest management. It is his hope that his research will be utilized to bring nanoscience and integrated pest management into the new era of research and development — nanoentomology.

Entomology Club makes masks, raises funds

Each year, members of the Entomology Club have a ton of fun creating festive Mardi Gras masks that feature the bright green metallic elytra of jewel beetles. These masks represent Louisiana culture with an entomological flare. The masks are sold to raise funds for the annual Dennis Ring

Graduate Student Travel Award, which provides funds for a deserving graduate student to travel to the Entomology Society of America Southeastern Branch Meeting. The 2023 awardee, Scott Lee, presented his research at the meeting in Little Rock, Arkansas, in March.



Entomology Club officers, from left to right: Tiago Silva, treasurer; Tyler Musgrove, secretary; Emily Benoit, insect handler; Keyla Pruett, vice president; Schyler Lee, social media officer; Jyoti Sharma, marketing operator; Ally Martin, president. Not pictured: Bandana Shrestha, marketing operator.



Mardi Gras masks feature the bright green metallic elytra of jewel beetles. The masks are made by the Entomology Club.

2022 ENTOMOLOGY AWARD WINNERS



Student Awards

12th Annual LSU Entomology Department Graduate Student Symposium

Infographic

- **Colin Bonser** — Winner. Field testing zein as a nanodelivery system for methoxyfenozide. **Colin Bonser**, Carlos Tamez, Jason White, Carlos Astete, Cristina Sabliov, Jeffrey Davis.

Poster Session 1

- **Junyan Chen** — Runner up. The gut microbiota affect pair formation of dealates in the Formosan subterranean termite, *Coptotermes formosanus*. **Junyan Chen**, Garima Setia, Claudia Husseneder.
- **Myriel Green** — Winner. Effects of menadione sodium bisulfate on food consumption and survival of the Formosan subterranean termite, *Coptotermes formosanus*. **Myriel Green**, Brendon Davis, Arjun Khadka, Qian Sun.

Poster Session 2

- **Ethan Doherty** — Runner up. Control of *Rhyzopertha dominica* through stored grain protectants. **Ethan Doherty**, Qian Sun, Blake Wilson.
- **Joel DuBois** — Winner. Underutilized characters in Acmaeoderini (Coleoptera: Buprestidae). **Joel DuBois**, Nathan Lord.

3-Minute Oral Proposal

- **Hasim Hakanoglu** — Winner. An integrative multi-omic approach to study *Varroa destructor* resistance in the Western honeybee (*Apis mellifera*). **Hasim Hakanoglu**, Kate Ihle, Qian Sun.

10-Minute Oral Proposal – Master's

- **Schlyer Lee** — Runner up. Does environment influence sweet potato weevil host plant resistance? **Schlyer M. Lee**, Michael J. Stout, Jeffrey A. Davis.
- **Joseph McCarthy** — Winner. Effect of the soldier defensive secretion and its major components on worker behavior in the Formosan subterranean termite, *Coptotermes formosanus*. **Joseph McCarthy**, Hasim Hakanoglu, Qian Sun.

10-Minute Oral Proposal – Ph.D.

- **Arjun Khadka** — Third Place. Effects of starvation on foraging behavior in the Formosan subterranean termite, *Coptotermes formosanus*. (Blattodea: Rhinotermitidae) **Arjun Khadka**, Qian Sun.
- **Tanner Sparks** — Second Place. Range expansion and natural enemy exclusion studies of the roseau cane scale (*Nipponaclerda biwakoensis*) in the native range of

Taiwan and adventive Louisiana. **Tanner Sparks**, Rodrigo Diaz, Cortez Amado, Hannah Broadley, Shaw-Yhi Hwang.

- **Tyler Musgrove** — First Place. Impact of insecticide seed treatments and irrigation management on selected insect pests of furrow-irrigated rice, *Oryza sativa* L. **Tyler Musgrove**, Kim Landry, Blake Wilson.

L.D. Newsom Memorial Graduate Student Award in Entomology

- Ilgoo Kang — Ph.D.

John and Grace Roussel Graduate Fellowship Award in Entomology

- Able Chow — Master's
- Zhilin Li — Ph.D.

David Boethel Graduate Student Award in Entomology

- Nathan Arey — Master's
- Scott Lee — Ph.D.

2022 Louisiana Agricultural Consultants Association (LACA) Scholarship

- Colin Bonser — Ph. D.

2022 Ray and Dorothy Young Endowed Assistantship Award

- Ethan Doherty

2022 Entomological Society of America Southeastern Branch J.H. Comstock Award for outstanding Ph.D. student

- James Villegas

2022 Entomological Society of America Southeastern Branch Kirby Hays Award for outstanding M.S. student

- Leonardo Salgado

LSU Discover Day 2022

- **Grace Cottingham** — Second place Overall Poster, First place for College of Science Poster. Development of feeding assays to identify novel antifeedant molecules for the ectoparasitic mite, *Varroa destructor*.
- **Hannah Laville** — First place Oral presentation. How Plant Damage Influences the Dispersal and Colonization of the *Salvinia* Weevil? Implications for Biological Control.

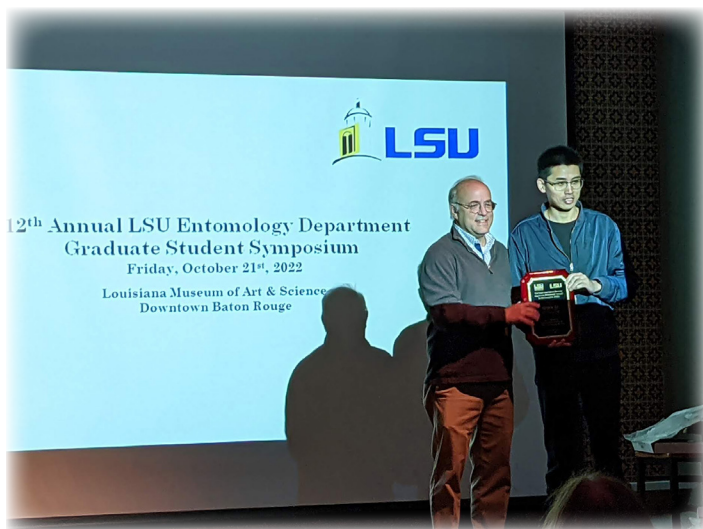
Faculty Awards

2022 G&H Seed Research Award

The winner of the G&H Seed Research Award was **Blake Wilson**. He is an entomologist working in two of the most economically important crops in Louisiana: rice and sugarcane. He is a fixture at the rice and sugarcane field days, giving farmers updates on his research pertaining to pests of these crops.

See more, Page 16 ►

2022 ENTOMOLOGY AWARD WINNERS



Dr. Michael Stout and Zhilin Li, winner of the Roussel Graduate Student Award, Ph.D.



Ethan Doherty, center, recipient of the Ray and Dorothy Young Endowed Assistantship Award, is shown with Ray and Dorothy Young.

Continued from Page 15

In 2018, invasive apple snails were found in rice and crawfish ponds. He is working on a control system farmers can use on their farms to better combat this pest. In sugarcane, Wilson is working on chemical control strategies to manage the two biggest pests of that crop: the sugarcane borer and Mexican rice borer.

Wilson has secured more than \$3 million in grant funding, published 40 peer-reviewed journal articles and given 73 professional presentations.

Louisiana Agriculture Magazine Article of the Year

Blake Wilson and Julian Lucero "Mitigating the Impact of Invasive Apple Snails in Rice and Crawfish Production Systems."

See article on page 1.

2022 Foundation Outstanding Staff Service Award

Demetres Casma



Demetres Casma



There were four winners from the competition in the Sun Lab: Myriel Green, winner Poster Session 1; Joseph McCarthy, winner master's 10-minute oral proposal; Hasim Hakanoglu, winner 3-minute oral proposal; Arjun Khadka, third place Ph.D. 10-minute oral proposal.

2022 ENTOMOLOGY GRADUATES

Tyler Ray Tagle Musgrove, M.S. – Spring 2022

[Re-evaluation of Late Season Action Thresholds and the Effect of Seed Treatments on Early Season Colonization of Threecornered Alfalfa Hopper, *Spissistilus festinus* \(Say\), in Louisiana Soybean, *Glycine max* \(L\) Merr](#)

Advised by Dr. Jeffrey Davis

Manoj Pandey, Ph.D. – Spring 2022

[Canopy Arthropod Responses to Catastrophic Wind Disturbances in Gulf Coast and Caribbean Forests](#)

Advised by Drs. Timothy Schowalter and Michael Stout

Nathan C. Arey, M.S. – Summer 2022

[Identifying the Components of a Hemp \(*Cannabis sativa* L.\) \(Rosales: Cannabaceae\) Integrated Pest Management Program in Louisiana](#)

Advised by Drs. Jeffrey Davis and Nathan Lord

Darrius M. Davis, M.S. – Summer 2022

[Understanding the Horse Fly Species and Species Relations of the *Tabanus nigrovittatus* Complex Along Coastal Louisiana](#)

Advised by Drs. Lane Foil and Claudia Husseneder

Alex Leede, M.S. – Summer 2022

[Aphid Herbivory on Industrial Hemp, *Cannabis sativa* L., and the Impact of Plant-Soil Feedbacks on Hemp Performance in Louisiana](#)

Advised by Dr. Jeffrey Davis

Flinn O'Hara, M.S. – Summer 2022

[Defining Toxicological Endpoints of *Aphis Gossypii* Feeding](#)

Advised by Drs. Jeffrey Davis and Daniel Swale

Steven J. Richardson, M.S. – Summer 2022

[Soil Moisture Mediated Behavioral and Physiological Alterations of *Coptotermes Formosanus* and *Reticulitermes Flavipes* \(Blattodea: Rhinotermitidae\)](#)

Advised by Dr. Qian Sun

Wenbo Yu, Ph.D. – Summer 2022

[Geographical Distribution, Allele Frequency, and Inheritance of CRY1A.105 and CRY2AB2 Resistance in *Helicoverpa zea* in the Southeastern Region of the United States](#)

Advised by Dr. Fangneng Huang

Ilgoo Kang, Ph.D. – Summer 2022

[Taxonomic Studies of Cardiochilinae \(Hymenoptera: Braconidae\) Focused on Specific Genera from Both the Old World and the New World](#)

Advised by Dr. Rodrigo Diaz

Able Chow, M.S. – Fall 2022

[Review of Structural Color in the Genus *Chrysochroa* Dejean, 1833 \(Coleoptera: Buprestidae\)](#)

Advised by Dr. Nathan Lord

Joseph McCarthy, M.S. – Fall 2022

[Searching for the Soldier Pheromone: Behavioral Effects of Soldiers and Soldier-Produced Chemicals in the Formosan Subterranean Termite, *Coptotermes formosanus* \(Blattodea: Rhinotermitidae\)](#)

Advised by Dr. Qian Sun

Colin Bonser, Ph.D. – Fall 2022

[The Applied Use of Zein Nanoparticles in Agriculture](#)

Advised by Dr. Jeffrey Davis

Rui Chen, Ph.D. – Fall 2022

[Defining Understudied Mechanisms of Potassium Ion Flux in the Insect Nervous System](#)

Advised by Dr. Daniel Swale

Zhilin Li, Ph.D. – Fall 2022

[Defining Pathogen-Vector Interactions in Arthropod Salivary Glands and the Utility of Potassium Ion Channels to Inhibit Vector Competency](#)

Advised by Dr. Daniel Swale

Timothy McNamara, Ph.D. – Fall 2022

[The Risks Posed by Mosquito Ultra-Low Volume Applications to *Procambarus clarkii* Production](#)

Advised by Dr. Kristen Healy

Vivek Pokhrel, Ph.D. – Fall 2022

[Esterase Mediated Insecticide Resistance in the Southern House Mosquito, *Culex quinquefasciatus*](#)

Advised by Dr. James Ottea

FACULTY ACTIVITIES

Aaron Ashbrook

Invited Presentations

- Understanding and Controlling the Red Imported Fire Ant and the Tawny Crazy Ant. LSU Baton Rouge Recertification Event. December 2022.
- Development of Insecticide Resistance, Resistance Management, and Unusual Cases. LSU Alexandria Station. November 2022.
- Using research to identify weak links in bed bug biology for better control outcomes. University of New Orleans, October 2022.
- Cockroaches, Ants, and Hornets of the Garden. LSU New Orleans Station Fall Garden Festival. October 2022.
- Dealing with Garden Pest Roaches and Fire Ants. LSU Hammond Research Station Plant Sale. October 2022.
- Understanding and controlling the Tawny Crazy Ant (*Nylanderia fulva*). Louisiana Pest Management Association, LSU AgCenter, Ruston, Louisiana. October 2022.
- Understanding and controlling the Tawny Crazy Ant (*Nylanderia fulva*). Louisiana Pest Management Association, LSU AgCenter, Lafayette, Louisiana. October 2022.
- Tawny Crazy Ant (*Nylanderia fulva*) Biology and Control. Greater New Orleans Horticulture Society. August 2022.

Other Presentations

- Guest lecturer. Entomology 7008 (special topics): Chemical Ecology of Insects. Developed and presented a lecture on bed bug chemical ecology and behaviors associated with alarm pheromone use. Afterwards, we discussed challenges that are encountered when conducting behavioral experiments. October 2022, LSU.

Grants and Contracts

- Diversity mini grant. "Creating Entryways for Greater Diversity and Representation in Entomology," Louisiana State University internal grant, October 2022. \$1,994.82.

Visiting Scientists/Students

- Rebekah Gibson joined the lab as an undergraduate lab assistant in August 2022. She works on a project exploring how the efficacy of boric acid

is impacted by different food sources against the German cockroach, with the goal of providing homeowners with practical control information.

New Collaborations (University, Industry, Other)

- Joined a project led by Dr. Jose Pietri that explores the potential of different cockroach species to vector human pathogens.
- Started a collaboration with Dr. Damon Abdi to determine what mulch type is preferred by Tawny crazy ants.

Name of Collaborator or Institution

- Dr. Jose Pietri, South Dakota State University.
- Dr. Damon Abdi, Louisiana State University, Hammond Research Station.

Publications

- Ashbrook, A.R., A.R. Mikaelyan, C. Schal. 2022. Comparative efficacy of a fungal entomopathogen with a broad host range against two human-associated pests. *Insects*, 13, 774. doi.org/10.3390/insects13090774
- Ashbrook, A.R., J. McCarthy, F. Huval, T.E. Reagan, and C.E. Carlton. Bug Biz: *Cimex lectularius*, Bed Bug (Hemiptera: Cimicidae).
- Ashbrook, A.R. GNO Gardening January 2023 edition, A Beneficial Insect with a Bite.
- Ashbrook, A.R. GNO Gardening December 2022 edition, Cold Weather Invaders.
- Ashbrook, A.R. GNO Gardening September 2022 edition, On the Lookout for the Joro Spider.

Christopher Carlton

Publications

- Owens, Brittany E., and Christopher E. Carlton. 2022. Revision of the New Zealand species of the genus *Pselaphogenius* Reitter (Staphylinidae: Pselaphitae: Pselaphini). *Zootaxa*. 5155. 2. 2.
- Owens, Brittany E., and Christopher E. Carlton. 2022. Revision of the New Zealand species of the genus *Pselaphaulax* Reitter (Staphylinidae: Pselaphitae: Pselaphini). *Zootaxa*. 5155. 2. 3.

Presentations

- Bayless, Victoria (presenter), and Christopher E. Carlton. Great Smoky Mountains National Park Beetle Inventory. Science at Sugarlands online presentation.

FACULTY ACTIVITIES



Mendel University students visit the Louisiana State Arthropod Museum and spend time with Victoria Bayless, the museum curator.



Mendel University students at the bee lab.

May 2022. Series. https://www.youtube.com/watch?v=6VDmG1nof18&list=PLjOrPdfliwsoP4_U8B1PuVsFJ9ZmzyO0O&index=15

- Preparing, submitting, and publishing English language scientific publications. Seminar and Workshop, Department of Biological Sciences, Chungbuk University, Cheongju-si, Korea. October 2022.
- Scientific and cultural value of university based arthropod museums. Seminar, Department of Biological Sciences, Chungbuk University, Cheongju-si, Korea. October 2022.
- Bayless, Victoria (presenter), and Chris Carlton. Coleoptera inventory projects: past, present, and future. Biodiversity Section Keynote Address. Annual Meeting and International Conference of the Korean Society of Environmental Biology, Busan, Korea. October 2022.
- Bayless, Victoria (presenter), and Christopher E. Carlton. Great Smoky Mountains National Park beetle inventory: not done yet, but we can't blame it on the pandemic. SysEB: Biodiversity Section Symposium, Oral Presentation, Entomological Society of America Annual Meeting, Vancouver, British Columbia, Canada. November 2022.
- Carlton, Christopher E. (presenter), Curt Harden, and Michael Caterino. Another *Arianops* presentation: how many more? Member Symposium, Oral Presentation, Entomological Society of America Annual Meeting, Vancouver, British Columbia, Canada. November 2022.

Jeff Davis

Awards and Honors

- Bonser, C. 2022. Louisiana Agricultural Consultants Association Scholarship funded by Belchim Crop Protection. Feb. 9, 2022.
- Bonser, C. 2022. First Place Infographic: Field testing zein as a nanodelivery system for methoxyfenozide. 12th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 21, 2022.
- Lee, S.M. 2022. Second Place M.S. Student Paper Competition (10-minute Oral Presentation): Does environment influence sweet potato weevil host plant resistance? 12th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 21, 2022.

FACULTY ACTIVITIES



Drs. Davis and Ashbrook in the field hunting for bugs.

- Lee, S.T. 2022. Dennis R. Ring Graduate Student Travel Award, LSU Entomology Club.
- Lee, S.T. 2022. Second Place Ph.D. Student Paper Competition (Grad P-IE: Biocontrol 2): Pesticide-induced reduction of natural enemies leads to outbreak in soybean looper, *Chrysodeixis includens* (Walker), in Louisiana soybean. 2022 Annual Meeting of the Entomological Society of America, Vancouver, British Columbia. Nov. 14, 2022.
- Lee, S.T. 2022. David J. Boethel Graduate Student Award in Entomology (Ph.D.), LSU Entomology Department.

Invited Presentations

- Arey, N.C., N.P. Lord, and J.A. Davis. Laboratory-based efficacy tests of select registered pesticides for use on hemp against noctuid pests. Invited Poster: Current Status of Pest Management in *Cannabis sativa* Symposium. 2022 Annual Meeting of the Entomological Society of America, Vancouver, British Columbia. Nov. 14, 2022.
- Arey, N.C. and J.A. Davis. Impact of hemp on the population dynamics of three noctuids. Invited Presentation: Hemp Diseases, Pests, and Management Symposium. 2022 Annual Meeting of the Southeastern Branch of the Entomological Society of America, San Juan, Puerto Rico. March 30, 2022.
- Davis, J.A. Building protective and productive partnerships for sustainable farming. Invited Presentation. Virginia Tech Southern Piedmont Agricultural Research and Extension Center, Blackstone, Virginia. April 19, 2022.

- Davis, J.A. Building protective and productive partnerships for sustainable farming. Invited Presentation. Virginia Tech Department of Entomology, Blacksburg, Virginia. April 20, 2022.
- Davis, J.A. Building protective and productive partnerships for sustainable fruit production. Invited Presentation. Virginia Tech Alton H. Smith, Jr. Agricultural Research and Extension Center, Winchester, Virginia. June 8, 2022.
- Davis, J.A. Building protective and productive partnerships for sustainable farming. Invited Presentation. Oregon State University Hermiston Agricultural Research and Extension Center, Hermiston, Oregon. June 27, 2022.

Other Presentations, Posters and Infographics

- Bhandari, S., C. Keyser, and J.A. Davis. Optimizing the virulence of *Metarhizium* spp. in sweet potato for the control of *Cylas formicarius elegantulus* (Summers). Annual Meeting of the Entomological Society of America, Vancouver, British Columbia. Nov. 14, 2022. (poster)
- Bhandari, S., C. Keyser, and J.A. Davis. Optimizing the virulence of *Metarhizium* spp. in sweet potato for the control of *Cylas formicarius elegantulus* (Summers). 12th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 21, 2022. (poster)
- Bonser, C.A.R., C. Tamez, J.C. White, C.E. Astete, C.M. Sabliov, and J.A. Davis. Field testing zein as a nanodelivery system for methoxyfenozide. 12th annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 21, 2022. (infographic)
- Davis, J.A., J. Chen, X. Chen, and M.J. Stout. Belowground herbivory to sweet potato by sweet potato weevil (Coleoptera: Brentidae) alters population dynamics and probing behavior of aboveground herbivores. Annual Meeting of the Entomological Society of America, Vancouver, British Columbia. Nov. 16, 2022.
- Stink bugs and hemp. LSU AgCenter Statewide ANR Agent Training: IPM School, Alexandria, Louisiana. Nov. 30, 2022.
- Lee, S.M., M.J. Stout, and J.A. Davis. Does environment influence sweet potato weevil host plant resistance? Annual Meeting of the Entomological Society of America, Vancouver, British Columbia. Nov. 14, 2022.

FACULTY ACTIVITIES

- Lee, S.M., M.J. Stout, and J.A. Davis. Does environment influence sweet potato weevil host plant resistance? 12th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 21, 2022.
- Lee, S.T., and J.A. Davis. Pesticide-induced reduction of natural enemies leads to outbreak in soybean looper, *Chrysodeixis includens* (Walker), in Louisiana soybean. Annual Meeting of the Entomological Society of America, Vancouver, British Columbia. Nov. 14, 2022.
- Lee, S.T., and J.A. Davis. Pesticide-induced reduction of natural enemies leads to outbreak in soybean looper, *Chrysodeixis includens* (Walker), in Louisiana soybean. 12th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 21, 2022.
- O'Hara, F.M., J.A. Davis, Z. Liu, and D. Swale. Development of antifeedant insecticides targeting hemipteran potassium ion channels. Annual Meeting of the Entomological Society of America, Vancouver, British Columbia. Nov. 13, 2022.
- Sarkar, N., S. Navarro, E. Armstrong, C. Keyser, and J.A. Davis. Mighty fungi to battle weevil: Efficacy of entomopathogenic fungi towards sweet potato weevil in the greenhouse and field. Annual Meeting of the Entomological Society of America, Vancouver, British Columbia. Nov. 15, 2022.

Grants and Contracts

- Louisiana Soybean and Grain Research and Promotion Board. "IPM for Louisiana soybean insect pests." 2022-2023. J.A. Davis. \$75,000.
- Louisiana Soybean and Grain Research and Promotion Board. "Fungicide Seed Treatment with Lignin Nanoparticles." 2022-2023. C.M. Sabliov (Lead PI), C.E. Astete, P.P. Price, V. Doyle, and J.A. Davis. \$25,000.
- Bayer CropScience. "Bayer SIP4 Open Field Efficacy Trial." 2022. J.A. Davis. \$46,800.
- USDA NIFA SCRI. "CleanSEED: A project to ensure the sustainability of U.S. sweet potato seed programs." 2022-2026. Shankle et al. \$4,856,728 (\$548,116 to J.A. Davis).
- MidSouth Soybean Board. "Enhancing stink bug resistance in Midsouth soybean." 2022-2023. J.A. Davis. \$86,000.

Graduated Students

- Tyler Musgrove, M.S., Spring 2022.
- Nathan Arey, M.S., Summer 2022.
- Alex Leede, M.S., Summer 2022.
- Flinn O'Hara, M.S., (co-advised with D. Swale), Summer 2022.
- Colin Bonser, Ph.D., Fall 2022.

Publications

- Arey, N.C., N.P. Lord, and J.A. Davis. 2022. Evaluation of hemp (*Cannabis sativa*) (Rosales: Cannabaceae) as an alternative host plant for polyphagous noctuid pests. *J. Econ. Entomol.* 115: 1947 – 1955.
- O'Hara, F.M., Z. Liu, J.A. Davis, and D.R. Swale. 2022. Catalyzing systemic movement of inward rectifier potassium channel inhibitors for antifeedant activity against the cotton aphid, *Aphis gossypii* (Glover). *Pest. Manag. Sci.* 79: 194 – 205.
- Musser, F.R., A.L. Catchot, Jr., J.A. Davis, C. DiFonzo, S.H. Graham, J.K. Greene, B. Jensen, D.L. Kerns, R.L. Koch, D. Owens, D.D. Reisig, P.M. Roberts, T.A. Royer, N.J. Seiter, S.D. Stewart, S.V. Taylor, B.C. Thrash, K.J. Tilmon, and R.T. Villanueva. 2022. 2021 Soybean insect losses in the United States. *MidSouth Entomol.* 15: 39 – 63.
- O'Hara, F.M., J.A. Davis, and D.R. Swale. 2022. Profile of commercialized aphicides on the survivorship and feeding behavior of the cotton aphid, *Aphis gossypii*. *Pestic. Biochem. Phys.* 186: 105174.
- Chen, J., X. Chen, M.J. Stout, and J.A. Davis. 2022. Belowground herbivory to sweet potato by sweet potato weevil (Coleoptera: Brentidae) alters population dynamics and probing behavior of aboveground herbivores. *J. Econ. Entomol.* 115: 1069 – 1075.
- Bonser, C.A.R., C.E. Astete, C.M. Sabliov, and J.A. Davis. 2022. Life history of *Chrysodeixis includens* (Lepidoptera: Noctuidae) on positively charged zein nanoparticles. *Environ. Entomol.* 51: 763 – 771.
- Sarkar, N., M.J. Murray, M.J. Stout, and J.A. Davis. 2022. Impact of host plant resistance on emergence, body parameters, and supercooling point of *Cylas formicarius elegantulus* (Coleoptera: Brentidae). *Florida Entomol.* 105: 65-70.
- Kacsó, T., E.A. Hanna, F. Salinas, C.E. Astete, E. Bodoki, R. Oprean, P.P. Price, V.P. Doyle, C.A. Bonser, J.A. Davis, and C.M. Sabliov. 2022. Zein and lignin-based nanoparticles as soybean seed treatment: translocation and impact on seed and plant health. *Appl. Nanosci.* 12: 1557 – 1569.

FACULTY ACTIVITIES

- Lee, S.T., C. Li, and J.A. Davis. 2022. Predator-pest dynamics of arthropods residing in Louisiana soybean agroecosystems. *Insects* 13: 154.

Rodrigo Diaz

Invited Presentations

- Biological control of weeds. Zamorano University, Honduras. Zoom Presentation. July 4, 2022.
- Sharing your cultural identity: An entomological journey from the highlands of Ecuador to the mouth of the Mississippi River. Latin American Symposium. ESA. Vancouver, Canada. Nov. 16, 2022.

Other Presentations

- Research updates on the roseau cane scale. Fourth Annual Roseau Cane Summit. Baton Rouge, Louisiana. Jan. 14, 2022.
- Diaz, R., Aviles, L., Cronin, J., Knight, I., Berry, M., Snook, J., Pruett, K. and T. Sparks. Roseau cane scale: Research progress made in the last four years. Louisiana Department of Wildlife and Fisheries. Baton Rouge, Louisiana. Jan. 25, 2022.
- Diaz, R., Harms, N., Pham, K. and W. Robles. Climate change impact to aquatic weed biological control: Lessons from giant salvinia. ESA-SEB. Puerto Rico. March 30, 2022.
- Updates on the Roseau cane die-back. Presentation to Senator Bill Cassidy, LSU, Baton Rouge, Louisiana. Aug. 26, 2022.

Awards and Honors

- Laville, Hannah - LSU Discovery Day, First place oral presentation (science, engineering, and mathematics). April 22, 2022.

Committees

- USDA-Multistate Project on Biological Control.
- ESA-SEB: Awards Committee.
- Barataria-Terrebonne National Estuary Program. Invasive Species Action Team.

Grants and Contracts

- USDA-APHIS. Roseau Cane Die-Back: Multidisciplinary Approaches to Address Plant Decline and Opportunities for Restoration. 2022. \$1,618,000. Diaz portion \$136,000.
- Atchafalaya National Heritage Area. Improving the Management of Giant Salvinia in the Atchafalaya Basin: Indoor Rearing Facility for Salvinia Weevil. 2022. Co-PIs. Korey Pham and Logan Herbert. \$15,000.

Visiting Scientists/Students

- Diana Mejia, visiting scholar, National University of Agriculture Honduras.
- Victor Lee, visiting scholar, National University of Agriculture Honduras.
- Samantha Prinsloo, visiting scholar, Rhodes University South Africa.

New Collaborations (University, Industry, Other)

- USDA-APHIS. New project on Chinese privet (*Ligustrum sinensis*) biological control.
- University of Puerto Rico. New project on biological control of water lettuce (*Pistia stratiotes*) in Carraízo dam.

Name of Collaborator or Institution

- Dr. Amy Roda, USDA-APHIS, Miami, Florida.
- Dr. Wilfredo Robles, UPR, San Juan, Puerto Rico.

Graduated Students

- Ilgoo Kang, Ph.D., Summer 2022.

Publications

- Matos Franco, G., Chen, Y, Doyle V.P., Rehner, S.A., and R. Diaz. 2022. Mortality of the crape myrtle bark scale (Hemiptera: Eriococcidae) by commercial biopesticides under greenhouse and field conditions. *Biological Control* 175: 105161.
- Schneider, S.A., Broadley, H.J., Andersen, J.C., Elkinton, J.S., Hwang, S., Liu, C., Noriyuki, S., Park, J., and Dao, H.T., Lewis, M.L., Gould, J.R., Hoelmer, K.A., and R. Diaz. 2022. An invasive population of Roseau Cane Scale in the Mississippi River Delta, USA originated from northeastern China. *Biol Invasions* (2022) 24:2735–2755 <https://doi.org/10.1007/s10530-022-02809-3>.
- Grodowitz, M.J., Elliot, B., Diaz, R., Boyette, D., Weaver, M., and Stetina, K. 2022. Impact of the fungal pathogen, SPFG, on the *Salvinia molesta* Mitchell biological control agent, *Cyrtobagous salviniae* (Coleoptera: Curculionidae). *J. Aquat. Plant Manage.* 60: 48–52.
- Wahl, C., Kaller, M. and R. Diaz. 2022. Optimising Berlese funnel extraction for population estimates of adult *Cyrtobagous salviniae* from *Salvinia molesta*. *Biological Control Science and Technology*. 32: 1232-1247. <https://doi.org/10.1080/09583157.2022.2108760>.
- Matos Franco, G., Chen, Y, Doyle V.P., Rehner, S.A., and R. Diaz. 2022. Will the application of biocontrol fungi

FACULTY ACTIVITIES

disrupt predation of *Acanthococcus lagerstroemiae* by coccinellids? *Journal of Invertebrate Pathology*. 193: 107789.

- Kang, I, Wilson, B, Carter, B, and R. Diaz. 2022. A New Detection of the Invasive Mexican Rice Borer (Lepidoptera: Crambidae) From Georgia in the United States Based on Morphological and Molecular Data. *Journal of Integrated Pest Management*. 13:1-5. <https://doi.org/10.1093/jipm/pmac014>.
- Galo, D., Escalante, C., Diaz, R., Hartgerink, J.E. and R.A.A. Valverde. 2022. *Phytophthora chamaeaphon* causing corm and root rot of uncultivated taro (*Colocasia esculenta*). *Eur J Plant Pathol*. 163:991–995 <https://doi.org/10.1007/s10658-022-02512-y>.

Non-Peer Reviewed

- Pham, K., Mudge, C. and R. Diaz. 2022. Solving a Giant Problem with a Tiny Solution: The Salvinia Weevil. *Louisiana Agriculture Magazine*.
- Pham, K., Diaz, R. and Nachtrieb, J. 2022. Salvinia Biocontrol Agents: History and Ecology in North America. *North American Invasive Species Management Association*.
- Pham, K., Diaz, R. and Nachtrieb, J. 2022. Salvinia: History and Ecology in North America. *North American Invasive Species Management Association*.

Lane Foil

Invited Presentations

- Husseneder C, and Foil, L. 2022. Horse flies as Bioindicators of Marsh Health after the Deepwater Horizon Oil spill. *LSU School of Veterinary Medicine, Sustainability and Climate Awareness Committee Lecture*, Baton Rouge.
- Stable fly IPM. XXVI International Congress of Entomology, Helsinki, Finland, July 17-22, 2022.

Graduated Students

- Darrius Davis, M.S. (co-advised with Dr. Claudia Husseneder), Summer 2022.

Publications

- Claudia Husseneder, Devika R. Bhalerao, and Lane D. Foil. 2022. "Was the Decline of Saltmarsh Tabanid Populations After the 2010 Oil Spill Associated with Change in the Larval Food Web?" *Ecosphere*, v. 13, 7 pp. e4157. doi: 10.1002/ecs2.4157

- Jin, T., Husseneder, C., Foil, L.D. 2022. Assigning Culicoides larvae to species using DNA barcoding of adult females. *Parasites & Vectors* 15:349 <https://doi.org/10.1186/s13071-022-05479-1>
- Claudia Husseneder, Patrick Rayle, Benjamin G. Aker, W. Kelley Thomas, Lane D. Foil. 2022. A comparison of intertidal metazoan biodiversity among different salinity zones of Louisiana coastal marshes. *Front. Environ. Sci., Sec. Freshwater Science*. Volume 10 - 2022 | <https://doi.org/10.3389/fenvs.2022.950527>
- Kylie G. Bendele, Deanna M. Bodine, Qiang Xu, Lane D. Foil, Connor Cameron, Adalberto Perez de Leon, Andrew Farmer, Ernie Retzel, Victoria Moore, Kimberly H. Lohmeyer and Felix D. Guerrero, 2022. The adult horn fly transcriptome and its complement of transcripts encoding cytochrome P450s, glutathione S-transferases, and esterases, *Veterinary Parasitology*, (2022) doi: <https://doi.org/10.1016/j.vetpar.2022.109699>

Kristen Healy

Invited Presentations

- The impact of pesticides on pollinators, *LSU Ag Leadership*, February 2022.
- Does mosquito control impact fireflies, *New Jersey Mosquito control association annual meeting*, March 2022.
- Use of insects in forensics, *Louisiana State Crime Lab annual training workshop*, June 2022.
- The impact of public health pesticides on non-target organisms, *University of Florida Entomology Department Seminar Series*, September 2022.
- Incorporating mosquito management practices in pest control, *Louisiana Pesticide Training*, October 2022.
- Impact of pesticides on fireflies, *Illinois Vector Control Annual Meeting*, November 2022.
- AMCA legislative and regulatory updates, *Illinois Vector Control Annual Meeting*, November 2022.
- LSU medical and veterinary entomology updates, *LMCA Annual meeting*, December 2022.

Other Presentations

- Vice Presidential welcome address, *AMCA annual meeting*, March 2022.
- Pollinator Conference Poster on the Use of Minecraft to teach the importance of pollinators in the garden, October 2022.

FACULTY ACTIVITIES

Committees

- LMCA board, LMCA arboviral sampling committee, LMCA workshop committee, LMCA awards committee.
- AMCA executive committee, AMCA student competition chair, AMCA science and technology committee, AMCA Diversity and Inclusivity Subcommittee, AMCA Legislative and Regulatory Committee, NMCA awards committee.

Name of Collaborator or Institution

- Tulane University.

Graduated Students

- Timothy Daniel McNamara, Ph.D., Fall 2022.

Publications

- Cecco, Laura B., E. Sasaki, D.B. Paulsen, C. Fontenot, C. Navarre, K. Healy. 2022. Livestock fatalities attributed to a massive attack of *Psorophora columbiae* following Hurricane Laura. *The Bovine Practitioner* 56 (1), 14-18.
- Rochlin, I., G. White, N. Reissen, D. Swanson, L. Cohnstaedt, M. Chura, K. Healy. 2022. Laboratory evaluation of sugar alcohols for control of mosquitoes and other medically important flies. *Scientific Reports* 12 (1), 1-10.
- Penn, H.J., M.D. Simone-Finstrom, J. Chen, K.B. Healy. 2022. Honeybee genetic stock determines DWV symptom severity but not viral load or dissemination following pupal exposure. *Frontiers in Genetics*, 1155:2.
- O'Shea-Wheller, T.A., F.D. Rinkevich, R.G. Danka, M. Simone-Finstrom, K. Healy. 2022. A derived honeybee stock confers resistance to *Varroa destructor* and associated viral transmission. *Scientific Reports* 12 (1), 4852:4.
- McNamara, T.D., K. Healy. 2022. A comparison of hay and fish emulsion-infused water as oviposition attractants for the CDC gravid trap. *Journal of Medical Entomology* 59 (2), 779-783.
- Lang, S., M. Simone-Finstrom, K. Healy. 2022. Context-dependent viral transgenerational immune priming in honeybees (Hymenoptera: Apidae). *Journal of Insect Science* 22 (1), 19.

Fangneng Huang

Invited Presentations

- Resistance management: lessons from 25 years of global Bt crop use. University of São Paulo (ESALQ-USP), Piracicaba, Sao Paulo, Brazil, April 6, 2022.

- Concepts related to Bt crop IRM. CTC Centro De Tecnologia Canaveieira (Sugarcane Technology Center), Piracicaba, Sao Paulo, Brazil, April 13, 2022.
- Rethinking the functional dominance levels and fitness costs of insect resistance to *Bacillus thuringiensis* crops. XXVI International Congress of Entomology, Helsinki, Finland, July 17-22, 2022.
- U.S. academic view of the evolution of IRM for Bt crops. Bayer and China Department of Agriculture IRM webinar. Sept 22, 2022.
- Bt toxins and transgenic Bt crops for insect pest management webinar. Institute of Plant Protection, Gansu Academy of Agriculture, Gansu, China. Nov 30, 2022.

Other Presentations

- Silva, T., G. Sword, G.P. Head, D. Kerns, J.J. Jurat-Fuentes, J. Qureshi, X. Ni, T. Towels, J. Villegas, D. Carrillo, S. Paula-Moraes, Y. Niu, C. Sakuno, S. Lin, B. Plata, A. Cerutti, and F. Huang. 12th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 21, 2022.
- Lin, S., T. Silva, Y. Niu, B. Plata, A. Cerutti, F. Huang. 2022. Investigation of calling, mating, and reproductive behaviors of *Helicoverpa zea* in varied biotic and abiotic factors to determine optimum conditions for laboratory rearing of the insect. 12th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 21, 2022.
- Patla, B., S. Tiago, S. Lin, A. Cerutti, and F. Huang. 2022. Geographical susceptibility of the fall armyworm populations in the southern region of the United States to eight common chemical insecticides. 12th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 21, 2022.
- Tiago, S., Y. Niu, T. Towles, G.P. Head, S. Brown, J. Villegas, W. Walker, C.R. Sakuno, and F. Huang. 2022. Effective dominance and incomplete resistance of Cry1A.105/Cry2Ab2 dual-protein resistance in *Helicoverpa zea* (Boddie) (Lepidoptera: Noctuidae). 2022 Annual Meeting of the Entomological Society of America, Vancouver, British Columbia. Nov. 12-16, 2022.
- Tiago, S., Y. Niu, G. Sword, J. Qureshi, G.P. Head, D.D. Kerns, J.L. Jurat-Fuentes, X. Ni, D. Carrillo, C.R. Sakuno, and F. Huang. 2022. Extended investigation of fall armyworm resistance in the southern United

FACULTY ACTIVITIES

States to four common Bt proteins. 2022 Annual Meeting of the Entomological Society of America, Vancouver, British Columbia. Nov. 12-16, 2022.

- Huang, F., Y. Niu, S. Brown, D. Kerns, J.L. Jurat-Fuentes, T. Towles, G. Head, M. Carroll, W. Walker, and T. Silva. 2022. Extended investigation of unexpected survival of corn earworm on transgenic corn hybrids expressing Vip3A protein in Louisiana. Annual Meeting of the Southeastern Branch-Entomological Society of America. San Juan, Puerto Rico, March 26-30, 2022 (Virtual).
- Silva, T., Y. Niu, T. Towles, S. Brown, G.P. Head, P. Price, W. Walker and F. Huang. 2022. Performance and effective dominance levels of Cry1A/Cry2A dual-gene resistant *Helicoverpa zea* on common Bt corn traits expressing pyramided Cry and Vip3A proteins. Annual Meeting of the Southeastern Branch-Entomological Society of America. San Juan, Puerto Rico, March 26-30, 2022 (Virtual).
- Huang, F. 2022. Unexpected injury of corn traits containing Cry and Vip3A proteins by corn earworm in Louisiana. 2022 National Cotton States Arthropod Pest Management working group meeting. Tucson, Arizona, Oct. 16, 2022.

Awards and Honors

- Listed among the top 500 U.S. scientists in the area of Plant Science and Agronomy by Research.com, a prominent academic platform for scientists.
- Listed among the world's top 10% scientists with high citations by Stanford University's scientist rankings.

Grants and Contracts

- Susceptibility of Bt-resistant fall armyworm, corn earworm, and sugarcane borer to Syngenta's novel insecticidal proteins. Syngenta, \$36,782.
- Extended selection and maintenance of the Cry1Ab- and Cry2Ab2-resistant strains of sugarcane borer. Bayer Company, \$27,350.
- Monitoring and management of corn earworm resistance to Bt corn in Louisiana (two projects) \$32,500. Louisiana Soybean and Grain Research and Promotion Board.

Visiting Scientists/Students

- Caroline Izabel Ribeiro Sakuno, visiting scientist, Centro de Tecnologia Canavieira (CTC: Center of Sugarcane Technology), Campinas-SP, Brazil.
- Anderson da Cruz Cerutti, visiting scholar IDEAU University Center, UNIDEAU, Brazil.

New Collaborations (University, Industry, Other)

- KWS Gateway Research Center, LLC. St. Louis, Missouri.
- Impetus Agriculture, Inc. St. Louis, Missouri.

Graduated Students

- Wenbo Yu, Ph.D., Summer 2022.

Publications

- Qureshi, J., F. Huang, and R. Day (eds.). 2022. Fall armyworm: Managing a significant threat to global food security. CABI Agriculture and Bioscience. CABI. (Special issue)
- Chae, H., Wen, Z.; Hootman, T., Himes, J., Duan, Q., McMath, J., Ditillo, J., Sessler, R., Conville, J., Niu, Y., Matthews, P., Francischini, F., Huang, F., Bramlett, M. 2022. eCry1Gb.1lg, a novel chimeric Cry protein with high efficacy against multiple fall armyworm (*Spodoptera frugiperda*) strains resistant to different GM traits. *Toxins* 2022, 14, 852. <https://doi.org/10.3390/toxins14120852>.
- Yu, W., G. Head, and F. Huang. 2022. Inheritance of resistance to Cry1A.105 in *Helicoverpa zea* (Boddie) (Lepidoptera: Noctuidae). *Insect*. 13, 875. <https://doi.org/10.3390/insects13100875>.
- Oliveira, W.S. de, Sakuno, C.I.R., Miraldo, L.L., Tavares, M.A.G.C., Komada, K.M.A., Teresani, D., Santos, J.L.X., and Huang, F. 2022. Varied frequencies of resistance alleles to Cry1Ab and Cry1Ac among Brazilian populations of the sugarcane borer, *Diatraea saccharalis* (F.). *Pest Manag. Sci. Pest Manag Sci* 2022; 78: 5150–5163.
- Banerjee, R., Placidi de Bortoli, C., Huang, F., Lamour, K., Meagher, R., Buntin, D., Ni, X., Reay-Jones, F., Stewart, S. and Jurat-Fuentes, J.L. 2022. Large genomic deletion linked to field-evolved resistance to Cry1F corn in fall armyworm (*Spodoptera frugiperda*) from Florida. *Sci. Report.* (2022) 12:13580. <https://doi.org/10.1038/s41598-022-17603-3>.
- Yu, W., G.P. Head, P. Price, S. Brown, D. Cook, X. Ni, F. P.F. Reay-Jones, M. Dimase, and F. Huang. 2022. Estimation of resistance allele frequencies to Cry1A.105 and Cry2Ab2 in the corn earworm (Lepidoptera: Noctuidae) with F2 isolines generated from a mass-mating method, Crop Protect, doi: <https://doi.org/10.1016/j.cropro.2022.106054>.
- Lin, S., I. Oyediran, Y. Niu, S. Brown, D. Cook, X. Ni, Y. Zhang, F. P.F. Reay-Jones, J. S. Chen, Z. Wen, M. Dimase, and F. Huang. 2022. Resistance allele

FACULTY ACTIVITIES

frequency to Cry1Ab and Vip3Aa20 in *Helicoverpa zea* (Boddie) (Lepidoptera: Noctuidae) in Louisiana and three other southeastern U.S. states. *Toxins* 4, 270. <https://doi.org/10.3390/toxins14040270>.

- Yang, F., J. Williams, F. Huang, and D. L. Kerns. 2021. Characterization of Vip3Aa resistance in *Spodoptera frugiperda* (Lepidoptera: Noctuidae) derived from Texas, USA. *Crop Prot.* 147 <https://doi.org/10.1016/j.cropro.2021.105702>. (early 2022).
- Yu, W., S. Lin, M. Dimase, Y. Niu, S. Brown, G.P. Head, P.A. Price, F.P.F. Reay-Jones, D. Cook, D. Reisig, B. Thrash, X. Ni, S.V. Paula-Moraes, and F. Huang. 2021. Extended investigation of field-evolved resistance of the corn earworm *Helicoverpa zea* (Lepidoptera: Noctuidae) to *Bacillus thuringiensis* Cry1A.105 and Cry2Ab2 proteins in the southeastern United States. *J. Invertebr. Path.* 183 (2021)107560. <https://doi.org/10.1016/j.jip.2021.107560>. (early 2022)
- Dimase, M., I. Oyediran, S. Brown, W. Walker, J. Guo, W. Yu, Y. Zhang, J. Chen, Z. Wen, and F. Huang. 2021. Larval movement and survival of *Helicoverpa zea* (Boddie) in seed blends of non-Bt and Bt maize containing Agrisure Viptera® trait: implications for resistance management. *Crop Protect.* <https://doi.org/10.1016/j.cropro.2020.105339>. (early 2022).
- Towles, T., B. Wilson, M. Stout, and F. Huang. 2022. An Army on the Move: Farmers, Entomologists Battle Fall Armyworm in 2021. *Louis. Agr.* 65(1): 20-21.

Claudia Husseneder

Invited Presentations

- Husseneder C, and Foil, L. 2022. Horse flies as Bioindicators of Marsh Health after the Deepwater Horizon Oil spill. LSU School of Veterinary Medicine, Sustainability and Climate Awareness Committee Lecture, Baton Rouge.
- 2022. Digestive System of Termites, Symbionts and Implications for Termite Control. Louisiana Pest Management Association Winter Convention, Baton Rouge, Louisiana.
- 2022. Termite feeding, symbiosis and termites of Guam's Ironwood trees. Ironwood (*Casuarina equisetifolia*) decline conference, Guam, U.S. Territory.
- Setia G. and Husseneder, C. 2022. Investigation of potential role of termites as pathogen vectors in the decline of Ironwood trees (*C. equisetifolia*) in Guam. Ironwood (*Casuarina equisetifolia*) decline conference, Guam, U.S. Territory.

- 2022. Identifying termite species that attack ironwood trees. Building Resiliency of Trees in the Mariana Islands Workshop, Guam, U.S. Territory.

Other Presentations

- Husseneder, C. and Foil, L. 2022. The greenhead horse fly as bioindicator of marsh health – population decline and recovery after the Gulf of Mexico oil spill. XXVI International Congress of Entomology, Helsinki, Finland.

Awards and Honors

- First Place Poster: The gut microbiota affect pair formation of dealates in the Formosan subterranean termite, *Coptotermes formosanus*. Overseas Chinese Entomologists Association (OCEA), Vancouver, British Columbia. Nov. 15, 2022.
- Runner Up Poster Session I The gut microbiota affect pair formation of dealates in the Formosan subterranean termite, *Coptotermes formosanus*. 12th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 21, 2022.

Grants and Contracts

- Wilson, B., Husseneder, C., Diaz, R. and Stout, M. 2022-2025. Population Genetics and Adaptive Change in Gradual and Rapid Range Expansion of an Invasive Insect Herbivore. USDA-NIFA \$612,852.

Graduated Students

- Darrius Davis, M.S. (co-advised with Dr. Foil), Summer 2022.

Publications

- Husseneder, C., Rayle, P., Aker, B.G., Thomas, W.K., and Foil, L.D. 2022. A comparison of intertidal metazoan biodiversity among different salinity zones of Louisiana coastal marshes. *Frontiers in Environmental Science* 10:950527. doi: 10.3389/fenvs.2022.950527. Impact Factor 4.75.
- Husseneder, C., Bhalerao, D., and Foil L. 2022. Was the decline of saltmarsh tabanid populations after the 2010 oil spill associated with change in the larval food web? *Ecosphere*13(7): e4157. <https://doi.org/10.1002/ecs2.4157>. Impact Factor 3.17.
- Chen, J., Gissendanner, C.R., Tikhe, C. V., Li, H.-F, Sun, Q. and Husseneder, C. 2022. Genomics and geographic diversity of bacteriophages associated with endosymbionts in the guts of workers and alates of *Coptotermes* species (Blattodea: Rhinotermitidae).

FACULTY ACTIVITIES

Frontiers in Ecology and Evolution 10:881538. doi: 10.3389/fevo.2022.881538. Impact Factor 4.17.

- Jin, T., Husseneder, C., and Foil, L.D. 2022. Assigning *Culicoides* larvae to species using DNA barcoding of adult females and phylogenetic associations. *Parasites and Vectors* 15:349. doi.org/10.1186/s13071-022-05479-1. Impact Factor 4.05.
- Castillo, P., Husseneder C., and Sun, Q. (2022) Molecular characterization and expression variation of the odorant receptor co-receptor in the Formosan subterranean termite. *PLOS ONE* 17(4): e0267841. <https://doi.org/10.1371/journal.pone.0267841>. Impact Factor 3.24.
- Bendiks, Z.A., Guice, J., [...], Husseneder, C., Keenan, M.J. and Marco, M.L. 2022. Resistant starch type 2 and whole grain flours result in distinct taxonomic shifts and metatranscriptomes in the intestinal microbiota of rats. *Journal of Functional Foods* 90. <https://doi.org/10.1016/j.jff.2022.104982>. Impact Factor 4.45.

Other publications

- Chen, J., Setia, G., Sun, Q., Husseneder, C. 2022. Dynamics of gut symbionts in termite kings and queens during early colony development. *Louisiana Agriculture Vol 65(1) Winter 2022: 28-29.*

Publication of datasets and submissions to GenBank (<http://www.ncbi.nlm.nih.gov/Genbank/index.html>)

- Genome sequencing and assembly of a lined horse fly, *Tabanus hinellus* Philip using data generated from Illumina and Oxford Nanopore Technologies. Bioproject PRJNA785805 BioSample SAMN23578053. January 2022.
- ITS2 and COI sequences for identification of insects in Louisiana marshes, discontinuous GenBank accession numbers (130 sequences). January 2022.

Todd Johnson

Invited Presentations

- 2022. Using behavioral and chemical ecology to build fundamental and applied knowledge about forest insects. Department of Entomology, The Ohio State University, Columbus Ohio.
- 2022. Using behavioral and chemical ecology to build fundamental and applied knowledge about forest insects. Department of Entomology, Louisiana State University, Baton Rouge, Louisiana.
- T.D. Johnson, C. Coupe, D. Wilbur, C. Ziadeh, J. Gould,

and J.R. Garnas. 2022. Impacts of tree species and size on the survival and fitness of emerald ash borer and its parasitoids in New Hampshire. In: *Critical entomology issues, emerald ash borer, Northeastern Forest Pest Council*, Portland, Maine.

Other Presentations

- Johnson, T.D., C. Coupe, J.R. Gould, and J.R. Garnas. 2022. Impacts of application of methyl jasmonate at different times prior to egg hatch on the survival of larval emerald ash borer, its parasitoids, and the chemistry of two species of ash in New Hampshire. Joint meeting of the Entomological Society of America and Entomological Society of Canada. Vancouver, Canada.
- Johnson, T.D., C.C. Coupe, C. Ziadeh, D. Wilbur, J.R. Gould, J.R. Garnas. 2022. Performance of emerald ash borer (*Agrilus planipennis*, Coleoptera: Buprestidae) larvae is apparently regionally specific, and may have implications for population dynamics and biological control. Southern Forest Insect Work Conference, Lexington, Kentucky.

New Collaborations

- USDA Forest Service Southern Research Station.
- Louisiana Department of Agriculture and Forestry.

Nathan Lord

Invited Presentations

- "From structures to color: Measuring objective visual signals to inform evolutionary studies in insects." Departmental Seminar Series, Department of Entomology, University of Nebraska-Lincoln. Dec. 2, 2022.

Other Presentations

- "From structures to color: Measuring objective visual signals to inform evolutionary studies in insects." Adjunct Faculty Nomination Seminar, Department of Biological Sciences, SEE Division, Louisiana State University. Oct. 24, 2022.

Grants and Contracts

- United States Air Force Research Lab: Nature inspired and Biotechnology University Day. Seedling Grant: "Circular polarization in *Chrysina*: Understanding design rules for novel visual signals and their applications." \$74,996. One of four competitive awards granted in this program.

FACULTY ACTIVITIES

New Collaborations (University, Industry, Other)

- U.S. Air Force Research Lab and the University of Costa Rica (see grants and contracts above).

Graduated Students

- Able Chow, M.S., Fall 2022.
- Nathan Arey, M.S. (co-advised with Dr. Jeff Davis), Fall 2022.

Thomas Reagan

Publications

- Mulcahy, M.M., B.E. Wilson, and T.E. Reagan. 2022. Spatial distribution of stem borers in Louisiana rice fields. *Environ. Entomol.* 52: 405–412.
- Mulcahy, M.M., B.E. Wilson, M.J. Stout, and T.E. Reagan. 2022. Spatial distribution of the rice water weevil (Coleoptera: Curculionidae) in Louisiana rice fields. *Environ. Entomol.* 51: 108–117.

Non-Refereed Publications

- Aaron Ashbrook, Forest Huval, Joseph McCarthy, T.E. Reagan, Christopher E. Carlton. 2022. Bug Biz Pest Management and Identification Series: *Cimex lectularius*, Bed Bug (Hemiptera: Cimicidae) LSU AgCenter Pub (3815).
- Forest Huval, Ashbrook Aaron, Chris Carlton, T.E. Reagan. 2022. Bug Biz Pest Management and Identification Series: Peri-domestic Cockroaches Part 1 LSU AgCenter Pub (In Press).
- Forest Huval, Ashbrook Aaron, Chris Carlton, T.E. Reagan. 2022. Bug Biz Pest Management and Identification Series: Peri-domestic Cockroaches Part 2 LSU AgCenter Pub (In Press).
- Sam des Bordes, Kaylee Deynzer, Forest Huval, T.E. Reagan. 2022. Bug Biz Pest Management and Identification Series: *Spodoptera ornithogalli*, Yellow-striped Armyworm (Lepidoptera: Noctuidae) LSU AgCenter Pub (3815).
- Leonardo D. Salgado, David Galo, Forest Huval, Christopher E. Carlton, T.E. Reagan. 2022. Bug Biz Pest Management and Identification Series: *Frankliniella occidentalis*, Western Flower Thrips (Thysanoptera: Thripidae) LSU AgCenter Pub (3814).
- Chris Carlton, Forest Huval, T.E. Reagan. 2022. Bug Biz Pest Management and Identification Series: Tussock Moths, *Orygia* spp. (Lepidoptera: Erebidae) LSU AgCenter Pub (3813).

- Chris Carlton, Forest Huval, T.E. Reagan. 2022. Bug Biz Pest Management and Identification Series: *Steatoda triangulosa*, Triangulate Cobweb Spider (Araneae: Theridiidae) LSU AgCenter Pub (3812).
- Paula Castillo, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Sirex nigricornis*, Native North American Woodwasp (Hymenoptera: Siricidae) LSU AgCenter Pub (3851).
- Leonardo D. Salgado, Kensy D. Rodriguez, Forest Huval, T.E. Reagan, Christopher E. Carlton. 2022. Bug Biz Pest Management and Identification Series: *Bemisia tabaci* Middle East Asia Minor 1 (MEAM1) species, Silverleaf whitefly (Hemiptera: Aleyrodidae) LSU AgCenter Pub (3806).
- Rui Chen, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Megaselia scalaris*, Scuttle fly (Diptera: Phoridae) LSU AgCenter Pub (3850).
- Steven Richardson, Samuel des Bordes, Forest Huval, T.E. Reagan. 2022. Bug Biz Pest Management and Identification Series: *Solenopsis invicta*, Red Imported Fire Ant (Hymenoptera: Formicidae) LSU AgCenter Pub (3805).
- Samuel des Bordes, Kaylee Deynzer, Forest Huval, T.E. Reagan. 2022. Bug Biz Pest Management and Identification Series: *Piezodorus guildinii*, Red Banded Stink Bug (Hemiptera: Pentatomidae) LSU AgCenter Pub (3810).
- Sarah E. McComic, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: Red Paper Wasps, *Polistes carolina* (Fine-Backed Red Paper Wasp) and *P. rubiginosus*, (Coarse-Backed Red Paper Wasp) (Hymenoptera: Vespidae) LSU AgCenter Pub (3846).
- Sarah E. McComic, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Musca domestica*, House Fly (Diptera: Muscidae) LSU AgCenter Pub (3849).
- Paula Castillo, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Lyctus carbonarius*, Southern Lyctus Beetle (Coleoptera: Bostrichidae) LSU AgCenter Pub (3847).
- Sarah E. McComic Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Amblyomma americanum*, Lone Star Tick (Ixodida: Ixodidae) LSU AgCenter Pub (3834).

FACULTY ACTIVITIES

- Steven Richardson, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Atta texana*, Texas Leaf Cutter Ant (Hymenoptera: Formicidae) LSU AgCenter Pub (3803).
- Arjun Khadka, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Megacopta cribraria*, Kudzu Bug (Hemiptera: Plataspididae) LSU AgCenter Pub (3854).
- Arjun Khadka, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Murgantia histrionica*, Harlequin bug (Hemiptera: Pentatomidae) LSU AgCenter Pub (3848).
- Samuel des Bordes, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Acuops cannibicola*, Hemp Russet Mite (Acarina: Erophyidae) LSU AgCenter Pub (3804).
- Chris Carlton, Forest Huval, T.E. Reagan. 2022. Bug Biz Pest Management and Identification Series: *Gryllus texensis* and *G. rubens*, Field Crickets (Orthoptera: Gryllidae) LSU AgCenter Pub (3083).
- Kaylee Deynzer, Steven Richardson, Forest Huval, T.E. Reagan. 2022. Bug Biz Pest Management and Identification Series: *Helicoverpa zea*, Corn Earworm (Lepidoptera: Noctuidae) LSU AgCenter Pub (3809).
- Rui Chen, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Conotrachelus nenuphar*, Plum curculio (Coleoptera: Curculionidae) LSU AgCenter Pub (3835).
- Arjun Khadka, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Leptinotarsa decimlineata*, Colorado Potato Beetle (Coleoptera: Chrysomelidae) LSU AgCenter Pub (3840).
- Sarah E. McComic, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Chrysops flavidus*, Deer Flies (Diptera: Tabanidae) LSU AgCenter Pub (3845).
- Paula Castillo, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Camponotus nearcticus*, Small Carpenter Ant (Hymenoptera: Formicidae) LSU AgCenter Pub (3844).
- Chris Carlton, Forest Huval, T.E. Reagan. 2022. Bug Biz Pest Management and Identification Series: *Latrodectus geometricus*, Brown Widow Spider (Araneae: Theridiidae) LSU AgCenter Pub (3797).
- Arjun Khadka, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Halyomorpha halys*, Brown Marmorated Stink Bug (Hemiptera: Pentatomidae) LSU AgCenter Pub (3833).
- Chris Carlton, Forest Huval, T.E. Reagan. 2022. Bug Biz Pest Management and Identification Series: Southern and Northern Black Widow Spiders, *Latrodectus mactans* and *L. variolus* (Araneae: Theridiidae) LSU AgCenter Pub (3796).
- Arjun Khadka, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Bagrada hilaris*, Bagrada Bug (Hemiptera: Pentatomidae) LSU AgCenter Pub (3841).
- Arjun Khadka, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Diaphorina citri*, Asian Citrus Psyllid (Hemiptera: Liviidae) LSU AgCenter Pub (3842).
- Sarah E. McComic, Forest Huval, T.E. Reagan, Chris Carlton. 2022. Bug Biz Pest Management and Identification Series: *Aedes aegypti*, Yellow Fever Mosquito (Diptera: Culicidae) LSU AgCenter Pub (3843).

Michael Stout

Invited Presentations

- Entomological Society of America, Annual meeting (15-minute talk; P-IE Section Symposium, Recent Trends and Prospects for the Future in Several Key Plant-Insect Ecosystems Sub-Disciplines; Flor Acevedo, co-author). Title: Recent history and future trends in host-plant resistance. Nov. 13, 2022.

Other Presentations

- Lee, S.M., M.J. Stout, and J.A. Davis. 2022. Does environment influence sweet potato weevil host plant resistance. Entomological Society of America Annual Meeting, Vancouver, Canada, Nov. 14, 10-min. talk.
- Glassmire, A., A. Salgado, R. Diaz, M.J. Stout, H. Lee, A.M. Gaffke, and J. Cronin. 2022. The consequences of soil and above-ground herbivory on terpene diversity of wetland grass. Entomological Society of America Annual Meeting, Vancouver, Canada, Nov. 16, 10-min. talk.
- Villegas, J.M., B.E. Wilson, and M.J. Stout. 2022. Effects of chronic root herbivory by the rice water weevil on nutrient concentrations in rice plants. Entomological Society of America Annual Meeting, Vancouver, Canada, Nov. 13, 10-min. talk.

FACULTY ACTIVITIES

Grants and Contracts

- Perennial Agriculture Project, The Land Institute, July 1, 2021, to Dec. 31, 2022. Super-ratooning (perennial) rice project. M. Stout and J. Ham, Co-PI, \$25,601; 1/23-12/23, \$25,000.
- USDA AFRI, Foundational and Applied Sciences, 2022–2026. Population genetics and adaptive change in gradual and rapid range expansion of an invasive insect herbivore. B.E. Wilson lead-PI, (Husseneder, Diaz, Stout and Beuzelin Co-PIs) \$612,852.
- Idaho Forest Group, Nov. 15, 2021, to Nov. 14, 2022, Effects of Bioactive Extracts on Plant Growth and Resistance to Biotic Stresses. \$180,390 (M. Stout, PI).

Visiting Scientists/Students

- Laila Santos, visiting student, Lavras University, Brazil, Spring to Fall 2022.
- Dr. Panna Ali, post-doctoral scientist, Bangladesh, Fall 2022 to present.

Publications

- Pazini, Juliano de Bastos, José Francisco da Silva Martins, Keilor da Rosa Dorneles, Rosane Lopes Crize, Fernando Felisberto da Silva, Fábio Clasen Chaves, Juliana Aparecida Fernando, Leandro José Dallagnol, Enio Júnior Seidel, Michael Joseph Stout, and Anderson Dionei Grützmacher. 2022. Morphoanatomical and biochemical factors associated with rice resistance to the South American rice water weevil, *Oryzophagus oryzae* (Coleoptera: Curculionidae). *Scientific Reports* 12:22480. <https://www.nature.com/articles/s41598-022-27080-3>.
- Bhavanam, S*. and M.J. Stout. 2022. Varietal resistance and chemical ecology of the rice stink bug, *Oebalus pugnax*, on rice, *Oryza sativa*. *Plants* 2022, 11(22), 3169; <https://doi.org/10.3390/plants11223169>.
- Pelosi, A.P., F.C. de Silva, A.G. Vaz, A.C.S. Almeida, A.R. da Silva, M.J. Stout, F.G. de Jesus, and J.A.F. Barrigossi. 2022. Silicon amendment induces resistance in rice to *Diatraea saccharalis* (Lepidoptera: Crambidae). *Arthropod-Plant Interactions* 16: 657-664 <https://doi.org/10.1007/s11829-022-09922-z>.
- Chen, J., X. Chen, M.J. Stout, and J.A. Davis. 2022. Belowground herbivory to sweet potato by sweet potato weevil (Coleoptera: Brentidae) alters population dynamics and probing behavior of aboveground herbivores. *Journal of Economic Entomology* 115: 1069-1075, <https://doi.org/10.1093/jee/toac098>.

- Boica Jr., A.L., W.I. Eduardo, B.H.S. de Souza, R.F.O. de Moraes, H. Louvandini, J.C. Barbosa, and M.J. Stout. 2022. Protocol for assessing soybean antibiosis to *Chloridea virescens*. *Entomologia Experimentalis et Applicata* 170: 689-699. <https://doi.org/10.1111/eea.13190>
- Sarkar, N., M.J. Murray, M.J. Stout, and J.A. Davis. 2022. Impact of host plant resistance on emergence, body parameters, and supercooling point of *Cylas formicarius elegantulus* (Coleoptera: Brentidae). *Florida Entomologist*, 105: 65-70.

Graduated Students

- Manoj Pandey, Ph.D. (co-advised with Dr. Timothy Schowalter), Spring 2022.

Qian “Karen” Sun

Invited Presentations

- Sun Q., Castillo P., Richards J., Husseneder C. 2022. Morphological and molecular analyses of the chemosensory system in the Formosan subterranean termite. Annual Meeting of the Entomological Society of America (virtual).
- 2022. The termite way of the dead: death cues and corpse management. The International Termite Course, Fort Lauderdale, Florida.
- 2022. Policing and reproduction in termites. The International Termite Course, Fort Lauderdale, Florida.

Other Presentations

- Sun Q., Castillo P., Husseneder C. 2022. Molecular characterization and expression variation of Orco in the Formosan subterranean termite. The International Union for the Study of Social Insects International Congress (virtual).

Committees

- Member of Research Entomologist Hiring Committee for the USDA Honey Bee Breeding, Genetics and Physiology Research Lab.
- Member of Awards Committee for International Union for the Study of Social Insects, North American Section.

Grants and Contracts

- Louisiana Department of Agriculture and Forestry, Structural Pest Research Contract, July 2022 to June 2023, \$50,000. PI: Qian Sun.

FACULTY ACTIVITIES

New Collaborations (University, Industry, Other)

- Dr. Henry Chung, Department of Entomology, Michigan State University.

Name of Collaborator or Institution

- Dr. Kate Ihle, USDA Honey Bee Breeding, Genetics and Physiology Research Lab.
- Dr. Wu-Min Deng, School of Medicine, Tulane University.

Graduated Students

- Steven Richardson M.S., Summer 2022.
- Joseph McCarthy M.S., Fall 2022.

Publications

- Castillo P., Husseneder C., and Sun Q. 2022. Molecular characterization and expression variation of the odorant receptor co-receptor in the Formosan subterranean termite. *PLoS ONE*, 17(4): e0267841.
- Chen J., Gissendanner C.R., Tikhe C.V., Li H.-F., Sun Q., and Husseneder C. 2022. Genomics and geographic diversity of bacteriophages associated with endosymbionts in the guts of workers and alates of *Coptotermes* species (Blattodea: Rhinotermitidae). *Frontiers in Ecology and Evolution*, 10:881538.

Blake Wilson

Invited Presentations

- Rice insect update. Evangeline Parish Rice and Soybean Advisory Board. Dec. 2, 2022.
- Emerging threats to sugarcane and rice in Louisiana. IPM School, Alexandria, Louisiana, Nov. 30, 2022.
- Rice insect update. Southwest Louisiana Rice and Soybean Advisory Board. Nov. 29, 2022.
- Sugarcane Entomology update. Bayou Teche sugarcane growers meeting. Erath, Louisiana, July 28, 2022.
- Sugarcane Entomology Research. Sugar Research Station Field Day. St. Gabriel, Louisiana, July 20, 2022.
- Sugarcane insects update. Rapides/Avoyelles sugarcane meeting. Alexandria, Louisiana, July 18, 2022.
- Rice Entomology Research. H. Rouse Caffey Rice Research Station field day, Crowley, Louisiana, June 29, 2022.

- Louisiana rice insects: Biology and management overview. Rice extension agent training. Crowley, Louisiana, June 28, 2022.
- Rice pest management. South farm field day, Crowley, Louisiana, June 15, 2022.
- Rice insect update. Evangeline rice field day. Mamou, Louisiana, May 26, 2022.
- Managing soil dwelling insects in sugarcane. Sugarcane research/extension training, St. Gabriel, Louisiana, May 18, 2022.
- Managing stored grain pests. Seed treatment applicator recertification meeting, Alexandria, Louisiana, May 2, 2022.
- Rice seed treatments. Seed treatment applicator recertification meeting, Alexandria, Louisiana, May 2, 2022.
- Managing Mexican rice borer in Rio Grande Valley sugarcane. Harlingen, Texas, April 21, 2022.
- Sugarcane insect update. Iberville Sugarcane Growers Meeting, White Castle, Louisiana, March 16, 2022.
- Sugarcane insect update. Pointe Coupee Sugarcane Growers Meeting, New Roads, Louisiana, Feb. 7, 2022.
- Sugarcane insect update. Lower Bayou Teche Sugarcane Growers Meeting, Jeanerette, Louisiana, Feb. 3, 2022.
- Sugarcane insect update. Upper Bayou Teche Sugarcane Growers Meeting, St. Martinville, Louisiana, Feb. 1, 2022.
- Sugarcane IPM update. Sugarcane Extension/Research Training Meeting, Raceland, Louisiana, Jan. 19, 2022.
- Rice insect management update. Vermilion Parish Rice Meeting, Abbeville, Louisiana, Jan. 10, 2022.
- Rice insect management update. Acadia Parish Rice Meeting, Crowley, Louisiana, Jan. 6, 2022.
- Rice insect management update. Evangeline Parish Rice School, Vidrine, Louisiana, Jan. 5, 2022.
- Rice insect management update. Southwest Louisiana Rice School, Welsh, Louisiana, Jan. 4, 2022.

Professional Conference Presentations:

- Biological invasions and their mitigation. LSU AgCenter Annual Conference, Baton Rouge, Louisiana, Dec. 13, 2022 (invited symposium organizer).
- Invasive pests of sugarcane and rice. LSU AgCenter Annual Conference, Baton Rouge, Louisiana, Dec. 13, 2022 (invited speaker).

FACULTY ACTIVITIES

- Biological invasions and their mitigation. LSU AgCenter Annual Conference, Baton Rouge, Louisiana, Dec. 13, 2022.
- A century of geographic range expansion by the Mexican rice borer. (Lepidoptera: Crambidae). ESA and CSA Joint Meeting, Vancouver, British Columbia, Canada. Nov. 13, 2022.
- Musgrove, T.R.T. and B.E. Wilson. 2022. Midsouthern furrow-irrigated rice (*Oryza sativa* L.) and its associated insect pests: A regional survey. ESA and CSA Joint Meeting, Vancouver, British Columbia, Canada. Nov. 14, 2022.
- Doherty, E., Q. Sun, and B.E. Wilson. 2022. Control of *Rhyzopertha dominica* through stored grain protectants. ESA and CSA Joint Meeting, Vancouver, British Columbia, Canada. Nov. 14, 2022.
- Villegas, J.M., B.E. Wilson, and M.J. Stout. 2022. Effects of chronic root herbivory by the rice water weevil on nutrient concentrations in rice plants. ESA and CSA Joint Meeting, Vancouver, British Columbia, Canada. Nov. 15, 2022.
- Wilson, B.E., J.M. Villegas, and M.J. Stout. 2022. Economic returns on seed treatments in rice. Plant Health, Pittsburgh, PA, Aug. 8, 2022.
- Short and long term population dynamics of the sugarcane borer in Louisiana. ESA Southeastern Branch Meeting, San Juan, Puerto Rico, March 27, 2022.
- Sugarcane borer (Lepidoptera: Crambidae) management in Louisiana: An IPM success story. Internat. IPM Symposium, Denver, Colorado, March 1, 2022.
- Doherty, E. and B.E. Wilson. 2022. Managing beetles in stored rice. Louisiana Ag. Technol. and Manag. Conf., Marksville, Louisiana, Feb. 10, 2022.
- Pyrethroid resistance status in insect pests of rice. Louisiana Ag. Technol. and Manag. Conf., Marksville, Louisiana, Feb. 9, 2022.
- Rice stinkbug threshold considerations for Louisiana's crawfish production region. Louisiana Ag. Technol. and Manag. Conf., Marksville, Louisiana, Feb. 9, 2022.
- Insects in fall and spring sugarcane. Louisiana Ag. Technol. and Manag. Conf., Marksville, Louisiana, Feb. 9, 2022.
- Wilson, B.E. and N. Daigle. 2022. Experiences from ten years of Mexican rice borer in Louisiana sugarcane. Amer. Soc. Sugar Cane Tech. Louisiana Division Annual Meeting, Baton Rouge, Louisiana, Feb. 8, 2022.

Awards and Honors

- 2022 G&H Seed Research Excellence Award.
- Louisiana Agriculture "Article of the Year" award.

Grants and Contracts

- USDA AFRI, Foundational and Applied Sciences, 2022–2026. Population genetics and adaptive change in gradual and rapid range expansion of an invasive insect herbivore. B.E. Wilson lead-PI, (Husseneder, Diaz, Stout and Beuzelin Co-PIs) \$612,852.
- USDA AFRI, Crop Protection and Pest Management, Enhancing Sustainability in Insect Management in Furrow-Irrigated Rice in the U.S. Mid-South. B.E. Wilson lead-PI, (Towles, Bateman, Cook, and Gore Co-PIs).
- Apple Snail (*Pomacea maculata*) Integrated Pest Management Tactics for Crawfish and Rice Crop Production. B.E. Wilson lead-PI, (Richardson and Roda Co-PIs).

Visiting Scientists/Students

- Nohelys Flores, visiting scientist, National University of Agriculture Honduras.

New Collaborations (University, Industry, Other)

- USDA Sugar Research Unit, University of Arkansas, Miss. State. Uni., University of Florida.

Name of collaborator or institution

- Nick Bateman (University of Arkansas).
- Don Cook (Mississippi State University).
- Jeff Gore (Mississippi State University).
- Brad Richardson (USDA ARS, Stoneville, Mississippi).
- Amy Roda (USDA-APHIS-PPQ, Miami, Florida).

Publications

- Lucero, J.M. and B.E. Wilson. 2022. Regional expansion and chemical control for invasive apple snails (*Pomacea maculata*) in Louisiana rice and crawfish production systems. Crop Prot. (accepted, in press).
- Doherty, E.M., Q. Sun, and B.E. Wilson. 2022. Stored rice varietal resistance and associational susceptibility towards *Sitophilus oryzae*. Entomologia Experimentalis et Applicata (accepted, in press).
- Salgado, L., B.E. Wilson, H. Penn, R.T. Richard, and M.O. Way. 2022. Characterization of resistance to the Mexican rice borer (Lepidoptera: Crambidae) among sugarcane cultivars. Insects 13(10): 890.

FACULTY ACTIVITIES

- Kang, I, B.E. Wilson, B. Carter, and R. Diaz. 2022. A new detection of the invasive Mexican rice borer (Lepidoptera: Crambidae) from Georgia in the United States based on morphological and molecular data. *J. Integ. Pest Manag.* 13(1): 17.
- Wilson, B.E., J.M. Villegas, and M.J. Stout. 2022. Economic returns on seed treatment combinations in rice. *Crop Prot.* 152: 105983.
- Pontif, M., C. Kimbeng, K. Bischoff, K. Gravois, C. LaBoard, G. Hawkins, D. Sexton, J. Hoy, N. Baisakh, B.E. Wilson, A. Orgeron, J. Todd, and H. Waguespack. 2022. Registration of 'L 12-201' sugarcane. *J. Plant Reg.* plr2.20185.
- Mulcahy, M.M., B.E. Wilson, and T.E. Reagan. 2022. Spatial distribution of stem borers in Louisiana rice fields. *Environ. Entomol.* 52: 405–412.
- Mulcahy, M.M., B.E. Wilson, M.J. Stout, and T.E. Reagan. 2022. Spatial distribution of the rice water weevil (Coleoptera: Curculionidae) in Louisiana rice fields. *Environ. Entomol.* 51: 108–117.
- Wilson, B.E., L.D. Salgado, and J.M. Villegas. 2022. Optimizing chemical controls of *Diatraea saccharalis* in sugarcane. *Crop Prot.* 152: 105843.
- Salgado, L., B.E. Wilson, and J.M. Villegas. 2022. Resistance to the sugarcane borer (Lepidoptera: Crambidae) among Louisiana sugarcane cultivars. *Environ. Entomol.* 51: 196–203.
- Todd, J.R., A.L. Hale, Y.-B. Pan, T.L. Tew, W.H. White, E.O. Dufrene, M.J. Duet, D.L. Verdun, D.J. Spaunhorst, C.D. Dalley, M.P. Grisham, B.E. Wilson, K.A. Gravois, and W.R. Jackson. 2022. Registration 'Ho 05-961' sugarcane. *J. Plant Reg.* plr2.20100.



Visit our website: www.LSUAgCenter.com

Matt Lee, LSU Vice President for Agriculture
Louisiana State University Agricultural Center
Louisiana Agricultural Experiment Station
Louisiana Cooperative Extension Service
LSU College of Agriculture

Pub. 3836-23 (online) 5/23

The LSU AgCenter and LSU provide equal opportunities in programs and employment.