

**Fourth national conference
October 10 - 12, 2022**



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Protecting Pollinators in Urban Landscapes

Bringing together researchers,
educators, and practitioners

University of Georgia
Center for
Continuing Education
October 10 - 12, 2022

**protectingpollinators.org
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Conference Support

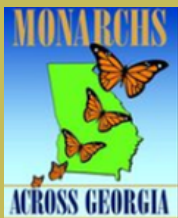


National Institute of Food and Agriculture
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2022 Sponsors

Monarchs Across Georgia
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The Bee Cause
Project



Agenda At-A-Glance

Monday, October 10

Time Location	Session/Activity
9 a.m. - 4:30 p.m. Poultry Science 110 Cedar St.	Bee Identification workshop Elsa Youngsteadt, NC State University Michael Ulyshen, USDA Forest Service
5 - 6 p.m. Pecan Tree Galleria	Conference Registration
6 - 9 p.m. Magnolia Ballroom	Opening Keynote & Reception Gerardo Camilo, Saint Louis University *heavy apps and cash bar to follow



Agenda At-A-Glance

Tuesday, October 11

Time Location	Session/Activity
7 - 8 a.m. Magnolia Ballroom	Breakfast Buffet Conference Registration Open
8:00 - 9:45 a.m. Meeting room K/L	Session 1: Pollinators in the urban environment: status and trends
Keynote: Bees in Your Backyard, Olivia Carrill Sonia Altzier Rebecca Griffin Toby Tsang (Virtual)	
9:45 - 10 a.m. Kellogg Concourse	Break
10 - 11:30 a.m. Meeting Room K/L	Session 2: Pollinators and people: Socioeconomic and cultural influences



Agenda At-A-Glance

Tuesday, October 11

Time Location	Session/Activity
Keynote: Paige Warren Jennifer Leavey Rebecca Tonietto (virtual)	
11:30 a.m. - 1:30 p.m. Magnolia Ballroom	Lunch Buffet
1:30 - 3:40 p.m. Meeting Room K/L	Session 3: Challenges for urban pollinators
Keynote: Keith Delaplane Lewis Bartlett	
2:30 - 3 p.m.	Break
3 - 3:40 p.m.	Session 3: Challenges for urban pollinators continued
Gordon Fitch Doug Sponsler	

Agenda At-A-Glance

Tuesday, October 11

Time & Location	Session/Activity
3:40 - 6:30 p.m.	Break/Dinner on own Poster Session Set-up
6:30 - 9 p.m. Pecan Tree Galleria	Poster Session light refreshments offered

Wednesday, October 12

7:30 - 9 a.m. Magnolia Ballroom	Breakfast Buffet
9 - 10:30 a.m. Meeting Room K/L	Session 4: Taking action - landscaping for pollinators Part 1
Keynote: Joe Boggs Anne Spafford Rachel Smith	



Agenda At-A-Glance

Wednesday, October 12

Time & Location	Session/Activity
10:30 - 11 a.m. Kellogg Concourse	Break
11 - 11:20 a.m.	Session 4: Taking action - landscaping for pollinators Part 1 Continued
Maria VanDyke (virtual)	
11:20 a.m. - 1:30 p.m. Meeting Room K/L	Session 5: Taking Action- landscaping for pollinators. Part 2 Soil
Keynote: Sujaya Rao Jason Gibbs (virtual) Joe Boggs & Steve Foltz	



Agenda At-A-Glance

Wednesday, October 12

Time & Location	Post Conference Tour & Workshop
1 - 1:30 p.m. Kellogg Concourse	Grab and Go Lunch *available for workshop and tour registrants
1:30 - 3:30 p.m. Meeting Room K/L	Implementing a community-wide pollinator protecting program *pre-registration required
1:30 - 4:30 p.m.	State Botanical Garden of Georgia Tour *pre-registration required

The Protecting Pollinators in Ornamental Landscapes Conference 2022 is planned jointly by Michigan State University, North Carolina State University, the Cincinnati Zoo and Botanical Garden, and the University of Georgia.



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Extension



Tour & Workshops

Workshop: Bee Identification

Facilitators: Elsa Youngsteadt, NC State University
Michael Ulyshen, USDA Forest Service

This beginner-level workshop will focus on recognizing common North American bee taxa using pinned specimens. Microscopes and specimens will be provided. Participants are also welcome to bring their own specimens from ongoing identification projects. Advanced students may enroll, but should expect to review basic concepts with the whole group before receiving assistance with specific taxa.

Workshop: Implementing a community-wide pollinator protecting program

Facilitators: Laura Rost – The Xerces Society, Bee City USA & Bee Campus USA
Coordinator
Peter Helfrich – Chair of Beecatur, the Bee City USA initiative of Decatur, GA
Tyra Byers – University of Georgia, Athens, Bee Campus Coordinator

We are excited to offer this new, collaborative opportunity for conference participants! This workshop is a forum for discussion and sharing for anyone who has, or would like to, implement a community-wide pollinator protection program in their city or campus. Workshop facilitators will share experiences and inspiring examples. Small- and large- group activities will focus on topics including stakeholder mapping and inclusivity, habitat implementation, and communication. Discussion will emphasize sharing successes, concerns, and lessons learned. We will use the Xerces Society's Bee City USA and Bee Campus USA programs as a framework for discussion, but participants need not be, or plan to become, Bee City USA/Bee Campus USA affiliates.

Tour: State Botanical Garden of Georgia

Guide: Cora Keber, Georgia Botanical Garden

The **State Botanical Garden of Georgia**, a part of Public Service and Outreach at the University of Georgia, will host a tour for the Protecting Pollinators in Urban Spaces Conference. The Garden is 313 acres of displays, natural areas, and conservation. This stunning space is made up of several gardens such as the Shade and Native Flora Garden, the Heritage Garden, the Hummingbird Trail, and the newest Alice H. Richards Children's Garden. The site is also home to an internationally known plant conservation effort. The Botanical Garden works with rare and endangered species, native plant production, and habitat restoration. The Garden spearheads the Pollinator Plants of the Year program which works with growers to bring native plant species to the public. Our tour will be guided by knowledgeable Garden staff and will highlight the portions of the space that are dedicated to pollinators.



Opening Keynote

Helping People Help Bees: Branding Science to Conserve Urban Pollinators

Gerardo Camilo, Saint Louis University & Conservation Fellow, Saint Louis Zoo

Urbanization represents one of the greatest threats to biodiversity worldwide. Given the current increase in the human population, and the consistent migration from rural to urban areas, urban infrastructure must double by the middle of the century. In the United States, already over 70% of the population lives in cities. One potential solution that many conservation organizations and leaders have proposed is the conversion of privately owned green space into conservation areas. This is epitomized by Doug Tallamy's Homegrown National Park program. In fact, we have identified over one hundred such programs across the United State alone. Alternatively, we have not found any published data assessing the suitability of such programs for conserving biodiversity. The few published papers tend to be anecdotal or correlational.

We collaborated with the St. Louis chapter of the Audubon Society in order to assess the effectiveness of their program called "Bring Conservation Home" (BCH). The program has clearly stated guidelines and goals concerning the establishment of native vegetation, removal of invasive species, increased canopy complexity, and minimizing use of pesticides and fertilizers. Depending on the level of achievement on the above criteria, the property can be certified as not meeting the standard (none), silver, gold, or platinum. Furthermore, the BCH program already has enrolled over 1,700 homes across the St. Louis metropolitan region, encompassing 170km east-west and 145km north-south. This provided us with an experimental design with two treatments: certification level and urbanization gradient. We collected data in the growing seasons of 2020 and 2021 that included plant, bird, bee and mosquito diversities and abundances.

Biodiversity responses were complex and not always consistent. Regardless of certification levels, bird diversity decreased with increased urbanization, although the abundances of some species did respond to certification. Mosquito diversity did increase with certification, while abundances went down. This is consistent with the dilution effect hypothesis. Finally, bees responded to both, exhibiting an interaction between certification and urbanization levels. Overall, our results show that the BCH program does have significant positive effects for biodiversity, but not always consistent across taxa. We make specific recommendations to organizations that run this kind of programs in order to improve communication, and hopefully outcomes.



Session Descriptions

Session 1: Pollinators in the urban environment: status and trends

Keynote: Pollinators, assemble! How to foster bee communities in urban backyards.

Olivia Carril, Author of *The Bees in Your Backyard*

Bees, in their role as pollinators of the world's flowering plants, are an essential component of nearly every ecosystem on Earth. Our native, solitary bees appear to struggle in the face of many of the modifications that occur on landscapes occupied by humans. Intensive agriculture, habitat fragmentation, pesticide use, and climate change are all factors that affect bee populations across large areas and over time. On the other hand, bees have been shown to be resilient in the face of disturbance, and evidence suggests many native bee species will respond positively to modest changes in urban landscapes. Efforts on multiple fronts in our most populated areas are likely to benefit bees with diverse natural histories. Dr. Carril will highlight some of the many ways in which urban environments can be modified to include these most important pollinators; from small efforts in yards, to city action plans and statewide initiatives, humans are bees' best allies.

Monarch butterfly movement, parasitism, and conservation in urban landscapes

Sonia Altizer, University of Georgia

The annual migration of monarch butterflies in North America has captured the imagination of scientists and nature enthusiasts alike. Yet monarch migration is shifting in response to a changing environment. As scientists work to understand what the new normal for monarchs and their future migrations will look like, insights from continent-wide data sets generated by community science project have become increasingly important. Recent analyses show that climate warming combined with the planting of non-native tropical host plants have caused some monarchs to stop migrating and breed year-round in the southern U.S. Moreover, in areas where natural habitats have been reduced by land-use change, human-planted butterfly gardens have become popular among the public. Urban and suburban gardens can counter the loss of native habitats at local and regional scales, but further work is needed to examine their conservation value and address potential concerns. For monarchs, the use of urban gardens intensifies the transmission of a debilitating parasite, possibly owing to crowding that increases contact rates, and restricted movements that increase exposure to parasites that build up in the environment. This talk illustrates how community science data helps researchers to understand responses of monarch abundance and parasite infection to urbanization. Results underscore that monitoring and experimental studies are needed to inform strategies for habitat management to lower infection risk for monarchs and sustain their annual migration.



Session Descriptions

Session 1: Pollinators in the urban environment: status and trends

Citizen Science - The Great Georgia Pollinator Census

Becky Griffin, University of Georgia

After two years of pilot projects, The Great Georgia Pollinator Census became a statewide community science project in 2019. The initiative has three goals (1) to create sustainable pollinator habitat; (2) to increase the entomological literacy of our state; and (3) to generate useful data about our pollinator population trends. This project is unique in its use of social and online media and it has been embraced by varying segments of the population. This Census also documents several types of pollinators including wasps and flies. In 2022, South Carolina joined the Census allowing us to work toward the Great Southeast Pollinator Census.

Urbanization reduces taxonomic, functional and phylogenetic diversity in bee communities

Toby P. N. Tsang, University of Toronto Scarborough

Session abstract- Biodiversity, often represented by the number of species within communities (i.e. taxonomic diversity), can be strongly reduced by global change, yet other dimensions of biodiversity may respond differently. Recent studies have especially highlighted the need to examine phylogenetic and functional diversity, which capture variations of evolutionary history and ecology within communities and have stronger relationships with ecosystem services. We used a global dataset of 3,388 bee communities from 151 studies to understand how urbanization affects taxonomic, functional and phylogenetic diversity of bees, considered the most important taxa for pollination globally. We found all diversity dimensions were reduced in urban relative to natural areas by up to 20%, with taxonomic diversity exhibiting the strongest decline. The simultaneous decline in all biodiversity dimensions suggests urbanization can weaken the capacity for bee assemblages to provide key ecosystem services.



Session Descriptions

Session 2: Pollinators and people: Socioeconomic and cultural influences

Keynote: People, flowers, and pollinators: embracing the complexity of social-ecological interactions in urban ecosystems

Paige Warren, University of Massachusetts, Amherst

Humans shape biotic communities in cities in profound ways, from obvious changes in species composition, to less noticeable shifts in timing of breeding, predator-prey dynamics, and foraging behavior. Historically, wildlife ecologists and conservation biologists, largely viewed cities through a relatively simple lens: cities remove and fragment natural habitats. Urban biotic communities are by implication deficient or damaged – they lack key guilds or species and are highly invaded. There is growing shift, however, in how human-altered landscapes are viewed and valued. Researchers and practitioners are embracing terms and approaches that increasingly situate humans as integral to positive changes in ecosystems: “designed ecosystems,” “transformative restoration,” “assisted migration,” and “reconciliation ecology.” There are good reasons to be cautious about embracing these more anthro-centric approaches, and many are controversial. Yet, realism dictates that we contemplate the implications of a domesticated planet, one where the distribution and abundance of species become increasingly dependent on human values, decisions, and actions. Viewed through this more anthro-centric lens, we propose that cities are sources of novelty, hotspots of resource inputs (as well as resource consumption), agents of decoupling for ecological phenomena, and drivers of evolutionary change. We examine here some of the complex pathways through which humans influence biotic communities, with consequences that may ripple through food webs in previously unexpected ways. In particular, we highlight the pervasive impacts of anthropogenic foods. Anthropogenic food can directly increase population sizes of wildlife that consume it or indirectly mediate top-down control by altering diets of predators or increasing populations of prey to the point that predation cannot constrain them. In addition, anthropogenic food is the product of industrial agriculture, processing, packaging, and shipping of foods from where they were produced to where they are consumed by wildlife. As a result, we propose anthropogenic food is a novel, socio-ecological force affecting trophic dynamics in an increasingly urban world. The future conservation of regionally distinct fauna and flora increasingly depends on viewing and managing urban ecosystems through a more anthro-centric lens.



Session Descriptions

Session 2: Pollinators and people: Socioeconomic and cultural influences

Gateway bees for pollinator protection in urban areas

Jennifer Leavey, Georgia Institute of Technology

When planning educational pollinator initiatives, most organizations pursue the creation of pollinator habitat (gardens, bee hotels), the establishment of honey bee apiaries, or both. It can be argued that introducing non-native honey bees (*Apis mellifera*) to ecosystems in North America increases competition for resources with native pollinators and allows for disease transmission between honey bees and native bees. However, there is nothing like a beehive to capture the imagination of the public and serve as an educational tool. When the Georgia Tech College of Sciences placed honey bee hives on the roof of a classroom building on the Georgia Tech campus in midtown Atlanta, the conversation quickly broadened on campus and in the surrounding neighborhoods to include the risks of pesticide application and how land usage affects bees. These conversations continued with nearby community organizations such as the West Atlanta Watershed Alliance, Truly Living Well Center for Natural Urban Agriculture, Coretta Scott King Young Women's Leadership Academy, the City of Atlanta, Metro Atlanta Beekeepers Association, Trees Atlanta, Historic Westside Gardens, and others. In the case of the Georgia Tech Urban Honey Bee Project, action taken to improve honey bee health increased awareness of native pollinators and factors that contribute to their conservation.

Planning pollinator conservation projects with communities: The Porch Project in Flint, Michigan

Rebecca Tonietto, University of Michigan-Flint

The Porch Project in Flint, Michigan launched in 2017, when eastside resident Megan Heyza initiated a neighborhood beautification program with the goal to strengthen community connections. In support of neighborhood goals, we collaborated to design two front-yard landscaping plans (one incorporating all native plants, one all non-native ornamentals) and undergraduate students from UM-Flint developed an observation protocol to determine which plantings best supported native bees in the City of Flint. Through The Porch Project, we planted front yard gardens at over 40 homes, with over 400 residences in Flint participating in other aspects of the program as of 2022. Pollinator-friendly experimental gardens were designed with CPTED (Crime Prevention Through Environmental Design) standards and ease of care in mind to help serve multiple goals: increased "neighborliness" and activation of front yards (neighborhood-led goal) and providing resources for wild bees (research goal). We will highlight our research plan development, current findings, and the ways we engage with our community.



Session Descriptions

Session 3: Challenges for urban pollinators

Keynote: Perils and promises for urban bee pollinators

Keith Delaplane, University of Georgia

Effective conservation of urban pollinators depends on informed management of the biological constraints particular to the pollinator taxon. In this lecture I overview three of these constraints particular to bees: (1) the energetic limits placed on bees by their nesting habits, (2) the population genetic vulnerabilities posed by their mating systems, and (3) the degree to which any bee species expresses floral specialization. Application of these knowledge points for urban situations will be discussed

'Arbovirus vector control in a changing world: what does it mean for urban pollinators?'

Lewis Bartlett, University of Georgia

'Epidemiologists and disease ecologists invest significant effort in predicting where additional vector control where will be required as the climate envelopes of human-biting insects expands. Vector control is often at odds with wild insect health and can be drastic in the face of epidemics - especially in urban areas. What might be expect in the next decade for resolving this conflict?'

Why didn't the bee cross the road? The influence of urbanization on pollinator movement

Gordon Fitch, University of Massachusetts, Amherst

While cities can support robust pollinator communities, the built environment presents unique barriers to pollinator movement. In this talk, I will discuss our current understanding of the magnitude and impacts of these barriers, at multiple scales, for pollinator communities and pollination in cities. I will conclude with ideas for reducing the degree to which the built environment impedes pollinator movement.



Session Descriptions

Session 3: Challenges for urban pollinators

Flowers are food, pollinators are florivores, and what we are doing here is trophic ecology

Doug Sponsler, University of Würzburg

The mutualism between plants and pollinators is built upon the trophic ecology of flowers and florivores. Yet the ecology of flowers-as-food is left implicit in most studies of plant-pollinator ecology, and it has been largely neglected in mainstream trophic ecology. In this presentation, I trace trophic ecology of flowers and florivores from the rooftops of Philadelphia to the obscure origins of angiosperm pollination, from the golden age of theoretical ecology to the contemporary conflict between beekeepers and conservationists, and ultimately from the grasslands of central Europe back to the rooftops of Philadelphia. The insights gained in each of these places converge on a synthesis that informs the conservation of pollinators in general and bears upon the particular opportunities and challenges of pollinator conservation in cities.



Session Descriptions



Session 4: Taking action- landscaping for pollinators. Part 1: Plants

Keynote: Connecting the Dots Connecting the Dots: Plant Diversity, Pollinators & Pest Management

Joe Boggs, The Ohio State University

Protecting plant pollinators is commonly viewed as only an insecticide use issue. However, we must think more broadly. The science is clear: pest management and plant pollinators are two sides of the same coin in urban landscape ecosystems. How does the abundance of flowering plants translate into fewer plant pests? How do pollinators themselves play a critical role in the reduced need for insecticides? This presentation reveals the multi-layered connections between pollen, nectar, and a parade of unsung insect heroes that keep pests in check.

Planting Strategies for Urban Pollinator Gardens: Design, Implementation, and Management

Anne Spafford, North Carolina State University

Residential gardens, in aggregate, can play a huge role in providing much needed habitat, food and water supplies, and nesting places for pollinators. No garden is too small to make a difference. With over 40 million acres of lawn in the United States alone, there is ample opportunity to make room for pollinator habitat. While there is much concern for the plight of pollinators, many homeowners are unaware or unsure how they can help, and are perhaps concerned about the landscape aesthetics of a pollinator habitat. Landscape design guidelines and best practices for implementation and management will be shared that enable gardeners and pollinator-enthusiasts to create high performing (e.g. not only supporting pollinators, but mitigating stormwater runoff, etc.) landscapes through strategies that will help them implement gorgeous habitats with practical on-the-ground actions and with an eye towards pollinator protection.



Session Descriptions

Session 4: Taking action- landscaping for pollinators. Part 1: Plants

Increasing the commercial supply of native plants, the building blocks for diverse pollinator gardens

Rachel Smith, University of Georgia

One of the challenges of gardening for pollinators and other wildlife is finding a commercial source of native plant species, particularly if you are interested in growing locally adapted ecotypes. The State Botanical Garden of Georgia's Connect to Protect program is a great resource for plant materials and information on sourcing native species. In addition to propagating more than 100 varieties of natives for our annual plant sales, we coordinate the Georgia Native Plant Initiative, a partnership involving growers, landscapers, plant societies, garden clubs, and land management agencies working to transform gardens and landscapes across Georgia by showcasing the horticultural appeal and ecological value of our native flora. The Georgia Pollinator Plants of the Year program recognizes four top performing landscape plants annually and promotes their production and marketing across the state. On the research side, horticultural trials at our Mimsie Lanier Center for Native Plant Studies evaluate the ability of native species such as Bee Balms (*Monarda* spp.) and their cultivars to attract pollinating insects. Learn how collaborations with the Green Industry across all steps of production and marketing are improving the availability of appropriate pollinator-supporting plants statewide.

Specialist Bees of Georgia: -How can we protect them?

Maria VanDyke

What are specialist bees? Specialist bees are not just one host plant species, genus or plants family to gather pollen to feed their young. They are completely dependent on this one species or small group of species for their pollen and/or plant exudates to the point that their young typically will not survive if they eat another type of pollen. I will talk about why species specialize, which species specialize, some specialization stories, and a simple strategy for including specialists into your native plant landscape or garden.



Session Descriptions

Session 5: Taking action- landscaping for pollinators. Part 2: Soil

Keynote: Digging deep! What we know about nest selection sites by ground-dwelling bees

Sujaya Rao, Cornell University

Bees provide critical pollination services in wild and agricultural landscapes, and are thus vital to global economy, food security, and environmental health. Worldwide, there have been reports of bee population declines due to diverse factors including loss of food resources and nesting habitats resulting from land use changes. For conservation of bees, research has focused largely on habitat enrichment with flowering plants for providing nectar and pollen for bees. Less attention has been directed towards the provision of nesting sites, especially for ground-dwelling bees, due to limited availability of information on characteristics of habitats selected for nesting by different species. The presentation will cover what is known about soil properties and other factors associated with areas that harbor bee nests for exploring options for enhancing ground-dwelling bee nesting in urban landscapes.

Ground-nesting bees: where to find them and how to support them

Jason Gibbs

Most bees (64%) excavate underground burrows for their nests. Nests may be occupied by a single female and her brood or hundreds of cooperating females. In some cases, bees form large aggregations that can persist for decades, but others are likely more isolated and elusive. Bees seem to show a strong preference for sandy / silty soils. Preserving nests sites and encouraging bee nesting can be an important aspect of their conservation. I will review some basic aspects of underground bee nests and why it is important to learn more about them. I will review strategies for promoting bee nests at different scales from home gardens to large scale agriculture.

You May be Standing on the Problem

Joe Boggs, The Ohio State University

Steve Foltz, Cincinnati Zoo and Botanical Garden

Soil is the foundation upon which we build plants, so soil problems lead directly to plant problems. This is particularly true for urban soils with compaction, loss of topsoil, nutrient deficiencies, drainage issues, etc., etc., contributing to the failure to launch successful pollinator gardens. This “discussion style” practical presentation will focus on case studies to teach you how to build stronger pollinator plants by recognizing and correcting problems with urban soils.



Speaker Biographies

Sonia Altizer



Sonia Altizer is the UGA Athletic Association Professor of Ecology and Interim Dean of the Odum School of Ecology at the University of Georgia. For the past 25 years, she has traveled the world to study monarch butterfly migration and ecology. Dr. Altizer co-edited a book in 2015 titled *Monarchs in a Changing World: Biology and Conservation of an Iconic Insect*, and has published over 50 scholarly papers related to monarch migration and monarch-parasite interactions. At UGA, Altizer and her students run a community science project called “Project Monarch Health,” now in its 16th year, that involves hundreds of volunteers across North America in sampling wild monarchs for a debilitating protozoan disease. In addition to scholarly work, Altizer has participated in national and international task forces dedicated to monarch butterfly conservation and regularly engages in K-12 outreach focused on butterflies.

Lewis Bartlett



Dr Lewis Bartlett is a newly appointed faculty research scientist at the University of Georgia, joint with the Department of Entomology and Center for the Ecology of Infectious Diseases in the Odum School of Ecology. His work over the last decade of graduate and postdoctoral research has mostly focussed on the ecology and evolution of parasites and their hosts, with particular application to managed honey bees. His newly founded lab focusses on the evolved defenses of insects to their pathogens and parasites, evolutionary answers to pest and parasite control, and the adaptation of viruses to changes in the transmission ecology such as opportunistic vectoring or host population spatial structure changes; all of these topics centre managed honey bees and their associated species as applied model systems for answering fundamental EEID questions and simultaneous application of ecological and evolutionary theory in agricultural problem solving.

Joe Boggs



Joe Boggs is an Assistant Professor with OSU Extension, Hamilton County, and the OSU Department of Entomology. He has 30 years of experience specializing in tree and shrub diagnostics and pest management. Joe averages over 100 teaching presentations per year. His weekly radio segment, “Buggy Joe Boggs Report,” runs from April through October on the Saturday morning show, “In the Garden with Ron Wilson,” (iHeartRadio: WKRC, Cincinnati; News Radio 610 WTVN, Columbus). The Cincinnati show is syndicated to 34 radio stations in 12 states.



Speaker Biographies

Gerardo Camilo



Gerardo Camilo received his B.S. in biology in 1986 from the University of Puerto Rico-Mayaguez. He then moved to Texas to attend graduate school, and received an M.S. in entomology in 1988, and Ph.D. in 1992 from Texas Tech University. He was a postdoc from 1993 to 1995 at the Institute from Tropical Ecosystem Studies in Puerto Rico studying food web ecology and disturbance. Currently, he is a professor of biology at Saint Louis University where he researches the ecology and conservation of bees in urban environments. His research also addresses aspects of socio-economic and cultural norms influences on bee diversity. Another research focus in his lab is the role of bee pollination in the evolutionary ecology of plant mating systems. Dr. Camilo is also a conservation fellow of the St. Louis Zoo and the Living Earth Collaborative.

Olivia Carril



Dr. Olivia Carril has been studying native bees for over 25 years. She received her BS and MSc from Utah State University, and a PhD from Southern Illinois University in Carbondale. She is the coauthor of *The Bees in Your Backyard: A Guide to North America's Bees*, *Common Bees of Eastern North America*, and the soon to be published *Common Bees of Western North America*. She is currently conducting several large-scale surveys of bees in northern New Mexico, studying the pollinators of several rare plants, and working to develop a long-term monitoring protocol for use in surveying bees on public lands. In her spare time, she teaches science to middle schoolers, and hangs out with her two adorable daughters and her handsome husband.

Keith Delaplane



Keith Delaplane is Professor of Entomology and Director of the honey bee program at the University of Georgia where he and his students study honey bee pollination, disease ecology, and social evolution. He is author of the 2000 book *Crop Pollination by Bees* published by CABI, and in 2021 the first of a two-volume second edition of the same title was released. Keith was lead editor of the 2020 edition of *ABC and XYZ in Bee Culture*, an encyclopedia of bee biology and beekeeping in continuous print by the *AI Root Company* since 1876. In 2014 he was inducted into the *Most Excellent Order of the British Empire* for his research and education efforts in honey bee health and management throughout the UK.



Speaker Biographies

Jason Gibbs



Jason Gibbs is an Associate Professor of Insect Taxonomy in the Department of Entomology at the University of Manitoba. He has led or co-authored nearly 100 peer-reviewed papers on various aspects of bee biology, conservation, diversity, and taxonomy. He mostly works on little bees that other people can't be bothered with, especially sweat bees. He is an instructor at the annual Bee Course and teaches various entomology courses at the University of Manitoba. His current research focuses on bee taxonomy, phylogenomics, promoting bees in agricultural systems, and, to his surprise, an endangered butterfly.

Gordon Fitch



Gordon Fitch is an ecologist interested in understanding how environmental stressors influence plant-bee interactions of all kinds, and what the consequences are for the health and fitness of both bees and plants. He is currently an NSF postdoctoral fellow at the University of Massachusetts Amherst, studying how and why parasite infection influences bumble bee foraging preferences; his prior work has focused on the role of urbanization and agricultural intensification in shaping plant-bee interactions. He will begin as an Assistant Professor of Biology at York University in Toronto in Fall 2023, as a member of their Centre for Bee Ecology, Evolution, and Conservation (BEEc).

Steve Foltz



Steve Foltz, Director of Horticulture at the Cincinnati Zoo & Botanical Garden, has been with the Zoo for 21 years. Steve is responsible for one of the area's largest plant collections that include 3,000 varieties of trees, shrubs, tropical plants, grasses, bulbs, perennials and annuals. His expertise is widely-known in the industry and he is frequently asked to speak to horticulture groups. A graduate of the University of Kentucky with a B.S. in Ornamental Horticulture, he is currently teaching Horticulture at both Cincinnati State Technical and Community College and at the University of Cincinnati.



Speaker Biographies

Becky Griffin



Becky Griffin is University of Georgia (UGA)'s Community & School Garden Coordinator where she works with Extension agents across the state helping create impactful gardens. She is also a Pollinator Health Associate and a Georgia certified beekeeper. Emphasizing the ecosystem of the garden and teaching workshops on beneficial entomology and integrated pest management are important parts of her work. Becky is the coordinator of the Great Georgia Pollinator Census which is a passion project for her. Becky has been with UGA Extension for almost 11 years and enjoys the collaborations and friendships that working with the University brings. Becky represents the Southeastern US region on the Community Seed Network Advisory Panel and sits on the board of directors for The Bee Cause. She is also part of the University's Native Plants and Beneficial Insects Working Group and works with the Pollinator Plants of the Year program.

Jennifer Leavey



Jennifer Leavey is the director of the Georgia Tech Urban Honey Bee Project, an interdisciplinary educational initiative of the Georgia Tech College of Sciences for which Leavey coordinates sustainability-related educational initiatives. Leavey also serves as an instructor for the Vertically Integrated Projects Team, Living Building Science, that studies physical and biological questions related to the systems in and around the Kendeda Building for Innovative Sustainable Design, and serves as Assistant Dean for Faculty Mentoring for the College of Sciences.

Sujaya Rao



Dr. Sujaya Rao is Professor and Department Head for Entomology at the University of Minnesota. Her prior research as a faculty member at Oregon State University focused on integrated pest management until a serendipitous observation that native bees were drawn to blue traps used by her in a pest monitoring study led to the discovery of a new monitoring tool for native bees. Subsequently, her research was extended to include native bee surveys, foraging and nesting behaviors, and crop pollination. She collaborated with colleagues across diverse disciplines on novel projects such as the creation of a wireless sensor for tracking bees and understanding the strong attraction of native bees to the blue traps, the intriguing linden-associated bee mortality, and soil habitats selected for nesting by ground-dwelling bees. Sujaya has also taught courses on native bees and led innovative education programs that engaged K-12 students and university students in bee research.



Speaker Biographies

Rachel Smith



Master's student in horticulture, I work with Dr. Jim Affolter and the conservation team at the Mimsie Lanier Center for Native Plant Studies (MLCNPS), the headquarters for conservation research at the State Botanical Garden of Georgia. My area of study pertains to ornamental and ecological performance of select *Monarda* species and cultivars. I also obtained my BS in horticulture from UGA in 2018, while working as an intern at the MLCNPS. After completing my MS, I want to help revitalize urban spaces by using best management practices that put wildlife hospitality first.

Anne Spafford



Ms. Anne Spafford, MLA, is a Professor of Landscape Design in the Department of Horticultural Science at North Carolina State University. Her teaching career spans over 20 years and won many teaching awards, including being inducted into NC State University's Academy of Outstanding Teachers and a 2021 NCSU Alumni Association Distinguished Undergraduate Professor. Her courses include Intro to Landscape Design, Sustainable Residential Landscape Design, Principles of Planting Design, Intro to Permaculture: Sustainable Living, Green Infrastructure: The Functional Role of Plants in the Urban Environment; and a Home Landscape Design course for non-majors and homeowners. She is passionate about all of the subjects that she teaches (and there is substantial overlap between them), but she has a particular fondness for planting design—under which she excels in pollinator habitats, rain gardens, therapeutic gardens, and residential gardens. She received her Bachelor's degree in Horticulture, which provided a foundation in plants, plant sciences, and small-scale design. Her Master's degree in Landscape Architecture provided a foundation in cultural and social issues of design and research applied design as well as experience in designing larger projects. She is currently enrolled in the Doctor of Design Program at NC State University where she is studying the effects of urban streetscape design on human well-being. Anne has co-authored two books: *Pollinator Gardening for the South: Creating Sustainable Habitats* (2021 UNC Press, with Danesha Seth Carley) and *Rain Gardening in the South: Ecologically Designed Gardens for Drought, Deluge, and Everything In Between* (c. 2009 Eno Publishers, with Helen Kraus). *Rain Gardening in the South* received the prestigious Gold Medal Award for Best Technical Book from the Garden Writer's Association and the Benjamin Franklin Award from Independent Publishers.



Speaker Biographies

Doug Sponsler



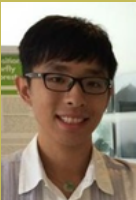
Doug Sponsler is an entomologist and ecologist whose work revolves around the nexus of flowers, insects, and people. He completed his PhD in entomology at the Ohio State University and is currently a postdoc in the department Animal Ecology and Tropical Biology at the University of Würzburg. He lives in central Germany with his wife, three daughters, three ant colonies, a hamster, and – most recently and questionably – a dog.

Rebecca Tonietto



Rebecca Tonietto is an Assistant Professor of Biology in the Department of Natural Sciences at the University of Michigan-Flint. Rebecca earned her MS and PhD from the Plant Biology and Conservation Programs at Northwestern University and the Chicago Botanic Garden, and was a recipient of a David H. Smith Conservation Research Postdoctoral Fellowship. Her research is focused on native bee conservation in urban and restored systems of the Midwest.

Toby Tsang



Toby P. N. Tsang is a post-doctoral researcher at University of Toronto Scarborough, interested in community and global change ecology.



Speaker Biographies

Maria VanDyke



Maria VanDyke is an ecologist that focuses on native bees and have a deep seeded passion to investigate what makes organisms make the decisions they make, particularly native bees but also humans and those humans that manage landscapes. This is a guiding light in how I approach conservation and management of native bees. I have a long-standing interest in the nesting biology of bees and where bees choose to make their nests and what environmental factors guide their choices and which management scenarios limit their populations and how we can compromise human needs and bee needs through education and understanding of what is going on in the mysterious activities of bees while on the flowers and what they are up to when they are not on flowers.

Paige Warren



Paige Warren has been pursuing urban ecology research for the past 22 years, working in cities around the United States. Research in Dr. Warren's lab seeks to understand processes generating and maintaining biological diversity in a world that is becoming increasingly dominated by humans. She focuses on the impacts of urbanization on animals, from the population to the community level, as well as the relationships between humans and urban nature. She led an NSF-funded Urban Long Term Research Area – Exploratory (ULTRA-Ex) project in Boston, plays a leading role in Long-Term Ecological Research projects in Phoenix and Baltimore, and co-led an international working group focused on biodiversity in cities.



2022 Poster Displays

Lauren Agnew	Differences in Exposure to Heavy Metal Pollutants Across Urban Bee Species: A Trait-Based Approach
Lewis Bartlett	Preventing bee disease spillover by better understanding honey bee epidemiology
Kris Braman	Pollinator cultivar choice: An assessment of season-long pollinator visitation among <i>Coreopsis</i> , <i>Aster</i> and <i>Salvia cultiva</i>
Erika Dalliance	Walls for Bees: Using city structures to promote native bee populations for outreach, education, and research"
Jaret Daniels	Bloom evenness modulates the influence of bloom abundance on insect community structure in suburban gardens
Miriam Edelkind-Vealey	Trap type and placement influence urban pollinator diversity assessment
Conor Fair	What leads to changes in the intention to commit to pollinator conservation behaviors?
Kate Gorman	Current practices and management options for the carpenter bee (<i>Xylocopa virginica</i>), an urban pest and pollinator
Ethan Hackmeyer	Improving bee health through simultaneous better parasite control and supplemental nutrition



2022 Poster Displays

Kristen Healy	Using Minecraft Education as a tool to teach pollinator gardening to young adults
Daniel Ibiyemi	Bees Collect Pollen from Centipedegrass Inflorescence
Asia Kaiser	The Bee Community Ecology of Urban Community Gardens
Melina Keighron	Hot bees in the city
Lindsey Kemmerling	Urban pollutants impact on butterflies
Alex LoCastro	Building and Managing Native Habitat for the Benefit of Birds and Pollinators
Bernadette Mach	Wildlife-friendly ornamental plant production
Frédéric McCune	Does syrphid fly response to urban heat islands varies with functional traits?
Sharron Miller	Varying bumble bee community composition across human altered landscapes in Michigan
Bryan Thompkins	Southeastern Bumble Bee Atlas Project



2022 Poster Displays



Zia Williamson

Exploring Bee Diversity in Georgia Residential Landscapes

Rosemary
Woodel

Creating a Pollinator-Friendly Garden at an Urban Retirement Community

2022 Scholarship Awardees

Araceli Gomez Villegas- University of Nebraska-Lincoln

Bridget Harter- Bowling Green State University

Jenny Hsu- University of California, Santa Cruz (undergraduate), Eastern Kentucky University (graduate)

Tara Moore- Director of Conservation Partnerships for the North Carolina Wildlife Federation

Sreelakshmi Suresh- University of Illinois at Urbana-Champaign,
Department of Entomology

Maraiah Russell- Little River Wetlands Project





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