



Entomological
Collections
Network



Annual Meeting

November 9-10, 2024

Phoenix, Arizona, USA

SCHEDULE AT A GLANCE

Saturday, November 9th

MEMBER SYMPOSIA

8:15 am – 10:45 am	1. Collections Reaching Out	4 – 11
10:55 am – 12:00 pm	2. iNaturalist today, a mutually beneficial tool or a plaything for amateurs?	13 – 15
1:30 pm – 3:05 pm	3. Using Collections to Solve Agricultural Problems	17 – 21
3:15 pm – 5:20 pm	Contributed Talks, Session 1	22 – 26

Sunday, November 10th

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11:25 am – 12:10 pm	Lightning Talks	39 – 42

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Cover Image: Blue Death-Feigning Beetles (*Asbolus verrucosus*), a charismatic species of darkling beetle native to southwestern United States and northwestern Mexico.

Photograph courtesy of Chris Wirth and the Purdue Entomological Research Collection.

We are also very thankful for our continued partnership with the Entomological Society of America (ESA).

Entomological Collections Network

Annual Meeting

Saturday, November 9th and Sunday, November 10th, 2024

Sheraton Phoenix Downtown

Phoenix, AZ, U.S.A.

#ECN2024 <https://ecnweb.net>

Saturday, November 9th

Sheraton Phoenix Downtown

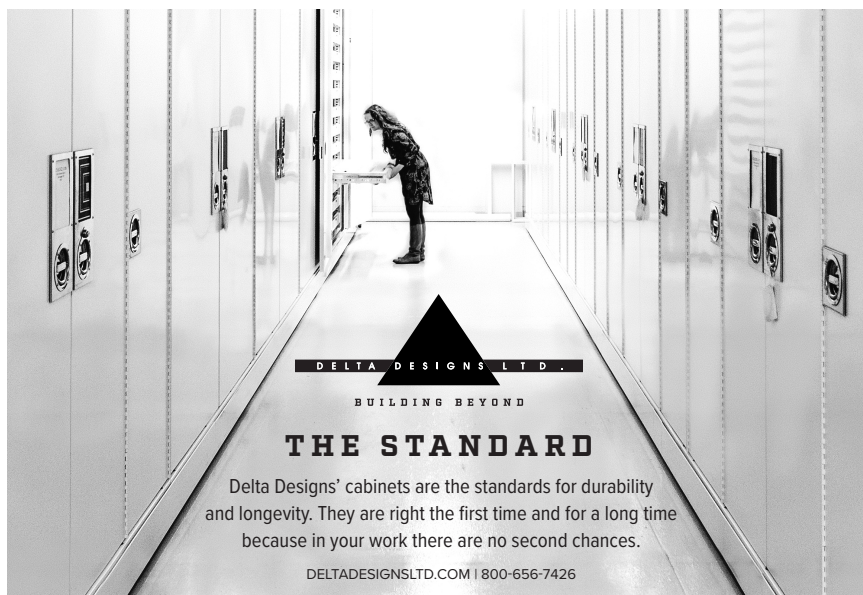
Phoenix Ballroom D/E

7:00 am – 8:10 am **Registration**

8:10 am – 8:15 am **Welcome and Announcements**

Oliver Keller

*University of Michigan Pathogen Biorepository,
Ann Arbor, MI, U.S.A.*



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MEMBER SYMPOSIUM 1

Collections Reaching Out

Organizers/Moderators: **Jennifer C. Girón**, *Invertebrate Zoology Collection, Natural Science Research Laboratory, Museum of Texas Tech University, Lubbock, TX, U.S.A.*; **Victor H. Gonzalez**, *Department of Ecology & Evolutionary Biology & Biodiversity Institute & Natural History Museum, University of Kansas, Lawrence, KS, U.S.A.*; & **Rachel Osborn**, *Department of Ecology & Evolutionary Biology & Biodiversity Institute & Natural History Museum, University of Kansas, Lawrence, KS, U.S.A.*

8:15 am – 8:20 am **Introduction**

8:20 am – 8:35 am **Come Bug Me: the first attempt at an outreach event showcasing the Invertebrate Zoology Collection of the Museum of Texas Tech University**

Jennifer C. Girón

*Invertebrate Zoology Collection, Natural Science Research Laboratory, Museum of Texas Tech University, Lubbock, TX, U.S.A.;
entiminae@gmail.com*

The Museum of Texas Tech University (MoTTU) is one of Lubbock's local attractions with both long- and short-term exhibits showcasing human-made objects (arts, textiles, history, anthropology) and natural history specimens (extinct and extant animals). Over the summer MoTTU offers several programs for children, but none of them actually engage with the exhibits or the collections of the Museum. On June 7 of 2024 we ran our first experiment to showcase the Invertebrate Zoology Collection of the MoTTU to the public by celebrating "June Bug Day". I will discuss the organization of this event, which in about three hours brought around 450 visitors of all ages through the doors of the Museum.

8:35 am – 8:50 am **From trash to teacher: utilizing the unlabeled, unsealed, and unprocessed for community engagement**

Patricia Wooden¹, Nikolai Artley² & Caitlin Silva²

¹*Mississippi State University, Mississippi State, MS, U.S.A.;* ²*Clemson University, Clemson, SC, U.S.A.;*
benthicbugologist@gmail.com

During the pandemic, shutdowns and shifts to virtual education changed how the Clemson University Arthropod Museum interacted with the public. The students who told us stories and asked many questions were silent when faced with science behind a screen, especially the youngest audiences. When facilities began to reopen, requests for in-person programs soared, and the lack of time, personnel, and funds weighed on the outreach team. To combat this, Museums in Miniature was created. Each organization is given a drawer of 100 local insects and materials for identification and understanding their place in the ecosystem. This allows virtual scientists to talk to students about real bugs and teachers and librarians to incorporate entomology into everyday lessons. Twenty-five drawers have been sponsored for the state of South Carolina, and with Dr. Wooden's relocation to the Mississippi Entomological Museum, the project is taking steps towards expanding across the southeast and beyond! The program has received positive reviews, and program coordinators have applied for new financial avenues, but we are still looking for bugs, fun facts, and scientists to take it to the next level.

8:50 am – 9:05 am Good optics: outreach drawers for structural colors

Ainsley Seago

Carnegie Museum of Natural History, Pittsburgh, PA, U.S.A.;
seagoa@carnegiemnh.org

Among our outreach specimens and “wow drawers,” iridescent insects like *Morpho* butterflies and *Chrysina* scarabs are often the most popular. By incorporating a few extra tools, you can use these specimens to create dramatic demonstrations of structural color that maximize the educational value of collection tours and class visits. I'll walk through some of my favorite methods for demonstrating circular polarization, pointillistic color mixing, diffraction gratings, antireflection, and different photonic mechanisms using relatively common insect specimens. This material can

be adapted for different ages and interest groups, and fits most state learning standards for understanding the properties of electromagnetic radiation (a.k.a. “light”).

9:05 am – 9:20 am **Carri-on Communicating**

Ashleigh Whiffin

*National Museums Scotland, Edinburgh, Scotland;
a.whiffin@nms.ac.uk*

At National Museums Scotland, there were very few portable displays used for outreach until 2016. Since this turning point, there has been greater interest in promoting the collection and participating in outreach, sharing the collection beyond the walls of the collection centre. Several small displays have been created at virtually no additional cost, by repurposing drawers or existing boxes and using specimens destined for disposal. Unit trays are sometimes used to sub-divide the drawers, with header labels providing descriptions. These drawers and boxes cover various themes, from aquatic insects to bee diversity. Some of the most well-used are themed around Carrion insects. A hit with all audiences, from school groups to families, they have been used at science festivals, careers events, Insect Week celebrations and external outreach collaborations. Some boxes are dual purpose, being used for outreach and training workshops. This talk will provide some examples of these displays, as well as some lessons learned along the way.

9:20 am – 9:35 am **Reinvigorating UCR Entomology
Outreach through collaborations:
from outreach drawers to Insect Fair**

**Christiane Weirauch¹, Caitlyn
Campbell¹, & Stephanie Castillo¹**

*¹University of California, Riverside, Riverside, CA,
U.S.A;
christiane.weirauch@ucr.edu*

The Entomology program at the University of California, Riverside (UCR) has a long tradition of outreach to local communities. Countering the impacts of dwindling financial support and the pandemic, the outreach program is now being reinvigorated. The program builds on collaborations with the Natural History Museum Club (NHMC), a UCR student

association, a new class on “Insect Outreach and Science Communication”, and the Entomology Research Museum at UCR, in addition to volunteers across the Entomology department. We here showcase some of our recent initiatives. These include a remodel of the Entomology building lobby to showcase insects (pinned and living), NHMC- and class-based production of new display drawers, the new class that involves students in theory and practice of science communication and entomology outreach, and the expansion of our Insect Zoo that is one of the highlights of the annual Riverside Insect Fair.

9:35 am – 9:45 am **Break**



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9:45 am – 10:00 am **“It’s nice, but it’s still just a museum.”**

Roberta Brett

*Essig Museum, University of California, Berkeley,
Berkeley, CA, U.S.A.;*
roberta.brett@berkeley.edu

The Essig Museum of Entomology is one of seven specimen-based collections within the UC Berkeley Natural History Museums. The Essig is primarily research focused and not open to the public. However, we do provide unique assets as an educational resource, offering opportunities to engage undergraduate and graduate students in hands-on learning experiences and to gain a deeper understanding of insect biodiversity and appreciation of the importance of collections. Tours are arranged by appointment for entomology-focused courses and for special campus events like CalDay and DarwinDay. But museums like ours face unique challenges, including limited and diminishing campus resources, physical space constraints, and minimal staff to support both our mission and the capacity to open our doors to visitors. However, these challenges can also be leveraged to inspire creativity and innovation in designing exhibits, displays, and outreach materials for students and the public. In addition to displays specifically developed for tours, here I present the approach we took in developing a new interpretive exhibit recently opened. This exhibit is not only aimed at increasing our footprint outside of the museum, but is designed to be visually arresting, attractive, and informative to broad audiences, including those who may have little prior knowledge about insects.

10:00 am – 10:15 am **Profiling outreach drawers and a proposal for best practices**

**Victor H. Gonzalez¹, Rachel Osborn¹,
Jennifer C. Girón², Kade Bonnell¹, &
Kelsey Wiggins¹**

*¹Department of Ecology & Evolutionary Biology &
Biodiversity Institute & Natural History Museum,
University of Kansas, Lawrence, KS, U.S.A.;*

*²Invertebrate Zoology Collection, Natural Science
Research Laboratory, Museum of Texas Tech
University, Lubbock, TX, U.S.A.;*
vhgonza@ku.edu

Insect collections frequently include outreach drawers displaying specimens to enhance public awareness and access to scientific knowledge at various events. Despite their educational value, there is limited understanding of how these drawers are designed, used, or evaluated for quality. Results from an online survey indicate that outreach drawers are considered important by curators and collection managers, and are widely used at events, though they are rarely assessed beyond aesthetics and audience engagement. The number and thematic scope of these drawers vary significantly, ranging from as few as 3 to over 50, and covering topics from the history of collections to contemporary issues such as pollinator conservation. However, the content of these drawers is seldom showcased online, which restricts broader public interaction beyond in-person events. Their maintenance and development are also often limited by funding and staff availability. To address these challenges, we propose a rapid assessment system for evaluating outreach drawers, focusing on criteria such as informational content, relevance, aesthetics, engagement, and inspiration. Our aim is to propose best practices that enhance the educational impact and accessibility of outreach drawers.

**10:15 am – 10:30 am Nature’s Living Gems: Captivating
Visitors with Engaging Entomological
Displays**

Lacey Restemyer

*Houston Museum of Natural Science, Houston, TX,
U.S.A.;*
lrestemyer@hmns.org

Engaging the public’s interest in entomological issues is a well-known and frustrating hurdle in outreach, due to common cultural biases against insects. An already challenging problem can be exasperated by short presentation time frames, limited space, and more appealing items nearby. Drawing inspiration from museum exhibits, art, and other sources, I have created show drawers meant to engage and appeal to a broad audience. I will discuss my drawer creation process and how aesthetics and design can be used to overcome hurdles such as the stigma against insects.

10:30 am – 10:35 am **Outreach and miscellaneous insect collections: a study case in Colombia**

Lucía Aguilar Benavides¹, Dario Guevara Plata¹, & Duvan Sneider Ulloa Saldaña¹

¹*Universidad Militar Nueva Granada, Bogotá, Colombia;*
marlene.aguilar@unimilitar.edu.co

Insect collections housed in museums, universities, and research institutions are crucial for scientific research, education, and conservation. This case study presents the outreach initiatives of the Entomological Collection at Universidad Militar Nueva Granada in Colombia, highlighting the connection between biodiversity conservation and community engagement. The Biological Collection of insects provides educational and outreach services to schools, institutions, organizations, communities, and citizens in the region. During visits, guided tours are conducted in the entomology laboratory and the “Bombinario”, a greenhouse designed to support native insects, especially bees of the genus *Bombus*. In these facilities, we organized activities showcasing specimens from several insect orders and emphasizing their importance in biodiversity, distribution, ecosystem services, especially their interactions with plant species. The combination of the Bombinario and the entomological collection allows us to display both faunal and floral diversity. Our results showed no significant differences in interest levels among age groups concerning learning about insects; however, younger participants showed a greater willingness to interact directly with the specimens. Additionally, many attendees expressed interest in participating in future activities, demonstrating a strong interest in insects and the potential to expand entomological outreach initiatives. Financial support: VICEIN IMP-CIAS 3740.

10:35 am – 10:40 am **The Game of Leaf: a gamified outreach drawer for micro-parasitoid Hymenoptera in leaf litter**

Robin P. Marquez¹, Matthew L. Buffington², Jeffrey Sosa-Calvo³, & Robert L. Kresslein²

¹*University of Central Florida, Orlando, FL, U.S.A.*; ²*Systematic Entomology Laboratory, USDA-ARS, Washington DC, U.S.A.*; ³*National Museum of Natural History, Smithsonian Institution, Washington, DC, U.S.A.*;
Robin.Marquez@ucf.edu

Entomology outreach is crucial for developing public interest, but designing hands-on engagement can be challenging for insects that are microscopic and have minimal pre-existing supplemental materials. During my research internship at the National Museum of Natural History, we developed an outreach drawer with an optional matching game to inspire exploration of our research in micro-parasitoid Hymenoptera collected in leaf litter. We created the drawer by selecting six specimens for imaging: *Baeus lactrodecti* (2), *Podagrion ecthrus* (2), and *Andricus quercuscalifornicus* (2). We placed each specimen in separate one-quarter unit trays that were randomly spaced in a USNM-style drawer. We covered the drawer lid with a decorative leaf print with squares partially cut over the locations of the unit trays. The squares could then be folded open to reveal a specimen with its corresponding image. We used this drawer for outreach during peak museum visitation hours. Overall, guests enjoyed a personal sense of discovery of microscopic insects that can exist in the leaf litter horizon, and a sense of reward for finding matching insects. This gamified drawer concept could be expanded to include additional information or supplemental materials, or re-themed for other topics including aquatic and imported invasive insects.

10:40 am – 10:45 am **Closing Remarks**

10:45 am – 10:55 am **Break**



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MEMBER SYMPOSIUM 2

iNaturalist today, a mutually beneficial tool or a plaything for amateurs?

Organizer/Moderator: **Ingolf Askevold**, *Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, FL, U.S.A.*

10:55 am – 11:00 am **Introduction**

11:00 am – 11:15 am **iNaturalist—what can you love about it?**

Ingolf Askevold

*Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, FL, U.S.A.;
iaskevold@gmail.com*

As the Covid pandemic gripped everything around me, I discovered iNaturalist. My iPhone became my constant companion and I became pretty proficient with its camera. I discovered some 300 plant species in my backyard. Today, I go iNatting everywhere. More recently I began to target my fave beetles, the aquatic donaciine leaf beetles, and decided to clean up that little corner of thousands of observations in iNaturalist. In the process I learned a lot about how iNaturalist functions and how researchers can use it. For every trained scientist, there must be hundreds if not thousands of pairs of eyes belonging to citizen science practitioners, volunteering their time, documenting organisms in their natural world. iNaturalist offers limitless potential for self-education of the public, and I believe an educated public will make wiser choices about the protection of environments. iNaturalist offers a treasure trove of information about organisms: their distribution, natural history from host plants to life cycle data and phenology, even discovery or rediscovery of species. iNaturalist could be viewed as a digital collection, free of holding and storage costs, dermestid and fungus issues. The question is perhaps begged, does iNaturalist threaten natural history collections, or should we embrace it and contribute to its continued development and success?

11:15 am – 11:30 am **Community Science Data in
Entomology**

Michael Skvarla

*Penn State University, University Park, PA,
U.S.A.;*
mxs1578@psu.edu

iNaturalist, BugGuide, and other photo sharing and citizen science websites have become increasingly popular over the two decades. Following the steady rise in photos shared to these websites, there has been an increasing number of scientific papers that have been based on them. But what exactly has the impact of online photo sharing on entomology been? And are there best practices we can implement when using data from such photos?

11:30 am – 11:45 am **Investigating potential bumble bee
range shifts using iNaturalist and other
community science datasets**

Michael Caballero¹, & Sean Griffin¹

*¹Lady Bird Johnson Wildflower Center, The
University of Texas at Austin, Austin, TX, U.S.A.;*
mcaballero@wildflower.org

Bumble bees (*Bombus* spp.) contribute immense pollination services to both wild lands and our agricultural systems. As our climate continues to warm, a number of bumble bee species have exhibited substantial shifts from their past to present ranges. The resulting shifts may have profound effects on plant-pollinator interactions and could contribute to global pollinator declines. Despite these concerns, few studies have rigorously examined fine-scale contemporary bumble bee species range shifts, especially within drought-prone regions of the Southern US. We hypothesize that historically western desert-tolerant bumble bee species are gradually moving eastward as the Texas climate continues to warm. Examining data taken from two community science datasets, iNaturalist and 20-yr of observations taken by volunteers at the Lady Bird Johnson Wildflower Center, we investigate two species, the historically more drought-sensitive *Bombus pensylvanicus* and the historically more drought-tolerant *Bombus sonorus*, and quantify how their abundance and ranges have shifted over the past decade. Based on our preliminary

analyses, we see notable fluctuations in *B. pensylvanicus* from 2020–2024 years, while *B. sonorus* observations have increased since 2020. Future work will incorporate climate data and continued monitoring to characterize the trajectory of potential range shifts as well as possible mechanisms driving these shifts.

11:45 am – 12:00 pm Collections and community science work together to improve our knowledge of the poorly known bumblebee-riding beetle genus *Antherophagus* (Coleoptera: Cryptophagidae)

Madeline Shaw¹ & Tommy McElrath²,

*¹Department of Ecology & Evolutionary Biology,
University of Connecticut, Storrs, CT, U.S.A.*

*²Illinois Natural History Survey, Prairie Research
Institute, University of Illinois at Urbana-
Champaign, Champaign, IL, U.S.A.;
monotomidae@gmail.com*

Bumblebee riding beetles in the genus *Antherophagus* (Cryptophagidae: Coleoptera) are a poorly known group of bumblebee nest inquilines that transport via phoresy. However, two recent papers on their identification have created a foundation for more work on the genus. However, their ranges and lifecycles are still poorly known. Recent collecting efforts have discovered larval material for at least one species, and preliminary investigation suggests their range is extremely underreported and poorly documented. Using a combination of museum and community science data, we improved the known distribution of several species and provide the first description of any larvae from North or South America.

12:00 pm – 1:30 pm Lunch Break

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MEMBER SYMPOSIUM 3

Using Collections to Solve Agricultural Problems

Organizers/Moderators: **Jessica Awad**, *Staatliches Museum für Naturkunde Stuttgart, Stuttgart, Germany*, & **Robert L. Kresslein**, *Systematic Entomology Laboratory, USDA-ARS, Washington DC, U.S.A.*

1:30 pm – 1:35 pm **Introduction**

1:35 pm – 1:50 pm **Taxonomic preparedness and effective biological control rely on comprehensive insect collections**

Matthew L. Buffington¹, Robert L. Kresslein¹, Robert Kula¹, Jeffrey Sosa-Calvo², & Elijah Talamas³

¹*Systematic Entomology Laboratory, USDA-ARS, Washington DC, U.S.A.*; ²*National Museum of Natural History, Smithsonian Institution, Washington, DC, U.S.A.*; ³*Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, FL, U.S.A.*;
matt.buffington@usda.gov

All forms of biological control rely on rapid and accurate identification of both pest insects and their natural enemies. We review here how this relationship crucially depends on well curated collections. Further, taxonomy can be greatly enhanced by biocontrol workers generating hundreds, if not thousands, of host records, many of which include behavioral data. We provide several examples where this interplay of disciplines worked favorably, where they can work better, and how this relationship interfaces with DNA barcode ‘taxonomy’.

1:50 pm – 2:05 pm

**Collections and regulatory entomology:
A focus on scale insects and whiteflies**

Erin C. Powell

*Florida State Collection of Arthropods, Florida
Department of Agriculture and Consumer Services,
Division of Plant Industry, Gainesville, FL, U.S.A.;
Erin.Powell@fdacs.gov*

Reference collections are imperative for accurate and timely diagnostics in regulatory entomology. The state of Florida is especially vulnerable to insect incursions. An average of one exotic arthropod species is estimated to arrive in Florida every month and of those, more than one third are true bugs (Hemiptera). A main goal of the Florida State Collection of Arthropods is to have the in-house expertise and resources to identify arthropods causing damage to Florida's agriculture or natural resources. Cooperation with other working reference collections, such as the USNM, is also crucial to solving taxonomic issues with adventive species. Recent scale insect (Coccomorpha) and whitefly (Aleyrodidae) introductions and how the reference collection aided in their identification will be discussed. In some cases, it is not surprising that repeatedly intercepted pest species arrive and establish. Having cosmopolitan coverage in the collection supports the identification of such taxa. In other cases, adventive species may be undescribed and specimens in the collection help solve decades-old taxonomic mysteries. Moreover, such specimens can lend insight to the native distribution and introduction pathways.

2:05 pm – 2:20 pm

**Small but Mighty: How a Small
Collection Tackles Important
Agricultural Challenges.**

**Alfred Daniel Johnson¹, Nadeer N.
Youssef¹, Jason B. Oliver¹ & Karla M.
Addesso¹**

*¹Otis L. Floyd Nursery Research Center, Tennessee
State University, McMinnville, TN, U.S.A.;
danieljalfred@gmail.com*

The insect collection at the Otis L. Floyd Nursery Research Center holds approximately 50,000 specimens housed in over 250 drawers distributed across about 15 cabinets. These specimens have been captured over the

past 25 years, primarily from studies related to woody ornamental nursery production. We have 12 drawers dedicated for outreach purposes. We use these resources to train extension workers and nursery growers of middle Tennessee as well as to provide K-12 educational programs. The majority of the specimens were reared and come with extensive natural history information, including host remains, different life stages, etc., Despite its relatively small size, this collection has yielded first reports of invasive buprestids, ants, range extensions of Cerambycidae, rediscoveries of Coccinellidae and new host records of buprestids, parasitoids of Japanese beetles, flatheaded borers, etc. Ongoing research utilizing collection-based spectrophotometry scanning is helping to streamline the identification process for the complex *Chrysobothris femorata* species group. Additionally, our collection contains a significant number of expert identified Cerambycidae and Buprestidae and Scolytines from the southeastern region of the United States. It serves as a valuable resource for insect identification for taxonomists across the country, thereby playing a role in solving agricultural problems.

2:20 pm – 2:35 pm **Don't panic: using collections to quell public fears**

James Hayden

*Florida State Collection of Arthropods, Florida
Department of Agriculture and Consumer Services,
Division of Plant Industry, Gainesville, FL, U.S.A.;
jehayden63@gmail.com*

Newly detected pests and other introduced species cause concern when first discovered in a new region and environment. Questions arise about how abundant they could become and how much damage they could cause. However, the newly detected species may be subsequently discovered among older unidentified or misidentified material in collections. We give examples of newly detected species that were later found to be historically present in the region, thus giving a track record of abundance and behavior.

2:35 pm – 2:50 pm **From Cabinets to Crops: the use of collections in biocontrol**

Ashley Yên Nhi Bui¹, & John Heraty¹

¹*University of California, Riverside, Riverside, CA, U.S.A.;
abui052@ucr.edu*

Agricultural pests have a financial impact of billions of dollars every single year. Biological control (biocontrol) is the use of a pests' natural enemies (i.e. predators, parasites, parasitoids, and pathogens) against them. While pesticides and other forms of pest management can be utilized, the use of biocontrol, particularly in insects, is particularly appealing when considering the adverse environmental effects of pesticide usage. Though biocontrol is not without its own history of adverse environmental ramifications. This is why, in order to have successful biological control program, due processes must be in place. This includes the deposition of biological control vouchers in museum systems and a detailed record of the agent and its host. This talk will discuss some case studies of when museum collections have aided in our understanding of biological control and its use in agriculture.

**2:50 pm – 3:05 pm The pivotal role of collections in
systematics research of agriculturally
important weevils and wood-boring
beetles**

**M. Lourdes Chamorro¹, Kojun Kanda²,
& Grey Gustafson³**

¹*Systematic Entomology Laboratory, USDA-ARS, Washington DC, U.S.A.*; ²*USDA-APHIS-PPQ-S&T Pest Identification Technology Lab, Fort Collins CO, U.S.A.*; ³*Department of Biological Sciences, Northern Arizona University, Flagstaff, AZ, U.S.A.*;
lourdes.chamorro@usda.gov

Weevils and woodboring beetles include some of the most devastating and important agricultural pests in the world such as the Boll Weevil, a pest of cotton, and the Emerald Ash Borer, a pest of Ash trees. In 2021 the National Museum of Natural History, with contributions from several US governmental agencies, acquired the Eduard Jendek collection of Buprestidae. This collection is an invaluable reference for the identification of *Agrilus*; it contains over 1,277 species, approximately a third of the total diversity of the genus and is extremely rich in Palearctic

and Indo-Malayan species. Most specimens were collected within the last 40 years and this was considered an advantage for its use in molecular phylogenetic studies of the genus. However, certain factors stemming from the unique method of preservation of this collection may have contributed to significant DNA degradation. We present preliminary results of a global phylogeny of *Agrilus*, with discussion on the challenges we experienced when using this collection for molecular studies. We also provide an update on digitization efforts to facilitate systematics research on *Agrilus* and weevils and the role the national insect collection plays in the USDA's effort to protect the nation's natural and agricultural resources.

3:05 pm – 3:15 pm **Break**

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CONTRIBUTED TALKS SESSION 1

Moderator: Maria-Eugenia Losada, National Museum of Natural History, Smithsonian Institution, Washington, DC, U.S.A.

3:15 pm – 3:20 pm **Introduction**

3:20 pm – 3:35 pm **After 2 Years of the World
Ichneumonid Database (WID):
Strategies for Building a Strong
Community**

Rachel Behm¹ & Davide Dal Pos¹

¹*University of Central Florida, Orlando, FL,
U.S.A.;*

behmrachel@yahoo.com, daveliga@gmail.com

The World Ichneumonidae Database (WID) is the only updatable global database dedicated to the fauna of Ichneumonidae, offering significant potential for advancing taxonomic and ecological studies. However, despite this advantage, WID has faced challenges in community engagement and training. In this talk, we will present the latest updates and outline the future directions for WID. We will also highlight the successful strategies that have been implemented to foster a more active and collaborative community, sharing lessons learned and plans to enhance participation moving forward.

3:35 pm – 3:50 pm **Tyger Tyger Burning Bright: the legacy,
logistics, and legalities of the Dr. David
W. Brzoska Cicindelid Collection**

Zack Falin

*Division of Entomology, University of Kansas
Biodiversity Institute, University of Kansas,
Lawrence, KS, U.S.A.;*
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The Dr. David Brzoska Tiger Beetle Collection (Carabidae: Cicindelinae) is the result of decades of passionate, herculean effort. As one of the largest, most diverse personal collections of tiger beetles in the world it

represents an enormous and effectively unique scientific resource. It contains approximately 255,000 specimens and 1,850 taxa collected over 50 years from 66 countries across all bioregions, virtually all by Dr. Brzoska himself. I introduce Dr. Brzoska and his collection, why and how it came to the KU Biodiversity Institute's Division of Entomology, and the ongoing process I use to inventory and accession such a large, complex, personal collection. It is a prime example of a perfect storm of issues we all face in appropriately, diligently, accessioning and preserving legacy personal collections of incredible scientific value and complex provenance.

3:50 pm – 4:05 pm Geographic biases and social trends of insect collectors inferred from digitized data

M. Andrew Johnston

Purdue University, West Lafayette, IN, U.S.A.;
m.andrew.johnston@gmail.com

With the proliferation of digitized occurrence records, we can begin to understand large-scale patterns in insect diversity and distribution. But what biases and trends are present in the underlying data and are those the result of the individual naturalists who generated the data? Two studies are presented from aggregated data for the United States looking at Arizona and Indiana. Insect biodiversity knowledge is far from complete anywhere, even in the most well-sampled regions, and evidence suggests that our knowledge is structured by individual collectors.

4:05 pm – 4:20 pm LightningBug in Collections

Christine Fernance¹ & Crystal Maier²

¹National Research Collections Australia, CSIRO, Canberra, Australia; ²Museum of Comparative Zoology, Harvard University, Cambridge, MA, U.S.A.;
christine.fernance@csiro.au

LightningBug is a new digitization system that aims to speed up insect specimen digitisation and transcription by utilizing a combination of robotic hardware and computer vision software. The system uses the COPIS digitization platform. It captures multiple views of labels and

specimens and generates 3D photogrammetric reconstructions from these images. The National Research Collections Australia Digitisation Team at CSIRO and the Entomology Collection at the Harvard Museum of Comparative Zoology share their experience using this system at their respective institutions.

4:20 pm – 4:35 pm **Seeing and Doing More With (Your) Data**

Deborah L. Paul¹, Matthew Yoder¹, & José Luis Pereira¹

*¹Species File Group, Prairie Research Institute, University of Illinois at Urbana-Champaign, Champaign, IL, U.S.A.;
dlpaul@illinois.edu*

Be it a database or a spreadsheet, it can be challenging to fully know what data lurk there. Often, we all discover data issues not strategically, rather haphazardly. We fix them if we can, other times we need to seek human help or learn new methods. We explore the promise of two new tasks in TaxonWorks – Project vocab and Field Synchronize. These empower you and others to find and fix issues as well as extend and enhance existing data without a spreadsheet. At a much higher community level, we see an opportunity to look back and see ourselves as good data ancestors. To do that, we need to assess our existing processes, acknowledge that we teach the way we are taught and recognize some changes may be needed, and engage leadership to help address (biodiversity) informatics gaps in our related communities.

4:35 pm – 4:50 pm **Grasshoppers, Crickets and Katydid
Oh My, Or How I learned to Stop
Worrying and Love the Digitization
of Audio**

Greg Cowper & Aidan Houlihan

*Department of Entomology, The Academy of Natural Sciences of Drexel University, Philadelphia, PA, U.S.A.;
gwc32@drexel.edu*

A treasure trove of field recordings from worldwide localities spanning 30 years were rediscovered in the Entomology Department at the Academy of Natural Sciences of Drexel University. Recorded by Daniel Otte, PhD, an expert on Orthoptera taxonomy and their species-specific songs, they represent nearly 250 hours of recordings from 207 cassette and reel-to-reel tapes. The natural degradation of analog tapes prioritized their digitization and an Institute of Museum and Library Services' Award and partnership with the Sound Archives at Drexel University made saving these tapes a reality. Using an audio processing protocol designed for the open-source software Audacity, the digitized field recordings are now being transcribed and mined for species-specific song clips, which can be identified and associated with specimen level occurrence data. Focusing on species represented on the tapes, more than 90K specimens from the Academy's comprehensive Orthoptera collection have been databased using the Symbiota-based Ecdysis portal and are now available. New audio-handling functionality in Symbiota was sponsored by this project's funding and completed by the Symbiota Support Hub and ASU-BIOLIC developers. Once the song clips and collecting metadata are extracted and cataloged, they will be available on Ecdysis, GBIF, and Xeno-Canto, with whole-tape files and transcriptions upon request.

4:50 pm – 5:05 pm **A Catalogue of the Moth Type
Specimens in the Natural History
Museum of Zimbabwe.**

Dorothy C. Madamba¹, & S.A.
McManmon²

*¹National Museums and Monuments of Zimbabwe,
Natural History Museum of Zimbabwe, Bulawayo,
Zimbabwe; ²Researcher, Zimbabwe;
madambadc@gmail.com*

This presentation aims to provide an up to date record of the collection of moth type specimens held in the Natural History Museum of Zimbabwe. This includes images and information on each specimen. In the Natural History Museum in Bulawayo, Zimbabwe there are 13 Families of Moths represented in type specimens. The presentation attempts to give an overview of the catalogue and supply the state of the specimens, the authors as well as some issues to do with the state of conservation.

5:05 pm – 5:20 pm **Can AI help with automated identification & management of natural history collections?**

Geoff Martin¹, Jack Hollister¹, Geoff Martin¹, Xiaohao Cai², Tammy Horton³, Ben Price¹, Mark Sterling¹, Glory Turnbull¹, & Phillip Fenberg²

¹*Natural History Museum, London, UK;*

²*University of Southampton, Southampton, UK;*

³*National Oceanography Centre, Southampton, UK;*

g.martin@nhm.ac.uk

Between 2013 and 2016 some 607,056 specimens of British and Irish Lepidoptera in the collections of the Natural History Museum, London were digitised. These data were subsequently uploaded to the NHM's Data Portal. It was not possible for the sole curator responsible for the collection to check every specimen determination before digitisation. As much of the collection had already been identified and the British and Irish fauna is so well-known it was assumed that there would be few, if any, misidentifications. Moving forward to 2024, PhD student Jack Hollister proposed to use artificial intelligence and computer vision to examine 350,208 specimens from this dataset to highlight specimens that did not match their taxonomic name in the Data Portal. The processing of these images revealed that 7004 of the specimens were likely to be incorrectly identified. Together we returned to the collection and visually inspected 210 specimens of which 147 were misidentified. With refinement this computer vision pipeline will prove to be a very powerful tool for curating and managing large collections of Lepidoptera.

5:20 pm – 5:30 pm **Break**

5:30 pm – 6:00 pm **ECN Business Meeting**

6:30 pm – 9:00 pm **ECN Reception, Que Sazon South American Cuisine, 622 E Adams St, Phoenix, AZ, 85004**

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Sunday, November 10th
Sheraton Phoenix Downtown
Phoenix Ballroom D/E

7:00 am – 8:00 am **Registration**

CONTRIBUTED TALKS SESSION 2

Moderators: **Christopher C. Wirth**, *Purdue Entomological Research Collection, Department of Entomology, Purdue University, West Lafayette, IN, U.S.A.* & **Kristin Jayd**, *National Museum of Natural History, Smithsonian Institution, Washington, DC, U.S.A.*

8:00 am – 8:05 am **Introduction**

8:05 am – 8:20 am **Collection on the Move in Rural,
Appalachian Ohio**

Heather Stehle

Crane Hollow Preserve, Rockbridge, OH, U.S.A.;
heather@cranehollow.org

We will share the skills [pros and cons] we learned centered around the planning and execution of a once-in-a-career collection move facilitated by a small nonprofit and critically important partners in rural, Appalachian Ohio. This September 2022 collection move was made infinitely more interesting due to challenges with topography, beloved historic structures, and last but not least, Covid precautions for everyone involved. We will share the lessons we learned while navigating partnerships, facility planning, fiscal and risk management. We will also share what we learned about working with specialized contractors who do not normally work with museums and conservation-based land management entities. We hope to relay to potential project leaders insights into human resources and stress management in the midst of a major, capital-intensive, keystone project.

8:20 am – 8:35 am

Evaluation of the Health Index and restoration of the Formicidae Collection (Insecta: Hymenoptera) of the Central University of Venezuela's Museum of Biology

Andrés Fermín Morales Ortega¹ & Edmundo Guerrero¹

*¹Laboratorio de Biología de Vectores y Parásitos, Instituto de Zoología y Ecología Tropical, Facultad de Ciencias, Universidad Central de Venezuela;
andresmorales.vzla97@gmail.com*

The insects known as ants belong to the family Formicidae, located in the order Hymenoptera. They make up a very important taxonomic group, on one hand, because of their diversity and abundance in ecosystems; and on the other, because of their commonness in everyday life in human society. In Venezuela they are known around 546 species of ants, kept in biological collections both local and abroad. In the country, and specially in Caracas, there is a shortage of well-maintained ant collections. The Museum of Biology of the Universidad Central de Venezuela (MBUCV) possessed a small ant collection that lacked appropriate curatorship. The McGinley (1993) Collections Health Index was used to measure the initial state of the collection. After that analysis, the collection was curated, expanded with new specimens (collected recently and previously stored in several labs by other researchers), identified taxonomically and organized. The Health Index analysis was then repeated and a database created. Now, the ant collection at the MBUCV can be considered an important source of information regarding Formicidae in the country.

8:35 am – 8:50 am

Idiosyncratic legacies: UC Riverside's hidden treasures

Doug Yanega

*University of California, Riverside, Riverside, CA, U.S.A;
dyanega@gmail.com*

The UC Riverside Entomology Research Museum has its beginnings over a century ago, in the then newly-established Citrus Experiment Station.

Formed originally as a synoptic collection for insects being considered for biological control, or pests themselves, the composition of the collection reflected the interests and activities of the researchers working and depositing specimens in the collection. Some, such as P.H. Timberlake, brought with them large numbers of specimens from prior positions—in Timberlake’s case it was numerous insects from the Hawaiian Islands, including bees, vespid and crabronid wasps, carabid beetles, and weevils, in addition to parasitoid wasps (what Timberlake was hired to work with). Timberlake abandoned parasitoids, and undertook collecting primarily bees for many decades, amassing roughly 500,000 specimens. Other researchers were similarly idiosyncratic and eclectic in their choices of study organisms, though primarily with insects that were pests, or possible biological control agents. As a result, the UCR collection contains disproportionate representation from diverse groups that might not be expected, such as thrips, mirid bugs, ladybirds, melyrid, meloid, and scarab beetles, and asilid and bombyliid flies, plus large amounts of material from surprising places, such as Hawaii, Thailand, Russia, Cyprus, Taiwan, New Zealand, Guatemala, and more.

8:50 am – 9:05 am **ecoPalette: A Visual Bridge Between
Environment and Machine Learning
Insect Identification**

**Brennan T. Hays¹, Nicholas Gunner²,
Alyson East³, Daniel López-Lozano⁴, &
Izzy Viney⁵**

¹Arizona State University, Tempe, AZ, U.S.A.;

²Cornell University, Ithaca, NY, U.S.A.; ³University

*of Maine, Orono, ME, U.S.A.; ⁴Center for
Biodiversity and Conservation, American Museum of
Natural History, New York, NY, U.S.A.; ⁵Battelle-*

NEON, Gainesville, FL, U.S.A.;

bthays@asu.edu

Ecopalette explores a new approach to visualizing and analyzing biodiversity data. By leveraging increasingly available large datasets and advanced machine learning models, Ecopalette recontextualizes NEON ground beetle specimens. Environmental data is encoded directly into specimen images, creating a visually rich representation of the “extended specimen” that captures both the organism and its spatio-temporal context. These enhanced images aim to provide human users with an intuitive

understanding of the specimen's ecological niche. Simultaneously, the encoded environmental data is incorporated in an attempt to train a visual machine learning model for species identification. This approach hopes to explore the intersection of ecological data visualization and machine learning, while retaining a clear focus on the specimen and the human-user, with the ultimate goal of contributing to biodiversity research, communication, and conservation.

9:05 am – 9:20 am **Develop or Die: why collections must remain active to remain relevant.**

Maxwell V. L. Barclay

*Natural History Museum, London, UK;
m.barclay@nhm.ac.uk*

Entomological Collections management is an ongoing trade-off between protection and exposure. On the one hand, we aim to pass as comprehensive an archive of the natural world as possible safely to future generations. On the other hand, we expend time and resources, even some risk, to increase scientific access. We recognize that without exposure to the scientific community, the collections would stagnate, and all we would have left to pass to posterity would be a historical anachronism, a 'museum of a museum'. This is because Science and the generation of knowledge do not stop, and a collection that is not updated, maintained, developed, examined and re-examined by experts, however perfect and well-cared for, quickly becomes outdated and irrelevant, as well as losing its role as a generator of new information. I will discuss an additional 'agent of deterioration' in museums, the invisible decay of becoming irrelevant, and how to combat it.

9:20 am – 9:35 am

A Collaborative Project on the Biodiversity of Arthropods of the Davis Mountain Preserve in Texas, Emphasizing Collections Data Management

Jennifer C. Girón¹, Ashley J. Schmitz², Joshua Basham³, Jason Botz⁴, Richard L. Brown⁵, Richard S. Fleischer⁶, Jason A. Hansen⁷, Tyler J. Hedlund⁸, Daniel J. Heffern⁹, JoVonn Hill⁵, Yu-Hsin Lin¹⁰, Joseph Manthey¹¹, James McDermott¹², Katrina Menard¹³, Ricky Patterson¹⁴, Matthew R. Pintar¹⁵, Brian T. Raber⁹, & Edward G. Riley¹⁰

¹*Invertebrate Zoology Collection, Natural Science Research Laboratory, Museum of Texas Tech University, Lubbock, TX, U.S.A.*; ²*Museum of Texas Tech University, Corpus Christi, TX, U.S.A.*; ³*USDA-APHIS-PPQ, Pharr, TX, U.S.A.*; ⁴*USDA-APHIS-PPQ, Nogales, AZ, U.S.A.*; ⁵*Mississippi Entomological Museum, Mississippi State, MS, U.S.A.*; ⁶*Burleson, TX, U.S.A.*; ⁷*USDA-APHIS-PPQ, Los Indios, TX, U.S.A.*; ⁸*USDA-APHIS-PPQ, Mahomet, IL, U.S.A.*; ⁹*Texas A&M University, Houston, TX, U.S.A.*; ¹⁰*Texas A&M University, College Station, TX, U.S.A.*; ¹¹*Texas Tech University, Lubbock, TX, U.S.A.*; ¹²*Palestine, TX, U.S.A.*; ¹³*University of Connecticut, Storrs, CT, U.S.A.*; ¹⁴*Mississippi State University, Mississippi State, MS, U.S.A.*; ¹⁵*Florida International University, San Marcos, TX, U.S.A.*; *entiminae@gmail.com*

The Davis Mountain Preserve is about 33,000 acres and has been managed by The Nature Conservancy since 1998. Plants and vertebrates have been well documented, but the arthropod community present in the preserve has not been comprehensively studied. Since 2021 a research team has been collecting specimens at the preserve, aiming to generate a comprehensive checklist of arthropods. To date, about 19 researchers are involved in the project, with over 1400 arthropod taxa recorded. Specimens have been

deposited at several collections, both private and institutional. The Invertebrate Zoology Collection of the Museum of Texas Tech University has been designated to house voucher specimens for this project. Here we will provide information on how the specimens are collected, identified, and then transferred and digitized, with data available online via ecdysis.

9:35 am – 9:50 am **The Margaret Collins Termite
Collection: Curation of a Historical
Collection**

**Maria-Eugenia Losada¹ & Floyd
Shockley¹**

*¹National Museum of Natural History, Smithsonian
Institution, Washington, DC, U.S.A.;
marulosada33@gmail.com / losadam@si.edu*

Dr. Margaret Collins was a pioneering scientist and civil rights activist who spent part of her life working at the Smithsonian National Museum of Natural History (USNM). She was born in West Virginia in 1922 and upon graduating with her Ph.D. in Zoology in 1950, she became to be the first African-American female entomologist in the United States. Collins' work focused on Isoptera (termites), with more than 40 research publications. She travelled to more than a dozen countries for field work and was an expert on termites from the Caribbean Islands and Guyana. Collins passed away during a field expedition in 1996. Most of the termite collection is housed in alcohol and has been recently curated, the pinned and slide collections of termites needed conservation and recuration. Microscope slides were cleaned and transferred from legacy storage to archival plastic slide boxes. Pinned specimens were reorganized to reflect current classification, including 47 genera from 7 families and 33 primary types and 22 paratypes. The collection also includes termite nests, which were also recurred, and fossils which were transferred to the Paleobiology department. Margaret's legacy continues as her contributions make the USNM Isoptera collection among the best in the world.

9:50 am – 10:05 am **Microscopic Digitization of the McGuire Center Slide Collection**

Megan X. Neal¹, James E. Hayden², & Deborah L. Matthews¹

¹*McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, Gainesville, FL, U.S.A.*; ²*Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, FL, U.S.A.*;
mxiumei.neal@ufl.edu

Many Lepidoptera species have a distinctive external morphology that help identify them. However, cryptic and plain-colored species can be difficult to determine, particularly amongst microlepidoptera. In addition to DNA sequencing, lepidopterists use genitalia dissection and subsequent analysis of unique chitinized and sclerotized features to facilitate identifications. The McGuire Center has a collection of over 20,000 genitalia slides, contributed by McGuire staff and donors over many generations. This talk will demonstrate the process by which these slides are digitized, including an overview of the tools used to capture and edit high-resolution images of Lepidoptera genitalia. The ultimate goal of amassing a digitized collection for public availability will also be discussed with specific focus given to where and how the images can be accessed.

10:05 am – 10:10 am **Break**

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10:10 am – 10:25 am **Natural History Literature Rescue**

Michael Ferro

*Clemson University Arthropod Collection (CUAC),
Clemson University, Clemson, SC, U.S.A.;
spongymesophyll@gmail.com*

Natural History Literature Rescue is a newly established 501(c)(3) organization whose purpose is to preserve literature, specimens, samples, equipment, supplies, memorabilia, and ephemera associated with the study of natural history that would otherwise be destroyed or lost if not maintained (“We Save Science”). Currently, the main focus of the organization is to preserve reprint collections and ultimately make them available to future researchers. We have not yet reached our campaign goal of ten million dollars.

10:25 am – 10:40 am **Navigating the Complexities of
Forensic Entomology: Challenges and
Considerations in Collection, Curation,
and Storage**

Krystal R. Hans

*Purdue University, West Lafayette, IN, U.S.A.;
hans3@purdue.edu*

Insects are used as a type of physical evidence in forensic science, particularly in criminal cases concerning human death investigations. Forensic entomology applies information regarding the development of insects on remains to estimate the minimum time of colonization (TOC), or time since insects arrived to and deposited offspring on the remains. Given that insects can arrive to remains quickly after death, the TOC can contribute information regarding the minimum postmortem interval (mPMI), or time between death and discovery of the remains, which is often a crucial component and the most requested type of information from law enforcement. Although there are standardized methods for collection and analysis of insect evidence in criminal investigations, the curation and storage of insect specimens can present a unique and sometimes challenging undertaking. Often in the criminal justice system, there may be a great length of time between collection of insect evidence, analysis, trial and any post-trial appeals. This presentation will provide some insight into the considerations for curation and storage of forensically relevant

insects and will share data regarding current practices in the field. Suggestions for best practices and protocols will also be provided as a means to standardize the storage and retention of insect evidence in forensic entomology and to further strengthen connections between museum curators and practicing forensic entomologists.

**10:40 am – 10:55 am House of the Dragons (and Damsels):
Curating the USNM Odonata Collection**

Erin Kolski¹ & Jessica Bird¹

*¹Department of Entomology, National Museum of
Natural History, Smithsonian Institution,
Washington, DC, U.S.A.;
kolskie@si.edu*

The Odonata collection at Smithsonian's National Museum of Natural History represents 3,265 species and contains over 115,000 specimens. In the early 2000s, the majority of the pinned specimens were removed from their pins and stored flat in glycine envelopes. At this time, specimens were also barcoded and cataloged into EMu, making Odonata the first and only order in the collection with a complete specimen-level database. In 2022, the USNM Herbarium's digitization project that utilized a conveyor belt imaging system developed by Picturae was coming to an end. Since the majority of Odonata specimens are stored flat, similarly to herbarium sheets, we were able to image the Odonata specimens on the conveyor system using a modified workflow. Every Odonata specimen was photographed, and the images were associated to EMu database records. The records and photographs are publicly available online, with most being in the Public Domain. The next step for this collection is rehousing into new boxes and linking the location of each specimen in the collection with its database record, further enhancing the accessibility of this collection.

**10:55 am – 11:10 am Improving accessibility of entomological
collections for the study of Neotropical
Anthribidae (Coleoptera:
Curculionoidea)**

K. Samanta Orellana

*Arizona State University, Tempe, AZ, U.S.A.;
sorellana@asu.edu*

The family Anthribidae Billberg, known as fungus weevils, is a cosmopolitan group with about 3,900 described species mainly distributed in the tropics. The Neotropical fauna includes at least 616 species in 61 native genera, currently classified in two subfamilies and 15 tribes. The Arizona State University Biocollections (ASUCOB, ASUHC) hold more than 8,000 specimens of Anthribidae encompassing 29 of the 33 described tribes. From 2019 to 2024, the curation, identification and digitization of Neotropical specimens was prioritized as a result of ongoing research. More than 3000 Anthribidae specimens were digitized on the Ecdysis Symbiota portal (ecdysis.org), expanding the access to the taxonomic and geographic information. The subset of over 2300 Neotropical records, including 42 genera and 191 species, represents 33% of specimens available for this region in GBIF, where the data is also shared. Furthermore, at least 250 high resolution images generated at the ASU Biocollections, now depict 82 Neotropical species, many without other illustrations available. To maximize the accessibility to these specimen records, additional online resources such as interactive checklists and keys, were generated on a variety of platforms to encourage further research of this group in the Neotropics.

11:10 am – 11:25 am **The Michigan Pathogen Biorepository**

Oliver Keller¹, Nicté Ordóñez-Garza¹, &
Timothy James¹

¹*University of Michigan Pathogen Biorepository, Ann Arbor, MI, U.S.A.;*
okeller@umich.edu

M-PABI is a research unit of the University of Michigan Center for Infectious Disease Threats and the Department of Ecology and Evolutionary Biology. M-PABI facilitates robust pandemic prevention and preparedness by providing high-quality wildlife-associated parasite and pathogen specimens for basic and translational research. It is a global resource, serving members of the University of Michigan community and beyond.

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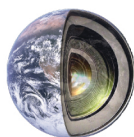
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LIGHTNING TALKS

11:25 am – 11:30 am Bugs in the code: Preliminary forays with AI from a collections perspective

Isabelle S. Betancourt¹ & Evan S. Waite²

*¹NEON Biorepository, Biodiversity Knowledge Integration Center, Arizona State University, Tempe, AZ, U.S.A.; ²Biodiversity Knowledge Integration Center, Arizona State University, Tempe, AZ, U.S.A.;
Isabelle.Betancourt@asu.edu*

Artificial intelligence (AI) is an emerging technology that has worked its way into almost every facet of our lives, including the world of science. While a lot of people may be hesitant to accept and work with this developing field, one of our jobs as museum collections employees is to ensure our collections are being used in meaningful ways relevant to the scientific zeitgeist. In the past, collections have collaborated with artists, ecologists, physicists, and more; it is time our community starts the discussion about how to approach working with AI and Machine Learning (ML). We will reflect on our experiences at Beetlepalooza, a workshop hosted by the Imageomics Institute in August 2024 that focused on applying AI/ML to enhance the work done with beetle specimens in the National Ecological Observatory Network (NEON) Biorepository. We will briefly discuss the goals of the workshop, what we were able to contribute as collections workers, and the outcomes from the program.

11:30 am – 11:35 am Coming Into Focus: Standardizing the 3D Imaging Process at The San Diego Natural History Museum

Taylor Hori¹, Pam Horsley¹, & Ellie Deer¹

*¹The San Diego Natural History Museum, San Diego, CA, U.S.A.;
thori@sdnhm.org*

There's nothing like the frustration when you realize the specimen you photographed and stacked... is out of focus. Eliminate the guess work

when setting the x-axis for image stack series with 360° y-axis rotation. Utilize this short, video tutorial to ensure the entirety of your specimen is captured throughout its x-y journey.

**11:35am – 11:40am Welcome to the Natural History
Museum Beetle Section**

**Maxwell Barclay¹, Michael Geiser¹,
Dmitry Telnov¹, Keita Matsumoto¹, &
Talay Namintraporn¹**

*¹Natural History Museum, London, UK;
m.barclay@nhm.ac.uk*

**11:40 am – 11:45 am Welcoming our new Director, Dr.
Stephen Baca, to the Louisiana State
Arthropod Museum**

Victoria Bayless

*Louisiana State Arthropod Museum, Department of
Entomology, Louisiana State University, Baton
Rouge, LA, U.S.A.;*
Curator35@gmail.com

The Louisiana State Arthropod Museum (LSAM) is very excited to announce our new Director and LSU Department of Entomology faculty member in Systematics, Dr. Stephen Baca. Stephen started on August 1st of this year and has a vision to expand the utility of the LSAM by growing the collection to reflect the unique aquatic biodiversity of the state of Louisiana. Dr. Baca is an aquatic entomologist and his research interests mesh with ongoing research at LSU on Louisiana's vast aquatic habitats. The LSAM has over a million specimens and with over half of those belonging to the order Coleoptera, hiring Dr. Baca, a Coleoptera systematist, was an excellent choice! This brief introduction is also an invitation to visit the collection, request loans, or consider graduate programs at LSU. As the long-time curator of the LSAM I am already enjoying working with Stephen and looking forward to helping him implement his vision.

11:45 am – 11:50 am **Andrew Polaszek**

*Natural History Museum, London, UK;
A.Polaszek@nhm.ac.uk*

11:50 am – 11:55 am **Centralizing the Purdue Entomological Research Collection**

Charla Replogle¹, Christopher C. Wirth¹,
Beecher Baker², & Aaron D. Smith¹

*¹Department of Entomology, Purdue University,
West Lafayette, IN, U.S.A.;²Agriculture
Information Technology, Purdue University, West
Lafayette, IN, U.S.A.;
creplog@purdue.edu*

The Purdue Entomological Research Collection (PERC) contains over 1.3 million arthropod specimens representing over 140,000 different species, with a particularly strong representation of midwestern insects and global mayfly diversity. Despite being the largest collection in Indiana and contributing to multiple digitization projects, the PERC has lacked a centralized publicly available database of our digitized material, with most records only available through community portals such as GBiF, iDigBio, and ecdysis. In collaboration with TaxonWorks and Purdue AgIT, we have initiated the first searchable public interface for the PERC. Using TaxonWorks as our primary digitization and collection management system, provides an opportunity to centralize and display collection records through our university website to drive both research and outreach. This talk details the work done to reach this milestone for the PERC, including vetting previously digitized specimens and troubleshooting frontend development along the way.

11:55 am – 12:00 pm **One in several million? An interesting specimen from the collections of the Natural History Museum**

Maxwell Barclay

*Natural History Museum, London, UK;
m.barclay@nhm.ac.uk*

12:00 pm – 12:05 pm **Specimen spotlight: See No Weevil**

Ainsley Seago

*Carnegie Museum of Natural History, Pittsburgh,
PA, U.S.A.;*
seagoa@carnegiemnh.org

12:05 pm – 12:10 pm **A specimen to lose your heart to**

Natalie Dale-Skey

Natural History Museum, London, UK;
n.dale-skey@nhm.ac.uk

Frederic Enock, a famous Victorian microscopist who is credited with coining the term “Fairy Flies” for the family Mymaridae (Hymenoptera, Chalcidoidea) often referred to one specimen seen at a Quekett Club meeting as the source of his interest in this group. While this particular exhibit proves somehow difficult to trace, an Enock specimen found in the NHMUK collection acts as a good proxy.

12:10 pm – 12:15 pm **ECN Annual Meeting Concluding Remarks**

Collections and Museum Consulting Services



FMC
Furth Museum Consulting

Dr. David G. Furth
5901 Mt. Eagle Dr #1516
Alexandria, VA 22303 USA
furthmuseums@gmail.com
1-703-869-2077
furthmuseumconsulting.com

Entomological Collections Network Code of Conduct

ECN seeks to promote a welcoming environment at our conferences that is safe, collaborative, supportive, and productive for all attendees. ECN values the diversity of views and backgrounds reflected among all attendees; as such we are committed to providing a positive environment for all, regardless of gender, sexual orientation, ability, religion, socioeconomic status, career status or ethnicity. All conference attendees are expected to adhere to the Code of Conduct.

Our respectful dialogue policy asks that participants make every effort to maintain constructive discourse with other conference attendees at all times. This includes speakers honoring designated time limits, attendees being aware of balancing speaking and listening time and welcoming newer members into conversation.

Expected Behavior

- Treat everyone with respect and consideration.
- Respect the rules and policies of the conference center and all venues as associated with the conference.
- If you see inappropriate or disrespectful behavior or language, please speak up, either to the offender or conference organizers.

Unacceptable Behavior

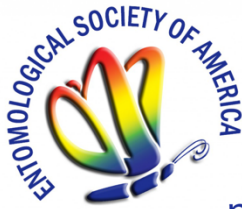
- Harassment and intimidation, including any verbal, written, or physical conduct designed to denigrate, threaten, intimidate, or coerce another attendee, conference organizers or staff;
- Discrimination based on gender or gender identity, sexual orientation, age, disability, physical appearance, body size, race, religion, national origin, or culture;
- Physical or verbal abuse of any attendee, speaker, volunteer, exhibitor or service provider.

Consequences

- Anyone requested to stop unacceptable behavior is expected to comply immediately.
- ECN officers may take any action deemed necessary and appropriate, including immediate removal from the meeting without warning and without refund.
- ECN reserves the right to prohibit attendance at any future meeting.

Reporting Unacceptable Behavior

- If you are the subject of unacceptable behavior or have witnessed any such behavior, please immediately notify any ECN officer.
- For matters of immediate physical safety, you may also approach the venue security staff.



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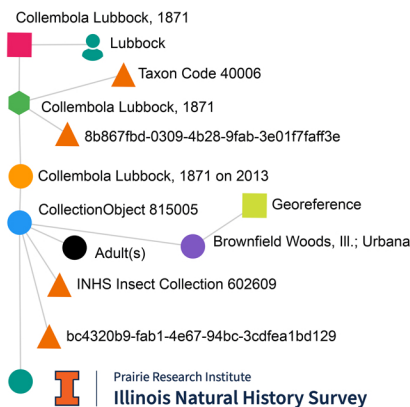


Notes

Notes



The **Species** (life on Earth) **File** (software) **Group** (collaborating community) builds tools that facilitate cataloging, description, and study of the Earth's species.



We are an endowed collective based at the University of Illinois, Illinois Natural History Survey.

In 2024, a wealth of new support for Natural History Collections:

Innovated new ways to manage containers, digitize by drawing, and batch operate on thousands of records at a time.

Doubled the organizations (12) using TaxonWorks to digitally extend their collections, rapidly exceeding 3.5m specimens and 3TB of images.

Facilitated outside development seeking to make collections data more FAIR.

At ECN 2024 meet Deborah Paul, dlpaul@illinois.edu, ask about TaxonWorks Together - May 2025

Catalogue of Life



TaxonWorks

