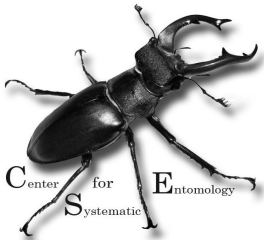


Note: All times are EST, Eastern Standard Times

Center for Systematic Entomology
Annual Meeting and Conference
3215 Hull Road, McGuire Center for Lepidoptera and
Biodiversity, upstairs conference room
January 28th, 2023
10 am to 4:00 pm
PROGRAM



Welcome!

Breakfast items provided by friends of the CSE

10:00 am: Opening, Introductions, and Instructions

10:10 am: **Joe Eger.** An analysis of the Pentatomoidea fauna of Florida (Hemiptera: Heteroptera).

10:25 am: **Matthew R. Moore (presenter), Elíjah J. Talamas, Jonathan S. Bremer, Natalie McGathey, James C. Fulton, Zach Lahey, Jessica Awad, Cheryl G. Roberts, and Lynn A. Combee.**

Cosmopolitan parasitoids: Mining biodiversity databases reveals unexpected abundance of intercontinental distributions in platygastroid wasps

10:45 am: **Andrew J. Johnson.** New records and taxonomic changes of Scolytinae in Florida.

11:00 am: **Andrei Sourakov.** Probing Lepidoptera diversity with wing-pattern manipulation experiments.

11:30 am: **Aswaj (Ash) Punnath (presenter), Stanislav Kolencik, Jorge Doña, Kevin P. Johnson, Avery Grant, Julie M. Allen and Edward L. Stanley.** Morphological convergence in repeatedly evolving ecomorphs of avian feather lice (Phthiraptera) revealed by nano-computed tomography.

11:45 am: **Davide Dal Pos.** Male genitalia of Ichneumonoidea (Hymenoptera): a forgotten treasure in bad need of a unified terminology.

12:00 pm: **Lunch (Provided by the CSE)**

12:30 pm: **Erick Rodríguez.** Fieldwork on *Anastrepha* (Diptera: Tephritidae) mainly in the western Amazon.

12:45 pm: **Alessandra Pandolfi.** Distribution of an exotic ground beetle (Coleoptera: Carabidae) in Florida and quality of citizen science records.

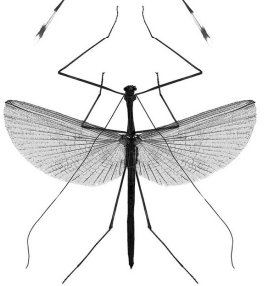
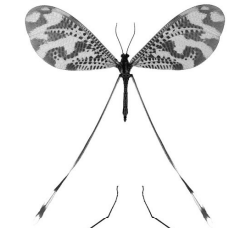
Julieta Brambila, organizer, Julieta.Brambila@usda.gov, and cse.insectamundi@gmail.com, 352-281-0428 (text)

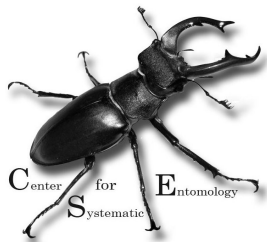
Davide Dal Pos, Alessandra Pandolfi, moderators

Your **Zoom Hosts** are David Plotkin at dplotkin@ufl.edu and Oliver Keller at okeller1977@gmail.com

CSE: <http://centerforsystematicentomology.org>

Journal contact: insectamundi@gmail.com





1:00 pm: Felipe Soto (presenter) and Kath Daly. Synopsis of the species of *Trogolaphysa* (Collembola: Paronellidae) with 0-5 eyes.

1:15 pm: James Hayden. Diversity of Lathrotelinae (Lepidoptera: Crambidae).

1:30 pm: Erin Powell, Matthew Moore, and Douglass Miller. Grass-infesting mealybugs and the FSCA Coccoidea collection.

1:45 pm: Mike Quinn. Exploring the surprising beetle diversity of the Texas I-35 corridor via iNaturalist.

2:00 pm: Coffee Break

2:15 pm: Ann Dunn (presenter) and Felipe Soto. Synopsis of the Florida species of long-tailed thrips (Thysanoptera: Phlaeothripidae).

2:30 pm: Brian J. Armitage (presenter), Tomás A. Ríos González, and Yusseff P. Aguirre. Panama's hidden caddisfly (Insecta: Trichoptera) diversity.

2:45 pm: Jose I. Martínez (presenter), David Plotkin, B. Christian Schmidt, Amanda Markee, Rebecca Messcher, Kevin L. Keegan, David L. Wagner, Nhi Vo, Jacqueline Y. Miller, Reza Zahirí, & Akito Y. Kawahara. Redefining the Noctuidae sensu stricto and reclassifying the Noctuidae sensu lato.

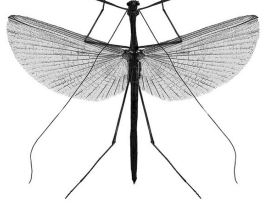
3:00 pm: Jose Marcelino (presenter) and Jamie Ellis. Integration of -omics approaches as molecular tools in apiculture research.

3:15 pm: Ángel Solís, Guillermo Alvarado, Bert Kohlmann (presenter). A Costa Rican biological puzzle.

3:30 pm: Closing of event and announcements, photos.

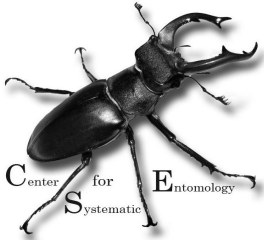
4:00 pm: CSE Business meeting.

6:00 pm: Gather at Bahama Breeze Restaurant, 3989 Plaza Blvd., Butler Plaza North, 352-378-7555 , <https://www.bahamabreeze.com/menu>



Center for Systematic Entomology
Annual Meeting and Conference
3215 Hull Road, McGuire Center for Lepidoptera and
Biodiversity, upstairs conference room
January 28th, 2023
10 am to 4:00 pm

PROGRAM WITH SUMMARIES



Welcome!

Breakfast items provided by friends of the CSE

10:00 am: Opening, Introductions, and Instructions

10:10 am: Joseph (Joe). E. Eger. Florida State Collection of Arthropods (FSCA),
Gainesville, Florida. jeeger811@gmail.com

An analysis of the Pentatomoidea fauna of Florida (Hemiptera: Heteroptera).

Summary: In Florida, the superfamily Pentatomoidea consists of five families: Cydnidae, Pentatomidae, Plataspidae, Scutelleridae, and Thyreocoridae. The fauna of Pentatomoidea currently found in Florida consists of 123 species level taxa. Included in this total are 24 immigrant species. The dates of immigrant arrival (or discovery) indicate that only seven species immigrated prior to 1975, but the rate of immigration has increased with eight species occurring between 1975 and 2000, and nine since 2000. The largest number of immigrants have come from the Caribbean region, followed by the western US, the Neotropics and Asia. Three of the recent immigrants are from Asia suggesting that increased trade and travel to Asia have resulted in increased immigration from that region. Two of these Asian immigrants are in the family Plataspidae, a family not previously found in the Western Hemisphere. Of the non-immigrant taxa, five are found only in Florida. Seventy-nine of the remaining species are also found in the southeastern US (and many in the northeast as well), 72 are found in the southwest, 42 in the Neotropics, and 31 in the West Indies. Six species are found only in Florida and the West Indies. Sixty-seven of the Florida species are found in both the southeastern and southwestern regions of the United States and 15 widespread species are found in the southeastern and southwestern regions of the United States, the West Indies and the Neotropics.

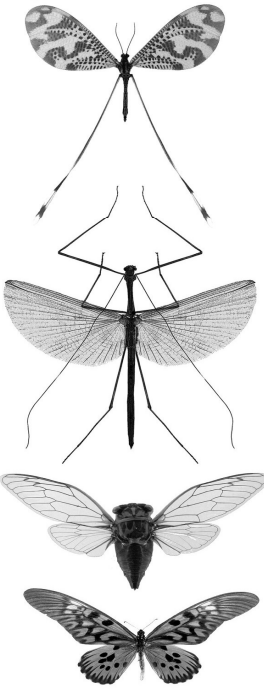
10:25 am: Matthew R. Moore¹ (presenter), Elijah J. Talamas,
Jonathan S. Bremer, Natalie McGathay, James C. Fulton,
Zach Lahey, Jessica Awad, Cheryl G. Roberts, and Lynn A.

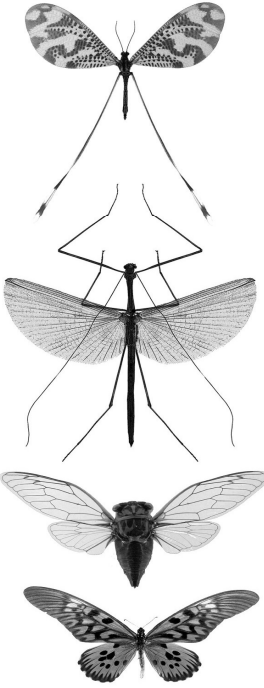
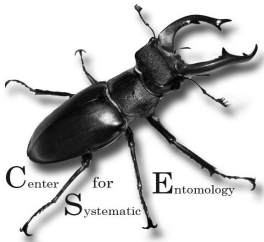
Combee. 1. Molecular Diagnostics Laboratory, Division of Plant Industry, Florida
Department of Agriculture and Consumer Services, Gainesville, Florida, USA.

Matthew.Moore@FDACS.gov

**Cosmopolitan parasitoids: Mining biodiversity databases reveals unexpected
abundance of intercontinental distributions in platygastroid wasps.**

Summary: In the past decade, several platygastroid biological control agents were found to be adventive in North America and Europe while simultaneously under evaluation in quarantine. The scope and relative risk of this phenomenon is not fully known, but it is clearly a trend with implications for classical biological control. As a means of assessing the issue and providing a global baseline, we implemented a data-mining approach with DNA sequences in the Barcode of Life Database, which yielded many platygastroid BINs with intercontinental distributions. The intercontinental BOLD BINs were compared to literature records and GBIF occurrences of cosmopolitan species to identify gaps and discordance across data sources. A small COI barcode dataset from Florida localities, including topotypical specimens, revealed three more intercontinental matches.





10:45 am: Andrew J. Johnson. Forest Entomology, Forest Resources & Conservation, University of Florida, Gainesville, Florida, USA. ajj@ufl.edu
New records and taxonomic changes of Scolytinae in Florida.

Summary: Florida's Bark and Ambrosia beetles are well studied, yet additional species continue to be found. Better trapping, better taxonomy and a constant flow of new exotics have added more than 10 species to the known fauna of Florida since 2015. *Cyclorhipidion* and *Coccotrypes* are all non-native and particularly diverse. Several of these new records are only known from hand collected samples, highlighting the importance of maintaining taxonomic expertise in the field and in collections.

11:00 am: Andrei Sourakov. McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida, Gainesville, Florida, USA. sourakov@ufl.edu

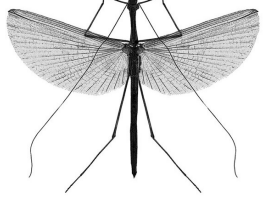
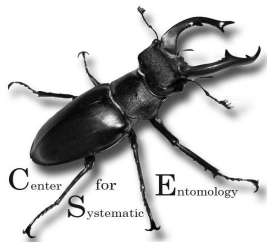
Probing Lepidoptera diversity with wing-pattern manipulation experiments.

Summary: The outstanding diversity of wing color patterns found in Lepidoptera has fascinated humans for centuries, but we still know little about the common developmental mechanisms that shape this diversity across the order. Our knowledge of wing pattern formation in Lepidoptera has advanced significantly in recent years due to the careful examination of several nymphalid butterflies. However, similar pattern elements can be found in numerous lineages that may be separated by over 100 million years of evolution. My goal was to determine whether some of these elements are the result of homologous developmental mechanisms or convergent evolution. To achieve this, I used heparin injections into developing Lepidoptera, conducting experiments on a broad range of taxa, including swallowtails, nymphalids, lycaenids, and moths. Using this pharmaceutical intervention demonstrates that there are many similarities and some very significant differences in the ways wing patterns are formed in different Lepidoptera lineages. Additionally, by creating a range of variation one can demonstrate how one pattern can easily evolve into another, aiding in understanding of speciation and adaptation processes.

11:30 am: Aswaj Punnath¹ (presenter), Stanislav Kolencik, Jorge Doña, Kevin P. Johnson, Avery Grant, Julie M. Allen and Edward L. Stanley. 1. Entomology and Nematology Department University of Florida, Gainesville, Florida, USA. aswajpunnath@ufl.edu

Morphological convergence in repeatedly evolving ecomorphs of avian feather lice (Phthiraptera) revealed by nano-computed tomography.

Summary: Chewing lice in the family Philopteridae are permanent ectoparasites that feed on the feathers of birds. The general body plan of chewing lice is closely tied to microhabitat, and the group shows repeated morphological convergence, with strong phenotypic similarities seen among distantly related species that live on specific areas — head, body, wings—of the host. Traditionally these ecomorphs have been defined with qualitative body-shape descriptions and the individual morphological structures associated with each ecomorph are less well understood. Nano-CT scanning produces ultra-high-resolution volumetric datasets that allows us to visualize and quantify internal and external structures within alcohol preserved lice, facilitating the recovery of metrics unavailable with traditional slide mounted preserved specimen analysis. Using a dataset of 165 nano-CT scanned bird lice, we can provide a quantitative assessment of morphospace, identify specific character shifts associated with microhabitat specialization—including changes in the proportional volume of chewing muscles, limb length, and head shape— and identify rate-shifts in phenotype evolution associated with host switching.



11:45 am: Davide Dal Poz. Department of Biology, University of Central Florida, Orlando, Florida, USA. daveliga@gmail.com

Male genitalia of Ichneumonoidea (Hymenoptera): a forgotten treasure in bad need of a unified terminology.

Summary: Applying a consistent terminology for morphological traits across different taxa is a highly pertinent task in the study of morphology and evolution. Different terminologies for the same traits can generate bias in phylogeny and prevent correct homology assessments. This situation is exacerbated in male genitalia of Hymenoptera, specifically in Ichneumonoidea, in which the terminology is not standardized and has never been fully aligned with the rest of Hymenoptera. A discussion of these inconsistencies is provided, and a unified terminology for the entire order is proposed. The plan is to provide a manual that could bolster future studies on the forgotten male genitalia of Ichneumonoidea.

12:00 pm: Lunch (Provided by the CSE)

12:30 pm: Erick Rodríguez. Florida State Collection of Arthropods, Division of Plant Industry, Florida Department of Agriculture and Consumer Services, Gainesville, Florida, USA. Erick.Rodriguez@fdacs.gov

Fieldwork on *Anastrepha* (Diptera: Tephritidae) mainly in the western Amazon.

12:45 pm: Alessandra Pandolfi. Department of Biology, University of Central Florida, Orlando, Florida, USA. pndalessandra@gmail.com

Distribution of an exotic ground beetle (Coleoptera: Carabidae) in Florida and quality of citizen science records.

Summary: Florida has several ports of entry that facilitate introduction and establishment of exotic species. Here is an updated distribution of *Tetragonoderus laevigatus* Chaudoir (Coleoptera: Carabidae), species native to South America and established in Florida. A discussion on the potential and limitations of citizen science platforms in reporting occurrences of exotic species is also provided.

1:00 pm: Felipe Soto¹ (presenter), Kath Daly¹, and J. Judson Wynne².

1. Florida State Collection of Arthropods, Division of Plant Industry, Florida Department of Agriculture and Consumer Services, Gainesville, Florida, USA. Felipe.Soto-Adames@fdacs.gov. 2. Department of Biological Sciences, Center for Adaptable Western Landscapes, Northern Arizona.

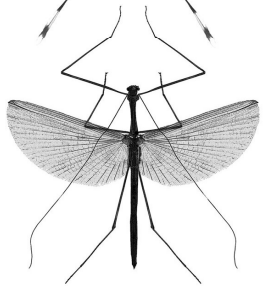
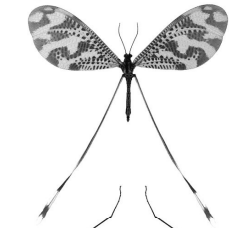
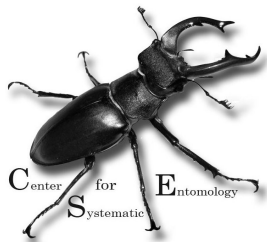
Synopsis of the species of *Trogolaphysa* (Collembola: Paronellidae) with 0-5 eyes.

1:15 pm: James Hayden. Florida State Collection of Arthropods, Division of Plant Industry, Florida Department of Agriculture and Consumer Services, Gainesville, Florida, USA. jehayden63@gmail.com

Diversity of Lathrotelinae (Lepidoptera: Crambidae).

Summary: The genera of Lathrotelinae are reviewed. *Sufetula* includes many species of small gray moths, some of economic importance. The subfamily also includes rare, larger-bodied genera with more variation in external characters. A cladistic analysis serves to diagnose the genera and to test the hypothesis of evolutionary relictualism.

1:30 pm: Erin Powell, Matthew Moore, and Douglass Miller. Florida State Collection of Arthropods, Division of Plant Industry, Florida Department of Agriculture and Consumer Services, Gainesville, Florida, USA. Erin.Powell@fdacs.gov
Grass-infesting mealybugs and the FSCA Coccoidea collection.



1:45 pm: Mike Quinn. Austin, Texas. entomike@gmail.com

Exploring the surprising beetle diversity of the Texas I-35 corridor via iNaturalist.

Summary: Will discuss the explosion of observational species data and make comparisons primarily to beetle specimen data. Finally will discuss the surprising beetle diversity of the north-south I-35 corridor through the center of Texas.

2:00 pm: Coffee Break

2:15 pm: Ann Dunn (presenter) and Felipe Soto. Florida State Collection of Arthropods, Division of Plant Industry, Florida Department of Agriculture and Consumer Services, Gainesville, Florida, USA. Ann.Dunn@fdacs.gov

Synopsis of the Florida species of long-tailed thrips (Thysanoptera: Phlaeothripidae).

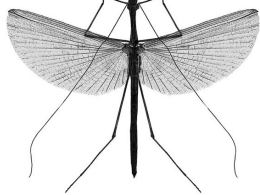
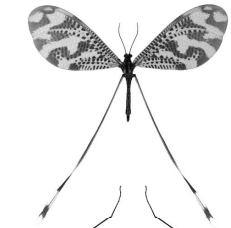
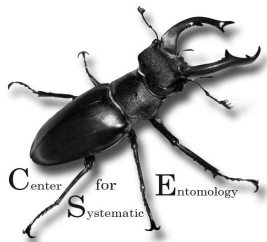
Summary: The thrips that live in debris and leaf litter are morphologically diverse but often neglected, especially as potential adventive species. Once considered a discrete family, the litter-dwelling thrips in Tribe Urothripini are distinctive and relatively easy to identify to species. By examining FSCA's historical slide collection, as well as making new collecting trips, we herein begin to investigate the past and present diversity of the so called "long-tailed" thrips throughout the state of Florida.

2:30 pm: Brian J. Armitage (presenter), Tomás A. Ríos González, and Yusseff P. Aguirre. Museo de Peces de Agua Dulce e Invertebrados; Universidad Autónoma de Chiriquí, David, Republic of Panamá.

tobikera89@gmail.com

Panama's hidden caddisfly (Insecta: Trichoptera) diversity.

Summary: Until the last 32 years, the insect order Trichoptera was poorly known in Panama, both in terms of diversity and distribution. In general, repeated collections had been made in a relatively few locations. The first taxa list published in 1992 listed 168 species in 13 families and 39 genera. By 2014, an additional six genera and 78 species were added by a number of researchers, bringing the total to 246 species distributed among 45 genera. Beginning in 2015 and continuing through the first half of 2023, our research group will have added an additional two families, 12 genera, and 276 new species and first country records. By mid-year 2023, 522 species distributed among 15 families and 57 genera will represent our knowledge of this order in Panama. There is no end in sight. Additional benefits from this effort include the de-listing of over 120 species as endemic to Costa Rica and the identification of Panama as an epicenter of caddisfly diversity for a number of microcaddisfly genera. The use of multiple collection methods and sustained sampling at a wide array of sites are two reasons for our success in uncovering Panama's hidden caddisfly diversity.



2:45 pm: *Jose I. Martínez¹ (presenter), David Plotkin, B. Christian Schmidt, Amanda Markee, Rebeccah Messcher, Kevin L. Keegan, David L. Wagner, Nhi Vo, Jacqueline Y. Miller, Reza Zahirí, & Akito Y. Kawahara.* 1. McGuire Center for Lepidoptera and Biodiversity, Florida Museum of Natural History, University of Florida, Gainesville, Florida, USA. joemartinez@ufl.edu

Redefining the Noctuidae sensu stricto and reclassifying the Noctuidae sensu lato.

Summary: Monophyly of the moth superfamily Noctuoidea is strongly supported by morphological and molecular evidence, but the status of its families and subfamilies remains uncertain. However, we were able to scratch the surface of this problem using genomics and museomics.

3:00 pm: *Jose Marcelino (presenter) and Jamie Ellis.* Honey Bee Research and Extension Laboratory, Entomology and Nematology Department, University of Florida, Gainesville, Florida, USA. jmar06@gmail.com

Integration of -omics approaches as molecular tools in apiculture research.

Summary: Beekeeping is an important industry for the economy and food security of most countries globally. The cornerstone species in this industry is the western honey bee *Apis mellifera* L. Beekeepers, and the bees they keep, face many challenges related to pests, pathogens, and invasive *A. mellifera* subspecies exhibiting traits of concern, traits such as defensiveness or absconding. In apiculture, -omics research includes developing comprehensive molecular tools that can be used to link honey bee genotype with phenotype and help profile the biotic assemblages honey bees contact. At the University of Florida Honey Bee Research and Extension Laboratory (HBREL), we use these tools to develop accurate, expedient and cost-effective assays to address some of the challenges faced by the beekeeping industry. We especially focus on the timely detection of honey bee subspecies and use environmental DNA to characterize the pest/pathogen communities that honey bees encounter in the apiary and their foraging range. Here, we provide an overview of these approaches at the HBREL.

3:15 pm: *Ángel Solís¹, Guillermo Alvarado², Bert Kohlmann¹ (presenter).* 1. BioAlfa Barcoding Project, Santo Domingo de Heredia, Costa Rica. bkohlmann64@gmail.com 2. Centro de Investigaciones, Ciencias Geológicas, Universidad de Costa Rica, San José, Costa Rica.

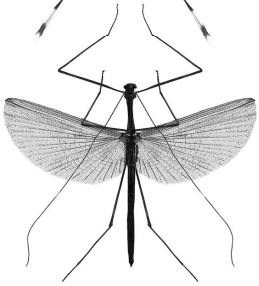
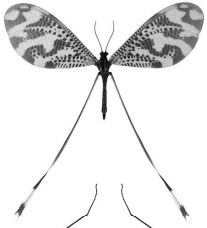
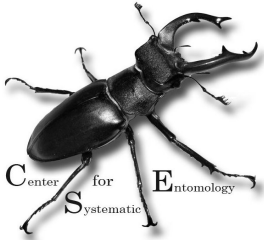
A Costa Rican biological puzzle.

Summary: The high biological diversity and endemism for Costa Rica are aspects that have always intrigued naturalists in the past and today. Lamentably, not very much is known about the possible processes that have been active in the past. To understand the highly complex problem of Costa Rica's biodiversity and endemism and its feasible generation mechanisms, using dung-beetles as model organisms, simple proposals or models are established integrating geological and biological lines of evidence that could have favored changes that generated biodiversity and endemism. This study adduces models integrating geological, paleogeographical, and biological lines of evidence to explain different biodiversity processes operating in Costa Rica. These possible mechanisms are based on available stratigraphical, radiometric dating, paleontological, paleotectonic and paleogeographical evidence spanning the last 24 Ma to 24 ka. This study amalgamates auspiciously geological and biological processes with very interesting and novel results regarding the coupled evolution and interrelation between life, geology, and landscape.

3:30 pm: *Closing of event, announcements, photos.*

4:00 pm: *CSE Business meeting.*

6:00 pm: *Gather at local Restaurant.*



Julieta Brambila, organizer, Julieta.Brambila@usda.gov, and
cse.insectamundi@gmail.com, 352-281-0428 (text)

Daide Dal Pos, Alessandra Pandolfi, moderators
Your **Zoom Hosts** are David Plotkin at dplotkin@ufl.edu
and Oliver Keller at okeller1977@gmail.com

CSE: <http://centerforsystematicentomology.org>

Journal contact: insectamundi@gmail.com

<https://www.facebook.com/CSE.InsectaMundi/>

Twitter @CSE_at_FSCA