



IECC INVERTEBRATES IN EDUCATION & CONSERVATION CONFERENCE

2018 INVERTEBRATES IN EDUCATION AND CONSERVATION CONFERENCE
August 7 - 11 • Tucson, Arizona

Hosted by



TITAG

The Terrestrial Invertebrate Taxon Advisory Group

2018 Preliminary Program Subject to Change

**Tuesday,
August 7**

9:00am - 2:00pm **TITAG Meeting**

1:00pm - 5:30pm **Registration**

5:30pm - 9:00pm **Keynote Address**

2018's IECC Keynote Speaker will be Linda S. Rayor.

Dr. Linda S. Rayor has been on the faculty of the Department of Entomology at Cornell University since 1994. Linda got her doctoral degree at the University of Kansas on mother-offspring dynamics of prairie dogs and other ground squirrels. When all of her prairie dogs died of the plague mid-dissertation research, she realized the error of her ways and switched to research on social invertebrates, particularly social spiders and amblypygids. Linda's current research focuses on the behavioral and physiological costs and benefits of group-living in large social huntsman spiders and their [solitary kin from Australia](#).

Linda Rayor teaches courses on scientific outreach (Naturalist Outreach), Spider Biology, Insect Behavior, and Social Animal Behavior: Arthropods to Apes. Her innovative teaching has been recognized by national societies (2016, 2008 Entomology Society of America; 2015 Animal Behavior Society) and within Cornell University (2007 Innovative Teacher Award; 2005 Kaplan Service-Learning Award).

Scientific outreach permeates all aspects of Linda Rayor's career. In 1998, Linda started a STEM outreach program on spiders called the 'Eight-legged Ambassadors for Science Education' which evolved into her current

'Naturalist Outreach Program'. Her course, [Naturalist Outreach Practicum](#), is an experiential community engaged service-learning course on how to do effective scientific outreach which sends college students into classrooms to give hands-on presentations on natural history and ecology. To date, she and her 354 students have reached over 111,500+ people in outreach events.

Linda has produced [36 short scientifically accurate STEM videos](#) that illuminate powerful concepts about nature and biological diversity. For two seasons, Linda Rayer starred on the Discovery Science show 'Monster Bug Wars' about the behavior of predatory arthropods. Most recently, she has been working on the Australian Museum's North American traveling exhibit on 'Spiders: Alive and Deadly' which will open at the Royal Ontario Museum in June 2018. She and her students prepared the spiders to look like they are ready to [walk out of the display cases for the entire large exhibit](#).

Beverages and dinner or heavy appetizers will be served.

Thank you to our Gold Level Sponsors:



**REYNOLDS ADVANCED
MATERIALS**



Wednesday, August 8 6:30am - 8:30am **Registration**

1:30pm - 4:30pm **Registration**

FIELD TRIPS - Pre-registration required

7:00am - 4:00pm

Magical Madronas and the Tinajas of Turkey Creek (12 participants) Led by Tony Palmer, Arizona Sonora Desert Museum

This field trip will allow 12 people to explore some of the perennial and semi perennial water sources of Saguaro National Park's, Rincon Mountain District. The day will begin with a visit to the Madrona Pools, a magical area at the base of Chimminea Creek where the Saguaros and the Sycamores grow together in an incredibly lush canyon, filled with all kinds of interesting Plants, Reptiles, Amphibians, and Invertebrates, both aquatic and terrestrial. The trip will then head out to the far eastern edge of Saguaro National Park to explore along the Turkey Creek Drainage. **No collecting will be permitted on this trip.**

7:15am - 4:00pm

Treasures of the Pajaritos 2018 Led by Jim Melli - San Diego Natural History Museum

We will explore the beautiful Pajarito Wilderness just north of the border. Habitats ranging from Madrean woodlands, desert grasslands, streams, ponds, and rocky hillsides bristling with ocotillo and agave provide for a rich diversity of plant and animal life. Critters, more common in Mexico, sometimes steal across the border into this area. If we're lucky, we may encounter a brown vine snake or other Mexican specialties. For sure we will find some cool bugs. The birding is great. Bring your binoculars and camera. Let's get there before they build the wall!

7:30am - 4:00pm

Making the Desert Great Again (24 Participants) Led by Zack Lemann, New Orleans Audubon Insectarium

The Sonoran Canyons have yuge diversity. Yuge. Believe me. Many people, smart people, are saying that this landscape is a total disaster. But...

If you've ever seen southeast Arizona after the monsoon rains have begun, you've experienced an explosion of plants and arthropods that will make anyone want to cross party, umm – state lines. Whether you are new to this spectacular environment or not, consider this your invitation to delve into the desert, cruise around the canyons, and spend a day observing and collecting some of Arizona's splendid bugs, large and small.

EVENING EVENTS

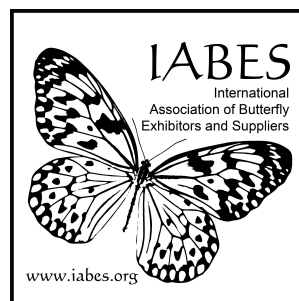
5:00pm - 6:00pm **Poster Session**

7:00pm - 10:00pm **Evening Blacklighting Adventure - Location TBD**

Thank you to our Silver Level Sponsors:



ARIZONA-SONORA
**DESERT
MUSEUM**



**Thursday,
August 9**

7:30am - 4:30pm **Registration, Vendors and Exhibits**

7:30am - 4:30pm **Silent Auction**

PAPER SESSIONS

8:00am **Welcome and Announcements**

8:10am - 9:10am **Behavior, Husbandry and Collection Management**

Timothy Wong - California Academy of Sciences

Birds vs. Butterflies: Exhibiting Tropical Passerines and Lepidoptera in the Osher Rainforest Exhibit at the California Academy of Sciences

Andalyne Tofflemire - Cambridge Butterfly Conservatory

Expanding the live invertebrate collection at Cambridge Butterfly Conservatory

Julie LaTurner - Houston Zoo

Oreophoetes peruana at the Houston Zoo

9:10am - 9:30am **Short Break!**

9:30am - **Dr. Linda Rayer - Department of Entomology, Cornell University**

10:20am *Huntsman spiders: Behavioral biology, habitat use, and husbandry*

Marissa Harrison - Disney's Animal Kingdom (short)

Managing Multiple Beetle Species at Disney's Animal Kingdom

John Watts - Texas Discovery Gardens

I didn't know butterflies did that!

10:20am - **Animal Husbandry Breakout Session**

12:00pm Facilitators: TBD Meet with our presentors and other animal experts in small groups to discuss various topics in animal husbandry.

LUNCH

12:00pm-1:30pm **COMPLIMENTARY lunch provided for conference participants**

AFTERNOON ROUNDTABLES

1:30pm - 3:30pm **US Fish and Wildlife Service, CITES and the ESA: "So you want to ship some bugs?"**

Led by Bob Herndon, US Fish and Wildlife Service

We will examine and discuss some of the major issues that people may encounter possessing and/or shipping invertebrates. We'll also hit on ways to navigate the legal obstacle course that we lovingly call The Code of Federal Regulations (CFR's), The Endangered Species Act (ESA) and The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

AFTERNOON WORKSHOPS

1:30pm - 4:30pm **Perfecting science communication in informal education (20 participants)**

Led by Anita Westphal, Reiman Gardens, Iowa State University

Do you ever experience that deer-in-the-headlights look when speaking at public events? Learn to change your approach when speaking to the public to improve your science communication skills. Through guided activities learn techniques used in the Portal to the Public program to bring scientists face-to-face with people from their community to discuss current research. By changing your approach you can actively engage your audience and teach them more effectively.

1:30pm - 4:30pm **Make Your Own Habitat for Invertebrates! (25 participants)** Led by Nicky Williams & Tony Ruiz, Reynolds Advanced Materials

This workshop will include an assessment of easy-to-use 2-part liquid silicone rubbers, liquid plastics and self-hardening epoxy putties all of which can be used to fabricate new, or enhance existing invertebrate habitats. Techniques for processing materials properly and efficiently will be covered to help you effectively create naturalistic environments with an authentic appearance. Session will include demonstrations by presenters as well as practical hands-on experience.

1:30pm - 4:30pm **Shifting attitudes: How to make other people think bugs are as great as you think they are (25 participants)**

Led by Jessica Sutherland, Pt. Defiance Zoo and Aquarium

What changes someone's opinion? How do you overcome preconceived notions? How do you touch and transform hearts? This workshop will explore best practices and new research for shifting attitudes in adults and children. These techniques are essential for garnering support for our often overlooked or unpopular invertebrates and their conservation. From encouraging empathy to changing a vote, give yourself effective tools and methods to convey messages that resonate with guests, engage audiences' emotions, and inspire actions.

FIELD TRIP

6:00pm - **Peppersauce--The Dark Side (24 participants)**

10:00pm Leader - Howard Byrne - Arizona-Sonora Desert Museum

Night leads to darkness, darkness leads to arthropods and arthropods lead to...good times in Peppersauce Canyon! Want to escape the heat of the day and 'use the Force' of darkness to have a memorable and educational evening black-light excursion? Peppersauce Canyon is in the Santa Catalina Mountains and is a great place to escape the Emperor and the warmer reaches of both the Tatooine and Sonoran deserts. It's nestled in at around 4,700 feet in elevation, and cools off nicely at night. This ephemeral riparian area is lined by Sycamore, Walnut and Ash trees. The surrounding hills are

'peppered' with oaks, grasses and yucca as well as the occasional Jawas. Arthro-pod-racing species are as varied as other more southerly sky islands, An-a-kin-ship with other enthusiasts is guaranteed! It's an Imperial spot for an evening field trip, and a mere 50 minutes from the resort. Conscientious collecting is allowed. You bring the nets; we'll bring the droids!

EVENING EVENT

7:00pm - **Insect Movie and Game Night**
10:00pm

**Friday,
August 10**

7:30am - 4:30pm **Registration, Vendors and Exhibits**

7:30am - 4:30pm **Silent Auction**

PAPER SESSIONS

8:00am **Welcome and Announcements**

8:10am - 9:50am **Eyes on Education**

**Catherine Bartlett and Sergio Avila - Arizona Sonora Desert Museum;
Sierra Club**

Escorpiones y Estudiantes: Los Pequeños Habitantes de Sierra de Álamos

Dr. Andrine A. Shufren - Oklahoma State University Insect Adventure

Undertaking an Insect festival

Winnifred Wolfe - Isla Vista Elementary

Growing Up With Arachnophobia

Mitch Magdich - Toledo Zoo

Prairies that Invigorate Inquiry Learning - Project PRAIRIE at the Toledo Zoo

Ron Wagler - The University of Texas at El Paso

Adventures With Arthropods: Eco-Friendly Lessons for Middle School

Chris Scabis - Omaha's Henry Doorly Zoo (short)

Teen Scientists: Inspiring Zoology Classes Through Shadowing and Scientific Projects

9:50am - **Announcements and Break -- Please visit the Exhibit Hall and Posters!**
10:10am

10:10am - **Conservation Initiatives**

11:20am

Faith B. Kuehn - Delaware Department of Agriculture

Scraps of Biodiversity – Pollinator conservation programs

Glenn Frei - St. Louis Zoo

*Reintroducing Partula Snails (*Partula nodosa*) back to Tahiti – A 30 year Promise*

Dr. Jaret Daniels - University of Florida, Florida Museum of Natural History

Monarch Conservation Initiatives in the Sunshine State

Bob Merz - St. Louis Zoo

*A Pivotal Time for American Burying Beetle (*Nicrophorus americanus*) Recovery*

11:30am - **USDA Permitting and Containment Update Roundtable**

12:10pm Led by Wayne Wehling, USDA/APHIS PPQ

This Round Table is for all of those that utilize Regulated Organisms requiring USDA permits and possibly Containment for their invertebrate

education/exhibit. The Round Table discussion will provide updates on regulations, permitting requirements and permit process changes, and containment. Following updates on matters at USDA APHIS participants will have time for all of their related questions to be answered.

LUNCH

12:15pm-1:30pm **COMPLIMENTARY lunch provided for conference participants**

AFTERNOON WORKSHOPS

1:30pm - 4:30pm **Collection Planning and Record Keeping(20 participants)**
Led by Trisha Nichols, Glennon Frei, Erin Sullivan; Philadelphia Insectarium, St. Louis Zoo, Woodland Park Zoo

1:30pm - 4:30pm **On Pins and Needles (20 participants)**
Led by John Watts, Texas Discovery Gardens

The backbone of systematic and environmental entomology revolves around proper identification and this often requires preserved specimens. Join John Watts on a workshop dedicated to collecting and preservation techniques, proper pinning and labeling, plus how to use dichotomous keys. Insect pins, spreading boards, and blank labels will be provided; please bring your own specimens for mounting.

EDUCATIONAL BREAKOUT SESSION

1:30pm - 3:00pm Facilitator: Catherine Bartlett - Arizona Sonora Desert Museum

An overlap between arthropods and education is inevitable in zoo, museum, and collegiate settings. We all love bugs but spreading the appreciation and conservation message naturally comes with challenges. Participants will engage in discussions and share their own experiences. Don't reinvent the wheel- just learn from others!

EVENING EVENT

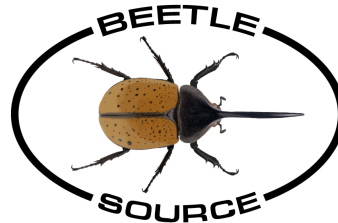
7:00pm - 10:00pm **Blacklighting, Location TBD**

Thank you to our Bronze Level, and Luncheon Sponsors:



Audubon Butterfly Garden
and Insectarium
A Facility of Audubon Nature Institute





**Saturday,
August 11**

7:30am - **Vendors and Exhibits**
12:30pm

7:30am - **Silent Auction**
12:30pm

PAPER SESSIONS

8:00am **Welcome and Announcements**

8:10am - 9:30am **Invertebrate Health and Welfare - Broad Strokes**

Erin Sullivan - Woodland Park Zoo
General welfare concepts

Lydia Attard- Toronto Zoo (short)
*Hemolymph Cytology, Cell Count, and Electrolyte Reference Values in Cameroon Red Tarantula (*Hysterocrates gigas*)*

Nathan Brockman - Reiman Gardens, Iowa State University
Small Pupae Big Data: Initial Look at Pupae Emergence Data and Look to the Future

Paige Howorth - San Diego Zoo (short)
Quino checkerspot butterfly reintroductions: A case study for honest signals

9:10am - 9:30am **Short Break!**

9:30am - 10:40am **Invertebrate Health and Welfare - Exploring Diets**

Jamie Sincage and Elizabeth Braatz - Disney's Animal Kingdom (short)
*Update on development of a modified diet to support conservation efforts of the Atala hairstreak butterfly (*Eumaeus atala*)*

Sarah May- Iowa State University (short)
Effects of Altering Feed Strategy to Mealworms and the Impact on Nutrient Composition

Cody Gilbertson - Suny ESF Research foundation
Determining diet and establishing a captive population of a rare endemic detritivore, the endangered Chittenango ovate amber snail

Kathryn Hokamp - Houston Museum of Natural Science - short
Multifaceted Approach to Butterfly Survival in an Artificial Environment

ANIMAL WELFARE BREAKOUT SESSION

10:40am - The Animal Welfare Breakout session is organized to promote the
12:10pm discussion of welfar topics in our industry. All are welcome to join!

WORKSHOPS

1:30pm - 4:30pm **The Scientific Method for Bugs (20 participants)**
Led by Catherine Short, Math Science Innovation Center

Scientific method is the accepted standard for investigating the natural world. It is how we determine new ideas and update previous knowledge. By systematic observation, formulation of a hypothesis, experimentation, data collection and analysis scientist are able to validate their discoveries. The presenter will review the process of the Scientific Method using invertebrates. Various live invertebrates will be used at four stations to teach a different step of the Scientific Method process. This activity is relevant for teaching Scientific Method to younger students or as a beginning of the year review for upper grade levels.

1:30pm - 4:30pm **Insect Science for Preschoolers (20 participants)**
Led by Stephanie Dole, Beetelady LLC

Learn how to create engaging programs for 2-5 year-olds using play, movement, music, rhyme, art, and live bugs. Stephanie Dole is a Ph.D. Entomologist who runs the insect education business, Beetelady, through which she teaches all ages about the wonderful world of bugs. Dr. Dole will present on the elements that go into her Insect Science for Preschooler class series in which preschoolers explore topics such as metamorphosis, insect colors, and camouflage. Workshop participants will relive their own buggy childhoods while exploring Beetelady's class materials. In this workshop, you will create sample materials to bring back to your institution for inspiration.

ROUNDTABLES

1:30pm - 4:30pm **Edification & accumulation of proposition & exhilaration with contribution & reciprocation via conversation & confabulation. (20 participants)**
Led by Andrine Shufan, Oklahoma State University Insect Adventure

Do you work with the public? Looking for ways to liven up a presentation or event? Have a great activity demonstrating an entomological concept? Then join in an "idea round-robin" where participants share a single activity and leave with dozens of new ones to try. Describe your favorite education or outreach inspiration on a single sheet of paper and bring it with you to the round-robin. We'll take turns presenting each and see if group discussion can improve, alter, or expand a contribution. The moderator will compile activities/extensions to create a compendium to be delivered to the conference next year.

BANQUET

6:00pm **Final Silent Auction bids, Cash Bar and Banquet**

9:00pm **Dancing until...?**

We are pleased to announce that the following institutions are offering free admission during the week of the conference. Just show your conference ID badge to receive admission:

Reid Park Zoo, Arizona Sonora Desert Museum, Tohono Chul, Phoenix Zoo, South

