

IECC²⁰¹⁹

INVERTEBRATES IN EDUCATION
& CONSERVATION CONFERENCE

JULY 30 - AUGUST 3
TUCSON, AZ



2019 INVERTEBRATES IN EDUCATION AND CONSERVATION CONFERENCE July 30 - August 3 • Tucson, Arizona

Hosted by



TITAG

The Terrestrial Invertebrate Taxon Advisory Group

2019 Preliminary Program Subject to Change

**Tuesday,
July 30**

9:00am - 4:00pm **TITAG Meeting**

1:00pm - 4:00pm **Registration**

4:00pm - 6:00pm **Ice Breaker**

Thank you to our Gold Level Sponsors:

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Moving Your World



**Wednesday,
July 31**

6:30am - 8:30am **Registration**

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

FIELD TRIPS - Pre-registration required

7:00am - 4:00pm

Willcox Tigers and More (24 participants) Led by Doug Taron,
Chicago Museum of Science

Join us as we head to the southeast Arizona's premier tiger beetling spot. Willcox Playa is home to over 20 species of tiger beetles, as well as an array of grasshoppers, wasps, and other goodies. On the return trip we will visit French Joe Canyon in the Whetstone Mountains. Here we may find longhorn and buprestid beetles, including showy species like *Gyascutus caelatus*, *Hippomelas sphenicus*, and *Dendrobias mandibularis*. There may also be more grasshoppers, and giant mesquite bugs. Willcox is a white sand playa with no shade, so come prepared for lots of heat and sun. Responsible collecting allowed.

7:10am - 4:00pm

Ruby Road Gold - Border Bugs 2019 (36 Participants) Led by Jim
Melli - San Diego Natural History Museum

Although collecting is allowed, focus of this trip will be based on the observation of the life forms unique and special to this area. We will follow Ruby Road as it winds its way through the beautiful mountainous wilderness just north of the border. We will investigate habitats ranging from Madrean woodlands, desert grasslands, streams, ponds, and rocky hillsides with cacti, ocotillo and agave. We may be greeted with something exotic and rare such as a brown vine snake or other Mexican specialty. For sure, we will find some great bugs. Whenever I start up Ruby Road, my heart races with excitement. One never knows what will show up next.

7:20am - 4:00pm

Bug-hemian Rhapsody (24 Participants) Led by Zack Lemann,
Audubon Insectarium

There may be no better word than "rhapsody" to describe the feeling one gets when enjoying the monsoon-soaked canyons and grasslands of southeastern Arizona. This day long outing will travel to several terrific sites for collecting and observing wondrous desert arthropods. Whether you are brought to song or not, peeking at the cacti, turning some stones, or dipping in puddles will reveal many-legged critters that will make you feel as Sonora-ous as, well, *Capnobates fuliginosus*. (OK, that species is nocturnal and therefore unlikely to be spotted during daylight, but you get the idea.) Who knows? We might even spot

a queen...butterfly, that is! If a rowdy van ride, searing temperatures, and awesome bugs sound like your idea of a billboard chart topper - join in! "I see a little silhouetto of a bug..."

7:30am - 4:00pm

CHIM-CHIMINY-CHIMENEA (Exploring Drainages and Tinajas of Saguaro National Park) (12 participants) Led by Tony Palmer, Arizona-Sonora Desert Museum

Chim-Chiminy-Chim-Chiminy-Chimenea. When you're with a geek, you're in glad company. Nowhere is there a happier crew, than them what explore the drainage Chimenea flows through! This field trip will allow 10 people to explore some of the perennial and semi perennial water sources of Saguaro National Park's, Rincon Mountain District. Come along on a visit to a magical area at the base of Chimenea Creek where Saguaros and the Sycamores grow together in an incredibly lush canyon, filled with all kinds of interesting flora and fauna. This area allows for exploration of both terrestrial and aquatic invertebrates and has even been known to be inhabited by Unicorns! This trip requires sturdy footwear and LOTS of water and snacks. The terrain can be challenging, with slippery rocks and uneven surfaces likely to be encountered. **NO COLLECTING** is permitted on this trip, however those that choose to participate will get a chance to go places where few people are permitted and to sample and photograph some of the aquatic diversity that can be found in Saguaro National Park. If participants are interested, and time permits we can drive the Desert Loop Trail and Stop by the Parks Visitor Center.

EVENING EVENTS

5:30pm - 9:00pm **Welcome, Keynote Presentation, and Reception**

Our keynote speaker for IECC 2019 is Ken-ichi Ueda! Ken-ichi is a biologist, software engineer and passionate wildlife enthusiast, which led him to the co-creation of our favorite wildlife observation program, [iNaturalist](#). Ken-ichi would like us to know this about him:

Ken-ichi Ueda is an amateur naturalist from Oakland, California. He also co-founded iNaturalist, a social media and crowdsourced biodiversity data platform for naturalists around the world. He likes bee flies, moths, millipedes, and insects he can't identify to order. If someone could show him how to find vinegaroons he would be very grateful.

In other words, he's one of us! And, most likely, he will be the winner of the annual IECC iNaturalist competition....unless anyone can stop him (gauntlet thrown).....

Ken-ichi will be sharing his experiences with us in July, and hopefully finding a few vinegaroons along the way!

Thank you to our Silver Level Sponsors:



**Thursday,
August 1**

7:00am - 4:00pm **Registration, Vendors and Exhibits** - Registration may close during paper sessions and lunch.

7:00am - 4:00pm **Silent Auction**

PAPER SESSIONS

8:00am **Welcome and Announcements**

8:10am - 9:30am **I, Naturalist**

Renee E. Hazen- Saint Louis Zoo
Citizen Science in an Urban Meadow

Mitch Magdich- Toledo Zoo
Project PRAIRIE - Pollinators go to School

Nathan Brockman- Reiman Gardens, Iowa State University
What's that Butterfly?

Louise I. Lynch-O'Brien / Michael Weissmann - University of

Nebraska-Lincoln / Kallima Consultants, Inc.

Is What We Know To Be True Really True Just Because We Know It Is True?

9:30am - 9:50am **Announcements and Break -- Please visit the Exhibit Hall!**

9:50am - 11:30am **Inverts in Education**

Stephanie A. Dole, PhD- Beetle Lady

Beetlelady: The first 3 years

Patricia Nichols – Philadelphia Insectarium and Butterfly Pavilion
Clubs, Camps, and Gardens: Diversifying Your Educational Programs

Dr. Faith J. Weeks - Towson University

Using live arthropods with in-service elementary teachers to enhance hands-on science in the classroom

Dr. Ron Wagler - The University of Texas at El Paso

Future Middle School Science Teacher's Emotions and Beliefs toward Cockroaches

Winnifred Wolfe - Topa Topa Elementary (short)

Perspectives on Arachnids Around the World

Karen Verderame - The Academy of Natural Sciences of Drexel University (Short)

Invert Cart to Bugs on the Big Screen and Beyond

LUNCH

11:40am-1:30pm **COMPLIMENTARY lunch provided for conference participants**

AFTERNOON WORKSHOPS

1:30pm - 4:30pm **Spider Bites (25 participants)**

Led by Dr. Craig Ira Goldstein, M.D., Rush Oak Park Hospital

Participants will learn about the biology of offending spiders as it pertains to human bites. The epidemiology, symptoms and sign, and treatment of bites will be discussed. Emphasis will be placed on recluse and widow bites. Less time will be devoted to uncommon bites (real and imagined) and to the consequence of contact with urticating hairs.

1:30pm - 4:30pm **Improv(e) your interpretations- How comedy and story telling can make you a more effective science communicator (16 participants)**

Facilitated by Catherine Bartlett, Arizona-Sonora Desert Museum

Presentations whether formal, informal, large, or small can be intimidating! In this workshop we will explore ways to build confidence, authentically connect with audiences, and craft vivid messages. Through exercises, and a little silliness, you'll get out of your head and into the moment. We'll break down the best ways to present your love of bugs, and include some tips on how to deal with the naysayers. Come equip yourself with practical approaches for teaching, and have some laughs in the process!

1:30pm - 5:30pm **DNA Barcoding: Citizen Science in Action PART 1**

Leaders: Jeffry Petracca- Cold Spring Harbor Laboratory DNA Learning Center

In this workshop, participants will learn how to use DNA barcoding for student and citizen science projects to study local biodiversity. Just as

the unique pattern of bars in a universal product code (UPC) identifies a consumer product, a short “DNA barcode” is a unique pattern of DNA sequence that allows even novices to potentially identify any living thing. In this practical workshop, you will perform simple methods to extract DNA from invertebrate specimens, amplify the barcode region by polymerase chain reaction (PCR), confirm amplification by gel electrophoresis, and analyze barcode sequences using the DNA Learning Center’s bioinformatics tool, DNA Subway. Please also register for workshop session Part 2 on Friday.

ROUNDTABLE

1:30pm - 3:00pm **Get more from your Volunteers: Tips and tricks to increase Volunteer satisfaction and improve public interactions**

Facilitated by Lisa Porter- Smithsonian Institution National Museum of Natural History and Chris Mooney (NMNH)

In this roundtable the co-facilitators will lead a discussion on effective strategies to sustain volunteer involvement and increase satisfaction by discussing methods: providing enrichments for gaining new knowledge; creating volunteer facilitated activities that allow for volunteer choice while maintaining core messages; offering “level-up” experiences for volunteers after hitting milestones; supplying opportunities for volunteer involvement in decision making. By providing these opportunities/offerings to volunteers, they become more engaged in the activities or conversations with the public and are better able to disseminate the messages of your institution. The audience is educators and administrators.

1:30pm - 3:00pm **Invertebrate Welfare Roundtable**

Facilitated by Erin Sullivan, Woodland Park Zoo and Paige Howorth, San Diego Zoo

This informal discussion will be focused on applying established concepts of animal welfare to enhance the lives of invertebrates in managed care.

FIELD TRIPS

6:00pm - **Peppersauce del Noche (24 participants)**

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

Peppersauce Canyon is nestled in the Santa Catalina mountains in a riparian area at a cool, mid-elevation that rises above the warmer desert floor. This night-time excursion is occurring at a very opportune time of year; arthropod diversity should be seriously impressive! It’s a great opportunity to go iNat crazy, to collect for your institution, or just take some unforgettable photos with friends and bugs, not necessarily in that order. Peppersauce should be hotter than last year, bug-wise!

EVENING EVENT

7:00pm - 9:00pm **Insect Trivia and Game Night**

Thank you to our Luncheon Level Sponsors:



Audubon Butterfly Garden
and Insectarium
A Facility of Audubon Nature Institute

**Friday,
August 2**

7:00am - 4:00pm **Registration, Vendors and Exhibits** -Registration may close during paper sessions and lunch.

7:00am - 4:00pm **Silent Auction**

PAPER SESSIONS

8:00am **Welcome and Announcements**

8:10am - 9:30am **The Invertebrate Conservation Landscape**

Bob Merz - St Louis Zoo

Should You Stay or Should You Go?

Adrienne Brewster, Cambridge Butterfly Conservatory (Short)

Conservation of Ontario's Endangered Mottled Duskywing Butterfly

Jaret Daniels - Florida Museum of Natural History

Experimental Reintroduction of the Federally Endangered Miami Blue Butterfly in South Florida

Brandon Quinby, Purdue University (Short)

*Evaluation of the Vertebrate Carrion Resources Used by the American Burying Beetle (*Nicrophorus americanus*)*

9:30am - 9:50am **Announcements and Break -- Please visit the Exhibit Hall and Posters!**

9:50am -
11:20pm **From The Field**

Greg Courtney - Iowa State University

Psammophiles and shutter speeds: Searching for crabwalkers and sand minnows in western and central North America.

Hannah Riskas - Northern Arizona University

Arthropod Communities of the Pinyon-Juniper Life Zone

Sneha Vissa - Northern Arizona University

The micro-invertebrate biodiversity of bark beetles

Jarek Sarnacki - Point Defiance Zoo & Aquarium (short)

Does handling affect mortality? A look at stick insect welfare

Derek Uhey - Northern Arizona University

Climate and vegetation effects on ant communities

11:20am - **USDA Permitting for Insect Zoos and Butterfly Houses Roundtable**

12:00pm Facilitated by Wayne Wehling - USDA APHIS PPQ

LUNCH

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

AFTERNOON WORKSHOPS

1:30pm - 4:30pm **Evaluation on the fly: Observing and measuring outreach outcomes in informal settings (30 participants)**

Led by Louise Lynch-O'Brien University of Nebraska-Lincoln

We all pour our creativity and energy into public outreach. Evaluating the outcomes of these efforts is how we show their value. But evaluation can be difficult for various reasons. Part I of this workshop will introduce assessment and evaluation approaches for informal education settings and provide participants with examples of high-, low-, and no-tech tools. Participants will be invited to discuss additional tools and experiences. Resource lists and take-home examples will be provided. In Part 2 we will develop evaluation plans for participants' own outreach programs through worksheets, group discussion and presentation.

1:30pm - 4:00pm **If You Would Only Look Them in the Eyes**

Led by Anne Baxter-Johnson- Henderson County Public Schools (Retired)

Scientists are seeing evidence that numbers of invertebrates such as spiders and insects are beginning to dwindle for various reasons. But it is easy to ignore or destroy out of fear the "faceless" tiny animals that we are so dependent on. How do humans connect to invertebrates so that we can stop our knee-jerk responses and become partners with them in saving our planet? In this workshop participants will explore human prejudices against invertebrates and use animals from the field, puppetry, and role-play so that they can make the human-to-creature connection needed to become aware and active partners with invertebrates.

1:30pm - 4:30pm **DNA Barcoding: Citizen Science in Action PART 2**

Leaders: Jeffry Petracca- Cold Spring Harbor Laboratory DNA Learning Center

In this workshop, participants will learn how to use DNA barcoding for student and citizen science projects to study local biodiversity. Just as the unique pattern of bars in a universal product code (UPC) identifies a consumer product, a short "DNA barcode" is a unique pattern of DNA sequence that allows even novices to potentially identify any living thing. In this practical workshop, you will perform simple methods to extract DNA from invertebrate specimens, amplify the barcode region by polymerase chain reaction (PCR), confirm amplification by gel electrophoresis, and analyze barcode sequences using the DNA Learning Center's bioinformatics tool, DNA Subway. Participants must also sign up for Part 1 of this Workshop.

ROUNDTABLES

1:30pm - 3:30pm **Invertebrate Conservation Roundtable**

Facilitated by Erin Sullivan, Woodland Park Zoo & Jaret Daniels

Many conservation programs have the same questions "What stage should we put the animal out? What is the best way to record temperature? What diet should I use for butterflies in the lab? Data sheets? In this round table we will all share our favorite ricks of the trade and try to tackle some of the commonly pondered lab questions to see if we have some commonality and document some best practices

to share.

3:30pm - 4:30pm **Planning and Implementation of Emergency Procedures**
Facilitated by Julie LaTurner – Houston Zoo

What types of emergency plans do institutions have in place? Have they had to implement them, and in what situations. This keeper can share what happened prior and post-Harvey in Houston, plans the zoo had in place, and how they worked.

POSTER SESSION

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

EVENING EVENT

7:00pm - 9:00pm **Black Lighting Adventure – Catalina State Park**

Black lights and sheets will be set up at this amazing location to enjoy the insect life as it flies in. Please note that this event is organized at no cost to conference participants. This means that there will be no meal provided, and participants are encouraged to eat before attending. Car caravans will be coordinated via a sign up sheet in the exhibit hall, and will depart from the resort at 7pm. In case of inclement weather, please check in at the registration desk to see if the event was cancelled or moved.

Thank you to our Bronze Level, Roundtable and Beverage Sponsors:





I A B E S

International Association of Butterfly Exhibitors & Suppliers



VICTORIA
Butterfly
GARDENS

**Saturday,
August 3**

7:00am - 1:00pm **Registration, Vendors and Exhibits** -Registration may close during paper sessions and lunch.

7:00am - 1:00pm **Silent Auction**

PAPER SESSIONS

8:00am **Welcome and Announcements**

8:10am - 9:30am **Shiny and New—Invertebrate Facility Design**

Paige Howorth & Susi Ngoi, San Diego Zoo

San Diego Zoo's McKinney Family Invertebrate Propagation Center

Amanda Ballard, Jordan Miner, Butterfly Biosphere at Thanksgiving Point

Introducing the New Butterfly Biosphere at Thanksgiving Point

Raymond A. Mendez, Work As Play and Bugarium, Albuquerque Biopark

From design to intent to implementation at the Bugarium Part 1

Jason C Schaller, Bugarium, BioPark, NM

Bugarium - Public reaction and issues Part 2

9:30am - 9:50am **Announcements and Break -- Please visit the Exhibit Hall!**

9:50am - 11:10am **Tinkering: Problem-solving with Invertebrates**

Tim Wong - California Academy of Sciences

A Multifaceted Approach to Horticulture in the Osher Rainforest Butterfly Exhibit

Kathryn Hokamp - Butterfly Pavilion

An Institutional Comparison of the Processing of Butterfly and Moth Pupae

Dylan Cebulske - Saint Louis Zoo

Punching Their Way Into Your Heart: Husbandry and Display of Mantis Shrimp

Jon Bertolas - Milwaukee Public Museum

Arthropod Scents: An Interactive Exhibit Upgrade at the Milwaukee Public Museum

WORKSHOPS**1:30pm - 4:30pm Bugs of Pokémon: Using the game to engage the public**

Led by Stephanie A. Dole, PhD – Beetlelady LLC

Pokémon creator Satoshi Tajiri spent his childhood collecting bugs in the Japanese countryside. His love of entomology pervades Pokémon from the “pocket monsters” that are inspired by real arthropods, to Pokémon attacks and abilities that actually exist in the arthropod world. This workshop will introduce participants to the Pokémon universe and give an overview of the Pokémon that are inspired by real arthropods. We'll explore using the public's knowledge of Pokémon to engage them in arthropod biology and conservation. Workshop participants will create their own Pokémon cards and displays using pinned arthropod specimens for use in education and outreach.

1:30pm - 4:30pm Introducing squiggly wiggles to young children (10 participants)

Led by Catherine Short - Math Science Innovation Center

We will use a combination of storytelling, crafts, games and other activities to teach children about invertebrates. Participants will be introduced to a variety of activities which introduce children to the wonders of small critters. Be prepared to act silly, get creative and develop out of the box activities.

ROUNDTABLE**1:30pm - 3:00pm Imports/Exports, ESA and CITES. How can US Fish and Wildlife help with the Regulatory Alphabet Soup?**

Facilitated by Bob Herndon and Jane Herndon - US Fish and Wildlife Service

A chance to dialogue with a pair of USFWS Wildlife Inspectors. We'd like to address any of your questions, comments, problems (...or even compliments!). We'll also try to have the newest information on Endangered Species listings, Lacey Act enforcements, and anything pertinent that comes out of the 18th meeting of the CITES Conference of Parties, taking place at the end of May in Colombo, Sri Lanka.

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](#), [Phoenix Zoo](#), [Arizona Sonora Desert Museum](#), [South Mountain Environmental Education Center](#), and [Tohono Chul](#).

