

Entomology

Newsletter 2015-2016



Department of Entomology
University of Illinois at Urbana-Champaign
(leafhopper, a new genus and species from Argentina,
described in a manuscript that should be published in 2017,
courtesy of Chris Dietrich)

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MESSAGE FROM THE HEAD

So, in my 24th year of serving as Department Head, I'm closing in on Clell Metcalf, who still holds the record for longest tenure as UIUC Entomology Head—26 years (from 1921 to 1947). The year 2016 has been memorable not just for our department but for the entire discipline of entomology—in September, more than 6800 entomologists from 102 countries came to Orlando, Florida, for the 25th International Congress of Entomology. ICE25 was the third Congress to be held in the United States in its 106-year history, and UIUC entomology has been well-represented in all three; this year, we were particularly hard to miss, at least in part because, as President of the host society, the Entomological Society of America, I was the de facto host of the Congress. Current UIUC faculty, graduate students and even undergraduates attended in force and alumni were well-represented among those receiving recognition at the meeting. Among 12 ESA Fellows elected this year, two are UIUC former faculty (Peter Price, Marcos Kogan) and one is an alumnus (Daniel Strickman). Of the Science Policy Fellows, M Alleyne, Tom Anderson, Tom Miller, Michelle Duennes were all students or postdocs here. It was particularly nice seeing so many of our international alumni at the Illinois mixer!

Beyond ICE, faculty and students continue to earn plaudits from peers. National awards for faculty in 2016 included the Distinguished Scientist Award from the International Behavioral Genetics Society for Gene Robinson and both the Sterling B. Hendricks Memorial Lectureship Award from the USDA- American Chemical Society and the Addison Emery Verrill Medal from the Peabody Museum at Yale University for May Berenbaum. Locally, the LAS I. C. Gunsalus award for outstanding achievement by an assistant professor in a science discipline went to newly minted associate professor Brian Allan. Regional and national recognition was earned by students for papers or posters at the North Central branch and national meetings of the Entomological Society of America and at the Illinois Mosquito and Vector Control Association meeting. Faculty and students, as usual, were well represented on the List of Teachers Rated Excellent by Their Students.

Alumni and friends of the Department have been generous in their support in the past two years, which is both deeply appreciated and particularly timely in view of the fact that the state legislature didn't authorize a budget for UIUC in either 2015 or 2016. The Fred H. Schmidt summer award, endowed by his niece and nephew Margaret and Ed Larsen, commemorates alumnus Fred H. Schmidt, who received a BS degree in 1957 and a master's degree in entomology here in 1959 and spent many years at the USDA Forest Service Laboratory in Corvallis, OR. A propos of ICE, Fred attended four International Congresses, beginning as an undergraduate in 1956 at Montreal; he also attended ICE in Vienna in 1960, in Canberra in 1972, and in Washington, DC in 1976 (where our own Robert Metcalf was on the Organizing Committee). The Schmidt summer award is used to support recruitment and retention of students during the summer months. As well, Jantorn Rufener (UIUC MS 1970, PhD 1972 in Education) created the William and Jantorn Rufener endowment, honoring her husband William ("Bill") (UIUC MS 1961, PhD 1970 in Dairy Science). Bill was a prominent beekeeper in his native Oregon for many years. Illinois Natural History Survey scientist David Eades generously provided two Species File Systematic Entomology Awards for 2016-17 in support of graduate students in systematics. Another gift came from Dr. Charles Ross, a longtime generous friend of UIUC entomology, to go toward (most fittingly) naming the Entomology Collections Room in the Natural History Building after his father, the legendary entomologist Dr. Herbert Holdsworth Ross.

We also received a unique and wonderful gift from Tom, Ginny, and Janet, the children of triple-degree alumnus and longtime faculty member Dr. James Sternburg—his meticulously curated and breathtakingly beautiful personal insect collection, comprising more than 10,000 butterflies and a few other spectacular insects. They reside in 407 Morrill Hall, which we're hoping to re-name in honor of Dr. Sternburg. Speaking of Morrill Hall, home of our living insects as well as our faculty, graduate students, and staff, despite state budget woes, renovations began on the few remaining spaces in Morrill Hall unchanged for 50 years. Among these spaces are the second and third floor insectary spaces, because, well, nothing's too good for our cockroaches! Come visit the cockroaches, flesh flies, and milkweed bugs, not to mention the two-legged members of the department, in our newly refurbished digs!

ENTOMOLOGICAL SOCIETY OF AMERICA PRESIDENTIAL YEAR 2016



In 2013, when I stood for election to be President of the Entomological Society of America, I really didn't think I had much of a chance of winning—among other things, I had never held any kind of office at any level in ESA; as well, to call my attendance at North Central Branch meeting spotty was kind of an insult to spots. Thus, when I was elected I faced a breathtakingly steep learning curve. Among the things I learned early on was that I wouldn't be President until 2016—I'd spend 2014 as Vice-President Elect and 2015 as Vice President. I also learned that Presidential service doesn't end with being President—there's a fourth year of service as Past President. I also learned that Presidents are expected to attend every branch meeting during their Presidential year—and there are five branches, spread out (not surprisingly) across all 50 states. Thus it was that in 2016 I traveled to Philadelphia, PA, in January (Eastern Branch), Tyler, TX, in February (Southwestern Branch), Honolulu, Hawaii in April (Pacific Branch), and Cleveland, OH, in June (North Central Branch). In March, in place of the Southeastern Branch meeting in Raleigh, NC, I was supposed to go to Maceio, Brazil, for the *Aedes aegypti* Summit of the Americas to represent ESA, one of two co-hosts of the meeting, but, due to my failure to take into account the difference between “10 days” and “10 business days” I ended up not getting a visa for Brazil and missing both Maceio and Charlotte. As well, it dawned on me at some point in early 2014 that I'd be President during the 2016 International Congress of Entomology in 2016. I knew that ICE was coming to the USA because as a member of the ICE Council in 2012 I campaigned and voted for the US bid (albeit by Skype and telephone, because I couldn't attend the 24th ICE in Daegu, South Korea). The International Congress of Entomology had been held on U.S. soil only twice before—the fourth ICE was held in Ithaca, NY, in 1928 and the 15th ICE was held in Washington, DC, in 1976. ICE LOC Chairs Walter Leal and Alvin Simmons worked mightily to insure that the third USA ICE would be the largest meeting of entomologists in the history of the discipline—the target number was 6000. From November 2015 to September 2016, the specter of disaster hovered before me, especially considering the fact that the meeting was to be held in Florida, where absolutely anything can go wrong in a spectacular way. Mercifully, when the time came, there were no outbreaks of new or emerging mosquito-borne diseases, no rogue man-eating alligators, and no homicidal maniacs with automatic weapons; the meeting even managed to start and finish between Hurricane Hermine and Hurricane Matthew.

What can I say? To have 6680+ entomologists from 102 nations all at the same meeting was historic. I suppose I could have said,

“The most obvious characteristic of this Congress has been the enthusiasm. All of us have felt it in an extraordinary degree. It is by far the largest meeting of entomologists ever held and its international character makes it the most important. It has marked to a striking extent the rapidly growing interest in Entomology as a Science and the wide-spread appreciation of its importance. In these respects the Congress has been a monumental milestone...”

but that would be plagiarism—that quotation is actually from Leland Ossian Howard's closing address to the Fourth ICE in Ithaca, in 1926 (Jordan and Horn, 1930), yet it's totally applicable to ICEXXV.

So, was my Presidential year remarkable in any way? Not only was I not the first female President (Edith Patch beat me by 8 decades), I wasn't even the first female President in the 21st century (unless you count 2000, Sharon Quisenberry's presidential year, as the last year of the 20th century). Fifty-nine years after Patch, in 1989, Dorothy Feir was elected; then, after 7 years, in 1996, Manya Stoetzel was President, and four years later, in 2000, Sharon Quisenberry became President. So, I guess my claim to fame might be that I'm the first female President who hasn't worked on hemipterans. What is noteworthy, perhaps, is the fact that, at ICE, when Susan Weller stepped up to be President, 2016 marked the first year that a female President was succeeded by another female President. I also think I've achieved distinction by serving the shortest term as President—because ICE moved the annual meeting up from November to September, I served less than a year; Susan Weller, as my successor, will almost certainly achieve the distinction of serving the longest term as President...

At ICE, I was elected Chair of the ICE Council, facing yet another precipitous learning curve (my attendance at International Congresses less spotty than my attendance at branch meeting only by virtue of the fact that there are far fewer Congresses). But serving on the ICE Council is an honor and a pleasure. Why? I'll let L.O. Howard explain, as he did in Ithaca in 1928, in his message to Professor Bouvier and his French colleagues set to host ICEV in Paris—

“So great has been the success of this one that all of us will go back to our homes not only with greater enthusiasm for Entomology, but with every feature of this international gathering impressed on his mind and with a great respect and personal liking for his colleagues from the other parts of the world. You men and women from the other countries by your journey here have broadened our outlook very greatly. We knew your work, we now know your personalities and we clasp hands with you in warm friendship...Long live Entomology!...”

As the French say, “*Plus ça change plus c'est le meme chose.*” In view of the fact that ICEXXVI will be held in Helsinki, Finland, in 2020, I guess all that's left for me to say is that I'm committed to seeing this through to the Finnish...



FACULTY AWARDS AND RECOGNITION



Entomological Society of America
Sharing Insect Science Globally

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Co-Editors-in-Chief Chosen for Insect Systematics and Diversity

Annapolis, MD; July 13, 2016 -- The Governing Board of the Entomological Society of America (ESA) has approved the selection of two professors from the University of Illinois -- Dr. Sydney A. Cameron and Dr. James B. Whitfield -- to serve as co-editors-in-chief for ESA's newest journal, *Insect Systematics and Diversity* (ISD).

"After a long and thorough search, the ISD editorial board is thrilled to have Drs. Cameron and Whitfield as co-editors-in-chief," said Dr. Anthony Cognato, chair of the ISD editorial board. "Together they bring a diverse background of editorial experience and systematic knowledge that will be invaluable for a momentous start and the success of *Insect Systematics and Diversity*."



Drs. Sydney Cameron and James Whitfield

The new journal, which is scheduled to begin publication in 2017, will publish original research on systematics, evolution, and biodiversity of insects and related arthropods. The journal will welcome integrative studies incorporating comparative and functional morphology, conservation, behavior, taxonomy, molecular phylogenetics, paleobiology, natural history, and articles that utilize novel technologies or data types or describe emerging methods of research.

Insect Systematics and Diversity will be published by Oxford University Press (OUP), joining the Entomological Society of America's portfolio of eight other journals. The ESA's journal collection can be accessed at <http://insectscience.org>, which will also include the new journal when it launches.

The new journal will be online-only and subscription-based. As an online-only journal, *Insect Systematics and Diversity* will be able to publish papers in a variety of lengths, from short communications, to reviews of current topics, to revisions of up to 200 pages. ESA members will be exempt from page charges when publishing in the new journal. As the journal is online-only, all color figures will be free to publish.

"It's a privilege and a challenge to help launch a new scientific journal today in the age of electronic publishing," said Dr. Cameron. "Our success will ultimately depend upon the excellent research of all those scientists interested in the systematics and diversity of insects and other arthropods representing by far the largest pool of biodiversity on the planet."

"I am pleased and honored to be able to help launch a journal I believe will become one of ESA's strongest contributions to entomology, in particular, and to comparative biology as a whole," said Dr. Whitfield.

Dr. Cameron is an expert on bee phylogenetics, evolution, genomics, behavior, and conservation. Her lab works at multiple levels in phylogenetics, from higher level to populations, and has developed next-gen sequencing (RAD sequences) for phylogenetics and analysis of genetic variation and population structure of bumble bees and the pathogen *Nosema bombi*, including non-destructive use of museum specimens for comparative genetic analysis. The lab has developed metagenomics screening of bumble bee microbiota for multiple host species. She received her PhD in entomology from the University of Kansas and her master's degree in entomology from the University of California, Berkeley.

Dr. Whitfield is an expert on the systematics of parasitoid wasps, phylogeny and evolution of parasitoid Hymenoptera, coevolution between viruses and parasitoid Hymenoptera, and molecular systematics of insects. His lab specializes in parasitoid Hymenoptera, especially braconid wasps that attack caterpillars, but their work spans a broad range of disciplines, from classical descriptive taxonomy to tropical community ecology to genomics and phylogeny. He received his PhD in entomology from the University of California, Berkeley and a bachelor's degree in entomology from North Carolina State University.

The Entomological Society of America is the largest organization in the world serving the professional and scientific needs of entomologists and people in related disciplines. Founded in 1889, ESA today has more than 7,000 members affiliated with educational institutions, health agencies, private industry, and government. Members are researchers, teachers, extension service personnel, administrators, marketing representatives, research technicians, consultants, students, and hobbyists. For more information, visit <http://www.entsoc.org>.

Oxford University Press is a department of the University of Oxford. It furthers the University's objective of excellence in research, scholarship, and education by publishing worldwide. OUP is the world's largest university press with the widest global presence. It currently publishes thousands of new publications a year, has offices in around fifty countries, and employs some 6,000 people worldwide. It has become familiar to millions through a diverse publishing program that includes scholarly works in all academic disciplines, bibles, music, school and college textbooks, children's books, materials for teaching English as a foreign language, business books, dictionaries and reference books, and academic journals.



Entomological Society of America
Sharing Insect Science Globally

ESA Science Policy Fellows Class of 2014



- **Dr. Marianne Alleyne**, a research scientist in the Department of Entomology at the University of Illinois at Urbana-Champaign;
- **Dr. Anders S. Huseeth**, a postdoctoral associate in the Department of Entomology at Cornell University;
- **Dr. Jamin Dreyer**, a postdoctoral researcher in the Department of Entomology at the University of Kentucky;
- **Dr. Rayda K. Krell**, an independent consultant specializing in entomological and agricultural communications;
- **Ms. Ariel Rivers**, a dual-title doctoral candidate at Pennsylvania State University, studying entomology and international agriculture and development.

Highlights of their service include:

- 2014 ESA Annual Meeting training workshop
- May 2015 trip to Capitol Hill where the Fellows met with a combined total of 32 House and Senate offices (see this [Entomology Today post from May 2015](#) for details).
- October 2015 trip to Washington where the Fellows met with federal and non-federal entities of interest to entomologists including USDA-NIFA, NSF, NIH, FFAR, and the National Academies.
- 2015 ESA Annual Meeting training workshop
- May 2016 trip to Washington DC (with the SPF class of 2015), meeting with over 30 congressional offices from 11 states
- (planned) November 2016 trip to meet with federal agencies and NGOs





Cockroaches communicate via bacteria in their feces
 Science /AAAS - Dec 7, 2015
 7, 2015 , 3:00 PM ... **May Berenbaum**, an entomologist at the University of Urbana-Champaign, who was not involved with the work ...



'Neonics Not Key Driver of Bee Deaths'--USDA Study
 Huffington Post - Mar 25, 2015
 University of Illinois Department of Entomology Chair **May Berenbaum**, up the National Academy of Sciences 2007 National ...



New White House pollinator plan gives big buzz to science
 Science /AAAS - May 20, 2015
 By Puneet Kollipara May. 20, 2015 , 1:45 PM ... "I think it's phenomenal, **Berenbaum**, an entomologist at the University of Illinois, Urbana-Champ
How the White House plans to help the humble bee maintain its buzz
 In-Depth - Washington Post - May 19, 2015

[View all](#)



In a fight between environmentalists and farmers, the bees lose
 Washington Post - Aug 26, 2016
May Berenbaum, head of the entomology department at the ... of more papers in scientific literature in 2015 and 2016, she says.



It Turns Out Bees Are, Quite Literally, Worrying Themselves to
 New York Magazine - Jun 18, 2015
 One interviewer suggested his own theory to entomologist hero **May Ber** who last year received a National Medal of Science: ...



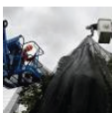
Media shouting match over neonicotinoids isn't helping bees
 Genetic Literacy Project - Aug 29, 2016
 [says] **May Berenbaum**, [entomologist]. . . The problem, though, isn't lin class of insecticides. . . . By contrast, "varroa is a horrible ...



A Report from the Integrated Tick Management Symposium in
 Entomology Today - May 20, 2016
 In May 2016, the U.S. Centers for Disease Control and Prevention, the closing remarks, ESA President **May Berenbaum** summarized ...



Dr. Tom Baker Talks About Harry Shorey, a Pioneer in Pherom
 Entomology Today - Dec 30, 2015
 At the 2015 annual meeting of the Entomological Society of America, ... pheromone biology," said **May Berenbaum**, ESA's 2016 President.



Neonicotinoid pesticides dramatically harm wild bees, study fin
 OregonLive.com - Apr 22, 2015
 University of Illinois entomologist **May Berenbaum**, who wasn't part of e and last year was awarded the National Medal of Science, ...



Beebread and Jelly: How a Bee's Diet Determines Caste
 Nature World News - Sep 5, 2015
 ... **May Berenbaum**, who conducted the study with research scientist W and developmental biologist Mary Schuler, said in a statement.
Diet Determines A Bee's Role In The Hive - Study
 Design & Trend - Sep 6, 2015



"Disgusting" Bugs That Infested Burning Man Not Actually Disg
 Popular Science - Aug 24, 2015
 According to **May Berenbaum**, an entomologist at the University of Illinois Great Burning Man Bugpocalypse of 2015 isn't the first time ...

Editors and Editorial Boards

Science Magazine - Jan 12, 2016
 Science's editorial boards include a seven-member Senior Editorial Board that helps set jo Board of Reviewing Editors consisting of more than ...



Cookies on the BBC website
 BBC News - May 20, 2015
May Berenbaum, has been on the faculty of the Department of ... Kapla 2015) named after her publicly in November 2014.



Richard J. Leskosky: Girls rule at this year's event
 Champaign/Urbana News-Gazette - Feb 23, 2015
May Berenbaum (who, I hasten to add in the interest of journalistic integrity my wife). As in previous years, the festival will also feature ...



Weekend update: On the bug screen
 Champaign/Urbana News-Gazette - Feb 28, 2015
 24, 2015. ... When entomologist/UI Professor **May Berenbaum** started t As Berenbaum received the National Medal of Science in ...



Do neonicotinoids harm bees? It depends on the crop, says E
 Christian Science Monitor - Jan 6, 2016
 A 2015 study in the field in the journal Nature found neonicotinoids in ... Illinois entomologist **May Berenbaum**, who in 2014 was ...



Rob Kanter/Environmental Almanac: Researcher takes fresh k
 Champaign/Urbana News-Gazette - Sep 18, 2016
 In 2011, UI Department of Entomology head **May Berenbaum** and colle Suarez came across it, and they wondered what could be ...



Officials urge precautions against mosquitoes
 Champaign/Urbana News-Gazette - Sep 3, 2016
 Not to be overly worried: "Transmission was unexpectedly low" in a 2016 test cited by **May Berenbaum**, head of the University of ...



Bee Experts Dismantle Touted 'Harvard' Neonics-Colony Colla
 Huffington Post - Dec 15, 2014
 Lu reached folk hero status among environmentalists last May when the University of Illinois entomologist **May Berenbaum**, who chaired the ...



How Do Bees Make Honey?
 GotScience.org - May 2, 2016
 ... more than royal jelly: Mao, Wenfu, Mary A. Schuler, and **May R. Bere** Science advances 1.7 (2015): e1500795. Multiple phenotypes ...



Similarities found in bee and mammal social organization
 Phys.Org - Jun 30, 2016
 Since then social insects such as **honey bees** and social mammals such as ... discover this, Hui Liu, **Gene Robinson**, and Eric Jakobsson of the ...



Genetic Roots of Social Behavior: Corresponding honey bee e
 PLOS Research News (press release) - Jul 30, 2016
Honey bees and mammals, including humans, live complex social ... EJ interested in sociogenomics from knowing **Gene Robinson** ...



Wimps or warriors? Honey bee larvae absorb the social cultur
 Science Daily - Oct 31, 2015
 Even as larvae, **honey bees** are tuned in to the social culture of the hive
 Genomic Biology director **Gene Robinson**, who led the research ...



UC Davis to host second symposium on honey bee health and
 Napa Valley Register - Apr 1, 2016
 The **honeybee** is the focus of an upcoming symposium at UC Davis. ...
 continent, Le Conte collaborated with **Gene Robinson** at the ...



Humans and bees share the same sociability genes
 The Register - Jul 4, 2016
 Most of the **genes** conserved between the **honey bees** and ... The auth
Gene E. Robinson and Eric Jakobsson, believe that these ...



Honey Bees Larvae Absorb Social Culture of Hive
 NDTV - Nov 2, 2015
 Washington: **Honey bees** are tuned in to the social culture of the hive at
 Woese Institute for Genomic Biology director **Gene Robinson**, ...



No Glass Ceiling for Worker Bees
 New York Times - Sep 8, 2014
 The **honeybee** hive would not seem to be the place to look for ... **Gene**
Robinson, the director of the Institute for Genomic Biology at the ...



Gene regulation underlies the evolution of social complexity in
 Phys.Org - May 14, 2015
 ... the evolution of social complexity in bees, including **honey bees**. ... A
 genomic study of 10 species of bees representing a spectrum of social ...
 individuals tending for themselves," said **Gene Robinson**, a lead on ...



Thousands of honey bees killed at Lincolnshire Marriott Resor
 Chicago Tribune - Nov 17, 2015
 Thousands of honeybees at Lincolnshire Marriott Resort died in Novem
 when someone snuck onto the grounds and used pesticides ...



Scientists track gene activity when honey bees do and don't e
 Science Daily (press release) - Jul 18, 2014
 Hundreds of **genes** showed differences in activity in **honey bees** ... "Ou
 parallel suggestive findings in humans," **Robinson** said.



The Commercial Bumble Bee Industry May Have Helped Spread ...
 Entomology Today - Apr 4, 2016
 In the late 1990s, populations of the western bumble bee (*Bombus ...* entomology
 professor **Sydney Cameron**, who led the new research.
Study suggests commercial bumble bee industry amplified a fungal ...
 Phys.Org - Apr 4, 2016
View all



Allsup: Protecting the bumble bees
 Bloomington Pantagraph - Sep 3, 2016
 We have 50 species of **bumble bees** in North America. ... **Sydney Cameron**,
 entomologist for the University of Illinois, and her lab is part of a ...



Commercial bumble bee industry amplified a fungal pathogen of ...
 Science Daily - Apr 4, 2016
 ... of Illinois entomology professor **Sydney Cameron**, who led the new research. ... The researchers
 found parallels between the use of bumble bees to ... the fungus is a key player in bumble bee
 declines, Cameron said.



Once common in Minnesota, rusty patched bumblebee nominated ...
 Minneapolis Star Tribune - Oct 29, 2016
 The rusty patched bumblebee, once one of the most common bees ... said **Sydney**
Cameron, an entomologist at the University of Illinois.



Great Canadian Bumble Bee Count creates buzz for bee "census"
 Cantech Letter - Jul 25, 2016
 ... bee Environmental advocacy group Friends of the Earth Canada is encouraging
 Canadians to participate in the first annual Great Canadian ...



The Bee That Breaks Your Heart
 Smithsonian - Oct 25, 2016
 The first time Clay Bolt saw the rusty patched bumblebee was in the A recent
 PNAS study published by **Sydney Cameron** from the University ...



Climate Change Is Shrinking Where Bumblebees Range, Research ...
 New York Times - Jul 9, 2015
 Warming temperatures have caused bumblebee populations to retreat ... **Sydney**
Cameron, an entomology professor at the University of Illinois ...
Climate change is putting a deadly squeeze on bumblebee ...
 In-Depth - The Verge - Jul 9, 2015
View all



Warming world has shrunk bee tongues
 Science /AAAS - Sep 24, 2015
 In just 40 years, the tongues of two bumblebee species living high up in ... says
Sydney Cameron, an entomologist at the University of Illinois, ...
Climate change is having a surprising effect on bumble bees: Their ...
 Highly Cited - Washington Post - Sep 24, 2015
View all



A New Gig For Bees: Start-Up Enlisting Them To Deliver Pest ...
 Forbes - Feb 1, 2016
 There is a start-up company in Ontario, Canada called BVT (Bee ... to make it a
 commercial reality working with both honeybees and bumble bees. ... like **Sydney**
Cameron of the University of Illinois to insure bee safety.



STUDENT AWARD IN ENTOMOLOGY



The University of Illinois Department of Entomology has a long history of conducting cutting-edge research on bee biology, ecology and genetics. The continuing decline of and multiplying threats to many of the world's 20,000 species of bees makes this research even more important for understanding these irreplaceable pollinators and developing strategies for helping them to flourish. Current faculty in the Department of Entomology and their graduate students have made significant breakthroughs in understanding the biology of bees and the forces that threaten their survival. Graduate students are an integral part of the research conducted at UIUC and support for their research is vital to continuing the effort to understand bees and the problems they face.

Bee Research



Dr. May Berenbaum

Dr. Berenbaum's research is focused on how honey bees cope with phytochemicals that occur naturally in their diet and pesticides that they encounter in agroecosystems. Berenbaum and her students examine food-processing from the molecular to the behavioral level to understand how individual bees detect toxins and how the colony collectively converts nectar and pollen into honey and bee bread. Recent work has revealed that certain phytochemicals in honey boost pesticide tolerance, induce immunity genes, and enhance worker longevity.



Dr. Sydney Cameron

Professor Cameron's lab uses molecular phylogenetics/phylogenomics to examine the evolution of social behavior in the major groups of social bees and the conservation genetics of threatened bumble bee species. Her graduate students have made expeditions worldwide to obtain rare species for phylogenetic and conservation research. This work resulted in comprehensive phylogenies of bumble bees and stingless bees as well as new insights into the causal mechanisms of bumble bee decline in North America.



Dr. Gene Robinson

Professor Robinson's research integrates genomics and neuroscience to understand the mechanisms and evolution of social behavior in the honey bee. Using RFID tags and barcoded bees, Robinson and his graduate students have made fundamental discoveries about the genetic and neural mechanisms that underlie honey bee division of labor, aggression and dance language, with important implications for understanding Colony Collapse Disorder.



Dr. Alexandra Harmon-Threatt

Professor Harmon-Threatt's lab assesses patterns of bee biodiversity and threats to bee persistence in natural habitats. Current grad students in the HT lab are exploring bee sensitivity and response to major environmental disturbances such as habitat fragmentation, pesticides, fire and grazing. This work is important to improving management of restored areas to ensure they effectively support declining bee populations.

Support for Bee Research

In September 2016, the University of Illinois at Urbana-Champaign Department of Entomology formally established the "**I-Bee Research Fund**" to support the innovative and independent research of graduate students which has been critical to major findings on bees. Donations to this fund will allow students to immediately begin research on emerging threats to bees which are critical to improving our understanding of bees and efforts to conserve their declining populations. It is our goal to raise \$150,000 over the next several years to have the opportunity to create our first-ever endowed graduate fellowship in bee research.

The University of Illinois is a state-supported institution but state money accounts for only about 12% of our operating costs. The unwavering support of our alumni and friends allows us to continue in discovery and public service through teaching, research, and community engagement. Your generous gifts are critical to preserving our excellence and making a difference in the lives of our students, today and tomorrow. We are very grateful for your support.



Methods of Giving: **Online:** www.uif.uillinois.edu/Gifts/StartGiving.aspx (Indicate giving to "**I-Bee Research Fund # 338946**")
Check or Money Order: Payable to "**University of Illinois Foundation.**"

STUDENT NEWS

National/international awards for students

June EPA STAR fellowship – Allison Gardner

Fulbright Fellow – Rafael Morales-Achury

Colciencias Fellowship – Nathalie Baena

National Science Foundation Doctoral Dissertation Improvement Grant—Kyle Parks 2016

North Central Branch Entomological Society of America 2015: Tanya Josek 1st place BS/MS 10-minute presentation; Suzaanne Vachula, 3rd place BS/MS poster MUVE P-IE



Entomological Society of America 2015: Undergraduate Shuyang Jin and graduate students Tanya Josek 2nd place 3-minute oral presentation, Rafael Achury 2nd place poster presentation (photo at left), Allie Gardner 2nd place poster

North Central Branch Entomological Society of America 2016:

Tanya Josek 1st place BS/MS 10-minute presentation; Tanya Josek, 1st place Triplehorn Challenge Pinning Competition; Nathalie Baena Bejarano 3rd place Ph.D. Poster Session II; Nathalie Baena Bejarano 3rd place Triplehorn Challenge Still Art; Linnea Meier 3rd place oral competition; Todd Johnson, 2nd place oral competition; Todd Johnson, Student Travel Scholarship

North American Prairie Conference July 17, 2016: Nick Anderson 2nd place poster presentation, Increased seed mix diversity in a prairie restoration changes abiotic factors implicated in nest site selection by ground nesting bees; 2nd place Catherine Dana, oral presentation, Prairie cicada (Hemiptera: Cicadidae) natural history and distribution in Illinois.

International Congress of Entomology 2016: Eric South, 2nd place Graduate Student Poster Competition: Ecology and Population Dynamics.

Illinois Mosquito and Vector Control Association meeting Henry Lawicki Student/Intern competition, 2015—Allie Gardner 1st place, Tanya Josek 2nd place; 2016—Allison Parker 1st place

Campus awards

List of Excellent Teachers in Entomology Department at UIUC

(faculty underlined; *Outstanding instructor)

Spring 2015

Brian Allan* (361), Nick Anderson, Brittany Buckles, Charles Dean, Michelle Duennes, Bettina Francis (486), Aron Katz, Dohyup Kim*, Allison Parker, Kyle Parks, Barry Pittendrigh (486), Hugh Robertson (504), Andy Suarez (329)

Fall 2015

Brian Allan (546), Nick Anderson*, Charles Dean*, Brenna Decker, Allison Hansen (270), Tanya Josek, Allison Parker, Kyle Parks, Andy Suarez (430), Daniel Swanson, Margaret Thairu*

Spring 2016

Brian Allan* (361, 481), Nick Anderson, May Berenbaum (109), Charles Dean*, Natalie Diesel*, Sarah Hughson, Allison Parker*, Kyle Parks, Laura Steele*, Andy Suarez (329), Margaret Thairu, Erin Updyke

Fall 2016

Nick Anderson, May Berenbaum (444), Daniel Bush, Charles Dean, Natalie Diesel, Alex Harmon-Threatt, Kyle Parks, Margaret Thairu, Erin Updyke

Campus/College/School awards

2015 Graduate College Conference Travel Award – Allison Gardner, Nathalie Baena, Eric South

2016 Graduate College Conference Travel Award – Kyle Parks, Margaret Thairu

Graduate College Dissertation Travel Grant – Rafael Achury Morales (2015), Erin Updyke, Nathalie Baena Bejarano (2016)

Graduate College Master's Project Travel Grant – Luke Zehr (2015), Brenna Decker (2016), William Montag (2016)

CLACS Tinker Fellowship – Josh Gibson, Erin Updyke, Luke Zehr (declined)

John G. & Evelyn Hartman Heiligenstein Outstanding Teaching Assistant – Allison Parker (2015), Laura Steele (2015), Margaret Thairu (2016)

2015 Graduate College Fellowship for Underrepresented Students – Jacob Dixon, Christian Millan-Hernandez

2015 NSF IGERT fellows – Jacob Dixon, Kari Jackson, Rachel Skinner

2015 Rita and Arnold Goodman Fellowship—Teresia Njoroge

2015 Herbert Holdsworth Ross Memorial Award – Chip Austin, Brendan Morris, Kyle Parks, Daniel Swanson

2016 Herbert Holdsworth Ross Memorial Award – Aron Katz, Christian Millan-Hernandez, Kyle Parks

William H. Luckmann award – Mark Demkovich (2015), Linnea Meier (2016)

Francis M. & Harlie M. Clark Summer Fellowship – Chip Austin (2015), Margaret Thairu (2016)

2015 Francis M. & Harlie M. Clark Research Support Grants – Nick Anderson, Scott Cinel, Erin Updyke

2016 Francis M. & Harlie M. Clark Research Support Grants – Brenna Decker, Todd Johnson, Tanya Josek

2016 Lebus Fund Award – Nick Anderson, Dohyup Kim, Margaret Thairu

Department awards

Undergraduate Entomology Research Award – Sean O'Fallon (2015), Chris Petranek (2015), Shuyang Jin (2016)

Ellis MacLeod/DuPont Award for Outstanding Teaching – Sarah Hughson (2015), Daniel Swanson (2016)

2016 Robert L. Metcalf Award – Laura Steele

2015 Schmidt Summer Scholars Award – Kari Jackson, Dohyup Kim

2016 Schmidt Summer Scholars Award – Nick Anderson, Erin Updyke

2015 Entomology Summer Stipend Award – Daniel Bush, Michelle Duennes, Allison Parker

2016 Entomology Summer Stipend Award – Daniel Bush, Charles Dean, Dohyup Kim, Eric South

2016 Illinois Natural History Survey Species File Group Graduate Research Fellowship – Aron Katz, Brendan Morris



Alex Pane, Alex Harmon-Threatt and Brenna Decker at the SIB Awards **Ceremony**

POLLINARIUM NEWS 2015 & 2016

(by Lesley Deem)

As one visitor remarked, the Pollinarium has continued to evolve. For the first time, we were on the 2015 CU Garden Walk for sustainable gardening (<https://www.facebook.com/events/1562848937328117/>). We made cedar planting boxes for the south side of the building, where we can't dig because of the buried power lines. We also put a hexagonal flowerbed box under our bee sculpture to give our "bee girl" her own flower patch. We had awesome help from the master gardeners getting our yard and plantings ready. All the hard work paid off and we had over 600 visitors that day. One gardener gave us a "10" for our plantings in the pots and beds as well as the inside displays.

In 2016, we increased the number of classes and groups visiting the Pollinarium as well as the number of presentations we did for classes and the public at their locations. We collaborated with the College of ACES to be part of their Summer Academies and taught honey bee biology and beekeeping for their 4H program for middle school through high school students. Planting for pollinators and native bees was the topic of many of the presentations this year.

With all new supplies for beekeeping and gardening in the building, we look even more like Grandma's attic. Our biggest need at the moment is for donations for a storage/workshed building. Seeds are always welcome so we can start plants and pass them along to increase the habitat available for bees, butterflies and other pollinators. Stop in for a visit! Thanks. Lesley



School Groups

Preschool/Daycare

Orchard Downs Preschool – (33 students) They planted the zinnias in the bee bed for us. Each student planted a yellow or pink zinnia.

University Primary School – Went to school (see section below)

Children's Center Day Care, Urbana, IL – (20 students) Handed out beaded bees for prizes. They knew their bees.

Chesterbrook Academy 4 to 5 year olds – (20 students, 4 adults) (Aug 8)

Elementary

All Champaign Unit 4 Second grade classes. It has been written into their curriculum. (36 classes)

[approx. 822 students, 36 teachers and numerous parents and aides] (~1,000)

Kenwood 3 classes, Robeson 3, International Prep Academy 3, Bottenfield 3, Carrie Busey 3, Garden Hills 3, Dr.

Howard 3, Carrie Busey 3, Washington 3, Westview 3, Southside 2, Stratton 4

Prince of Peace School (3 groups of 20) (k, 1-2, 3-5) (June 21)

Next Generation School – life cycles (30 Students, 4 teachers) (Sept 13) (2nd grade)

Urbana – Wiley School- 2nd grade, 2 classes (Oct 7)

Middle School (5-8)

Thomas Paine – 5th Grade Andrea Jackson (54 students) (May 5)

King Elementary – 5th grade Avanti Chajed (14 total) (May 9)

Dunlap Middle School Robotics Team (7 students, 1 adult) (Dec 3)

Home School Groups

Catherine Filip – five and six year olds and siblings (13 total) (May 3)

College

Parkland Classes – Environmental Biology (2 classes April 27; 2 classes April 28; 2 classes Nov 30; 1 class Dec 1; Heidi Leuszler), Introduction to Horticulture (1 class Nov 29; Jim Schmidt), Plant Biology- (1 class May 4; 1 class Dec 9; Mike Retzer)

University of Illinois-

IB401 Introduction to Entomology. TA Natalie Diesel. 2 class sections. (Oct 14)

CPSC 270 Applied Entomology (extra credit)

Adult Continuing Education

We started our year off hosting a native bee course open to students and the public. It was taught by Mike Arduser and we had ten students.

Community and Campus Groups Visiting the Pollinarium

Master Gardeners Garden Walk 2015 – Sustainable Gardening
Audubon – Insect viewing and collecting
Girl Scout Brownie troop – Bug Patch
CEIBA – Central Eastern Illinois Beekeepers Association; January 28, March 31, October 27
Boy Scouts - (power outage; moved to Urbana Free Library) (January 31)
Boy Scouts - Julie Grygiel, Mahomet 4th grade (May 10)
Girl Scout Troop – Susan Kim (April 1)
4H tour – Beekeeping and protecting bees with Carol Clothier’s group
Illinois Department of Natural Resources – Workshop
Interview with Elliot and sister Sam: All about the bees. (May 11)
4H spin club- Wendy L. – *Honey bees and beekeeping*.
Girls Explore Biology – Carla Caceres (June 6, 7 & 10)
Tap In Academy – 2 groups (June 15) 1 group (June 23), 2 groups (July 13)
ACES 4H Illini Summer Academies- Course on Beekeeping Jr High and High School students (6/26-6/29)
Pollen Power Camp – Middle school girls (July 1)
ACES Family Academies (July 7 and 8th) Parents, grandparents and prospective students. Talk on importance of planting habitat for pollinators. Visitors did craft painting of terra cotta pots. Then they take home their pots and a milkweed plant.
ACES RAP I (July 18) Discussing research at University of Illinois.
Leonhard Day Camp – Champaign Park District (July 25 & 27)
LAS Advancement Office tour (Aug 16)
Master Gardeners State Conference field trip (Aug 19)
IDNR (Illinois Dept of Natural Resources) Entice workshop – Native Bees (Aug 27)
WCIA morning show taping with Ava Heap (Oct 12)

Visitors from the U.S. (States)

Illinois

Arlington Heights, Beach Park, Beason, Bement, Bloomington, Cary, Champaign, Channahon, Charleston, Chatsworth, Chicago, Chrisman, Danville, Decatur, Dewey, Downers Grove, Fairbury, Freeport, Galena, Gibson City, Glenview, Glen Ellyn, Green Garden, Green Valley, Greenville, Heyworth, Joliet, Kildeer, Lake Zurich, Libertyville, Lincolnwood, Loda, Long Grove, Mackinaw, Mahomet, Mansfield, Milbrook, Momence, Monticello, Morris, Mt. Pulaski, Mt. Vernon, Naperville, Normal, O’Fallon, Oakbrook, Ogden, Orland Hills, Pana, Paris, Paxton, Philo, Piper City, Plainfield, Rantoul, Rushville, Sadorus, Shelbyville, Shumway, St. Joseph, Sugar Grove, Thomasboro, Tolono, Urbana, Waterloo, Yorkville

Alabama, Huntsville; **California**, Redondo Beach, Palo Alto, Martinez, San Francisco, Woodland; **Delaware**, Wilmington; **Georgia**, Tifton; **Indiana**, Indianapolis, Mentone, Mooresville; **Kansas**, Kansas City; **Kentucky**, Louisville; **Louisiana**, Baton Rouge; **Maine**, **Maryland**, Cockeysville; **Massachusetts**, Westford; **Michigan**, Albion; **Minnesota**, Plymouth; **Missouri**, Springfield; **New Mexico**, Albuquerque; **New York**, New York; **North Carolina**, Efland, Greensboro; **Ohio**, Uniontown; **Texas**, San Antonio; **Virginia**, Manassas, Virginia Beach; **Washington**, Seattle; **Wisconsin**, Germantown

Visitors from outside the U.S.

Australia, Canberra, Melbourne; **France**, Chamonix, Paris; **Germany**, Stuttgart, University of Honheim; **Israel**; **Korea**; **Netherlands**; **Japan**; **Poland**; **Taiwan**

Outreach Outside the Pollinarium to Schools and Public meetings

Sierra Club
Champaign County Museum Consortium meetings
Agronomy Night, *Clark County* – (January 21) *Planting for Pollinators*
Science Fair Judge – Next Generation School (February 19)
FS Farmtown – Hands on class: *Mason bees* and building bee houses (morning & afternoon Feb 27)
Discussion with Master gardeners – Good, bad and buggy (March 2)
McLean County Extension – *Home, Lawn and Garden Day* (Central Catholic High School; Bloomington, IL) (March 5)
Presentation about planting for butterflies including adults and caterpillars. General nectar plants for all species as well as specific host plants for butterflies.

Monarch and Pollinators Day – Peoria (April 2)

IVBA (Illinois Valley Beekeepers Association) meeting – Ottawa, IL. Talk and Display: Native bees, honey bees and host plants.

Preschool – University Primary School-visit to their classroom. Story telling, puppets and flowers. (April 12)

Master Gardeners *Edgar County* – April in Paris Gardening Conference (April 14, 2016) Powerpoint presentation and talk. *Planting for Pollinators: Selecting native plants for your gardens.*

Rantoul Garden Club- (May 23) Powerpoint presentation and handouts. *Extending the Season in the Garden.*

FFA (Future Farmers of America Convention) – Springfield,IL (June 14) Judging AgriScience Fair

FS Farmtown – Butterfly Gardening (June 18). Graduate student Sarah Giers brought sugar gliders for show and tell with Lesley.

Ballard Nature Center – IWIN course on Native bees. Altamont, IL (June 22)

Powerpoint presentation, trapping of native bees, and bumble identification. Specimen boxes assembled from insects at INHS museum.

National Pollinator week – Creepy Crawly Fest with Jim Nardi and Josh Gibson. Indiana (June 25)

YMCA – Talked about the importance of helping and protecting the pollinators. Taught bee anatomy making beaded bees and Sarah Giers brought her sugar gliders for show and tell (Aug 3)

Monarch Meeting. Springfield, IL (Sept 9)

Sanai Temple – Education on honey bees, honey tasting and lip balm making (21 children, 4 adults)

Docents/Volunteers

Entomology Graduate Students (EGSA)

Nick Anderson, Katie Dana, Charles Dean, Brenna Decker, Natalie Diesel, Jacob Dixon, Michelle Duennes, Josh Gibson, Sarah Giers, Kari Jackson, Todd Johnson, Elijah Juma, Aaron Katz, Linnea Meier, Will Montag, Teresia Njoroge, Alison Parker, Kyle Parks, Dan Swanson, Jared Thomas, Michael Wong

Master Naturalists/Master Gardeners

Sally Anderson, Cathy Barnard, Donna Early, Chuck Elder, Julie Elder, Bill Ford, Michael Holtz, Diana Johnson, Richard Lampman, Tess Larkin, Kellie Mook, Donna Nelson Evans (head caretaker), Nancy Snellen, Kathy Springer, Keith Springer, Kathy Young

This is the first year that the Pollinarium became an official site where the master gardeners could volunteer. ☺



NATIONAL POLLINATOR WEEK 2015-2016 Urbana Farmers Market

For National Pollinator Week in 2016 the Entomology Graduate Students Association (EGSA) had a booth at the **Urbana Farmers Market** June 4, 11, and 18th to let people know the status of pollinators in North America and how they can help. Allison Parker, Josh Gibson, Katie Dana and others gave out seed packets and made little planters so children could grow their own flowers. Tanya Josek made glasses etched with pollinators for raffle prizes. Brenna Decker led **Bee Blitz** with Michael McKelvey from BeeSpotter and Nick Anderson. A film “**A Ghost in the Making**” was shown at the Champaign Public Library by Sydney Cameron. Lesley Deem gave a **native bees workshop** on identifying native bees and making houses for them at the Pollinatarium.



BeeSpotter

[Home](#) [Topics](#) [Find Bees](#) [Submit Spotting](#) [About](#) [Log In / Create Account](#)

BeeBlitz

Thank you to everyone who went out spotting bees the weekend of June 25! We are still receiving spottings from that day, so if you haven't uploaded yours yet, we encourage you to **submit your spottings!** Results of the 2016 BeeBlitz will be announced soon.



About the BeeBlitz

Join us on Saturday, June 25, 2016 for the second annual **BeeBlitz!**

Mark your calendar for the second annual BeeBlitz during **National Pollinator Week**. Nature lovers and concerned citizens in Illinois, Missouri, and Ohio are invited to get outside, snap pictures of honey & bumble bees on Saturday, June 25th, and upload their findings to **BeeSpotter**, the citizen science project run in collaboration between the University of Illinois at Urbana-Champaign's **Department of Entomology** and the **Office for Mathematics, Science, and Technology Education**.



SNAP



UPLOAD



CONTRIBUTE

The name BeeBlitz is derived from a **BioBlitz**, an activity in which all of the biodiversity in a specific area is examined, to provide a snapshot in time of the flora and fauna present. We want to know what species of honey & bumble bees are seen, and where they are, on the 25th. We encourage veteran and aspiring bee spotters alike to venture out on a nature walk and participate in the blitz.

Join us at the Pollinatarium

You can find us at the Pollinatarium on Saturday, June 25, 2016, from 10AM - 11AM for the BeeBlitz! The University of Illinois Pollinatarium is the first free-standing science center in the nation devoted to flowering plants and their pollinators. It's surrounded by prairie, so it's the perfect place to spot some bees! Here's how you can find the Pollinatarium:

Address: **606 W Windsor Rd, Urbana, IL 61801**

Telephone: **(217) 265-8302**

Visit the **Pollinatarium website** to learn more about it!

Let us know you're coming!

Events

▶ **6/25/2016 10AM - 11AM: BeeBlitz at the Pollinatarium**

▶ **6/25/2016 11AM - 1PM: Local prairie excursion**

FACULTY



Brian Allan. All continues to go well in the Allan lab. Brian was promoted to Associate Professor with tenure as of August 2016. The tick project in Kenya funded by the National Science Foundation is coming to a close; the two postdoctoral scholars associated with this project, Sharon Okanga and Steven Hockett, completed field work and lab manager Page Fredericks is busily analyzing tick samples for a wide diversity of interesting pathogens. PhD student Allison Gardner, co-advised with Juma Muturi and the first doctoral student to graduate from the lab, successfully defended her PhD and obtained a tenure-track faculty position at the University of Maine Orono. Lab graduate students Tyler Hedlund, Allison Parker and Tanya Josek also successfully defended Master's theses; Allison and Tanya are staying on for PhDs, while Tyler is employed by the Natural Areas Committee at UIUC. PhD students

Erin Allmann Updyke and Erin Welsh both are approaching the completion of their doctoral thesis field research in Panama. Courtesy of an Institute for Sustainability, Energy and the Environment grant, postdoctoral scholar Andrew Mackay continues his enormous productivity in the lab, and this project also has supported the research efforts of new PhD student Elijah Juma and lead technician Catherine Wangen. A new project funded by the Strategic Environmental Research and Development Program will bring a new round of technicians and a postdoctoral scholar to the lab, who will be conducting tick-related research on military installations in the southeast U.S. We're keeping busy and looking forward to what the next two years will bring!

May Berenbaum.



Judging by how far behind I've fallen on answering emails, 2015-2016 must have been busier than usual (I have an entire folder in Thunderbird called "Apologies" for responses to messages that have languished for more than a year). Taxonomically diversifying studies of plant-insect interactions in the lab mean that the produce section of local grocery stores rival Sigma for providing research materials. Thanks to a happy confluence of negatives, my NSF grant that was rejected in December 2014 was unrejected in April 2015, so we're back working with parsnip webworms and wild parsnips (making 2016 my 40th year of working with these charismatic and endearing noxious invasive pests).

Getting unexpected funding meant buying grocery store parsnips and planting them in pots in anticipation of the field season (I'm sure the folks at Common Ground Food Coop are wondering why there was a run on parsnips in Spring 2015). In the process of looking for webworms on parsnips, Charles Dean, new to the NSF project, instead fortuitously found *Depressaria depressana*, a European webworm relative newly arrived in the Midwest USA with more eclectic taste across the Apiaceae (as evidenced by its common name, the purple carrot-seed moth). Thanks to help from alumnus Joel Siegel, Mark Demkovich, Daniel Bush, and Luke Zehr continue to work on the navel orangeworm, pests of almonds, pistachios, and figs (thanks, Strawberry Fields, for mission figs in November). The third time proved to be the charm with USDA, where an unexpected holiday gift in December 2016 was a call from Mary Purcell informing us that we'll be able to continue working on honey bees and honey –sweet! Longtime research associate Wenfu Mao left for a position in a venture capital start-up (Vestaron) but not before characterizing some remarkable nutraceutical properties of honey. Picking up the gauntlet, Ling-Hsiu Liao continued documenting the many remarkable attributes of honey as a superfood. New student Teresia Njoroge has been testing edible oils as low-cost environmentally sustainable alternative mosquito larvicides in the developing world (occasioning more trips to Strawberry Field for sesame oil, pumpkinseed oil, hempseed oil, and a few more odd looks from the cash register clerk). Sweet potatoes were in the lab, too, to produce foliage to support the cassidine chrysomelid beetles that new student Jacob Dixon is investigating.

On the home front, since Hannah is now living in North Hollywood, I keep finding reasons to travel anywhere west of the Rockies. I wangled an invitation to the September 2015 meeting of the Asia-

Pacific Association of Chemical Ecologists (what part of “Asia-Pacific” is Urbana, Illinois?) in Anaheim to visit her, and in August 2016 both Richard and I went west so that I could give a talk at the HoneyLove Natural Beekeeping conference in Pasadena. In September 2016, Hannah came to the International Congress of Entomology in Orlando with Cookie, her cockroach puppet, to perform during the family program at the Congress; she couldn’t stay through the meeting, though, because she had to return for her semi-regular stand-up gig at Flapper’s Comedy Club in Burbank. As an aspiring screenwriter, she now has a manager and a screenplay (adapted from a young adult novel) in development. I’ve been trying to talk her into writing a screenplay for (what else?) an insect fear film...



Stewart Berlocher. Even though I knew it was coming, it still feels otherworldly to realize that as of September of this year I had taught at Illinois for 40 years.

Forty years - there is dirt younger than that. It's amazing that they kept me, in the early years - I had to have been the most naïve, green, unimpressive assistant professor in the history of entomology. No postdoc, 1 paper and 1 abstract on my "CV", no grant. And we were expected to know how to teach by osmosis back then - "Step right this way, your 300 students are awaiting you" (although there is something to be said for learning from inexperience). I made every mistake in the book. I cannot thank Stanley Friedman, Judy Willis (both thankfully still with us) and Ellis McLeod enough for steering me back onto the track, more times than I can count. But it has been a great voyage to have been here. Where else but Illinois could I have had such a remarkable, incomparable,

peerless set of students and colleagues? A couple of thoughts to conclude. "The better part of one's life consists of his friendships..." (A. Lincoln). "I've got nothin' but affection for all those who've sailed with me" (B. Dylan). Finally, for those of you who might have read my entry in the first newsletter to which I contributed, I am happy to announce that there no longer is a paucity of enchiladas in Urbana-Champaign.



Sydney Cameron. This year we published our findings in *PNAS* on the role of *Nosema bombi* in bumble bee decline in North America and the likely role of pathogen spillover from commercial bumble bee colonies grown in industrial facilities and distributed for pollination services. We tested the hypothesis that the particular *Nosema* strain found in U.S. bumble bees was the result of an exotic introduction into North America by European companies initiating commercial colony production in North America in the early 1990s. We rejected that hypothesis, finding no genetic differences between *Nosema* found in European bumble bees and *Nosema* found in North American species.

We instead suggest that there may have been a sweep of a single *Nosema* strain across both Europe and North America as commercial interests in colony production and distribution spread throughout both continents.

I presented these findings at the XXV International Congress of Entomology (ICE) in Orlando, FL in September as part of a symposium on *Harnessing the Power of Genomics Tools: Monitoring Stressors in Pollinator Populations*. This year ICE set an all-time attendance record with more than 6,000 attendees from around the globe— perhaps not a surprise given that May was ESA President this year!



Jim and I made the most of a half-day off from the Congress to head east to the Canaveral National Seashore (above), enjoying an entirely new habitat of palm scrub forest en route.

Jim and I also took on positions as co-Editors in Chief of a new Entomological Society of America journal, *Insect Systematics and Diversity* (see <http://www.entsoc.org/press-releases/co-editors-chief-chosen-insect-systematics-and-diversity>), which will publish research papers on systematics, evolution, and biodiversity of insects and related arthropods. This is an exciting opportunity to highlight the depth and breadth of entomological research from

phylogenomics to insect conservation.

While the coming year will undoubtedly have its share of challenges — no state of Illinois budget as of yet, shrinking university budgets, static or reduced research funding rates, and more — I look forward to an adventurous and fruitful 2017!



Fred Delcomyn. If you've read my entries for the past few newsletters, you don't have to spend time reading this one – things are pretty much the same. Writing and photography still take up much of my time. In addition to articles to the News Gazette about my travels and a few articles in other publications, I'm working on a book on small prairie with Jamie Ellis, a botanist at the Illinois Natural Survey. We're actively looking for a publisher.

Family matters continue to delight. Nancy and I and Michael and his family were able to visit Julia in New Zealand in February and March. Erik, with a very young new addition to his family, opted not to go. We had a great time exploring places we had not seen on our first visit.

This summer, Julia and her two girls are again visiting us from New Zealand for August and September, 2016. The kids are getting to be old enough (Julia's oldest starts school this year; Michael's oldest has hit double digits, the big one oh, as the daughter of a friend called it) that they remember trips, cousins, aunts, and uncles, so it's great to get the whole family together. This will probably be the last extended visit for Julia. Once the kids start school, they won't be able to be gone for months at a time. Our summer is their winter, after all, and the school term is in full swing then.

To close, I'll repeat what I wrote last time: for those of you who are now away from campus, I'll mention that I have both a Facebook photography page (<https://www.facebook.com/DelcomynPhotography>) and a photography web site (<http://delcomyn-photo.smugmug.com/>). If you want to remember what central Illinois prairie looks like, or want to see a current picture of the campus or area, drop by and take a look. Both are open to anyone. If you click like on the Facebook page, you will be notified each week when I post a new image. Enjoy the photos!



D-thyrsiflorum

Bettina Francis. For the past two years, I have concentrated on teaching, and on committee work at the campus and university levels. I am a member of the University Senates Conference -- although I suppose it should be called the 'System Senates Conference', since there is now officially a University of Illinois System, with 3 universities: Urbana-Champaign, Chicago, and Springfield. The Senates Conference includes members of all three Senates, and meets each month with the president of the Illinois System. We provide a faculty viewpoint on issues that concern all three universities.

I am also chair of the Senate Committee on Educational Policy for UIUC. Ed Pol reviews all changes to departments, colleges, majors and minors (but not to individual courses – those are managed at the College level). One of our major efforts over the past year was to establish a change in the General Education requirements for undergraduates: rather than being required to take a course on the subject of *either* non-Western Civilizations *or* US minorities, they are now required to take one course on non-Western Civilizations *and* one on US minorities.

As chair of Ed Pol, I am also a member of the UIUC Senate Executive Committee, which meets monthly with the Chancellor and Provost, planning meetings of the Senate of the Urbana-Champaign Campus – yet another name that will need to be changed!

One thing I have learned from being on these committees is that several heads are indeed better than one, especially when the issues are seen very differently by the various constituencies involved. Committees can be extremely valuable in forming policy, as long as the members focus on common goals and avoid private agendas.

On the personal level, I now have 4 grandchildren: two grandsons, and two grand-daughters, ranging from 12 for the older grandson to 1½ for the younger grand-daughter. I'm still trying growing

orchids, with some success in hybrids of several genera, as well as some species orchids. The picture is of my *Dendrobium thyrsiflorum*, which bloomed for the first time this summer.



Larry Hanks. The big news around the lab since the last newsletter is that Joe Wong graduated with his PhD and has moved on. I was on sabbatical in spring 2016, which allowed me to co-author three reviews of the chemical ecology and behavior of cerambycids: an article in a special edition of *J. Chem. Ecol.* and two chapters for a book on cerambycids of the world. I also caught up on a lot of writing, with the result that we have 17 publications for 2016. That's a record for me. Meanwhile, my daughter Rebecca has gone off to college, if you can believe that. We all miss her terribly, of course, but she is thriving and enjoying the experience. Jean is still managing the office of Engineering dean, and Mason is attending Urbana High, playing percussion in marching band, and playing computer games as often as possible.



Allison Hansen. This year has been a good year for my laboratory in expanding research expertise with collaborators in mosquito-microbiome interactions and expanding my functional genomic toolkit for emerging insect models using CRISPR/Cas9 technology. My two Ph.D. graduate students, Dohyup Kim and Margaret Thairu, are now in their third year and are finally getting into the rhythm of their research projects learning and developing brand-new laboratory and bioinformatics techniques, each publishing one manuscript on their research and both having an additional one currently in submission. My laboratory is starting to network internationally as well on insect-microbe interactions. I was recently invited to teach an aphid-microbiome workshop in Chile this fall with three other international aphid collaborators/colleagues from Switzerland, France, and Germany. I was also nominated as the U.S. representative for the International Aphid Genomic Consortium (IAGC) steering committee. We plan to have a meeting next summer to give an up-date on sap-feeding insect genome sequencing projects in addition to new functional genomics approaches for emerging sap-feeding insect models. On a personal note I just obtained my purple belt in taekwondo and hope to get my black belt by next winter. Also, if you want to get rid of any good vinyl please send it my way.



The lab group celebrating Brittany's graduation Dec 2015

Alex Harmon-Threatt. The 2015-2016 year was a very busy one in the HT lab. We graduated our first student Brittany Buckles with an MS and welcomed new student Brenna Decker. Graduate students were awarded thousands of dollars for their amazing research and presentations were given at the Entomological Society of America, Undergraduate Research Symposium and the North American Prairie Conference (NAPC). Nick Anderson was even awarded 2nd place for his poster at the NAPC. Our most senior undergrad Alex Pane was also awarded the Camp Family Research Award and as a result able to complete his independent project on ground-nesting of bees. I've never been prouder of my students and the things we have accomplished.

Over the last year, interest in our work has been very high and Dr. HT gave a dozen presentations across the country to talk about native bees in natural areas. She was also awarded her first NSF award since arriving at UIUC to study bee movement and persistence in patches.

Of course, all of these presentations and awards are a result of the amazing research going on in the lab group. As the group has grown so too has the breadth of work we are doing. Despite the increase in breadth, we are all still focused on understanding how bees use natural systems and how disturbances

affect species diversity and persistence. We hope to be able to use our research specifically to improve conservation of native bees.

This year was also a stellar one for outreach as we established the CU Pollinator Count. The CU Pollinator Count is a partnership with the Champaign Parks District to help make parks more pollinator friendly by having citizens collect data on ornamental plants in parks. We are excited to see where this project goes in the future and improving our parks with data collected by our local residents. Please visit <https://www.publish.illinois.edu/CUpollinators> for more information.

Last but certainly not least, this fall we welcomed C. Scott Clem who completed his MS at Auburn and has brought a lot of expertise to our lab group. For more information on our lab, students and projects please visit <https://www.life.illinois.edu/harmon>.



All four of us, plus Zaker, at the Columbia River Gorge after I had a kitesurfing session on our West Coast trip this summer.

Hugh Robertson. The lab has shrunk to just technician Kim Walden and myself, trying to finish up several insect genome projects we have undertaken, including the wheat stem sawfly *Cephus cinctus* with ex-postdoc Kevin Wanner, who is now an associate professor at Montana State University (NSF funding), the navel orangeworm moth *Amyelois transitella* and the parsnip webworm *Depressaria pastinacella* with May Berenbaum (California Almond Board and NSF), a trap-jaw ant *Odontomachus brunneus* with Andy Suarez (NSF), the apple maggot fly *Rhagoletis pomonella* with Stewart Berlocher as well as Jeff Feder at Notre Dame (USDA and NSF), a *Rhagoletis* parasitoid wasp *Diachasma alloeum* with Jeff Feder as well as Andrew Forbes at the University of Iowa (NSF), and the corn rootworm beetle *Diabrotica virgifera* with several off-campus collaborators (USDA). We have to get these done so I can retire!

We have also assisted MS students Sarah Giers with work on *Rhagoletis* and Tanya Josek on the deer tick *Ixodes scapularis*, in both cases looking for chemoreceptors. I have personally been spending far too much time working on the manual gene model annotation of the three major families of chemoreceptors, the Odorant, Gustatory, and Ionotropic receptors in diverse arthropod genomes sequenced by others, primarily the i5k pilot project from the Baylor College of Medicine Genome Center. I've been using the WebApollo genome browser and annotation tool provided by the i5k Workspace group at the National Agriculture Library to do this. It is an addictive and very effective and efficient tool much like a video game, but it is wearing out my eyes, fingers, and backside.

This work has led to one more grant from the NSF with Coby Schal at North Carolina State University to try to find the genes involved in glucose aversiveness in bait-resistant German cockroaches, using the *Blattella germanica* genome sequence from the i5k pilot genome project. To this end we are using a large series of lines that were repeatedly backcrossed to the reference genome lab strain with selection for the glucose-aversive phenotype each generation by Coby's lab and doing a population genomics Pool-Seq experiment on the entire 2.2Gb genome to try to find the locus responsible for glucose-aversiveness. This is perhaps the only experiment I've ever done where I don't have a clue what the answer will be. And it has emboldened us to try several more population genomics Pool-Seq projects, including on *Rhagoletis*, *Amyelois*, and *Depressaria*, examining differentiation between host races and populations.

At home, the Robertson/Norrdholm household is now an empty nest, with our daughter Erica having gone to George Washington University in DC this Fall. We miss her a lot but she is having a great time doing all sorts of new things, including a 5-day backpack on the Appalachian Trail. Gabriel turned 30 this year, meaning I've known him for 23 years, and is making his own way in Seattle. Christina is trying to adjust to the end of her 30-year career raising children, and contemplating what to do with the next 20-30 years, which includes becoming a Master Gardener and giving private art classes. Meanwhile I kitesurf as much as possible all over Illinois, at Cape Hatteras in North Carolina, and in South Africa, where Cape Town has been my destination for world-class kitesurfing for our winter for 4-8 weeks each

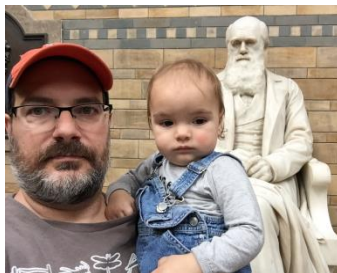
year the past six years. There I also visit with my hard-working math-and-science teacher sister Pam, and my 93-year-old Mom. I hope we can stay as active as long as she has once I too retire, perhaps before the next newsletter.



Gene Robinson. Work in my lab continues to focus on understanding the mechanisms and evolution of social behavior, relying mainly on honey bees, but also other species of bees. One highlight of the past few years was sequencing and analyzing the genomes of 10 bee species, ranging in levels of sociality from solitary to highly social. As we reported in *Science*, we found evidence to suggest that increasing levels of sociality are associated with the evolution of gene regulatory networks with greater complexity. This work was led by former postdoc Karen Kapheim, now an assistant professor in the Biology Department at Utah State University.

Another highlight was the discovery that honey bee larvae that live in a beehive of highly aggressive bees grow up to be more aggressive. This type of environmental effect had been seen before for young adult bees, but we had no idea the hive environment can also affect larvae in this way. We are keen to understand in molecular and neurobiological terms how the hive environment “gets under the skin (cuticle)” to produce these changes in behavior. This work was published in *Scientific Reports* and led by former postdoc Clare Rittschof, now an assistant professor in the Entomology Department at the University of Kentucky.

I just completed my 5-year review as director of the Carl R. Woese Institute for Genomic Biology and was very pleased to be asked to serve a second term. The field of genomics is exploding and it’s a thrill to continue to be at the helm at such a momentous time. Genomics is a Big Data science, and so there is extensive collaboration between genomic biologists and computer scientists and engineers. A multidisciplinary team that I was part of asked just how big? We compared the computational requirements for astronomy, Twitter, YouTube and genomics, and as reported in our *PLoS Biology* paper, we found that in a few years the computational requirements for genomics will be as big or bigger than these other three. Maybe later in the 21st century we’ll replace the word “astronomical” with “genomical!”



Andy Suarez. The Suarez lab had some research highlights this year including publishing our trap-jaw ant phylogeny (Larabee et al. 2016 MPE) and a paper comparing today’s household and urban ant communities in the city of Urbana to those of 1926 (Belcher, Berenbaum and Suarez 2016 *American Entomologist*). This latter work was possible due to the dissertation of M.R. Smith who completed his Ph.D. in Entomology at Illinois 90 years ago. We also produced an outreach video called “Fastest Fighting Ants” (<https://www.youtube.com/watch?v=7VMebatFr6k&t=2s>) as part of Adrian Smith’s “Explained by the Author” series. This video is

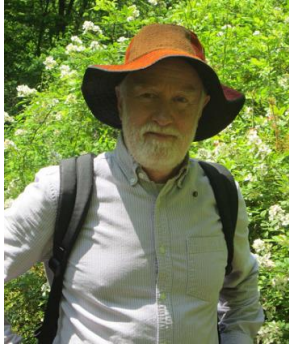
based on undergraduate student Sean O’Fallon’s paper on ant antennal boxing (O’Fallon, Smith and Suarez 2016 *Insectes Sociaux*).

The lab continues to travel internationally for ant research. Entomology student Rafael Achury returned to Colombia for his research on ant community ecology in relation to habitat. Entomology student Josh Gibson travelled to Mozambique to take part in the ant course and collected trap-jaw ants from the genus *Strumigenys*. I was also fortunate to join Dr. Corrie Moreau from the Field Museum and Dr. Jerome Orivel from EcoFoG on a research trip to French Guiana where we collected trap-jaw ants and the famous jumping ant *Gigantiops destructor*. Finally, we took advantage of having all these diverse ants in the lab and went to Argonne National Labs to film them using their electron beam. Keep an eye out for results from this research in the next newsletter....



Finally, my family and I took a pilgrimage to London where we visited the Natural History Museum of London. A highlight of this trip was paying homage to Darwin by visiting his statue.

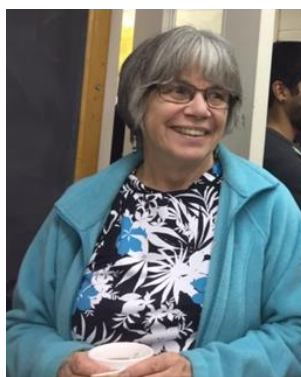
Charles Whitfield. Charlie Whitfield spent fall semester 2016 on sabbatical at York University, working with Dr. Amro Zayed.



James Whitfield. After a crazy year including 9 months on medical leave, I am happy to be back at work and a part of things again! My lab is leaner and meaner in the meantime but still active in parasitoid genomics, helping design phylogenomic pipelines, and doing our usual tropical caterpillar parasitoids work. Work is starting to ramp up again on a new version of my textbook (planned to appear in 2018) – it seems like I just finished the last one...

Outside of work, I still enjoy playing Irish music every Wednesday at Dublin O’Neil’s and getting together periodically with the Stewart Berlocher Experience. Sydney will be on sabbatical in Spring 2017 and I’m really looking forward to joining her in France!

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AFFILIATES AND ASSOCIATES



Marianne Alleyne. The past few years my activities, and those of my lab, have diversified and intensified. I am still involved in online education. I teach quite a few courses in this format. I am most proud of the online Masters of Science Teaching of Biology program for which I am the Graduate Director, and a popular course on Bioinspiration (=using biology as inspiration for new technological innovations). I still teach the core Insect Physiology course, which is still my favorite course to teach. In the Spring of '17 I will teach a brand-new Bioinspired Design course with a colleague in MechSE that will team up engineering and biology undergrads and encourage them to design bioinspired products, even prototype them.

Bioinspired research topics are also gaining traction in my lab. My graduate student Tanya Josek is studying tick Haller's organs in detail and we hope it will give us some interesting insights into how better sensors may be built. I am also involved in a project with the Army Corps of Engineers and the MechSE department studying insect wing self-cleaning and antimicrobial properties.

I just completed my 2-year tenure as an Entomological Society of America Science Fellow. Through trips to Washington DC I learned a lot about how the political world works and how we as entomologists can influence and gain more input on important issues such as public health, food security, and biodiversity. I will continue to serve on the ESA Science Policy Capabilities Committee, which will have to tackle important issues such as invasive species and the Farm Bill over the next few years.

I am still active on social media in an effort to promote science in general and insects in particular. Please engage with me on Twitter @Cotesia1 or via my blog <https://insectsdiditfirst.com/>.



Sam Beshers. Although I still spend the majority of my time working with the neuroscience program I am actively engaged in exploring division of labor in social insects using computer simulations. These efforts are finally paying off and the first manuscript is near completion, with others in the works.

I enjoyed working last fall with an IB 299 group on their independent ant research project, which involved nest site selection and the use of chemical trails and markers. Along the way I am working to keep the greenhouse going; we solved one problem this summer and need to find a long-term solution to summer overheating before global warming gets more serious.

A recent visit and seminar by Nate Schiff was a reminder of how great it is to see Ento alumni. We discovered we are both serious volleyball fans; who knew?



Edward DeWalt. The DeWalt laboratory conducts a wide range research projects on aquatic insects. One PhD student works on a phylogeny of North American Plecoptera (stoneflies) and another on the relationship of landscape features and species traits to repeated patterns of distribution of stoneflies. Other projects currently underway include modeling of past and future distributions of stoneflies, comparison of upper Great Lakes National Parks aquatic insect assemblages to multiple measures of the regional species pool, and the use of museum records to understand the factors that influence stonefly % species loss at fixed sampling locations in Illinois and the Midwest. A new project will assess changes in aquatic macroinvertebrate assemblages in relation to climate, this in association with the

USEPA's Regional Climate Monitoring Network. A current grant from NSF funds the accession and digitization of large donated collections of aquatic insect specimens (and other taxa) into the INHS Insect Collection. Another examines the role of Conservation Reserve Program practices on aquatic insect communities in central Illinois. Potential graduate students and undergraduates looking for research experience may contact me at any time.



Chris Dietrich. As home to one of the world's best leafhopper collections and one of only a handful of labs training graduate students in leafhopper and treehopper systematics, the Dietrich lab at the Illinois Natural History Survey has become a magnet for international visitors. Over the past year we hosted 10 visiting graduate students and 3 postdocs from Brazil, Cambodia, China and Mexico (see group photo with lab members and recent visitors) and are expecting additional visitors from Pakistan and Switzerland in the next few months. These scholars received fellowships from their home countries supporting their stays in Illinois for up to two years, enabling them to receive specialized training and to collaborate on a variety of research projects focusing on the world leafhopper and treehopper faunas. To further support international collaboration, we and the TaxonWorks team at INHS are developing a web-accessible cybertaxonomic research platform that supports comprehensive phylogenetic and biodiversity studies on Auchenorrhyncha (leafhoppers, treehoppers, planthoppers, spittlebugs and cicadas), reducing duplication of effort and facilitating large-scale research on the world fauna.

Sam Heads.

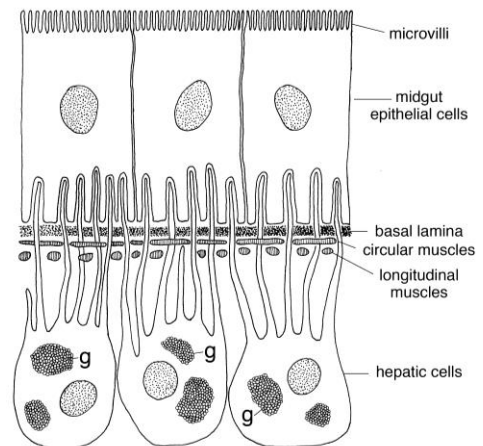


Kevin Johnson. The past two years have seen the graduation of Entomology M.S. student Patrick Gero from my lab. Congratulations, Patrick! NSF Assembling the Tree of Life and Dimensions of Biodiversity grants have given me a tremendous opportunity to collect more data than I could have even imagined a few years ago. This includes transcriptomes for over 200 species of hemipteroid insects and moderate coverage genomes for another 200 species. I am finally

starting to see the results from these projects in terms of the phylogenies they produce, and it is exciting to finally see such well-supported trees! Our Tree of Life project also hosted a group of about 30 scientists from all over the world (literally 5 continents) at the University of Illinois for a Hemipteroid Insect Phylogenomics (HIP) workshop. This was a great time to share expertise and foster collaborations. I was also able to travel with Chris Dietrich to Australia for collecting on this project, and we were able to obtain samples from a few families that had previously only been collected a handful of times.

Jim Nardi. During the past year, my work on arthropods as diverse as caterpillars, hemipterans, mites, and millipedes has addressed questions about the immune response, the unorthodox organization of the hemipteran midgut, the inordinate longevity of millipedes, and the origin and function of cuticular chambers covering the integument of soil mites.

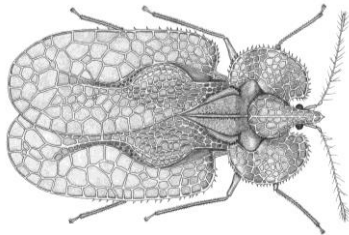
The inordinate longevity of millipedes. Nutrients absorbed by the epithelial cells of the millipede midgut are channeled to a contiguous population of hepatic cells where sugars are stored as glycogen. In insects and other arthropods, however, nutrients absorbed by midgut epithelia are first passed across the epithelial basal surface to the hemolymph before storage in fat body. The inter-digitation of cellular processes at the interface of hepatic and midgut epithelial cells offers a vast surface area for exchange of nutrients taken up by midgut cells.



Transverse section of millipede midgut

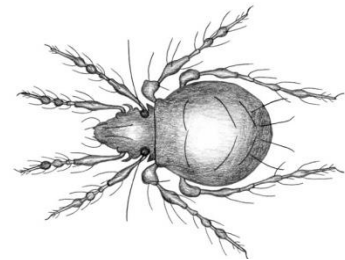
Longevity in insects and other animals is associated with reduced insulin signaling. The long lifespans for which millipedes are known may be attributable to a novel pathway with reduced insulin signaling represented by the novel arrangement of hepatic storage cells and midgut epithelial absorbing cells.

Immune response of *Manduca caterpillars*. A pair of massive dermal secretory cells exists within each thoracic and the nine abdominal segments of *Manduca* larvae. Each of these cells is nestled between the dorsal integument and underlying muscles. Protein contents of the large vacuoles in these cells are abruptly discharged at each molt and have always been considered to contribute to shedding and/or formation of cuticle. However, these proteins turn out to be secreted internally into the body cavity rather than externally onto the cuticular surface. To establish which proteins are discharged at the molt, proteins from pre-molt and post-molt secretory cells were separated by two-dimensional electrophoresis and characterized with mass spectrometry. Secreted proteins are novel, and all have presumptive roles in immune responses. Dermal secretory cells turn out to represent a new, unsuspected component of the innate immune system that release their proteins during the vulnerable molting period of an insect's life.



Sycamore Lace Bug

Alimentary canals of Hemiptera. Digestive tracts of Hemiptera are characterized by having disproportionately long midguts and disproportionately short hindguts. The complex, convoluted midgut has a predictable topology that is a function of the insect's diet. Contrary to conventional accounts, plant-feeding bugs such as lace nugs consume not only plant sap with their mouthparts but also plant cells.



Oribatid Mite

Distinctive cuticular features on integuments of soil mites. Oribatid mites have elaborate cuticular chambers located in specific locations on the surfaces of their bodies that house bacterial populations. The symbiotic microbes are believed to provide an antibiotic defense in the dense fungal forests inhabited by oribatid mites.



Daniel Schneider. After a recent personal experience with the metapopulation dynamics of bed bugs (avoid the Red Lion Hotel at Sea/Tac airport!), I decided that the best revenge was to study them. I recently started a project on the socio-spatial ecology of the bed bug (*Cimex lectularius*). Bed bugs are a resurgent problem in cities worldwide, and, since around 2000, have reestablished themselves as a common urban pest throughout the United States and present significant public health and economic concerns. Because humans are the habitat for bedbugs, the structure of human settlements determines bedbug population dynamics. This is thus an ideal system for integrating social-scientific analysis of human settlement with the biological ecology of an important urban species. With funding from by the National Socio-Environmental Synthesis Center I've organized an interdisciplinary working group on the socio-spatial ecology of the bed bug. The group has participants from the fields of entomology, ecology, epidemiology, geography, urban planning, civil engineering, public health, and pest control and is working with existing spatial datasets on bed bug occurrences to explore how the structure of human society is implicated in bed bug distribution, and how understanding the social and geographical processes affecting bed bug populations can help direct efforts at control.



Leellen (Lee) Solter. After 29 years at U of I and the Illinois Natural History Survey as hourly researcher, research scientist, graduate student, and INHS scientist, active research in insect pathology is coming to an end. Final papers and book chapters are in progress and the lab is being 'decommissioned' to turn over to a new INHS generation. Meanwhile, I am serving as interim director of INHS and editor-in-chief of the Journal of Invertebrate Pathology.

In 2015, I co-organized and co-taught our 1-week "Short Course in Insect Pathology" for graduate students and other interested scientists at Cornell

University (to be taught again in 2017), and taught the Insect Pathology course (IB-483) in an on-line format with Dr. Marianne Alleyne (also to be taught again in 2017). As well, I co-organized a 1-day symposium “Microsporidia as Emerging Pathogens” in Vancouver, B.C. supported by a grant from the OECD-CRP.

Spouse Phil is currently interim director of the Pathobiology Department at the UIUC Veterinary School and also IACUC director, so the old Urbana house (never-ending) projects will wait until retirement. A tiny addition is being built onto the tiny Salt Fork River cabin (while the autumn olive and bush honeysuckle outpace our remediation efforts). The bees have swarmed 3 times this summer (we are still learning!) but we did get some spring honey, and a bit of fall production. Our son, Ravi, who was 14 months old when we moved to CU, completed an MS in analytics at NC State University and is working as a marketing analyst in Washington, D.C.



Joe Spencer. Studies of western corn rootworm (*Diabrotica virgifera virgifera* LeConte, WCR) behavior and biology continue to be the major research focus of my laboratory in the Illinois Natural History Survey. The WCR is the most significant pest of our most valuable agricultural crop, corn. Since 2003, corn hybrids expressing different toxins derived from the soil microbe *Bacillus thuringiensis* or ‘*Bt*’ have become the primary tools used to protect corn from the WCR. For years I have studied how WCR beetles use and move between *Bt* and non-*Bt* refuges in cornfields with my Entomology MS and PhD student, Sarah Hughson. Our goal was to update the understanding of what WCR beetles *really* do in cornfields so that insect resistance management plans for WCR in *Bt* cornfields will slow the evolution of field-evolved resistance to *Bt* corn. Sarah’s

work will also reveal interesting details about the mating and intrafield movement of WCR adults. Since 2012, I have also studied Illinois WCR populations with suspected (and confirmed) resistance to a number of *Bt* toxins expressed in *Bt* corn. With colleagues, I have documented the presence of *Bt* resistance to multiple *Bt* toxins in rotation-susceptible and rotation-resistant WCR populations across Illinois. On-farm studies supported by extramural funding are revealing intriguing details about variation in the level of *Bt* resistance among populations.

I am also studying patterns of WCR long-distance dispersal from corn (and soybean) fields. WCR movement is an increasingly important topic in relation to field-evolved WCR resistance to *Bt* corn. Using collection methods deployed within, between and *high above* cornfields, we are learning that the majority of WCR that engage in long-distance dispersal from cornfields are young, newly-mated females. Movement of these reproductives throughout the growing season make it unlikely that *Bt* resistance can be managed by focusing on single fields.

In addition to a wide range of studies on WCR, I am involved in work on other pests of field crops, and I am very interested in the biology and movement of prairie insects, particularly prairie cicadas, and what their ecology may reveal about the health of prairies. I enjoy macro photography and videography of insects; this pursuit enhances my research and allows me to share my fascination for insects as objects of aesthetic value.

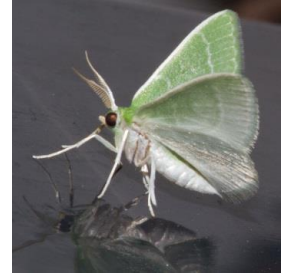


Steven Taylor. It has been fun to watch things unfold over the last couple of years in our lab. Doctoral student Dan Swanson (co-advised with Sam Heads) completed his MS thesis on fossil assassin bugs (Reduviidae), and has now begun working on his PhD, also focused on assassin bugs. Scott Cinel started and finished his MS thesis on transcriptional effects of predator cues in moths exposed to bat ultrasound, and has moved on to University of Florida, where his dissertation continues with a focus on predator-induced stress, behavior, and underlying molecular pathways of moths exposed to bat ultrasound. Aron Katz, now a doctoral candidate, is continuing his dissertation research putting a new focus on examination of the biodiversity of springtails in caves on both sides of the Mississippi River using

phylogeography to study genetic connectivity.

We've recently secured several years of funding to study bats across Illinois <illinoisbats.org>, but of course insects play an important role: one aspect of the project involves using environmental DNA (eDNA) to look at what Illinois' bats are feeding upon. When we catch bats, we're collecting their feces for eDNA analysis, and also collecting night-flying insects nearby with bucket light traps. This work allowed me to bring on Matt Safford as a new Master's student funded on this project. His thesis project involves looking at bat acoustic activity and land cover in relation to macro-moth diversity.

Several other projects are underway, including studies of cave amphipods and other cave biodiversity work.



Synchlora aerata Wavy-lined Emerald (Geometridae)



Tandy Warnow. Tandy Warnow, Professor of Computer Science and of Bioengineering, was elected a Fellow of the Association of Computing Machinery (ACM) in 2016.

ACADEMICS/POSTDOCTORAL SCHOLARS



Bernarda Calla. This is my first year as Postdoctoral Associate in the Entomology Department. After a few years away from UIUC, I am very grateful and happy to be back in the University environment, and close to my husband. Since I started working with insects, I don't have a week without thinking 'wow!', after reading some other unimaginable thing that these little creatures are capable of. After working on fruit flies, I now find myself immersed in the world of Lepidoptera and their P450s, and an ocean of data. It has been a very challenging year so far putting pieces of data together but things are finally coming along. I am looking forward to a second very productive year here.



Lesley Deem. The highlights of 2015 for me were Master Gardeners Garden Walk at the Pollinarium in the spring and taking the Bee Short Course in Portal, Arizona in the fall. It was great trekking around the mountains and deserts looking for and trying to catch some of the fast flyers they have there. In January 2016, I focused on more local bees and hosted Mike Arduser from Missouri teaching a course on native bees of the prairies. As always, I continue to garden and promote adding native plants and plantings to feed the pollinators and other wildlife.

This summer I coordinated with the College of ACES and taught a course to 4H kids on the biology of honey bees and beekeeping. I wish I had a picture to share of all of us in our moon suits. I am hoping it is a good year for bees and gardens.



Page Fredericks. Page is a broadly trained biologist with a doctorate in innate immunity and two postdocs in the molecular biology of innate immunity and host-pathogen interactions. She is currently the lab manager and molecular biologist in the vector-borne disease ecology lab of Dr. Brian Allan. The lab focuses on the effects of global change and wildlife conservation on the dynamics of vector-borne diseases. Page uses and develops molecular tools primarily to identify the pathogens vectored by ticks and mosquitoes in the Midwest (USA) and in Kenya (Africa). She is also a good artist, featuring primarily natural-based and surrealistic abstracts and nature realism.



Terry Harrison. As of December 2016, I will have retired from the university in my position of lab manager and beekeeper at the Bee Research Facility. I look forward to pursuing an active home-based program of research and publication on biotaxonomy of North American microlepidoptera.



Andrew Mackay. I am a postdoctoral researcher working with Dr. Brian Allan. My main research interests relate to the ecology and behavior of mosquitoes of public health importance. Much of my current research focuses on how the use of green infrastructure (GI) practices for managing stormwater can alter urban mosquito abundance and their potential to transmit human pathogens. Our group recently completed several field-based studies assessing impacts to urban mosquito populations from the use of different GI tools. Our current efforts are to develop national indices for the potential adoption of different classes of GI across urban areas. These indices will be used to predict outcomes to mosquito-borne disease risk in the U.S. from the use of these emerging stormwater management practices.



Catherine Wangen. I joined Dr. Brian Allan's lab as technician last fall. I have been working with Dr. Andrew Mackay to investigate the effects of stormwater infrastructure on the ecology and behavior of vector mosquitoes. I have greatly enjoyed working with the many undergraduate students involved in our research, and I am excited to continue my work in the lab.

STAFF

Todd Fulton. I survived "The Big Move" of 2016 and look forward to the completion of the current remodeling underway to all the Insectary rooms. I don't think I'll have to go through another of this magnitude in my lifetime. I can say this with certainty; it has been more than a pleasure managing the Insectary for the past 28-plus years. I think I still have a few good years left. We'll see.



Kim Leigh. The past two years have been fraught with many changes in the school. As a result, I've been tasked with taking on many jobs outside of my regular Entomology Office Manager duties, and at times, overwhelmingly so. I appreciate everyone's patience and understanding while I continued to juggle so many balls in the air. I couldn't have asked for a better group of faculty, staff, or students to work for and with! You all really are wonderful and you are the reason that I love to come to work every day. Thank you!

ENTOMOLOGICAL SOCIETY OF AMERICA MIXERS

2015



Synergy in Science:
Partnering for Solutions

ASA • CSSA • SSSA • ESA
2015 MEETING
Nov. 15-18 | Minneapolis, MN



2016



ICE-ESA mixer Orlando, FL, 2016

COLLOQUIUM SPEAKERS

Spring 2015

Jan 26	May Berenbaum , UIUC, Entomology	<i>My life on the bee-list, or, what the coevolutionary arms race between caterpillars and plants has to do with honey bees</i>
Feb 2	Eva Buckner , UIUC Postdoc	<i>Interactions between dengue virus, mosquito vectors, and environmental factors</i>
Feb 9	Jennifer White , U of KY, Lexington	<i>Trophic interactions of aphids, as mediated by bacterial endosymbionts</i>
Feb 16	Charles Flower , U of IL, Chicago	<i>Direct and indirect impacts of the emerald ash borer</i>
Feb 23	Raman Bansal , UIUC Visiting Postdoc	<i>Insights into adaptation strategies of invasive hemipterans: soybean aphid and brown marmorated stink bug</i>
Mar 2	Terry McGlynn , CA State	<i>Experimental natural history and the case of the missing ants</i>
Mar 9	Shalene Jha , U of TX, Austin	<i>Pollinator movement and population genetics across human-altered landscapes</i>
Mar 16	Catherine Linnen , U of KY, Lexington	<i>From mutations to species: causes and consequences of host use variation in pine sawflies</i>
Mar 30	Michael Wade , U of IN, Bloomington	<i>The evolutionary genetics of interactions: run-away cooperation and self-limiting conflict</i>
Apr 6	Nick Naeger , Student Exit Seminar	<i>Proximate and ultimate factors influencing honey bee behavior</i>
Apr 13	Emilie Snell-Rood , U of MN	<i>Costs and limits in the evolution of learning and plasticity: insights from butterflies</i>
Apr 20	Christina Grozinger , Penn State U	<i>Honey bee health: from genes to landscapes</i>
Apr 27	Fred Larabee , Student Exit Seminar	<i>The evolution and functional morphology of trap-jaw ants</i>

Fall 2015

Aug 31	Martha Hunter , U of AZ, Tucson	<i>Conditional benefits of Rickettsia infection in whiteflies</i>
Sep 21	Edward Walker , MI State U	<i>Toward malaria elimination: precedents, antecedents, and processes</i>
Sep 28	Michelle Duennes , Student Exit Seminar	<i>Hiding in plain sight: cryptic bumble bee diversity in Mexico and Central America</i>
Oct 5	Carol Anelli , OH State U	<i>The unimagined career path, or: A clumsy balance between the things you try to make happen and the things that happen to you</i>
Oct 12	Lyric Bartholomay , U of WI	<i>Harnessing innate immunity to develop molecular mosquitocides</i>
Oct 19	Rufus Isaacs , MI State U	<i>Bees, blooms, and berries: supporting specialty crop pollinators in intensively-managed landscapes</i>
Oct 26	Brian Fisher , CA Academy of Sciences	<i>Save an ant, save a planet: mapping ants to restore and sustain natural capital in Madagascar</i>
Nov 2	Roger Nasci , North Shore Mosquito Abatement District, Chicago	<i>Chikungunya, West Nile, Zika and more...The unanticipated consequences of global trade and human movement</i>
Nov 30	Kirk Anderson , USDA-ARS, AZ	<i>Honey bee hive microbiota: Held close or kept at arm's length?</i>
Dec 7	Manda Jost , Western NM U	<i>A gene of all trades: The evolution of disparate, novel functions in voltage-gated sodium channels</i>

Spring 2016

Jan 25	Jason Robinson , INHS, UIUC	<i>Old ideas and new tools for studying regional aquatic insect faunas: discovery, conservation and biogeography</i>
Feb 1	Robert Reenan , Brown U	<i>From dimensionality to disease: Lessons from the RNA world</i>
Feb 8	Andrea Swei , San Francisco State U	<i>Vector-borne pathogen dynamics and the role of genetic, microbial, and community diversity</i>
Feb 15	Gwen Pearson , Purdue U	<i>Science communication and short attention spans</i>
Feb 22	Manda Jost , Western NM U	<i>Molecular determinants of prey choice in spider-wasps (Pompilidae)</i>
Feb 29	Mary Gardiner , OH State U	<i>Quantifying the value of urban vacant land for conservation and ecosystem services</i>
Mar 7	Guy Bloch , Hebrew U, Jerusalem	<i>The social clock of the bee</i>
Mar 14	Gaelen Burke , U of GA, Athens	<i>Genome evolution in viral symbionts of parasitoid wasps</i>
Apr 4	Armin Moczek , IN U	<i>Conservation, innovation, and the origins of novelty and diversity: Case studies on horned beetles</i>
Apr 5	Armin Moczek , IN U	<i>How to design, fund, and implement meaningful K12 Science and Minority Outreach while trying to survive at an R1 institution</i>
Apr 11	Christelle Guédot , U of WI, Madison	<i>The establishment of a new pest: Phenology, crop susceptibility, and impact of landscape on spotted wing drosophila</i>
Apr 25	Allie Gardner , Student Exit Seminar	<i>Direct and indirect effects of native and invasive plants on mosquito ecology</i>
May 2	Brendan Hunt , U of GA, Athens	<i>Investigating patterns of DNA methylation in hymenopteran genomes</i>

Fall 2016

Sep 12	Kevin Johnson , INHS, UIUC	<i>Phylogenomics in the age of genomes: New approaches to insect phylogeny</i>
Oct 10	Michael Kaspari , U of OK	<i>The biogeochemical theater and the ecological play</i>
Oct 17	Nathan Schiff , USDA Forest Service	<i>Application of DNA barcoding to the identification of sawflies and other insects</i>
Oct 24	Stephen Pratt , AZ State U	<i>Collective cognition by insect societies</i>
Oct 31	Bernarda Calla , UIUC Postdoc	<i>Developing of foundational and applied tools for the control of Tephritids in Hawaii</i>
Nov 7	Keith Clay , IN U	<i>Microbial community ecology of ticks</i>
Nov 14	Jennifer Zaspel , Purdue U	<i>Vampire moths, toxic tigers, and creepy caterpillars: chemoecology and phylogenomics within the Erebidae (Insecta: Lepidoptera)</i>
Nov 28	Ken Raffa , U of WI	<i>Constraints and drivers of bark beetle outbreaks: Implications to natural resource management in a changing environment</i>
Dec 5	Michael Levy , U of PA	<i>Bugs in the City: controlling vector-borne Chagas disease in Arequipa, Peru</i>

ALUMNI / NEW STUDENT FALL PICNICS

2015 Alumna guest speaker Carol Anelli from Ohio State University



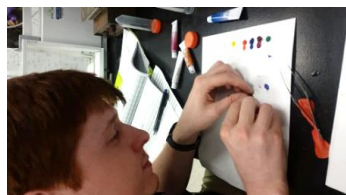
2016 Alumnus guest speaker Nathan Schiff from U.S. Forest Service, Stoneville, MS



GRADUATE STUDENTS



Rafael Achury Morales. I am a PhD student working in the Suarez lab and, yes, we love ants!!! Currently I am starting the fourth year of my program and I already finished all my core courses. I'm preparing the prelims and writing the first chapters of my thesis. My broad interest is how fragmentation is related to the loss of species, and finally how these processes interact in tropical countries to influence diversity and dominance of ants. As a Fulbrighter I'm so proud to be part of this University and especially to be part of this program that advocates academic excellence but also mutual understanding and cultural exchange. I can say that by far the experience in this department has been the best experience in my academic and personal life!!! Un abrazote para todos ;)



Nick Anderson. I am a third-year graduate student studying pollinator ecology in the Harmon-Threatt lab. I'm currently finishing up my master's project on the non-target effects of pesticides - specifically the neonicotinoid imidacloprid - on ground-nesting bees. Most research on bees and pesticides focuses on routes of exposure that occur when bees leave the nest. However, chronic contact exposure to contaminated soils may have important impacts on larval bees both while they are developing and after they emerge as adults. Here's a picture of me painting an adult bee for this project. After I finish this, I will be switching directions some, as I am currently designing my PhD research to focus on pollinator movement between habitat fragments and the role of matrix quality in bee ecology in fragmented landscapes.



Chip Austin. The past couple of years have been a bit difficult as I learn to navigate life with fibromyalgia. Fortunately, I've still been able to keep busy with various art projects: along with providing a T-shirt design for the 2016 Insect Fear Film Festival, I have been slowly working on an entomology-themed tarot deck. On the academic side of things, I completed my master's thesis on hemipteran ovipositor morphology and began my PhD work, which will treat more morphological systems in this group.



Nathalie Baena-Bejarano. I am a third-year PhD student at Dr. Sam Heads' Lab that is focused in paleoentomology and insect systematics. I am studying the phylogenetic relationships of very tiny crickets in Tridactyloidea, known as pygmy mole crickets and mud crickets. I am really happy because this research provides me with opportunities to travel and examine specimens from different countries. I am writing this from Leshan, China (see picture) at Doctor Cao Chengquan's lab studying Asian tridactyloids. Also, I am currently teaching some lessons in entomology for the undergrads at Leshan Normal University. I am really happy with this experience because I am also taking in Chinese culture, their tea, and their delicious food! At the beginning of the year, I had my first experience teaching in English. After struggling with the language, I finally passed my English exam to be TA of Insect Physiology at UIUC. Also, I went to my second ESA meeting in Cleveland, Ohio, where I participated at different events as a judge, as a competitor at the Ph.D. Poster Session, and at the still art NCB-ESA Triplehorn Challenge. Last but not least, I continue to engage in public education and outreach events with the entomology graduate students, where I am participating in events in English and Spanish with the Illinois community.





Daniel Bush. I am starting my fourth year in the Berenbaum lab, and this past year has been an eventful one! Last December, I successfully defended my Master's thesis demonstrating a facultative mutualism between the navel orangeworm and *Aspergillus flavus*. I would never have expected to spend three-plus years working on fungi, but I couldn't be happier about it now. My first publication also came out (co-authored with Eline Ampt, our Dutch exchange student who made an appearance in the last edition of this newsletter) at the end of last year, and I have another one in the works, so I now feel that I actually exist in the scientific milieu. Lately, I have begun to dip my toes into the wide world of *Apis mellifera* research, and I hope to have exciting research to share on bee-fungus relationships soon. As for my non-professional interests, I finally got the chance to

hike in Yosemite this summer, and it was cooler and more beautiful than I even expected (which is saying something). Thanks to an El Niño year, the waterfalls were spectacular, and there was plenty of insect life and even a few wildflowers in spite of a cool June. Right now I'm teaching Insect Ecology and looking forward to a couple more trips to sunny California at the end of the year.



C. Scott Clem. I am currently a first-year PhD student under Dr. Alex Harmon-Threatt. I am broadly interested in insect conservation, community ecology, and insect taxonomy. I received my bachelor's degree in zoology with a minor in entomology in 2012, and a master's degree in entomology in 2015 from Auburn University. My master's thesis involved investigating the interactions between native and non-native ornamental trees, and how those interactions affect caterpillar communities. I also have a background in Heteroptera taxonomy, specifically with the families Alydidae (broad-headed bugs) and Reduviidae

(assassin bugs). Currently, I am interested in studying broad-scale North American syrphid (hover fly) migration, and the role that may play in pollinator community dynamics.



Catherine Dana. I am a PhD student studying the natural history and conservation of midwestern cicadas in the laboratory of Dr. Sam Heads at the Illinois Natural History Survey. This has been a bit of a shift from my master's work on the effects of neonicotinoids on honey bee behavior and navel orangeworm detoxification systems. The past two summers I have been working on a State Wildlife Grant exploring the use of insects as indicators of habitat quality, which led to my newfound interest in, and love of, cicadas. My husband and I are expecting the emergence of our own (singular) brood this November!



Charles Dean. A lot has changed since my last correspondence. I have since completed my master's degree wherein I studied the physiological mechanisms underlying *Bombus impatiens* development and color pattern formation in the lab of Dr. Sydney Cameron. I am currently in the first semester of my PhD in Dr. May Berenbaum's lab. I now study the relationship between parsnip webworm, *Depressaria pastinacella*, and wild parsnip, *Pastinaca sativa*. My specific research objectives are to identify P450 genes and allelic variants associated with furanocoumarin detoxification, identify genomic regions under differential selection in environments varying in abundance of *P. sativa* and the recently acquired host plant, *Heracleum maximum*, and to compare detoxification efficacy between *D. pastinacella* and *Depressaria depressana*, a newly invasive and sympatric webworm species that maintains a more generalized diet. In addition to research, I also continue to

teach IB courses, get involved in local outreach events, and am the current EGSA president.



Brenna Decker. This past summer I started my first field season in Effingham Co. collecting bees at multiple prairies with varying prescribed burn strategies. The goal of my master's thesis is to provide data on the effects of burn timing on the prairie bee communities. With the help of other entomology graduate students I was able to complete sampling the day before classes started in August. Currently I have two undergraduates helping with specimen identification and labeling and hope to have all data entered by the end of this semester. I anxiously await news from the Illinois Department of Natural Resources on whether my sites will be burned this winter so I can start planning next year's sampling!

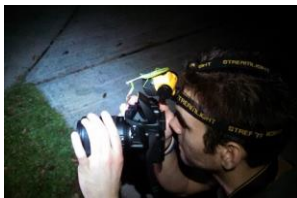


Mark Demkovich. I am a PhD student in Dr. May Berenbaum's laboratory. My research focuses on navel orangeworm, the primary insect pest of tree nut crops in California orchards. I am interested in determining how this insect detoxifies phytochemicals present in some of its hostplants in addition to the different types of insecticides that it encounters through management of each crop. Currently, I am taking a genomics approach to identify polymorphisms in navel orangeworm collected from almond orchards, fig orchards, and almond orchards where resistance to pyrethroid insecticides was first reported. With the recent annotations of the cytochrome P450 monooxygenase (P450s) genes in the navel orangeworm genome, I am also working on a project that would allow us to identify the P450 that metabolizes bifenthrin, a pyrethroid insecticide that is heavily applied in

management of navel orangeworm. I will look for differences in P450 activity in a susceptible population collected from almond orchards and in the pyrethroid-resistant strain.



Natalie Diesel. I'm currently a second-year master's student in the Hanks' lab. I'm from historic Ste. Genevieve, MO and received my bachelor's degree from University of Missouri-Columbia in 2015. I discovered an interest in entomology while working as a student at MU's Enns Entomology Museum. My research is in insect forest ecology, with a focus on the chemical ecology of the Carolina pine sawyer *Monochamus carolinensis* (family Cerambycidae). I hope to improve monitoring and capture methods for this beetle, which is a pest of pine and vector of the pine wilt nematode. In my free time I enjoy outdoor activities, traveling, watercolor, and of course happy hour.



Jacob Dixon. I am a 2nd-year in the May Berenbaum lab developing a project on the variance of tortoise beetle (Cassidinae) chemical defenses given the range of solitary to subsocial genera. The question being: does subsociality and the social behavior of tortoise beetles inhibit the natural selection of chemical defenses in the larvae? Upon my trip to Panama as a part of my IGERT (Integrative Graduate Education and Research Traineeship) to solve this question I realized that I am easily distracted and can't focus on a single task. So don't ask me to show you "cool data" because I don't

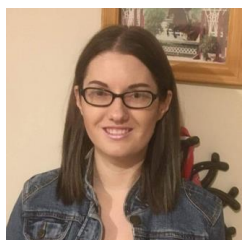
have any yet! I am currently working with a local species of tortoise beetle (*Charidotella sexpunctata*) that is not subsocial. With this local and easily accessible species I hope to better understand the system I plan to work in. For the department I try to participate in outreach events and I am currently the EGSA social chair. When not being a student you can find me at my house trying to procrastinate. I live in a co-op with about 15 other people, many of them graduate students themselves. It's quite fun, you should come by for dinner sometime!



Joshua Gibson. I am a third-year Master's/PhD student in Andrew Suarez' lab. For my Master's work I am examining the prevalence of active ant colonies within the nests of six common Midwestern bird species and their potential effects on fledging success and nest parasite abundance. I am in the process of writing up this project for defense. For my PhD I am studying the functional morphology and evolution of trap-jaw mechanisms in ants.

Thus far I have examined strike kinematics in miniature trap-jaw ants (*Strumigenys* spp.), showing that trap-jaw mechanisms have actually evolved three times within the genus from non-power amplifying ancestors, with all three trap-jaw lineages converging on the same

basic morphology. I have also examined scaling of strike kinematics and fatigue in an unrelated continuously polymorphic trap-jaw ant *Daceton armigerum* and have begun collecting preliminary data showing that the ant genus *Plectroctena* also contains species that use power amplification, although using a different mechanism than trap-jaw ants. Other projects include a collaboration with the Patek lab at Duke University to uncover the energy storage and latch release mechanism in *Odontomachus* using high speed videography and phase contrast imaging at Argonne National Laboratory's Advanced Photon Source, and supervision of an undergraduate research project by SIB student Dajia Ye on the mechanics of jumping in the ant *Gigantiops destructor*.



Sarah Giers. This summer has seen my successful defense of my master's and transition to my PhD. It has also resulted in another publication for my contribution to the annotation of the medfly genome. Just as I truly feel I was starting to get the hang of genomics, I decided to broaden my skill set and move away from strictly genomics work and into ecology for my PhD. I am now studying the tritrophic interactions between tephritid fruit flies, their competitors, and their parasitoids. I have been thoroughly enjoying having a real field

season, which has made me feel like a proper entomologist! In addition to my academic life, I have become more active at the barn where I take riding lessons and in fiction writing, both of which have been a wonderful outlet for me.



Xander Hazel. Alexander (Xander) Hazel is a second-year MS student in the Hanks Lab. He is interested in investigating interactions between long-horned beetles (Coleoptera: Cerambycidae) and flowers (his webpage: <http://www.life.illinois.edu/hanks/hazel.html>). His thesis titled, "Identifying floral hosts of cerambycid beetles using palynology", will be defended next semester (Spring 2017). He presented preliminary results from this study at the North Central Branch meeting in June and at the International Congress of Entomology in September of this year. Xander has served on the Education and Exhibits Committee at the Orpheum Children's Science Museum for 2 years, where he recently coordinated the construction of a permanent archaeology exhibit and butterfly garden this summer (news article: <https://news.illinois.edu/blog/view/6367/389398>). In May of this year, Xander and Christian Millan-Hernandez (Deitrich Lab) were elected as the Stewards Council Co-chairs in the Graduate Employees' Organization, the labor union for graduate employees at UIUC.



Sarah Hughson. I am a PhD student studying movement and mating of western corn rootworm (WCR) in Dr. Joseph Spencer's lab. For my Master's, I focused on WCR adult emergence and distribution in Bt cornfields. My Ph.D. work focuses on adult movement and mating distribution in Bt cornfields with different refuge configurations. I am also working to broaden our understanding of reproductive physiology and ecology of this animal. This research will help us determine how WCR use refuge and whether they are readily moving and mating between refuge and Bt corn, behaviors required for the success of insect resistance management in Bt corn. This summer, our lab turned to the sky, collecting adult WCR as they ascended from Bt cornfields in migratory flight. By evaluating WCR collected from 10 m scaffolding we can learn the characteristics of beetles

leaving cornfields and the proportion that originated in our cornfields vs. surrounding fields. I also began work on my final project, which investigates sperm precedence in WCR females when they mate more than once. My main interests are the exploration of ecology, behavior and physiology of agricultural pests and plan to continue working in this area when my studies at UIUC are complete.



Kari Jackson. This is my second year of my master's program in the Robinson Lab. I have been focused on exploring the presence of winner effects for the western honey bee queen. Virgin queens will engage in combat with each other for the opportunity to be the sole reproductive organism of their colony. I am interested in if a winner effect (increased probability of winning later duels) emerges in these battles as well as potential implications. For the first 4 months of this year, I was conducting research in Panama on Barro Colorado Island (BCI). I investigated nestmate recognition patterns in the crepuscular halictid bee *Megalopta genalis*, one of the few animal species to demonstrate facultative eusociality. I have conducted extensive research on marine organisms including the mysid shrimp and

pig-duck knifefish (*Parapteronotus hasemani*) as an undergrad. My primary interests are animal mating/courtship patterns and aggressive behavior(s).



Todd Johnson. I have just completed my third year as a PhD student in Lawrence Hanks' lab. At the end of the fall semester I will be taking my prelims and anticipate moving on to candidacy. My research program has focused on identifying volatile chemical cues used by parasitoids of cerambycid beetles to locate hosts. I have found that egg parasitoids across multiple families of Hymenoptera are attracted to sex and aggregation pheromones used by beetles in the subfamily Cerambycinae. In the summer of 2016, I found that pairing eggs of a cerambycid beetle with components of its pheromone attractive to parasitoids did not influence the amount of parasitism eggs experienced. I intend to explore how additional short and long-range cues may be important for the location and acceptance of eggs by parasitoids. Other projects I have been working on include the influence of visual

information on response to pheromones by the hickory borer, *Megacyllene caryae* (manuscript in prep), and how use of pheromones by cerambycid beetles influences interactions with generalist predators. My work ultimately seeks to understand how herbivores and associated insects behave within forest ecosystems, with the goals of reducing

economic losses to pests and quantifying potential benefits of other associated insects. All of my work is described at my website: www.forestentomology.com.

Outside of my research, I am the vice-chair of the North Central Branch Student Activity Committee (NCB SAC) that organizes functions at the NCB meeting and communicates student input to the branch leadership. I have enjoyed this role greatly and hope to continue to be involved in leadership at the branch and national levels of ESA.



Tanya Josek. I am a PhD candidate in Marianne Alleyne's lab. I received my master's in the summer of 2015 and have shifted my work toward understanding physiological components of hard ticks. Although most of my work will focus on the black-legged tick (*Ixodes scapularis*) I will be looking at some of the other medically important ticks in Illinois, such as the American dog tick (*Dermacentor variabilis*) and the lone star tick (*Amblyomma americanum*). My research will be focused on embryonic development of these ticks and looking at the chemosensory abilities of the Haller's organ of *Ixodes scapularis*. Outside of my research I am actively working at our community Fabrication Lab on campus as an instructor and also developing curriculum for the lab. I am also working in the education department as a curriculum developer focusing on incorporating vector

ecology in K-12 classrooms while also completing the Next Gen Science standards.



Elijah Juma. I'm a second year PhD student in Entomology supervised by Dr. Brian Allan and Dr. Ephantus Juma Muturi. My primary area of interest is in medical entomology, specifically, I work with mosquitoes at the Medical Entomology Lab, Illinois Natural History Survey. My PhD research is centered around the dynamics of mosquito gut microbial composition and diversity. I will take a closer look at changes in gut microbial composition for common mosquito vectors in the Urbana-Champaign area, IL, across different life stages and habitats and estimate variation in space and time as well as microbial dynamics in the mosquito breeding habitats. Hopefully, my research will

contribute to further interest in understanding of mosquito-microbial interaction and how this knowledge can be exploited for mosquito vector control.



Aron Katz. Aron Katz. I am a PhD candidate in Dr. Taylor's lab. My research interests focus on a group of tiny, insect-like arthropods called Collembola (or springtails). These enigmatic hexapods are among the most abundant terrestrial animals on the planet and include many species adapted to unique habitats such as caves and intertidal zones. For my dissertation, I am studying the phylogeography and systematics of cave and intertidal species to elucidate potential mechanisms driving patterns of diversity such as the impact of ecological specialization and geographic barriers on dispersal potential and gene flow. This work has taken me to beaches across the coastlines of Panama and recently, underground, to dozens of caves

throughout Illinois and Missouri. Most of all, I'm excited to describe the many new species collected throughout these projects!



Dohyup Kim. I survived the first and the second year of my PhD here at UIUC, and I feel great! I did my master's degree at the University of Wyoming working on modeling of protein evolution and structure. Before that, I did my undergraduate in bioinformatics at the Brigham Young University. Even after two years here, I am still learning to like insects. My research involves epigenomics and insect symbionts, and I am excited to work on these subjects, especially, how the symbiont is regulated through the host depending on their diet, and how DNA methylation patterns change along with it. Insect epigenomics is a new, mostly unexplored world and I enjoy working in this field.



Ling-Hsiu Liao. I am working in the lab of Dr. Berenbaum, where I have studied honey bees. My research has led to some fun insights into the ecology, behavior, and detoxification systems of honey bees. One of the exciting aspects is the impact of dietary phytochemicals on honey bees. Moreover, by using the support from Campus Surplus and the Fab Lab, and the help of developing software program from Wen-Yen, we developed some new exciting equipment (at a low cost) for our experiments, which includes the auto-computer counter, the flight treadmill, and the locomotion detectors. I am looking forward to the amazing data!

For the family, my brother had his first baby this year! This little one is my first nephew and is the first newborn baby for 20 years in my families! My family and I are very excited!



Linnea Meier. I received my B.A. at Earlham College, a small liberal arts school in Indiana. I majored in biology and developed an interest in invertebrates, especially insects. After graduating in 2009, I spent a couple of years out of school, working and starting a family. I now live in Urbana with my husband and 6-year-old daughter, juggling graduate school and family life. I got my MS in December 2014 in the Hanks lab and am continuing on for a PhD there.

My research is in the chemical ecology of longhorned beetles (family Cerambycidae). Cerambycids are a large and diverse group of wood-boring beetles which include numerous current and potential forest and timber pests. Because their larvae live and feed in the wood of trees, they are difficult to monitor visually. However, their behavior is very reliant on chemical cues, including aggregation pheromones and sex pheromones. Pheromone components are often highly conserved within taxonomic subgroups, and the focus of my research is to understand the chemical mechanisms that are used to avoid cross-attraction between sympatric, synchronous species with very similar pheromones.



Christian Millan Hernandez. I am 2nd year master's student in the Chris Dietrich lab studying the interactions between pincher wasps (Dryinidae) and leafhoppers and other members of the suborder Auchenorrhyncha. Specifically, I will be using molecular data obtained from larval individuals to expand the phylogeny of dryinids and use host information to shrink the gap of unknown hosts. During my undergraduate years, I became interested in parasitoid wasps while working at an agricultural entomology lab. I then came to finish my graduate studies in US, where in my free time I enjoy photography, biking, reading and exploring the outside (when it is warm). I am also a leader at the Graduate Employee Organization (GEO), where my goal is to help individuals and departments to better organize for fair and just working conditions.



William Montag. I am a second-year master's student in the Berenbaum lab. I am currently pursuing research on the fungicidal properties of honey with regard to *Kodamaea ohmeri*, a yeast associated with hive-infesting behaviors of the small hive beetle, *Aethina tumida*. My research interests focus on the natural history and control of the small hive beetle, including analyses of tarsal morphology and management techniques. In my spare time, I enjoy reading and biking.

Brendan Morris.



Evan Newman. I am a first-year master's student under the direction of R. Edward DeWalt at the Illinois Natural History Survey. I am looking at patterns of Plecoptera (Stonefly) distributions around the Midwest and examining how those patterns are affected by landscape and species traits.



Teresia Njoroge. I am a 2nd year graduate student, co-advised by Dr. May Berenbaum and Dr. Mary Schuler. Although I did not have an entomological background when I was joining the department, I feel so much enlightened by the program's courses that I have taken so far and my intentions to continue to earn a PhD holds even stronger! My current research is centered around plant-derived chemicals as promising alternatives for mosquito control, particularly plant essential oils. They are readily available, economically viable, and safe as potentially ecologically sensitive larvicides.



Allison Parker. I am a first year PhD student in Brian Allan's lab where I study the ecology of container-breeding mosquitoes. I received my B.S in Biology from the University of Richmond, and I successfully defended my master's in the spring of 2016. For my master's, I examined the effect of container size on adult fitness on *Aedes aegypti* and *Ae. albopictus*, two species of mosquitoes that can transmit Zika virus. My dissertation research is focused on how manipulating various parameters of man-made containers, such as surface area and volume of water, can affect oviposition preference, larval survival and adult fitness of the emerging mosquitoes in the lab and in the field. In my spare time, I enjoy hanging out with my hedgehog Penelope, reading, playing board games and playing on outdoor and indoor soccer teams.



Kyle Parks. I am in the last stages of my PhD in Dr. Jim Whitfield's lab, wrapping up my work on the systematics and evolution of *Parapanteles*, a genus of microgastrine wasps. I've also been using phylogenomic techniques to look into the systematics of microgastrines more broadly, and genomics to have a first look at the symbiotic viruses carried by *Parapanteles* wasps.



Matthew Safford. I am a first-year masters student, studying interactions between insects, vertebrates, and habitats as I work under Dr. Steve Taylor, at the Illinois Natural History Survey. As an undergraduate at the University of North Carolina and a wildlife biology intern with the National Park Service, I've worked with a huge diversity of vertebrate and invertebrate species in a range of habitats. Working on my thesis project, I'm continuing these cross-disciplinary research interests as I study how habitat structure and bat predation influence moth community composition in forest fragments and restored prairie in southern Illinois. In my free time, I've been hiking, canoeing, and camping my way through Illinois' state parks.



Keon Seong. This is my third and final departmental newsletter... This semester I'm working toward writing and publishing my PhD work on *Drosophila* metabolic mechanism of xenobiotics. Recently Dr. Pittendrigh's lab has moved to Michigan State University so now I am temporarily working at MSU, East Lansing, MI, but I am still a UIUC graduate student. For my dissertation, I am studying potential impact of intense selection pressure by an insecticide on evolutionary changes in detoxification genes in *Drosophila*. Hopefully, I wish to complete my graduate career next Spring semester.



Rachel Skinner. I am a second-year student in Chris Dietrich's lab where I am studying the phylogenetics, biogeography, and taxonomy of membracid treehoppers. I received my undergraduate degree from Transylvania University and my master's from Villanova University, where I studied phylogenetics of South African geckos. In the past year, I have enjoyed making the transition from herpetology to entomology and had the opportunity to participate in collecting trips in Panama and Brazil. In the next year, I hope to collect specimens from mid-elevation oak woodlands in the desert Southwest, which is a hotspot of North American treehopper diversity.



Eric South. I completed an MS in entomology last spring at UIUC. I am currently targeting a molecular phylogeny of the North American stoneflies for my PhD research.



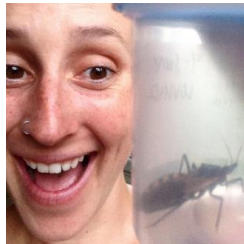
Laura Steele. I am a PhD student in Dr. Barry Pittendrigh's laboratory. I am currently working on finishing up the writing of my last two chapters of my dissertation. My research has focused on DDT resistance in *Drosophila melanogaster* as well as characterizing the mitochondrial genome of *Clavigralla tomentosicollis*, a pest of cowpea. In my free time I enjoy taking my two dogs (Luna and Tris) on walks, reading, and scrapbooking.



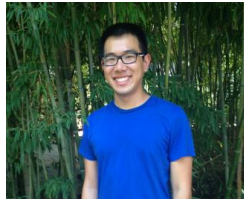
Dan Swanson. I am now in my fourth year as an Ento grad student at UIUC working with Sam Heads and Steve Taylor. I successfully defended my Master's thesis on fossil reduviids in April 2016 and made the transition to PhD student. For my doctoral project, I am focusing on a cluster of visually striking extant assassin bug genera. I also thoroughly enjoyed TAing the Entomology core course Insect Classification and Evolution in Fall 2015. Outside of academic work, I became engaged to Ent. Dept. alumna Christina Silliman in March 2016.



Margaret Thairu. This year makes my third as a PhD student in the department. I continue to work with Dr. Allison Hansen trying to understand the molecular mechanisms that underlie insect-microbe co-evolution, using the aphid- *Buchnera* system. For the first part of my PhD, to dissect aphid-*Buchnera* interactions I focused on developing a non-invasive and high throughput RNAi delivery system for aphids, which utilizes aerosolized siRNA-nanoparticle complexes. From this work, I was able to determine that this method of RNAi delivery is effective in the soybean aphid. Currently, I am trying to understand the functional role that *Buchnera* small RNAs (sRNAs) have in post-transcriptional gene regulation. I am also happy to report that this year I successfully survived and passed the rite-of passage of all PhD students, the dreaded Preliminary Exam.



Erin Updyke. I am now a fourth year MD/PhD student and recently passed my preliminary exams, which is very exciting. My dissertation research focuses on the ecology and epidemiology of Chagas disease in central Panama. I've had three full seasons of field work in Panama, and this coming December and January I will be going back to finish the field portion of my dissertation. After that, I've got a lot of molecular work and writing to do to finish up! I plan to defend my PhD by the Spring or Summer of 2018, after which time I will transition to working on the MD part of my work full-time.



Michael Wong. I'm a second year Masters student in May Berenbaum's lab. Currently I've been working on effects of phytochemicals and pesticides on honey bee longevity, although I'm also interested in doing more toxicological and behavioral experiments related to their synergistic effects. I'm currently one of the Outreach Coordinators for EGSA, and have really enjoyed interacting with the broader community to spread enthusiasm for insects!



Luke Zehr. I am a third-year graduate student in the Berenbaum lab. I am broadly interested in the chemical ecology of herbivorous insects and the plants they eat. I also am fascinated with the biodiversity in the Neotropics and have had the privilege to conduct my fieldwork there. Support from an NSF IGERT fellowship at Illinois that partners with the Smithsonian Tropical Research Institute (STRI) in Panama has made my research possible. This past summer, I returned to Panama for a second field season, having been awarded a STRI Short-Term Fellowship. Having finished the required coursework at Illinois, I am now writing my M.S. thesis, on daily patterns of herbivory and how feeding rhythms of herbivores may relate to daily cycles in plant secondary metabolites. I intend to graduate in the spring semester of 2017.

RECENT GRADUATES

Graduation Term	Student	Degree	Thesis Title
May 2015	Jo-anne Holley	PhD	The Evolution of Caste-Specific Morphology and Colony Structure in Ants (A. Suarez)
	Thomas Schmeelk	MS	Effect of Trap Height on Abundance and Species Diversity of Cerambycid Beetles Captured in Forests of East-Central Illinois (L. Hanks)
Aug. 2015	Patrick Gero	MS	Radiation of the Bark Louse Genus <i>Kilauella</i> Across the Hawaiian Islands (K. Johnson)
	Tyler Hedlund	MS	The Expanding Distribution of <i>Ixodes scapularis</i> and Associated Pathogens in the Chicago, IL, Metropolitan Area (B. Allan)
	Tanya Josek	MS	A Deeper Look into the Morphology and Receptors Found in the Tick (Acari: Ixodidae) Chemoperception Structure, The Haller's Organ (M. Alleyne)
	Fredrick Larabee	PhD	The Evolution and Functional Morphology of Trap-Jaw Ants (A. Suarez)
	John Maddux	MS	Avian Diet and Visual Perception Suggests Avian Predation Selects for Color Pattern Mimicry in Bumble Bees (S. Cameron)
	Nicholas Naeger	PhD	Proximate and Ultimate Factors Influencing Honey Bee Reproductive-Related Behavior (G. Robinson)
Dec. 2015	Brittany Buckles	MS	Floral Abundance and Soil Characteristics Affect Wild Bee Community Structure and Nesting Dynamics in Tallgrass Prairies (A. Harmon-Threatt)
	Daniel Bush	MS	Facultative Mutualism Between the Navel Orangeworm <i>Amyelois transitella</i> (Lepidoptera: Pyralidae) and <i>Aspergillus Flavus</i> (M. Berenbaum)
	Michelle Duennes	PhD	Hiding in Plain Sight: Unveiling Cryptic Diversity and Patterns in Bumble Bees (S. Cameron)
May 2016	Allison Gardner	PhD	Direct and Indirect Effects of Native and Invasive Plants on Mosquito Ecology (B. Allan / J. Muturi)
	Allison Parker	MS	Effect of Container Size and Larval Competition on Adult Fitness of <i>Aedes aegypti</i> and <i>Aedes albopictus</i> (Diptera: Culicidae) (B. Allan)
	Eric South	MS	Relative Importance of Conservation Reserve Programs to Mayfly, Stonefly, and Caddisfly Species Richness in the Kaskaskia River Basin of Illinois (E. DeWalt)
	Daniel Swanson	MS	Dead Bugs Do Tell Tales: Implications of a New Fossil Assassin Bug (Heteroptera: Reduviidae) for the Evolutionary History and Systematics of an Extant Lineage (S. Heads / S. Taylor)
Aug. 2016	Chip Austin	MS	Morphology of Acercaria: Investigations of the Ovipositor and Internal Anatomy (C. Dietrich)
	Scott Cinel	MS	Transcriptional Effects of Predator Cues in the Brain of <i>Spodoptera frugiperda</i> (Lepidoptera: Noctuidae) Moths Exposed to Bat Ultrasound (S. Taylor)
	Catherine Dana	MS	Impacts of Organic and Conventional Neurotoxic Pesticides on a Pest and a Pollinator in Almond Agroecosystems (<i>Prunus dulcis</i>) (M. Berenbaum)
	Charles Dean	MS	Developmental Timing of Pupation and Analysis of Color Pattern Response to Thermal Stress in <i>Bombus impatiens</i> (Hymenoptera: Apidae) (S. Cameron)
	Sarah Giers	MS	Molecular Evolution of a Superfamily of Chemoreceptors in <i>Musca domestica</i> and <i>Ceratitis capitata</i> (S. Berlocher / H. Robertson)
	Allen Lawrance	MS	Orientation of Polyphagous Lepidoptera to Hostplant Kairomones (M. Berenbaum)
	Joseph Wong	PhD	Host Plant Associations and Chemical Ecology of Cerambycidae (L. Hanks)
Dec. 2016	Ling-Hsiu Liao	PhD	Behavioral and Biochemical Processing of Natural and Synthetic Xenobiotics in the Western Honey Bee <i>apis mellifera</i> (M. Berenbaum)

ENTOMOLOGY GRADUATE STUDENT ASSOCIATION

2016-2017 Officers

President: Charles Dean
 Vice-President: Dan Swanson
 Secretary: Brenna Decker
 Treasurer: Rachel Skinner
 Outreach Officers: Josh Gibson & Michael Wong
 Faculty Liaison: Nick Anderson
 GSAC Rep: Allison Parker
 Social Chair: Jacob Dixon



This year EGSA has continued its commitment to community service and outreach events. We have invited local second grade students to participate in field activities at the Pollinarium. We have also visited several public institutions, such as Champaign Public Library, Allerton Park, and local schools to promote insect education and to further cement our presence in the community. Beyond outreach, EGSA will soon engage in various other undertakings such as organizing a Thanksgiving dinner and planning this year's Paul Hertzberg-themed IFFF!

2015-2016 Officers

President: Katie Dana
 Vice President: Nathalie Baena
 Secretary: Brenna Decker
 Treasurer: Margaret Thairu
 Outreach Officers: Josh Gibson & Sarah Giers
 Faculty Liaison: Nick Anderson
 GSAC Rep: Allison Parker
 Social Chair: Natalie Diesel



2015-2016 was a great year for community involvement by the graduate students of EGSA. The 33rd Annual Insect Fear Film Festival had great participation from our members – from making balloon animals, face painting, creating unique raffle prizes at the fabrication lab, to organizing an awesome petting zoo. EGSA members also designed and installed a butterfly garden at the Orpheum Children's Science Museum during the summer of 2016. Of course, we can't forget our annual celebration of Pollinator Week, trips to local libraries and classrooms, and plenty of other events in the Champaign-Urbana area and beyond. Our outreach animals are well known to many in the community and we plan to continue on with this tradition for years to come.



In May 2016, the Entomology Graduate Student Association was awarded \$1500 from the Chancellor's Public Engagement Student Fellows grant program from the Office of Public Engagement at UIUC. The award supported the construction of a butterfly and bee garden with 40+ perennial plants at the Orpheum Children's Science Museum in downtown Champaign, IL. Dr. Larry Hanks was the faculty sponsor for the project. The exhibit opened in July 30, 2016 after 200+ volunteer hours. More information can be found at <https://news.illinois.edu/blog/view/6367/389398>.

CLUB INSECTA

From the very beginning, Club Insecta has been an environment where a diverse range of students explore and discover the wonderful world of insects. To this day, it continues to be a welcoming environment that nurtures students' wonder of the natural world. The club happily accepts anyone from any major and currently we have members from engineering, biology, psychology, crop sciences, chemistry, and more. We participate in a multitude of activities. Some of our favorites include outreach, insect collecting trips, camping, volunteering, and insect pinning. Every year the club invites speakers from the department to talk. Some talk about what it's like being an entomologist and others give tips for prospective graduate students. Many members express an interest in research and we gladly offer advice and encourage them to find research that they are enthusiastic about. Recently we've made a special segment at the Champaign Public library showing middle school students the strange behaviors insects exhibit. This outreach segment will now be shown every Halloween! Being part of the community is inspiring for the members of the club and the community alike. We love to teach about the unanswered questions in science and motivate young minds to ask their own questions and perhaps, in the future, discover the answers to the very questions they asked. What seems to enthrall many members and community members alike is the collection of live creatures. Some of our members keep and raise insects and arachnids as pets. Now some members are caring for new pets and even learning to breed them! It's so fulfilling to see the club evolve over time; with newfound knowledge we learn to respect insects for their overtly fascinating quality. We are always happy to take on any new members looking to join all the fun activities and come on our many insect filled excursions.



Photos: left, collecting aquatic insects on a collecting trip; right, showing off a taurantula at quad day.



Club Insecta alumni at the International Congress of Entomology in Orlando, September 2016:
Horace Zheng, Lizzy Dabek, Allen Lawrance, Alan Yanahan, Rob Orpet

32ND ANNUAL INSECT FEAR FILM FESTIVAL Foellinger Auditorium, February 28, 2015



Our 32nd Insect Fear Film Festival--Female entomologists in the movies! According to the Wikipedia "List of Film Festivals" website, there are circa 186 film festivals in America; IFFF is older than 154 of those 186. It may be the fourth oldest university film festival, behind Humboldt State (1967), Athens International Film and Video (1973) and Big Muddy at SIU-Carbondale (1979). We keep changing and improving—check out our raffle, e.g.. As usual, we had a shout-out to festival regulars Nathan Schiff and Ellen Green, here from Stoneville, Mississippi. As for media coverage, our theme, "female entomologist fear films," inspired a series of posts on the Entomological Society of America Entomology Today page with biographies of famous (dead) women entomologists.

Today, it's likely that there are more not-yet-dead women entomologists in the U.S. than ever before. Sadly, that said, there are more members of the Automobile License Plate Collectors Association (ALPCA) than there are entomologists with two X chromosomes. It's probably safe to say that the average Hollywood producer is unlikely ever to have met a female entomologist, which might be why cinematic female entomologists have virtually nothing in common with the real thing (although it might be superfluous to add that cinematic insects generally also have virtually nothing in common with real insects). For the history of female entomologists in the movies, check out Berenbaum, M.R., 1991. Rated GP (Generally Patronizing). *American Entomologist* 37: 13 and (inspired by and borrowing heavily from the 32nd Annual Insect Fear Film Festival), Berenbaum, M.R., 2015 XX-rated entomologists. *American Entomologist* 61: 204-206. To summarize, a quarter-century ago, women in insect fear films were preoccupied with finding arthropod secretions to keep them young and beautiful (an odd pursuit, given the telegraphically brief lifespan and unprepossessing appearance of most arthropods); more recently, female entomologists, like their male counterparts, are dedicated to improving humanity but invariably end up triggering arthropod-driven catastrophes on said humanity. So, that's progress of a sort—female entomologists in today's movie have noble goals but lab technique sufficiently careless that they present a risk to human existence, like their male counterparts.

So, what did we show? Finding new female entomologist fear films wasn't the problem—there's an abundance of them—but what was problematic was finding films that weren't nonstop heterosexual, lesbian, and/or whatever insect-on-girl sex is called. A case in point-- *Insecticidal* (2005) features Cami, a misfit college student studying entomology who experiments with insect intelligence in her sorority house; a sorority sister sprays her insects with insecticide in a fit of pique and sets her insects off mutating into human size with insatiable appetites for beautiful coeds (particularly when they're showering and hence unclad). I thought we might be able to edit out the sex scenes but that would have left virtually no movie to show. Another film we couldn't show was *The Duke of Burgundy* (2014), about a female professor of entomology involved in a sadomasochistic lesbian relationship, depicted in graphic detail, with her student. There are some nice entomological touches, though—the couple's "safe word", pinastris, references *Sphinx pinastri*, the pine hawkmoth; also, the professor's name is Cynthia, which may or may not be a reference to *Samia cynthia*, the tree-of-heaven moth.

Our feature, *Mansquito* (2005), or *Mosquitoman*, owes a lot to *Mimic*, the 1997 feature film in which Mira Sorvino plays Dr. Susan Tyler, an entomologist at the Natural History Museum in New York, who creates and releases a genetically engineered cockroach, the Judas Breed, by merging cockroach, termite and mantid DNA, to halt a cockroach-borne disease afflicting city children. Needless to say, three years later, the ostensibly sterile transgenic Judas Breeds have mutated into human size with insatiable appetites for New Yorkers. She heroically partners with her husband, the CDC and a subway police officer to rid the city of Judas Breeds, which would be a lot more heroic if she hadn't created the problem in the first place. Since the movie spawned two (direct to video) sequels, it's likely the eradication effort was a bust. *Mansquito* was directed by Tibor Takacs, endlessly creative director of *Ice Spiders* 2007, *Spiders 3D* 2013 (tagline "Eight Legs Three Dimensions One Disaster") and, less thematically, *Megasnake* 2007 and *Kraken: Tentacles of the Deep* 2006. In *Mansquito*, Musetta Vander plays Dr. Jennifer Allen, a beautiful scientist dedicated to finding a cure for the "Gillan virus," a mosquito-borne virus so bad it'll "make West Nile seem like the common cold." Working with a private company, she "created a mosquito incapable of carrying this tsetse virus. Once released into the environment they'll quickly outbreed the infected mosquitoes and god willing eliminate this virus once and for all." This may or may not be a reference to Oxitec's genetically altered *Aedes aegypti*, awaiting government approval for release, using Release of Insects carrying a Dominant Lethal (RIDL) containing a repressible lethal genetic system that allows mosquitoes to reach maturity in the laboratory in the presence of an antibiotic but their offspring in the field cannot survive to reproduce in the absence of the repressor.

How DNA is altered in the movie is never explained (and actually it's only Police Lieutenant Tom Randall who mentions altered DNA), but evidently the process involves blue gel and a small dose of radiation. The technical scientific explanation appears two-thirds of the way through the movie: "That explosion must have altered his DNA or something." What contributes to the inevitable premature release is her boss Dr. Aaron Michaels, who wants to maximize profits for his investors because they're "sitting on a gold mine. Hell, you can be up for a Nobel Prize!", but Dr. Allen wants to "make sure that all of our results are positive".

Dr. Michaels thinks for some reason that the ideal candidate for human testing is a convict facing execution for killing 12 people who is being transferred to the private laboratory in exchange for a lighter sentence (than death). The fact that this plan would be both highly unethical and highly illegal doesn't seem to bother Dr. Michaels, who can't anticipate any other problems with it. What follows (SPOILER ALERT) is an explosion in the laboratory that exposes the psychopathic murderer to radiation and blue gel, and he slowly turns into the titular Mansquito (or Mosquitoman) and sucks human blood all over town. Unfortunately, the laboratory explosion also exposes Dr. Allen to radiation and blue gel. Here's where Hollywood exploits the plot advantages of a female entomologist. Mansquito of course lingers in town awaiting Dr. Allen's transformation into a woMansquito (miss-squito)? Ma'amSquito?

Notable features of the film include liberties taken with experimental design (e.g., using "the larva as a control group to verify our results—to see if the radiation has done its job. The levels have to be exact.") and inexplicable biology (e.g., Mansquito throughout metamorphosis develops one compound eye and one human-like eye, and, as well, keeps two human buck teeth along with an assortment of mosquito palps and variously has two or four wings, depending on the scene, all of which are too tiny to get him off the ground). Probably most puzzling is the fact that the male Mansquito sucks blood at all, which is not something any actual mosquitoes do.

As for the shorts, they're from the animated Discovery Kids series "Growing Up Creepie", which aired from 2006 to 2008. Both episodes were written by female screenwriters (who are probably even rarer than female entomologists), Heather Mitchell and Peggy Sarlin. The series depicts the adventures of a young girl who was raised by insects and constantly intercedes with her friends on behalf of insects in general (each episode ends with a short lesson about a real insect). We showed "The Case of the Mysterious Moth" (there really are ghost moths) and "Invasion of the locusts" (featuring fire ants??).

Interesting note—Creepie's best friend (the daughter of an exterminator) is named "Chris-Alice" (= "chrysalis")... The exterminator gets the best lines, even if they're not necessarily pronounced properly: "Don't let the *Cheemex lectularius* bite" and "Snug as an *Anthrenus scrophulariae* in a rug." Not to quibble, but the invading fire ants, which do indeed cause electrical shortages, are led by Creepie's clearly male "Uncle Jerry."

Richard J. Leskosky: Girls rule at this year's event | News-Gazette.com

Richard J. Leskosky: Girls rule at this year's event

Mon, 02/23/2015 - 7:00am | Richard J. Leskosky (author/richardjleskosky)

What's it like being married to a world-famous entomologist? I often get asked that question by new acquaintances — usually at dinner after the conversation has gotten around to topics such as *casu marzu*. That's a Sardinian sheep's milk cheese containing live maggots that can jump 6 inches off the cheese when you try to eat it.

I haven't tried it myself, but I have been drafted to eat other insects in classroom demonstrations of the practice. So that's part of what it's like.

In any case, you can get the lowdown on women entomologists — at least the movie sort — at this year's 32nd Insect Fear Film Festival at 7 p.m. Saturday in Foellinger Auditorium on the University of Illinois Quad.

Female entomologists have been showing up in insect fear films for decades, but they've usually been little more than lab assistants to the hero, or else they're simply trying to use chemicals derived from insects to preserve their own looks. Even Tiffany Bolling's jump-suited expert on spiders wound up more or less a sidekick to William Shatner's veterinarian in the 1977 "Kingdom of the Spiders."

Things changed, though, with Guillermo del Toro's 1997 "Mimic." Mira Sorvino's entomologist in that film not only genetically engineered a new insect to combat a deadly plague but then went into warrior mode to battle her own creations when they mutated into a menace in their own right.

Since then, more female entomologists have played more active and more positive roles in insect fear films, and this year's festival acknowledges that development.

The evening's screenings begin with a couple of episodes from the 2006-2008 cartoon TV series "Growing Up Creepie."

Creepie is a young girl who was abandoned as an infant at the front door of an abandoned mansion. The family of insects who lived there raised her as one of their own, but now she's ready to go to middle school and has to adjust to the human world. Her sympathy for all arthropods doesn't sit well with the other girls, but her insect family is always ready to come to her assistance in unlikely ways.

In "Mosquitoman" (a.k.a. "Mansquito"), Dr. Jennifer Allen (South African actress Musetta Vander) irradiates mosquitoes in hopes of halting the spread of a deadly virus. When an escaping convict blunders into her lab and gets dosed with radiation, mosquitoes, and various chemicals, he begins mutating into a, well, mosquitoman (or maybe a mansquito).



Photo by: Provided
A scene from "Mosquitoman."

The scientist also gets dosed, though to a lesser degree. Though the mosquitoman indulges in behavior that a male mosquito would not (that is, suck blood from humans), he does share one male mosquito urge — namely, mating with the only other human-mosquito hybrid around.

Dr. Allen's boyfriend, police Lt. Thomas Randall (Corin Nemec), doesn't want that to happen for a number of reasons, but his bullets don't have much effect on the determined bug, and Dr. Allen has to use science to zap him/it.

"Mosquitoman" borrows heavily from "Mimic" and from David Cronenberg's version of "The Fly," except in the areas of quality writing and direction. Fans of insect fear films might know director Tibor Takacs from his subsequent films, "Ice Spiders" (2007) about giant spiders at a ski resort and "Spiders" (2013) about giant spiders in the New York City subways. Meanwhile, Corin Nemec went out to battle giant flame-spewing wasps in "Dragon Wasps" (2012) in Belize with two female entomologists.

The films will be introduced (and their gaffes pointed out) by festival founder, head of the University of Illinois Entomology Department, and recent National Medal of Science winner Prof. May Berenbaum (who, I hasten to add in the interest of journalistic integrity, is also my wife).

As in previous years, the festival will also feature an art competition and gallery, an insect "petting zoo," exhibits of (mounted) exotic insects and other arthropods, face painting and festival T-shirts.

The festival is sponsored by the Entomology Department and the Entomology Graduate Students Association.

Doors at Foellinger Auditorium open at 6 p.m. Opening remarks and the announcement of art contest winners commence at 7. Screenings will begin at 7:30. Admission is free. All are invited.

Richard J. Leskosky taught media and cinema studies at the University of Illinois and has reviewed films for more than 30 years. He can be contacted at filmcritic@comcast.net.

33RD ANNUAL INSECT FEAR FILM FESTIVAL Foellinger Auditorium, February 27, 2016



The 33rd annual Insect Fear Film Festival welcomed back, for the 33rd time, festival faithful (and Entomology alumnus) Nathan Schiff along with wife (and fellow alumna) Ellen Green, from Stoneville, Mississippi. We also had a little bit of Hollywood here on Oscar weekend, with filmmaker Ryan Gillis and ventriloquist (and daughter) Hannah Leskosky. I often mention media coverage in introducing the festival. While looking up information about one of our feature films, I was surprised to see a reference to the festival in a book. A quick Google Books search revealed that IFFF has had shout-outs in at least a dozen books, spanning a breathtaking range of subjects, including film (*The Film Festival Guide: For Filmmakers, Film Buffs and Industry Professionals*, *The American Film Institute Desk Reference* (2002), *John Saul: A Critical Companion*), to K-12 education (*Insectigations: 40 Hands-on Activities to Explore the Insect World* and *Teaching Toward the 24th Century: Star Trek as Social Curriculum*), to college-level biology (*Animal Behavior*, *Breed and Moore*) and psychology (*Scared Stiff: Everything You Need to Know about 50 Famous Phobias*, and *The Infested Mind: Why Humans Fear, Loathe and Love Insects*), and even to science policy (*The Prosthetic Impulse: From a Posthuman Present to a Biocultural Future* and *Millipedes and Moon Tigers: Science and Policy in an Age of Extinction*). What's more, there's international appeal—we get a shout-out in German in *Tiere im Film: Eine Menschheitsgeschichte der Moderne*.

As for IFFF33, well, it took 33 years but I've learned that there's a patron saint of insect fear. According to the website Catholic Online, St. Gratus, fifth century "Bishop and patron saint of Aosta [in the Italian Alps]...invoked against fear of insects [and] dangerous animals". His feast day is September 7: "During the Middle Ages, Gratus was invoked against a series of natural disasters... grasshoppers and moles that devastated the fields... In 1450, he was invoked against a plague of insects in the Tarentaise region of France". In that era, excommunication and/ or sprinkling holy water was often used as a weapon to rid the countryside of locusts and other crop pests. Holy water may not seem like the best pest control strategy but it was certainly safer than some of today's strategies. Take aerosol insecticide foggers, or "bug bombs". According to "government statistics," "... every year there are about 500 fires" attributed to these devices (<http://nyti.ms/2j6d8BF>). Just in the last three years, there have been multiple spectacular insect control failures. In July 2013, as reported in *the New York Times*, a woman in New York set off 20 foggers in her two-room apartment and followed up the next day with another 20 foggers, at which point the oven pilot light ignited the fog and blew out the back wall of her apartment, leading to a partial collapse of the entire building. In July 2014, a man in Seattle tried to dispatch a spider using a lighter and a can of spray paint as a makeshift blowtorch and set the house on fire, causing \$60,000 damage. A month later, a resident in Hollywood set off 10 foggers, blew off the roof and caused \$25,000 in damage. And, in January 2016, a man in Detroit destroyed four apartments and damaged another 12 and set himself on fire trying to get rid of bedbugs by spraying himself and his furniture with alcohol and lighting a cigarette (<http://bit.ly/2iRf0yJ>).

So, clearly, people can blow up insects. But insects and other arthropods can self-destruct explosively without human assistance. Many species, particularly beetles, defend themselves by projectile bleeding—forced expulsion of blood through their body walls. They're not just dribbling or leaking—this behavior, called reflex bleeding or autohemorrhage, can involve in some species losing up to 25% of their blood volume in one bout (for humans, that's 3 pints leaking out of your elbows). In a behavior called autothysis, some insects actually blow off essential body parts; enormously enlarged glands are packed with acrid or entangling substances, which are ejected upon disturbance with such force that the body region containing the gland reservoir is permanently separated from the rest of the body with fatal consequences. These are mostly social species and the explosive self-destruct is euphemistically (technically) referred to as suicidal altruism—"Nature's own suicide bombers," if you will. It's not clear St. Gratus would approve; St. Thomas Aquinas in his *Summa Theologica* stated that "suicide is contrary to the inclination of nature."

Among these natural suicide bombers, so-called kamikaze ants --nine species of the *Cylindricus* complex—live in Borneo. Their mandibular glands occupy most of their body to store toxic compounds, including polyacetates, terpenes, aliphatic hydrocarbons, and alcohols; when the colony is threatened, they contract their abdominal muscles to blow off their heads and discharge the contents, which immobilizes or engulfs the predator. Often their dead dismembered body ends up permanently glued to the erstwhile enemy. Species of termites in the genus *Globitermes* (*sulphureus*) and four other genera are found in Vietnam; their soldiers are known as "walking bombs". Their abdomens appear yellow due to the huge amounts of noxious substances stored in an enormously enlarged frontal gland that occupies pretty much all of the thorax and abdomen, with no opening to the outside. At

the slightest disturbance, the secretions are forced out through the abdominal wall, violently detaching the abdomen, with glandular contents upon contact with air rapidly becoming tacky and thick, entangling the appendages and sense organs of the source of the disturbance. “Explosive defecation” is another term for the phenomenon. I do not, by the way, recommend doing a general literature search on Google with that particular combination of words.

Apropos of that, some insects regularly discharge glandular components via the anus without losing their butts in the process. Most famously and most explosively are the bombardier beetles (*Brachinus*, Carabidae) equipped with reactor glands, in which the stored products are inactive active but rather are discharged simultaneously to form a product *de novo* in the discharge. The advantages to the insect: it doesn't have to pack its abdomen full of toxic materials, and it can take advantage of thermodynamics and use the heat energy generated by a chemical reaction. Paired glands near the anal opening have two compartments. The inner compartment, or reservoir, contains hydroquinones and hydrogen peroxide. The outer compartment, or vestibule, contains catalases and peroxidases. Upon disturbance, catalases discharged into the vestibule degrade H₂O₂ and peroxidases oxidize hydroquinones to quinones. The pressure resulting from the free oxygen generated discharges the mixture with an audible “pop”. Due to the energy of reaction, the spray temperature is approximately 100°C.

For our festival, we managed to find three movies feature exploding arthropods. Our first was an animated short by Ryan Gillis, which he made as his MFA thesis film at University of Southern California in 2014. Here's the logline:

Investigating a mysterious explosion in the Florida Everglades, a crop-duster named Bill discovers a lone crate that survived the wreckage. Curiosity gets the better of him and he pulls the crate onto his airboat. That's just the first in a series of decisions he learns to regret.

The short was screened at the Ottawa Animation Festival, where retired UIUC Cinema Studies professor (and still spouse Richard Leskosky) saw it and told me about it. Ryan remarked in an online interview, “My brother...used to work in a biology lab at Barry University. One day they were cleaning house and he got to bring home some loot. One of the things he found was a yellow crate filled with jars, all covered in Japanese lettering. We found out that the jars were used to take flies into space. California has these palm trees that shed their fronds like a fur coat. They always looked like rockets to me. Those two images stewed in my brain for years, and when it was time to make my thesis film, I mashed them together to make *Palm Rot*.” His brother, by the way, is Phillip Gillis, author with Allen Sanborn and Polly Phillips of “The Cicadas of Florida”, 2008 (*Zootaxa*).

Our first feature was “Bug” (1975), which festival stalwarts may remember was shown in 1984, at our first festival. Once every 32 years, though, is probably a sufficiently low frequency to avoid boring the crowd (sorry, Nathan). It's all summed up in the tagline: “*They Look Like Rocks...Possess A High Intelligence...Have No Eyes...And Eat Ashes...They Travel In Your Car Exhaust...They Make Fire...They Kill*.” So—this movie is based on the 1973 novel *Hephaestus Plague*, by Thomas Page (classified in a genre called “speculative fiction”). He co-wrote the screenplay with William Castle, famous schlockmeister known for his over-the-top gimmicks (e.g., *The Tingler*, which played in theaters with seats wired to deliver an electric shock to audience members at key moments during the film). This was his last movie. It was directed by Jeannot Szwarc, who also directed *Jaws 2*. The basic story—in a godforsaken sand-swept place, an earthquake disgorges subterranean cockroaches that eat pure carbon (ashes) and can spontaneously burst into flame by rubbing their cerci together. A college entomology professor, James Parmiter, takes an interest in them after they incinerate his wife and then for reasons never fully explained in the film he hybridizes them with surface-dwelling cockroaches so that they can tolerate surface conditions, move about freely and breed. As for the cast, Professor James Parmiter is played by Bradford Dillman, who also played Major Baxter in 1978's *The Swarm*. The subterranean cockroaches appear to be *Blaberus giganteus* nymphs and the hybrids *Gromphadorrhina portentosa* (Madagascar hissing cockroaches), who have also appeared as post-apocalypse survivors in *Damnation Alley*, *Starship Troopers* and *Men in Black*. These “firebugs” apparently have no digestive tract because they have “symbiotic bacteria in their gut, eliminating the need for a digestive tract.” Surprisingly, cockroaches DO have symbiotic bacteria in their gut; I suppose even a blind pig finds an acorn every now and then. Speaking of blind, the “firebugs” in the movie are supposed to be blind—look carefully in one scene where Parmiter is inspecting one and you'll see eyes, which you'd think an entomology professor would recognize. Also, Professor Parmiter—if you're going to try rearing combustible cockroaches, why are you using a wooden cage to keep them in? In a minor quibble with the film, Parmiter names the hybrids after himself, *Parmitera*. The International Code of Zoological Nomenclature forbids naming any species after yourself. For that matter, this isn't a species, it's a hybrid.

Speaking of not-so-special effects, (SPOILER ALERT) when the firebugs develop the capacity for flight and zoom back into their crater, you'll see the wires from which the puppet roaches are suspended. Remarkably, the special effects by Phil Cory, earned the movie the 1976 “Medalla Sitges en Plata de Ley” for Best Special Effects from the Sitges-Catalonian International Film Festival. And here's a heads-up—if you feel a vague cognitive

dissonance during the kitchen scenes, it might be because they were filmed in the decommissioned set for the *Brady Bunch* TV show (which ended the year before, so Alice was never in any real danger in the kitchen).

As for our second feature, what can you say about *Lavalantula*? That it's from Syfy and Cinetel, the former of which brought you *Sharknado* and *Arachnoquake* (about an earthquake in New Orleans that unleashes carnivorous, fire-spewing spiders) and the latter of which was responsible for *Caved-In*, *Fire Serpent*, and *I Spit on Your Grave 1, 2 AND 3*? That it was written and directed by Mike Mendez, who also directed the Syfy movie, *Big Ass Spider!* and who was once quoted as saying, "Yeah, apparently I have the most specific niche in Hollywood of doing spider movies that attack Los Angeles!" <http://bit.ly/2jbCJxa>. That it was produced by UIUC alumnus Paul Hertzberg and stars no fewer than FIVE former cast members of *Police Academy* films, including Steve Guttenberg as Colton West, the hero? Or that the special effects were done by companies in Serbia and Pakistan?

The plot, such as it is, revolves around Colton West, a washed-up Hollywood action star who walks off the set when he discovers he's been cast in a bug movie, only to head into chaos when volcanic activity in the Santa Monica mountains unleash giant lava-spewing tarantulas onto the 405 Freeway. He commandeers a tour bus (a plot device that also appears in *Arachnoquake*) and (SPOILER ALERT) teams up the much of the cast of *Police Academy 4* to figure out a way to dispatch the giant spiders, find his son, and reconcile with his wife. Ultimately, as is so often the case in arthropod fear films, these Jurassic-era arachnids are social; there's a hive and a queen and a strategy—"If you kill the Mamalantula, you kill them all". In the best in-joke (among many movie in-jokes), when Colton, trying to find allies on the streets of Hollywood to fight off the lavalantulas, encounters Ian Ziering, the star of Syfy's *Sharknado*, who demurs, replying, "I'd like to help you but I have a shark problem to deal with" (which presumably is a reference to "*Sharknado: the Fourth Awakens*," the follow-up to "*Sharknado 3: Oh Hell No*"). Speaking of sequels, of course there's a sequel to *Lavalantula*—it's *2 Lava 2 Lantula!* and you can catch the film at the 34th Insect Fear Film Festival in 2017!



ALUMNI NEWS



Carol Anelli. Life is good at THE Ohio State University! Since moving here in 2013 to become associate chair of entomology (taking the reins from another U of I alum, Susan W. Fisher), I've taught a couple new courses and am gearing up to do a study abroad with Susan to the U.K. on Darwin and evolution in spring 2017. Recently, I've stepped in as interim chair, and find myself wondering how Stanley and May served for so long yet kept their sanity and remained productive (I garden). Steve and my son, Walter Sheppard, turns 28 in November and his Palouse Games store in Pullman (<https://www.facebook.com/PalouseGames/>) appears to be thriving. It's a mystery where Walter's fearless entrepreneurial spirit comes from, let alone his ability to manage finances successfully, given his genetic background. If any of you find yourselves in Columbus, I hope you'll drop by for a visit!



Joel Coats. I am enjoying my work more than ever, doing research and teaching in insect toxicology. I have three grad students with plans to accept three more in 2017. I'll see you at the ESA meetings!



Diane Cox-Foster, Randy Cohen and his wife, Susan

Randy Cohen. Randy is a few years away from retirement at California State University, Northridge (CSUN), but still doing research/teaching/administrative duties. Susan is in semi-retirement mode; only working as a clinical scientist 1-2 days per week. Rachel is attempting promotion to Associate Professor at Minnesota State University. Sarah is an Administrative Assistant at CSUN. Josh is attempting to both finish his PhD at Oklahoma and find a job in 2017.

Diane Cox-Foster. Diana Cox-Foster joined the USDA-ARS as the Research Leader and Research Entomologist of the Pollinating Insects Research Unit (PIRU) in Logan, UT, in October, 2016. There she gets to work with a great group of scientists and also involve students in the research. PIRU is housed in Utah State University facilities, so Diana has the fortune of interacting with wonderful scientists from USU, like the U of I alumnus Karen Kapheim. Diana is also an

adjunct faculty member with the Department of Entomology, Penn State University, where she has maintained her membership in the Center for Pollinator Research (CPR), helping to extend CPR to the western states. At PIRU, Diana's research involves examining the role of environmental stressors on pollinator health and their disease status for honey bees, bumble bees, blue orchard bees, and alfalfa leaf cutting bees. Having grown up in Colorado prior to coming to U of I, Diana is finding Utah to have lots to offer with many natural areas to explore. Diana's daughter Alexandria is still attending college in PA; Alex has found that Utah is also a great place to visit to come see lots of reptiles and bees. Diana hopes that you will come by to see her and visit PIRU when you are in the neighborhood.

Ed Cupp (1969). Things continue to go well as Mary and I develop a small vineyard and eventually a winery. We bought a 35-acre farm 2 years ago that has required lots of work to bring it back to a more natural state after serving for 100 years as a tobacco farm and later to raise cattle. Our goal is to develop a vineyard emphasizing grape varieties adapted to Mid-America that also make great dry/semi-dry wines.

We are both involved professionally as consultants to a start-up company that licensed some patented technology we developed while on the faculty at Auburn University. The technology uses a recombinant form of a molecule in horn fly (*Haematobia irritans*) saliva as a vaccine immunogen to prevent blood-feeding. The company hopes to bring the product to market by 2017. I continue to serve as a consultant to a group at the School of Public Health, University of South Florida. The group has developed an effective trap to attract and capture *Simulium damnosum*, the principal vector species of the causative agent of "River Blindness", and will study the best use of the trap in endemic foci in Uganda as a control tool. Fortunately, we have just received a 5-year grant from NIH to do so.



Jeffrey Heilveil. As I start my 10th academic year at Oneonta, I have just been promoted to full professor and am finishing my third year as department Chair. Our department is relatively small (21 faculty, ~650 undergraduates, 15 MS students), which still lets us interact with many of the students. My teaching rotation includes Methods in Population Genetics, Entomology, Aquatic Invertebrate Ecology, and Stream Ecology. My favorite courses though are the ones I get to teach in the summers at our Biological Field Station: Field

Entomology and NY Stream Biota: ID and Ecology. These are 16-day intensive courses (we run from 8 am till midnight each day) that have let me hook students on entomology, with graduates of our program continuing on at UIUC, Loyola, and Clemson, among others. I also have 5 graduate students of my own in our MS program. Amy, my wife, has been teaching for the Communication Arts Department and is having a great time with it, while still doing calligraphy and painting for enjoyment. Victoria, our daughter, will be 11 this year and has started making her own collection, so at least not *all* of the insects in the freezer are my fault.



Jeffrey Heilveil, Bridget O'Neill, Peter Reagal in Grad School sometime between 2001-2004



Gail Kampmeier and Carol Anelli
2015 Entomology Alumni/New Student Picnic

Gail Kampmeier. Although I have been officially retired since 2010, I remain involved in two professional societies: the Entomological Society of America and Biodiversity Information Standards (TDWG). For the latter I am on the Executive Committee and am program co-chair for TDWG2016 <http://www.tdwg.org/conference2016>, which will be held in Costa Rica in December 2016. At this year's International Congress of Entomology, I served as a section convener for biodiversity, biogeography and conservation biology; co-organizer of the Women in Entomology Breakfast; and co-organizer of the symposium "Connecting with the World's Best Talent: Attracting and Retaining Diverse Entomologists"

<http://ice2016orlando.org/esas-diversity-and-inclusion-committee-symposium/>. I also enjoy spending time with my husband as we figure out, experiment with, and document the ecosystems in our yard.

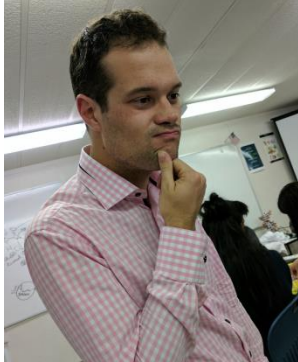


Gene Kritsky. The past year has been rather productive with Oxford's publication of my book, *The Tears of Re: Beekeeping in Ancient Egypt*. It has been well received and has led to a number of seminar invitations. I am now starting the research for my third bee book, which will consume the next couple of years with travel and museum visits. I have also agreed to serve as Editor-in-Chief of the six volume series *The Cultural History of Insects*, and to serve as the editor of the Antiquities volume. On the same topic, Jessee and I have co-authored a chapter on the history of insect biodiversity in human culture for the second volume of *Insect Biodiversity II: Science and Society*. Jessee has also been quite creative during the past year designing and producing new insect jewelry for her Etsy shop, Silverspotstudio. We hope you all have a great year.



Jonathan Lundgren. Dr. Lundgren is an agroecologist, Director ECDYSIS Foundation, and CEO for the Blue Dasher Farm Initiative. He received his PhD in Entomology from the University of Illinois in 2004, and was a top scientist with USDA-ARS for 11 years. Lundgren received the Presidential Early Career Award for Science and Engineering (the highest honor given to young scientists by the Office of the President), the Rothbart Early Career Scientist for USDA-ARS, and received the Early Career Innovation Award from the Entomological Society of America. Lundgren has served as Panel Manager for NIFA's Biotechnology Risk Assessment Grants Program for two years and on the EPA's and EFSA's scientific advisory panels to assess the safety of RNAi-based pesticides. Lundgren is actively involved in the Entomological Society of America, and is past President for the International

Organization for Biological Control (Nearctic Regional Section). He was an editor for *Environmental Entomology* and *Arthropod-Plant Interactions*, and has reviewed manuscripts for more than 50 scientific journals. He was a visiting scientist at CABI in Delemont Switzerland, and with CIAT in Cali Colombia. Lundgren has written 112 peer-review journal articles, authored the book “Relationships of Natural Enemies and Non-prey Foods” (Springer Publishers), co-edited the Biological Control special issue “Trophic Ecology of the Coccinellidae”, and has received more than \$3.4 million in extramural grant funds. One of his priorities is to make science applicable to end-users, and he has presented for 10,000+ farmers, beekeepers, ranchers, and stakeholders from around the world. He has trained 5 post-docs and 12 graduate students both nationally and internationally. Lundgren’s research program focuses on assessing the ecological risk of pest management strategies and developing long-term solutions for regenerative food systems. His ecological research focuses heavily on conserving healthy biological communities within agroecosystems by reducing disturbance and increasing biodiversity within cropland.



John Maddux. In August of 2015, I began a teaching position at the Collegiate School of Medicine and Bioscience, a STEM magnet school in St. Louis, MO. As I write this, the fall semester of my second year at the school is nearing its end. I have been working to lay foundations not only for my own career, but for the school as well. This May, we will see our first graduating class! Last year, I had the rare opportunity to completely outfit my classroom laboratory. This year I teach anatomy and physiology, biology, and AP biology. Generous donations from many entomology faculty enabled my biology students to complete insect collections this past fall as part of a taxonomy unit. I am very grateful to you all for that amazing support. Spring 2015 also saw the birth of our second son, Quinton. Quin is now 7 months and Jackson is 3 years. My partner, Whitney, is still happily working in student housing at Jefferson College, where I began as an adjunct member of the biology faculty this past summer.



John Marlin. I am still sort of retired and living in Urbana. Much of my time is spent as a volunteer managing efforts to establish native plantings on campus. That includes clearing the honeysuckle off the 22 acres of woods by the Pollinarium near Windsor and Lincoln. I work on that with a lot of students and community and campus members. This includes the prairie at Florida and Orchard. The battle over agreeing on what “looks nice” seems to be never-ending.

I still do a bit of work on bees and try to educate the public as to the value of having a variety of native plants that bloom across the seasons to provide resources for insects and other organisms. I conduct a one-hour independent study class on related topics.

Another activity is “teaching” Lego to emotional and behavior disorder classes at a local grade school. Students are K—5th grade and respond well to the geometry and versatility of Lego.

My wife, Diane, is running for Urbana mayor. The primary election is February 28, 2017. We have 2 grandsons (1 and 4) in Champaign and usually have them one night a week.



Michael (Mickey) McGuire (class of 1985). These past two years have been eventful in my life and those of my family. I retired in August 2015 from USDA-ARS after a 30-year career with stints in Montana, Illinois, California, Georgia and Maryland; the last two locations were for 4 and 6 months respectfully. In retirement I am volunteering extensively for two organizations (I was told too late to never tell organizations you are retired) and am fly-fishing much more than when I was working. My wife Vonne and I sold our house, bought a new, smaller house and moved over a six-month period. However, we have found time for travel to Yellowstone NP twice and visits back to the Midwest to visit family in Peoria, Davenport and Kalamazoo. We

are also frequent visitors to Rocky Mountain National Park, which is located about 30 miles from our doorstep in Loveland, CO. Son Chris and his wife Megan, who live in Kalamazoo, have four boys, and daughter Jeni, who lives in Davenport, has one daughter.



Rob Mitchell. Following my postdoc in Tucson, my wife Lauren and I experienced an exciting summer of 2015 that involved, almost simultaneously, 1) moving from Arizona to Wisconsin, 2) beginning my new job as faculty at UW Oshkosh, and 3) the birth of our son Daniel. I am sure that other events occurred in the meantime, but for our part we are still recuperating from that whirlwind. Everyone is healthy, happy, and mostly sane, though the latter is hard to say definitively with Daniel, whose utterances can only be transcribed as a series of exclamation points.



Peter Price. I enjoy the Departmental Newsletter immensely! Thank you for all the work involved. As I thumb through earlier editions nostalgia wafts through me: seeing familiar faces and former revelers at Treno's Friday afternoons; reading of the great successes achieved by departmental members and alumni; and the social whirl provided. I was a faculty member in the department from 1971-1979, and I am delighted to see my contemporaries' news and pictures. I wish more would contribute.

Since the last newsletter I published in 2015 a final paper on 32 years of population dynamics of the willow shoot-galling sawfly, *Euura lasiolepis*, showing how bottom-up effects from precipitation to plant growth, to sawfly female preference and larval performance, dominate dynamics, with a model able to predict events. Then, in the Spring of 2016, the "Legends" series in *American Entomologist* covered my checkered career, and on September 25 I was recognized as an ESA Fellow at the ICE 2016 in Orlando. This award was presented by May Berenbaum, President of the ESA, making this an especially memorable experience. At the meeting I was also able to meet old, or should I say, long-standing friends?

Life at 7,000 feet a.s.l. in Flagstaff AZ, continues to be peaceful, pleasant, and enjoyable. We have excellent hiking opportunities nearby, as the accompanying image shows with Maureen and me in the San Francisco Peaks area at about 8,700 feet. My gardening involves more potted plants, especially bulbs, which can be started in the greenhouse, and placed outside when spring frosts are less threatening – about mid-June. We have a short growing season at this elevation. But, with climate change, apples and lilac flower well, and a good crop of apples results in the fall, more reliably than the once in 10 years in times gone by. My work on reclamation along a section of the ditched Rio de Flag has resulted in trees and shrubs growing well, but some are threatened by deer nibbling shoots and removing their velvet on stems.



Annie Ray. I am in my sixth year in the Department of Biology at Xavier University in Cincinnati, OH. I was awarded tenure and promoted to associate professor this past spring. I continue to keep afloat whilst advising 30+ undergraduates and maintaining a full teaching load, including General Biology I and II, Introduction to Entomology lecture and lab, senior capstone courses, and a majors/non-majors study abroad course to Costa Rica. Research in my lab focuses on woodboring beetles, primarily invasive species. I have ongoing projects in collaboration with university colleagues and USDA APHIS to study chemically-mediated behavior in emerald ash borer, Asian longhorned beetle, and velvet longhorned beetle. I am working with fellow U of I alumna, Dr. Suni Krishnakutty, on a project that seeks to develop tools to rapidly identify wood boring insects intercepted in solid wood packing materials at US ports of entry. In December 2015, I returned from my Fulbright experience in Brazil with many new friends and an appreciation for Brazilian food. I've been traveling extensively, mostly for research/meetings, but I've managed to tack on side trips to the National Parks of Utah, to Mexico City, to Paris, and to many amazing places in Brazil.



Craig Reid. Being a Scots/English/British/European American (that should make all the PC folks happy), earlier this year I was oft asked about Brexit by my American and British friends...the best answer I came up with, which only one side of the pond understood, was a quote by Jim Varney, the man who created Ernest and Vern, "EEEEEEuuuuu." Yet I have been spreading the word that Britain's top Metropolitan Police Force has finally gone metric...yep... Scotland Yard is now Scotland 0.9144 Meters.

Seems I have leftovers from my debut Stand-Up comedy performance on my 60th birthday this year in front of 65 or so folks at San Diego's Comedy Palace. I'm currently one of the oldest survivors with cystic fibrosis (CF) and the

only one ever to come off medication and therapies (now for 37 years). I've wanted to try Stand Up since age 16. The show was a hit, where on that evening, CF stood for Comic Fu.

Still in the trenches looking for an agent for my memoir *Monsoon Mountain*. From the 11 agents that read it and the several that read my book proposal, each has fortunately shared that the writing is exceptional and the story compelling; however, the unfortunate recurring comments are: Too big of a project to handle; I'm 60...agents want younger writers as to develop a long-lasting business relationship; and the implication that chi gong will make negative waves with the medical community and pharmaceutical companies. I never expected these comments...but then again I never expected Trump to win. Yet like I've learned in martial arts, life, and facing a progressive, incurable fatal disease...things worthwhile are never easy, one's current situation doesn't have to be the final destination, you're only limited by what you think you can't do and to know that by doing my best on all levels and never giving up, these are the only choices to make...even if they result in failure. At least at the end of each day, I can claim a new world record...another day of being alive. Plus, I don't ever want to be like most of my professors at Cornell that gave dull lectures and put everyone to sleep....i.e., bored certified.

A few months ago, we were asked by a Yoga-based, Holistic Healing Organization if we could kindly volunteer our time for a day of healing for charity in San Diego's Balboa Park, as they were trying to raise money for the children in Nepal still dealing with the devastating aftereffects of the earthquakes...I called it "healing the rift." We did 13 straight hours of healing in one sitting. Silvia took the opportunity to introduce to the general public her latest creation...a ChiBlast device, where she's figured out a way to deliver chi through sound and light energy into the whole body. She's basically blasting negative energy out of the body. After being ChiBlasted for 20 minutes, patrons had this look of nirvana or a "I've seen the light" stare. Most of the events were oriented toward yoga, yet the feeling people experienced in 20 minutes was similar to what they *might* feel after 15 or so years of intense yoga practice. For the yoga practitioners it seemed to go over like telling a "knock knock" joke at a Door Bell Sellers convention. Yet others said, "Is this available on Amazon?" Far out. It was also the perfect time to ask the Yoga people, many of which were Vegans or Vegetarians, if they drove a car with a V-8 engine. Many didn't get it. An age thing or just a bad one-liner? However, those into sushi understood that when Achilles ate Unagi, he found his digestive weakness...Achilles eel.

Well, that's about it for now. When you've got a wee frozen clock moment, would love to hear what's happening in your world. In the meantime, look forward to one day seeing you again, hope all is well, life is balanced and as always...may the chi be with you.
Peace, Love and Cheers, Craig and Silvia

Hilary Reno. I am an Assistant Professor in Infectious Disease at Wash U Medical School in St. Louis and returned to full time work in 2014. Since then, I've been able to expand my research group's efforts in investigating health care access, management, and follow-up for patients seeking STD care in local emergency departments, and in maximizing prevention services at high volume provider locations. As an HIV provider, I am also interested in improving care for patients with repeat STD infections and in transgender patients living with HIV. I just started a half time appointment in the CDC's STD Prevention branch, and I'm very excited about that work. I imagine a bit of time with Zika virus is in my future as no one was more surprised than me when a mosquito-borne disease was found to be sexually transmitted. Who knew? I'm guessing that my skill set of (distant) mosquito biology work and STD expertise is unique????

Shaun and Ian (10) and Kieran (6) are doing well. We adopted a wonderful dog Oscar this year. We continue to travel far and wide. In my spare time, I follow the children to soccer games, let the butterfly and pollinator garden overgrow everything, and run.



Nathan and Ellen at Cove Island in Stamford, CT (right after the Cubs won!)

Nathan Schiff and Ellen Green. Greetings from Mississippi. Ellen and Nathan are still living in the Magnolia State and you haven't come to visit; you know who you are. Basically we are in high cotton. Ellen has been head of the biology department at Delta State University for two and a half years now and Nathan is still doing whatever he does for the Forest Service. Ellen is over the moon that the 10-year multi-million dollar renovation of the science building is nearly completed. She didn't start it but she is darn well going to finish it. It's been slower than molasses on a cold day, as we say in the Delta. Nathan went on a second collecting trip to Vietnam last summer and learned a new word. His Vietnamese counterpart was surprised when Nathan kept saying "excellent" when things worked out. He thought Nathan was saying "ex sau lang" which apparently means "frog on fire" in Vietnamese. They got along great. Ellen is turning out to be quite a powerhouse for the biology department. More students are getting accepted into professional and doctoral programs than ever before and she

mentored the first ever Delta State graduate to get into the Peace Corps. Rashad is on a medical mission in The Gambia and she worries because he doesn't write very often. She even had biology majors win the last two congressional fellowships in US Senator Thad Cochran's office in Washington DC. We don't walk around the political science department late at night anymore. She also went for leadership training at Bryn Mawr a couple of summers ago and I think she is planning world domination. Nathan has crisscrossed the US collecting for a couple of projects but may have been most delighted by finding his first ever ant cricket in Utah. We'll see all y'all (which is plural for y'all in case you didn't know) at the Insect Fear Festival come February.



Alan Schroeder. Still doing international consulting on Good Agriculture Practices, IPM, entomology, plant pathology, chemistry, agribusiness, climate smart agriculture, and most recently Zika with USAID, mostly in Africa, but other regions as well. Now based in Brussels part of the year. Best wishes to all UI alumni.



Alum Harry Bottenberg and Alan Schroeder



Alan Schroeder at work, interviewing Malagasy farmers on IPM during spring 2016 in Madagascar



Steve Sheppard. Greetings from the Pacific Northwest. 2017 will mark my 20th year at Washington State University and my 8th year as Chair of the Department Entomology. My population genetic and systematic research interests continue, although my lab group is also involved in translational research including a long-term bee breeding program and colony health research. The breeding work led to the development of cryopreservation techniques for honey bee semen, establishment of the world's first honey bee genetic repository and importation and dispersion of additional genetic variability from Old World sources into US honey bee populations. In 2015, we collected semen from a subspecies of honey bee that co-evolved with apples in the Tien Shan Mountains of Central Asia (*Apis mellifera pomonella*) and, through repeated backcrossing via instrumental insemination, will release this germplasm to beekeepers in 2017. In 2016, we also made the first "deposits" of honey bee genetic material into the National Animal Germplasm Program in Ft. Collins, CO. Most recently we have been investigating the anti-viral potential of mycelial extracts from old growth forest mushrooms on honey bees and evaluating biological control of varroa mites using *Metarhizium* fungus. On a personal note, Carol Anelli and I are proud parents of our son Walter, who lives in Pullman, WA and owns a small business. I live in nearby northern Idaho and have a flock of Icelandic sheep, a Norwegian fjord horse and the travails that accompany keeping a 1941 Model M International Harvester tractor in operating condition.



John Tooker. I continue to enjoy life at Penn State, where we have plenty of ex-Illinois folks around our Dept. of Entomology and we remind folks of our Illinois connections whenever necessary. My research group mostly studies plant-pest and tritrophic interactions in agricultural systems, and how crop management tactics influence pest populations. Oddly, I have spent considerable time getting to know slugs, which lack some of the more attractive qualities of insects but are relevant for Pennsylvania agriculture, and our research on them has been very helpful in my extension responsibilities. Despite my commitment to applied systems, I have been able to keep a few projects going on gall insects on goldenrod, providing a nice distraction from agriculture. Life at home is great, and our two sons (12 and 9) provide Meg and me plenty of activities to attend and unending opportunities for seemingly unreasonable parenting.

Ray Voorhees. Hi to all my friends and colleagues of U.I. Ent. I am still at U. of Central Mo. - my 41st year. I have not been able to do anything with mosquitoes in 40 years, as they have put me in the pre-med club. I advised for many years in Medical Technology and now have been given the Radiation Tech area to advise. If you break a bone or need a blood transfusion anywhere in the Midwest, you will probably meet one of my students.

Family news! Sue and I are expecting our first great-grandchild in a few months. We are well and happy on our farm outside Holden, Mo. Farming keeps us young, I expect--young enough to keep cleaning fence rows, kidding goats, and weeding the garden. I hope you all are doing as well as we are. God bless you all.

Which one is which? No fair looking at the name tags!



Rob Mitchell and Scott Shreve?
or
Scott Shreve and Rob Mitchell?

OBITUARIES 2015-2016

Bernard George Berger (“Bernie”) <http://www.thedavisfuneralhome.com/obit.aspx?I=2116>



Bernard George Berger (Bernie), of Lander, Wyoming passed away October 22, 2015. He was born August 21, 1916 in Muscatine, Iowa to Maude May (Wilson) Berger and Bernard George Berger. He graduated from the local high school and four years later from Iowa Wesleyan College with a B.A. Degree in Biology. He continued his studies at the University of Illinois, majoring in Entomology and received his M.A. Degree.

He began working for the State of Illinois at the Natural History Survey, located on the University of Illinois campus as a specialist on insects and man and domestic animals. Four years later he was an entomologist for Arwell, a large mid-western pest control company. He purchased and developed several pest control companies in Ohio and Indiana. In 1978, he retired to Lander, Wyoming to pursue his love of

hunting, fishing, and looking for petrified wood. Until recently, Bernie was an active member of Rotary, and contributed to the Museum of the American West and Central Wyoming College.

Bernie is survived by his wife, Helen, a daughter, Bonnie (Bowling Green, OH); three grandchildren: Stephen Casher (Billings, MT), Bonnie Martens (Springfield, OH), and Mindy White (Springfield, OH); seven great grandchildren, and several nephews and nieces including Roger Mardock of Lander. He was preceded in death by his son Stephen Berger, brothers Donald Berger and Robert Berger, and sister June Mardock.

Memorials may be made to the Museum of the American West through Davis Funeral Home, 2203 W. Main Street, Riverton, Wyoming 82501.

Jimmy Olson <http://www.callawayjones.com/jimmy-olson/>



Dr. Jimmy Karl Olson
February 18, 1942 – July 2, 2015

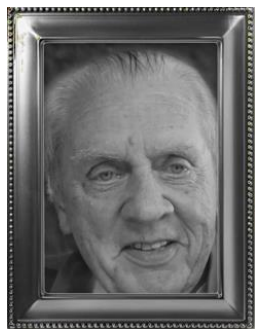
Dr. Jimmy Olson, 73, of Caldwell, passed away on Thursday, July 2, 2015 in St. Joseph Regional Health Center in Bryan. A memorial service will be held at 10am, Wednesday, July 8, 2015 at Lone Oak Baptist Church in Snook, Texas, located four miles West of Snook, on Highway FM 60. Memorial services are in the care of [Callaway-Jones Funeral Home and Crematory](http://www.callawayjones.com).

Jimmy was born to James Francis and Ruth Ann Peck Olson on February 18, 1942 in Twin Falls, Idaho. He served in the United States Army Chemical Corps as a First Lieutenant. His educational degrees were from University of Idaho and University of Illinois-Urbana. Jim met his wife, Carolyn Lou McDonald Olson, they married on May 10, 1987 in Caldwell, Texas. He has seven children all of whom held a special place in his heart. His hobbies were building and collecting model airplanes, spending time with friends and taking care of his dogs. In his professional career, Dr. Olson did research of mosquitos and taught in the Entomology Department at Texas A&M University. He possessed a passion for his graduate students to succeed in all their endeavors. He was an influential advocate and mentor but especially a friend to his students.

His parents, James Francis and Ruth Ann Peck Olson, his wife Carolyn Lou McDonald Olson of 24 years, precede him in death. He is survived by his children Ashley and wife Faith Alexander of Clinton Tennessee; Robin and husband Robert Von Heeder of Houston, Texas; Teri and husband Mike Belyeu of Giddings, Texas; Kristine and husband Chris Boehm of Florence, Montana; Jason and wife Donna Alexander of Snook, Texas; Christopher and wife Maria Olson of Houston, Texas, Megan Olson and Bobby Collins of Houston, Texas; his sister JoAnn Olson Robbins of Buhl, Idaho, numerous grandchildren and other relatives.

In lieu of flowers memorial donations are requested they be given to the Texas Mosquito Control Association (TMCA), Scholarship Fund, Dr. Jimmy K. Olson, P.O. Box 906, Hewitt, Texas 76643.

Robert Snetsinger <http://kochfuneralhome.com/tribute/details/1202/Robert-Snetsinger/obituary.html>



Robert John Snetsinger "Butterfly Bob", 88, of State College, passed away April 16, 2016 at home after battling cancer for four years.

Born on March 6, 1928, in Diamond Lake, IL, he was the son of the late Clarence and Helen Mills Snetsinger. He was married for more than 55 years beginning in 1960 in Chicago to the love of his life, Wendy Dawn Rigler, who survives him at home. He is also survived by his daughter, Laurel T. Allen & husband Richard of Burlington, NJ; brother, Donald Snetsinger & wife Darlene of Plymouth, WI. He was predeceased in death by his daughter, Clare Dahlia Snetsinger, 1989; brother, David Snetsinger, of Webster Grove, MO, 2014 and David's wife Phoebe Snetsinger, 1999.

Bob was a 1946 graduate of Ela-Vernon High School, Lake Zurich, IL. He received three degrees from the University of Illinois in Entomology graduating with a PhD in 1960. After their marriage, Bob and Wendy moved to State College, PA. He was a professor for Penn State University in the Dept. of Entomology for 38 years and retired in 1999 as Professor Emeritus. During his academic career, he mentored many students and directed 40 theses. In 1996 he was co-recipient of the Provost's Collaborative Innovations Special Recognition Program for teaching. As a specialist in insect pests, he was part of a four-person interdisciplinary team (1969–1998) that developed the Mushroom Test Demonstration Facility at Penn State. Their research led to major innovations for the mushroom industry. In 1993 he initiated and co-chaired the First Great Insect Fair at Penn State, a fun learning event attracting thousands of people annually.

After the death of his daughter Clare, Bob became interested in butterflies because of their beauty and ability to transform. He co-directed (1995-2000), a butterfly therapy/outreach project for the Hollidaysburg Veterans' Home. He started developing a 3-acre butterfly garden (1996) at Tom Tudek Memorial Park in State College, which was dedicated by the Tudek Foundation, as the Snetsinger Butterfly Garden at Tom Tudek Memorial Park in State College (2011). With the help of the Master Gardeners (2006 – present) the garden continued to improve and satellite Snetsinger Butterfly Gardens have been established at more than 30 schools, churches and other public places.

Bob served on the Patton Township Planning Commission (1964-1977) and Centre Regional Planning Commission (1970-1977) and was Patton Township Supervisor (1978). He enjoyed writing, and wrote six books on historical topics, including family histories.

A celebration of his life will be held at 2:00 pm on Sat., May 14, 2016 at the Unitarian Universalist Fellowship, 780 Waupelani Dr. Ext., State College, with Rev. Mark Hayes and Rev. Gabi Parks officiating. A butterfly release will take place in Tudek Park Sat., July 23, 2016 during Wings in the Park festivities. At a later date some of his cremated remains will be buried at Evergreen Cemetery, Barrington, IL and the remainder scattered in butterfly gardens. In lieu of flowers, memorial contributions may be directed to the Tom Tudek Memorial Trust on behalf of the Snetsinger Butterfly Garden, c/o Mark Kunkle, 3147 Research Dr, State College, PA 16801 in memory of Robert Snetsinger, or Unitarian Universalist Fellowship (UUFCC). on behalf of the Snetsinger Satellite Butterfly Garden, 780 Waupelani Dr. Ext., State College, PA 16801.

DONORS TO ENTOMOLOGY



Fred as a Student
1957

Fred at Retirement
2012

Fred H. Schmidt Summer Scholars Fund

(edited from text by Ed and Margaret Larsen)

Fred H. Schmidt (1928-2012) was born in Brooklyn, NY of German immigrant parents. His father, a baker, purchased a bakery and moved the family of five to New Brunswick, NJ. During his senior year in high school Fred took a job at Rutgers University as an entomological laboratory technician, conducting research on insecticides for use against agricultural and medical pests, developing screening, formulation and application methods and evaluation techniques. Whether this experience sparked Fred's interest in entomology or he took the job because he was interested in entomology we

don't know, but we do know from his high school yearbook that he was interested in science. After a year and a half at Rutgers he worked briefly at E.R. Squibb, in New Brunswick, as a laboratory assistant and then moved to Durham, NH to work at the Crop Protection Institute as an entomological lab technician under a Union Carbide and Carbon fellowship.

Fred began his undergraduate studies at the University of New Hampshire in Durham in September 1948, rather than in 1946 when he graduated from high school because he needed to earn money to pay his way through school. During the time Fred was a student at UNH (9/48-2/50) he was employed by the university as an entomological lab technician. The need to earn money interrupted Fred's studies when in February 1950 he took a job with the USDA Dept. of Entomology Division of Golden Nematode Control in Hicksville, NY, once again as an entomological lab technician.

After working for the USDA for a year, Fred's plans once again experienced an interruption, when he was drafted into the Army. Fred was inducted in February 1951 in Newark, NJ and served in Korea in the Medical Corps, 207th Malaria Survey Detachment, as a preventative medicine technician. The second year of Fred's Army "career" was spent at Fort Jackson, SC in the Medical Corps, still as a preventative medicine technician. He was honorably discharged at Camp Kilmer, NJ in January 1953 as a PFC, receiving the Korean service medal, distinguished unit citation and United Nations service medal. Again, Fred found a job to earn money, this time with the Boyce Thompson Institute for Biological Research in Yonkers, NY, where he was involved in the research and development of insecticides, application methods and evaluation techniques, once again under a Union Carbide and Carbon fellowship. His employment at Boyce Thompson lasted six months.

In September 1953 Fred entered the University of Illinois at Urbana-Champaign. During the summer of 1954 Fred was employed by the USDA Forestry Service in Upper Darby, PA, as a forestry aide. One can only wonder if this job was simply a coincidence or if it sparked Fred's interest in insect problems in forests. From February 1955 through June 1957 Fred was employed by the Illinois State Natural History Survey in Urbana, Illinois, located on the campus of the University of Illinois. He conducted research on *Collembola* half-time during the school year and full-time during summer [among his publications is *The Coloburella-Boernerella Complex with Description of a New Species (Collembola, Isotomidae)*, *Acta Zoologica Cracoviensia* 11:365-372, with H.B. Mills]. He received a BS degree from the University of Illinois Division of Special Services for War Veterans in February 1957. That same month he was admitted to the graduate school at UIUC. During this time Fred was employed by the Dept. of Entomology as a research assistant in insect physiology, studying the reproduction of the house fly half-time while continuing his studies. The summers of 1957 and 1958 saw Fred employed by the Indiana State Board of Health in Indianapolis as a medical entomologist, studying mosquitoes. In June 1958 Fred received an MS degree in entomology based on his work with his advisor Gottfried Fraenkel.

December 1961 saw Fred employed by the USDA Forest Service Pacific Northwest Station as an Entomologist (plant pests), conducting research on the spruce budworm and Douglas fir bark beetle. Among his research interests during his long tenure there were rearing methods, color polymorphisms, diapause termination in *Choristoneura* species, target and nontarget effects of pesticides on forest Lepidoptera. He retired from the Forest Service in 1996. On his resumé, Fred said, "My ultimate choice of a professional career is dependent on several factors, not the least of which is the ability to use my scientific training to the maximum. I would like to have the opportunity and satisfaction of making some sort of significant contributions to my field of specialty in science, and to be able to earn the respect of my colleagues and other scientists both as a result of this work and in everyday associations." It was Fred's wish that funds from his estate be used to support out-of-state students to further their education at the University of Illinois.



The William H. and Jantorn B. Rufener Endowment for Entomology was given to the Department of Entomology by Jantorn Rufener in memory of her husband. William ‘Bill’ Rufener was born June 13, 1937 and died June 18, 2013. He was a long-time resident of Banks, Oregon. Both William and Jantorn received advanced degrees from UIUC. William “Bill” Rufener received his M and PhD degrees in Dairy Science in 1961 and 1970, respectively. Jantorn received her MS and PhD degrees in Education in 1970 and 1972, respectively. Jantorn Rufener, in a lovely note to me, wrote that “I was quite excited to learn that UIUC is the leading research institution in the world on the subject” of honey bees. With her gift to UIUC, she wanted “to have a small part in contributing to the study of honey bees and their future well-being”.

In looking for more information about Bill Rufener, I found this article in the Fall 1990-Winter 1991 issue of *Oregon’s Agricultural Progress* newsletter. In the issue was an article by Carol Savonen, titled “A could of questions,” describing the arrival of Africanized bees into North America “What should Oregon expect now that “killer bees” have buzzed into the States?”. Author Carol Savonen quoted William Rufener extensively in the article:

“Although some beekeepers are selling out, many are “stubborn individualists” and may stick with beekeeping, said Bill Rufener, a professional beekeeper and chairman of the Oregon State Beekeepers Association’s subcommittee on the Africanized honeybee. “Some of us just don’t want to join the flock that quits,” said Rufener. “Our biggest concern as beekeepers has more to do with the public reactions to this bee. We are still naive enough to think we can still keep bees, if the public will let us do it.” Rufener and Burgett worry that the public’s panic over Africanized bees will put pressure on public agencies to restrict beekeeping, especially in urban areas. “What the public doesn’t realize is that there are about two to three times as many wild hives in the state as registered hives,” said Burgett. “The wild hives are everywhere and they can’t be regulated by law.” Public education will be key as the Africanized honeybee draws near. “We need to teach the public that we do need bees and beekeepers for pollination needs,”

PHOTO from the Bee Line 24(5): 1, June 1999

The William H. and Jantorn B. Rufener Endowment for Entomology will accordingly be used to support both honey bee research and public education about pollination.

June 1999



Bill Rufener works bare-handed...



...and with gloves to check brood pattern in split

Thanks to support from Dr. Charles D. Ross, the Entomological Collections Room in the newly renovated Natural History Building will be named in memory of his father, **Dr. Herbert H. Ross**. In addition to receiving his MS and PhD degrees from our Department, Dr. Ross spent 38 years at the Illinois Natural History Survey and 22 years as a Professor in the UIUC Department of Entomology. He was one of the most prominent and productive entomologists of the 20th century and his impact on entomological research and teaching remains palpable today. The remembrance below was written by J. D. Unzicker and B. J. Wallace (1979) *J. Econ. Entomol.*

April 1979

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Herbert Holdsworth Ross
1908–1978

Dr. Herbert Holdsworth Ross died November 2, 1978 in Athens, Georgia, at the age of 70. He gave a half century of service to the scientific community.

Professor Ross, the son of Jonathan and Jessie Holdsworth Ross, was born on March 3, 1908 in Leeds, England. He moved to Vancouver, British Columbia, with his family where he attended grade and high school and graduated from the University of British Columbia with a B.S. degree in Agriculture in 1927. Later that year he began graduate school at the University of Illinois in Urbana-Champaign, and also joined the staff of the Illinois Natural History Survey as Assistant Taxonomist. He received his M.S. and Ph.D. degrees in Entomology from the University of Illinois in 1929 and 1933, respectively. He married Jean Alexander on February 3, 1932. Throughout Dr. Ross' professional career his wife, Jean, assisted with his research, and accompanied him to scientific meetings and on collecting trips throughout North America and to many parts of the world. In 1931 Dr. Ross was appointed Systematic Entomologist at the Illinois Natural History Survey. He was appointed Head of the Faunistics Section in 1935, Principal Scientist in 1956, Acting Chief of the Survey in 1962 and Assistant Chief in 1963. Dr. Ross also held an appointment as Professor of Entomology at the University of Illinois from 1947 until 1969 when he retired from the Illinois Natural History Survey and University of Illinois. That same year he accepted an appointment as Professor of Entomology at the University of Georgia and he retired from that University in 1975.

Professor Ross was one of the most productive entomologists in North America and during the course of his career he pub-

lished approximately 220 scientific publications, including 6 books and chapters in 7 other books. Although retired he was actively engaged in research until the time of his death, and had a number of manuscripts in press and preparation. His books included a widely used *Textbook of Entomology* which appeared in three editions and he had almost completed a fourth edition. His book was one of the few entomology textbooks published in foreign editions and appeared in Spanish and Korean.

Dr. Ross was past president (1954–55) and secretary-treasurer (1944–50) of the Entomological Society of America. He was president (1966–67) and secretary (1959–65) of the Society for the Study of Evolution. He was president (1973–74) of the Society of Systematic Zoology. Dr. Ross served as a review panelist for the National Science Foundation; evolution editor of *Biological Abstracts*; on the editorial board of the *Annual Review of Entomology*; as a member of the board of trustees for Bioscience Information Service; on the editorial board of the *Journal of the Georgia Entomological Society*; and, he gave the Founders Memorial Award Lecture for the Entomological Society of America in 1970. Dr. Ross was a Guggenheim Fellow (1951–52) and a Fellow of both the Entomological Society of America and the Royal Entomological Society of London. He was a member of 14 other scientific societies.

During much of his career Professor Ross' research was funded by the National Science Foundation, from whom he had received a new grant 3 months prior to his death. His work was widely recognized in many diverse fields including evolutionary theory, community ecology, biogeography and systematic entomology. Within the Insecta, Professor Ross' work was wide ranging in many orders including the Orthoptera, Plecoptera, Hemiptera, Homoptera, Megaloptera, Neuroptera, Trichoptera, Diptera, and Hymenoptera. He was recognized as a world authority on Trichoptera. He served as major advisor to 27 graduate students who completed their M.S. or Ph.D. degrees under his direction at the University of Illinois or the University of Georgia. The work of his students, as did his own, reflected diverse interests in many orders. Many of his former students have achieved prominence in the scientific community.

Dr. Ross' broad knowledge of insects was unsurpassed. He willingly shared this knowledge with students and fellow colleagues. It is indeed unfortunate that many knew of him only through his scientific works. However, to those who knew him as a person, his death represents a tragic loss. He was a gentleman in every sense of the word, he was a humorist who could illustrate a point with a well chosen story; and, because he was respected throughout the scientific community, many sought his counsel and advice. A conversation with him often added a new dimension to one's own thinking because he asked questions that had not been considered before.

Perhaps his philosophy is best stated in his own words, "Each of us, to the best of our capability, must continually seek new evidence with the full realization that it will probably lead to changes in our ideas. We can become so absorbed in finding answers to questions, that we tend to neglect the importance of discovering new questions, and without new questions we can make no continued scientific progress in man's effort to achieve a better understanding of his universe." Dr. Ross' life and works represent an inspiration to us all.

Dr. Ross is survived by his wife Jean, who resides at 120 Devereux Dr., Athens, Ga.; a sister, Mary Ross of Vancouver, British Columbia; a son, Dr. Charles Alexander Ross and his wife Dr. June Ross of Bellingham, Wash.

A memorial fund has been established jointly by the Illinois

Here's a sample of some of the 10,000+ butterflies, moths, and other insects generously donated to the Department of Entomology by the family of three-degree alumnus and longtime beloved faculty member **Jim Sternburg**, to enliven our teaching mission and instill in students an enduring appreciation of both the biology and the beauty of insects.



DONORS TO ENTOMOLOGY

A heartfelt and emphatic “Thank you!!” to our alumni supporters and friends—we really appreciate your generosity!

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*The Fred H. Schmidt summer award, endowed by his niece and nephew, Margaret and Ed Larsen, commemorates alumnus Fred H. Schmidt, who received a BS degree in 1957 and a master’s degree in entomology here in 1959.

**William H. and Jantorn B. Rufener Endowment Fund for Entomology established to support students and educational programs in the Department of Entomology.

***Donation pledged for the next 5 years to name the Entomology Collections Room in the newly renovated Natural History Building after his father, Dr. Herbert Holdsworth Ross.

(If you gave a donation to the Department of Entomology from 1/1/2015-12/31/2016 and your name is not listed here, please forgive us. Every effort was made to try to obtain a complete list. If you contact us, we will be sure to include your name in the next issue.)

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Please attach photos!

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