

Entomology

Newsletter 2011-2012



Department of Entomology University of Illinois at Urbana-Champaign
(Illini *Cosmosoma* courtesy Alex Wild)

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Message from the Head



Like populations of the northern corn rootworms (*Diabrotica barberi*) with an extended diapause, the UIUC Department of Entomology newsletter seems to take about two years to complete development. Since the last newsletter, there have been many notable developments, not the least of which is that the Department recruited two new faculty members in the same year, a phenomenon that last occurred when Jim Whitfield and Sydney Cameron joined the faculty in 2001. We were fortunate not only to receive permission to recruit Dr. Alexandra Harmon-Threatt, a postdoctoral scholar at Washington University working on pollination ecology and conservation of bumble bees, but also to convince her to join us; she'll be arriving in October 2013. We were also authorized to make a hire to replace 90% of Gene Robinson, not that anyone can replace even a fraction of Gene, who has moved most of his line to the Institute of Genomic Biology, where he's the new director. A marvelous 2012 winter holiday present was Allison Hansen's acceptance of our offer to join our faculty in FY13. Allison works on the microbiomes of homopterans and thus will have the distinction of working on the smallest "bugs" in the department. For FY2012, our Campus Profile size was calculated as 11.48 (I'll let you guess how we ended up with 0.48 of a faculty member). That's up from a FY97 low of 6.98 FTE and much closer to the 12 FTE in the department when I joined in 1980. In other faculty news, we gained affiliates from across the campus: Ed DeWalt, Juma Muturi, Joe Spencer, Rosanna Giordano and Sam Heads joined us from the Illinois Natural History Survey and Saurabh Sinha joined us from the UIUC Department of Computer Science. There were losses, too; NRES affiliate David Onstad, e.g., retired and left for Delaware to work for DuPont. The saddest of the losses was the tragic death of Art Zangerl, a 28-year enthusiastic and indispensable academic professional member of our department, due to an intractable brain tumor. He officially retired in September 2011 and died less than three months later. He is missed on a daily basis and he will be memorialized in a garden at the Pollinarium planted with host plants for larval and adult swallowtail butterflies (his own thoughtful suggestion). Thanks to all alumni and friends who have already contributed to this effort to remember Art.

On the student front, graduate student achievements over the past two years include several Entomological Society of America program awards, University Distinguished Fellowships, and a Howard Hughes Memorial Institute International Student Fellowship. After a long period of benign neglect, our graduate manual was updated, with refinements added to make the proposal-writing component more practical. Along those same lines, an orientation course for incoming students was piloted this fall in collaboration with other departments in the School of Integrative Biology. As for undergraduates, our Individual Plan of Study enrollments have increased, with four seniors set to graduate this year (a step up from when there were only four students in the entire program). Our undergraduate IPS students do well after graduation, too. Robert Orpet, for example, an IPS major who graduated in Spring 2012, is now a graduate student at University of Arizona, which, with alumni Rob Mitchell as a postdoctoral fellow and Mark Carroll as a staff member at the Carl Hayden Bee Research Lab, is becoming a western outpost of UIUC (in a case of turnabout is fair play, our newest faculty member, Allison Hansen, was a postdoctoral fellow with Nancy Moran at University of Arizona). As for staff, we lost faithful, dependable, and highly capable Karen Trame, department secretary, as a result of efforts to consolidate services across the School. After seven months handling the department office alone, Audra Weinstein will welcome a new secretary in January, 2013.

In terms of teaching, the Department offered its usual assortment, along with the welcome return of IB481, Biology of Disease Vectors, taught to perfection by Brian Allan (literally—he received a perfect 5.0 on his ICES evaluation form). IB483, Insect Pathology, however, may go to an online format, at least in part because functional microscopes capable of visualizing insect pathogens aren't readily available on campus and are prohibitively expensive to purchase. With respect to online instruction, M. Alleyne, who is already involved in the delivery of an online master's program in the teaching of biology, has also been spearheading an effort to develop an online master's degree program, coordinating a feasibility study to assess national demand in fall 2012. In addition to offering potential for expanding our student constituency and for maintaining a competitive presence with peers who already offer such a

curriculum, web-based entomology instruction offers all kinds of potential puns about de-bugging software.

Outreach efforts of course continue. The 2011 Insect Fear Film Festival, our 28th, featured killer wasps and festival guest Gordon Yang, producer of “Swarmed,” who flew here from Toronto to introduce the film. IFFF in 2012 featured international ants, with a series of international shorts, a feature film from South Africa, and, courtesy of faculty member/ant whisperer Andy Suarez, a colony of Argentine *Dinoponera australis*, the world’s second-largest ants. At the Pollinatarium, visitor numbers topped 2700 and included not only every second grader in the Champaign Unit 4 schools but students ranging from preschool to college. Speakers in the summer Pollination Fascination lecture series included experts from three UIUC Colleges, the Illinois Natural History Survey, and the community. The Pollinatarium is now an official member of the Museums at the Crossroads Consortium, a group of about a dozen museums within Champaign County, including Rantoul’s Octave Chanute Air Museum, so anyone interested in learning about flying objects can compare its B52s with our bees.

In terms of infrastructure, the Natural History Building, home to most of our classes as well as our teaching collection, is undergoing an extensive renovation, occasioned by the discovery that in 1908, when the “new” part of the building was constructed, contractors apparently ignored building codes and left the building vulnerable to imminent (i.e., within the next 100 years or so) collapse. The bulk of renovation will occur in 2014, at which point we will have to move entirely out of the building and figure out how to accommodate thousands of displaced IB students (possibly in Morrill Hall) along with hundreds of thousands of insects and other invertebrates in our teaching collection.

When the last newsletter was published, we had just learned that we were one of only a tiny handful of campus graduate programs ranked among the top of their field in the National Research Council Research-Doctorates Review. We were also awaiting the results of an ongoing doctoral review program on campus being conducted by the Graduate College. As it turns out, we were one of only nine doctoral programs (of 90 reviewed) to be ranked excellent on all counts. Here’s hoping we can keep the successful run going! This does serve as a reminder, though, that I will be undergoing my fourth fifth-year review during AY13. If the review goes well, I should be on schedule for a fifth five-year review in 2017. I’m mindful, though, that the longest-serving head in department history was Clell Metcalf, who stepped down after serving for 26 years (1921-1947). If I’m the author of the “Message from the Head” for the 2020 edition of our newsletter, you’ll know the record has been broken...



FIGHTING PAPILIONINI



Art Appreciation Day Sept. 19, 2011

Clockwise from left: parsnip webworm cookie cake; parsnip panna cotta; Art receives an honorary street sign from the city of Urbana; Art and Kathe greet former student Ellen Green; May Berenbaum recounts highlights of Art's career for the group; former students/coauthors of Art--Ellen Green, James Nitao, Xianchun Li, Mark Carroll

Menu (based on the fieldwork and publications of Arthur R. Zangerl)

Dutch poached asparagus topped with Roquefort, heirloom tomato, tarragon and lemon
(Zangerl & Berenbaum 2006)

Italian eggplant parmesan medallions
(Zangerl & Berenbaum 2005)

Illini goat cheese log: goat cheese with roasted garlic, Illini honey, rolled in candied pecans
(Berenbaum et al. 1984, 1996; Berenbaum & Zangerl 1986; Zangerl & Berenbaum 1992, 1993)

Italian tomato, baby fresh mozzarella, skewered with Kalamata olive and pepperdew pepper
(Zangerl & Berenbaum 2005)

Austrian potato pancakes topped with sour cream and sautéed apple
(Berenbaum & Zangerl 2006; Zangerl et al. 2008)

German potato pancakes topped with sour cream and chives
(Berenbaum & Zangerl 2006; Zangerl et al. 2008)

Wisconsin beer cheese soup served with French baguette
(Zangerl & Berenbaum 2003, 2005)

Cubes of Dutch Edam and Gouda with fresh-cut fruit and berries
(Ode et al. 2004; Berenbaum & Zangerl 2006)

New Zealand kiwi pavlova
(Zangerl et al. 2008)

Parsnip, goat cheese, & vanilla bean panna cotta
(>75 publications)

Arthur R. Zangerl—in memorium

On December 16, 2011, Dr. Arthur Rainer Zangerl died after a valiant 20-month struggle with glioblastoma multiforme, an exceptionally aggressive and almost always fatal form of brain cancer. Art spent his entire academic career at the University of Illinois at Urbana-Champaign. He first came to the University of Illinois as an undergraduate, earning a B.S. degree in biology in 1974 and subsequently entered the PhD program in Plant Biology (then Botany) to work with Fakhri Bazzaz, obtaining his degree in 1981. In 1983 he returned to the University of Illinois to work as a research associate in the laboratory of May Berenbaum; for the next 28 years they had a remarkably productive collaboration that generated dozens of publications and helped to establish the interaction between the parsnip webworm *Depressaria pastinacella* and the wild parsnip *Pastinaca sativa* as a model system for the study of chemically mediated coevolution. In addition, Art pursued his own independent research in the area of optimal defense theory and worked with a range of other investigators to make significant advances in this field.

Due to his uncanny insights into experimental design and statistical analysis, his almost unlimited capacity to engineer solutions to seemingly intractable problems, and his inexhaustible generosity and good nature, Art contributed substantially to the research of many faculty and students throughout the School of Integrative Biology. Beyond his formal service on thesis and preliminary examination committees, he also unstintingly offered help to many other students and faculty members whenever it was needed. He was also involved in teaching, giving guest lectures in classes in Honors Biology, Plant Biology, and Entomology, offering advanced topic seminars in Entomology and teaching Ecological Genetics in its entirety in 1997 and with Ray Ming from Plant Biology. In 2000, Art was awarded the College of Liberal Arts and Sciences Academic Professional Award; as stated in his nomination letter, “no individual on the campus...has acted more professionally as an academic professional or...has enhanced the academic environment more substantively.” That statement remained true up through his retirement 11 years later.

The high regard in which he was held by his peers was evidenced by the many invitations he received to give lectures at institutions across the country, to participate in international symposia (including Gordon Conferences), to serve on grant panels for the National Science Foundation, and to serve on the editorial boards of *Ecology* and *Ecological Monographs*. With Berenbaum, he was successful in obtaining continuous support for his research from the National Science Foundation. He published over 90 papers (including a 1986 paper in *Ecology* that received the Mercer Award from the Ecological Society of America) and ten book chapters. His impact on the science of entomology, however, extended well beyond his publication record. His encyclopedic knowledge of biology, his unquenchable scientific curiosity, his tremendous energy and his relentless good humor, even in the face of overwhelming challenges, will continue to inspire his friends and colleagues for years to come. At his suggestion, to remember Art, a fund has been established at the UI Pollinarium to create the Arthur R. Zangerl Swallowtail Garden, which will feature larval and adult food plants to bring attention to the local swallowtail populations and to help them to thrive.

Art Zangerl, celebrating his 59th birthday



FACULTY AWARDS AND RECOGNITION



May Berenbaum Receives Tyler Prize

May Berenbaum, University of Illinois entomology professor and department head, received the 2011 Tyler Prize for Environmental Achievement, an international award that recognizes "those individuals who have contributed in an outstanding manner to scientific knowledge and public leadership to preserve and enhance the environment of the world."

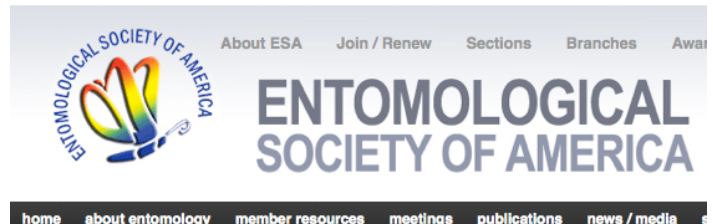
Berenbaum delivered a lecture at the Davidson Conference Center of the University of Southern California, which administers the Tyler Prize. She was accompanied by **ESA Vice President-Elect Robert N. Wiedenmann**, University of Arkansas.

The Tyler Prize consists of a \$200,000 cash prize and a gold medal. Previous Tyler Prize recipients include American biologist and Pulitzer Prize-winning author Edward O. Wilson, primatologist and animal conservationist Jane Goodall and conservation biologist Paul Ehrlich.

In addition to her ongoing research on the chemical interactions between plant-eating insects and their host plants, Berenbaum has built a second career as a science communicator. She has written or co-written numerous books on insect fact and folklore, and she has a regular column in *American Entomologist*.



May Berenbaum with Rob Wiedenmann



Entomological Society of America Names 2012 Fellows

Lanham, MD; August 1, 2012 -- The ESA Governing Board has elected ten new Fellows of the Society for 2012. The election as a Fellow acknowledges outstanding contributions to entomology in one or more of the following: research, teaching, extension, or administration. The following Fellows will be recognized during Entomology 2012 -- ESA's 60th Annual Meeting -- which will be held November 11-14, 2012 in Knoxville, Tennessee:



Dr. Hugh M. Robertson, a professor of entomology and of cell and developmental biology at the University of Illinois at Urbana-Champaign (UIUC), is internationally recognized for his research on transposons, chemoreception, and genomes of insects. Robertson was born in Johannesburg, South Africa in 1955 and grew up in East London, where he attended Selbourne College. After a year at the University of Cape Town in 1974, he moved to the University of the Witwatersrand in Johannesburg, where he earned his BSc in zoology and biochemistry in 1976, and his PhD in zoology with Hugh E. H. Paterson in 1982. He moved to the USA for a Guyer postdoctoral fellowship in the Zoology Department at the University of Wisconsin at Madison with Jack P. Hailman, followed by a second postdoctoral in genetics with William R. Engels. In 1987 he was appointed assistant professor in the Department of Entomology at UIUC, and promoted to associate and full professor in 1993 and 1999. Robertson's research began with studies of the mating behavior of damselflies and *Drosophila* flies, followed by two decades of studies of transposons in insect genomes, starting with postdoctoral work on P elements in *Drosophila* and ending with studies of horizontal transfer of transposons between animal genomes. Around the turn of the century he redirected his primary research focus and the efforts of his laboratory to the molecular basis of olfaction and gustation in insects, starting with odorant binding proteins and moving on to odorant and gustatory receptors. He also broadened his research to other aspects of insect molecular biology, primarily gleaned from new public insect genome projects, such as circadian rhythms, methylation, and telomeres. He was involved in most public insect and other arthropod genome projects beyond *Drosophila*, playing a central role in the honey bee genome project. His small laboratory is currently involved in sequencing several insect genomes in collaboration with others. He is an author on 108 research papers and 18 other publications. Robertson has been an invited speaker at meetings around the world, most recently at the Sixth International Symposium on Molecular Insect Science in Amsterdam, and the XXIV International Congress of Entomology in Daegu, South Korea, where he will receive a Certificate of Distinction. His other honors include being named a University and a Romano Professorial Scholar at UIUC, and he is a fellow of the American Association for the Advancement of Science. He has served as an associate editor of *Insect Molecular Biology* for eight years. He has advised many undergraduates, ten MS, and eight PhD students, and three postdoctoral fellows, many of whom have gone on to successful careers in biology. Robertson is married to an artist, Christina J. Nordholm, and has a stepson, Gabriel, and a daughter, Erica. His major hobby is sailing, including windsurfing and kiteboarding.

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Hugh Robertson Wins ICE Certificate of Distinction

Dr. Hugh Robertson, a professor at the University of Illinois at Urbana-Champaign, has been awarded a Certificate of Distinction from the International Congress of Entomology (ICE) for his fundamental contributions to insect genome science, involving collaborators on five continents. This prestigious award, which is only given three times (at most) every four years, will be presented to Dr. Robertson at the opening ceremony of the next Congress to be held in Daegu, South Korea in August 2012. It will include a cash prize of \$5,000.

Dr. Robertson's phenomenal mastery of insect genetics, coupled with his keen understanding of insect biology, has allowed him to become an international leader in the field of insect genomics. It can be stated without exaggeration that he is one of the field's most extraordinary scientists.

He is legendary as probably the only person who has played a role in virtually every single insect genome project, starting with the first (*Drosophila melanogaster*). He has unparalleled understanding of genome organization and structure as a whole, in addition to deep knowledge of key gene families, notably the chemoreceptors. It is always the case that the genes that Robertson works on in any genome project are the best analyzed of any other genes in that genome. Everyone who works on any insect genome knows and respects Hugh Robertson. To cite one example, Dr. Robertson played a key role in the annotation of the honey bee genome, notably contributing to manual superscaffolding of chromosomes 12-16, and his work has inspired and provided a variety of invaluable honey bee genomic tools for use by the entire entomological community, blazing a trail in comparative genomic analysis.



He contributed similarly to the annotation of the genomes of two mosquitoes (*Anopheles gambiae*, *Aedes aegypti*), the head louse *Pediculus humanus*, the red flour beetle *Tribolium castaneum*, the pea aphid *Acyrtosiphon pisum*, and several ant genomes; his collaborators on these projects live in almost two dozen countries (Canada, England, Italy, Spain, France, Germany, Switzerland, Denmark, Belgium, Sweden, Russia, Czech Republic, Slovakia, Israel, Japan, China, Korea, Australia, New Zealand, Brazil) on every continent except Antarctica. Most recently, Dr. Robertson dedicated his sabbatical leave to assisting with the tsetse fly genome, a project based in his native South Africa and as such the first insect genome project that has involved developing nations in a leadership role since its inception.

Beyond contributing to collaborative genome annotation efforts, Dr. Robertson has become a leading authority on the exceptionally large and complex gene family of chemoreceptors in insects and other invertebrates, which play a critical role in food-finding and mate location and thus are likely targets for species-specific sustainable pest management approaches. Dr. Robertson began this effort using sequence information available from nematode genome projects to analyze the evolution of this extremely large family of genes, with a focus on the loss (frequent) and gain (rare) of introns, non-coding regions of DNA. As insect genomes came online, Dr. Robertson thus had laid a solid foundation for understanding the evolution of this huge gene superfamily in insects.



Thomas Say Award—This award acknowledges significant and outstanding work in the fields of insect systematics, morphology, or evolution. **Dr. James B. Whitfield** is professor of entomology at the University of Illinois at Urbana-Champaign, and an associate research scientist at the Illinois Natural History Survey. His research focuses on the systematics and ecology of parasitoid wasps, especially microgastrine Braconidae, that attack caterpillars. His fieldwork has taken him over much of the world, with a special emphasis on neotropical forests where the wasps are highly diverse. A special interest in this group of wasps is their coevolution with symbiotic polydnnaviruses, which his research has helped elucidate. He also has been deeply committed to teaching courses in insect systematics and invertebrate zoology, and he is currently lead author (with Sandy Purcell, Howell Daly, and John Doyen) of the third edition of the *Introduction to Insect Biology and Diversity*. He has published over 120 journal articles and book chapters, and has been a recipient of 15 grants from the National Science Foundation.



Integrated Pest Management Team Award—Sponsored by Dow AgroSciences, this award recognizes the successful pest-control efforts of a small, collaborative work team which includes at least one entomologist from the private sector and one from the public sector. **The European Corn Borer (ECB) Team** documented a \$6.9 billion cumulative benefit to U.S. corn producers resulting from 14 years of areawide suppression of the pest *Ostrinia nubilalis* (Hübner) following the adoption of transgenic corn, specifically corn hybrids expressing one or more insecticidal proteins of the bacterium *Bacillus thuringiensis*. The team found a significant and substantial decline in ECB larval and moth populations for five major corn-growing states in the central U.S. Corn Belt. Historically, ECB has been the most widespread insect pest of U.S. corn, responsible for an estimated annual loss of \$1 billion.

The team had access to, or collected, long-term (50+ years) larval and moth population data that allowed a quantitative analysis of population change before and after the introduction of *Bt* corn. In brief, the areawide suppression occurs over time because *Bt* corn, as a form of host plant resistance, continues to be highly effective, providing virtually 100% control of the pest with no field-evolved resistance to *Bt*. Once young larvae take their first bites, they ingest lethal doses and die within a few days. Since female moths cannot distinguish *Bt* corn from non-*Bt* corn, the *Bt* corn acts as a "trap crop," and local infestations decline over time. The analysis confirmed that in addition to the direct benefits to *Bt* corn producers, nearly 63% of the savings (\$4.9 billion) actually accrued to non-*Bt* corn growers. Non-*Bt* corn growers benefit from very low infestations in these fields, and their production costs are lower since they are not paying *Bt* corn technology fees. The team's findings were reported by Science, NPR, the Associated Press, German Public Radio and other news outlets. **ECB Team members include Bill Hutchison, Eric Burkness, and Roger Moon** (University of Minnesota); **Paul Mitchell** (University of Wisconsin); **Mike Gray** (University of Illinois); **Rick Hellmich** (USDA-ARS); **Kevin Steffey** (Dow AgroSciences); **Von Kaster** (Syngenta); **Tom Hunt** and **Bob Wright** (University of Nebraska). In addition, several associate team members were instrumental to this project, including Shelby Fleischer (Penn State University), Mark Abrahamson (Minnesota Department of Agriculture), K. Hamilton (Wisconsin Department of Agriculture), K. Pecinovsky (Iowa State University), Tim Leslie (Long Island University), Brian Flood (DelMonte Foods), Tom Rabaey (General Mills) and Earl Raun (University of Nebraska).

Photo: Hugh Robertson with Rob Mitchell, Annie Ray and David Lampe outside Daegu, Korea



Sydney Cameron wins prestigious Fulbright Scholars award; Dr. Cameron traveled to Argentina to aid in developing a large-scale study assessing bumble bee decline that was recently mandated by the International Union for Conservation of Nature. While in Argentina, she also lectured on phylogenetics and conservation genetics at the Universidad Nacional del Comahue and delivered a keynote address to the Argentine Congress of Entomology.



Bugscope, an online project that provides access for students around the country to a powerful electron microscope was selected by the journal *Science* to win the July Science Prize for Online Resources in Education (SPORE).

Entomological Society of America President's Prize for Student Oral Presentations Competition: Rob Mitchell and Nick Naeger 2011; Fred Larabee in 2012

In 2011, Affiliate Joe Spencer won an Entomological Society of America award for his short film "Prairie Cicadas at Loda Prairie." His video won the Instruction category and Joe received \$200.00 and a trophy at the 2011 meeting in Reno, Nevada. Here's a link to all of the winning videos:

<http://www.entsoc.org/2011-youtube-your-entomology-videos>



2011 International Achievement Award Recipients

The University of Illinois at Urbana-Champaign honored alumni, faculty, and students at the annual International Achievement Awards banquet on April 12.

Dr. Sri Mulyani Indrawati, a native of Indonesia and winner of the 2011 Alumni Award, is currently one of three managing directors of the World Bank Group.

Before taking her position with the World Bank Group in June 2010, Dr. Indrawati was appointed to Minister of Finance of Indonesia by President Susilo Bambang Yudhoyono, where she held that position from 2005 to 2010. Through an economic crisis, Dr. Indrawati managed to help guide Southeast Asia's largest economy into a period of strong growth. Dr. Indrawati received her Master's and PhD in Economics from the University of Illinois at Urbana-Champaign in 1992.

The Sheth Distinguished Faculty Award for International Achievement was presented to **Dr. Barry Pittendrigh**, C.W. Kearns, C.L. Metcalf, and W. P. Flint Endowed Chair in Insect Toxicology in the Department of Entomology at Illinois. Dr. Pittendrigh is being honored for his efforts in putting educational solutions into the hands of local farmers in West Africa, in particular cowpea pest control strategies he developed through a USAID-funded project. The Scientific Animations Without Borders project creates animated videos, with voice overlaid in local languages, to educate low literacy learners on topics that can improve the quality of their lives.



2011 Award winners Sri Mulyani Indrawati, Barry Pittendrigh, Benjamin Barnes, Aaron Shultz, and Dana Fager were honored at the International Achievement Awards Banquet April 12, 2012.

Photo courtesy Andrew Gleason

Dr. Andrew Suarez, named Perry Adkisson Distinguished Seminar speaker, Texas A&M



Student research and teaching recognition

Linnaean Games 2012!

The University of Illinois Linnaean Games team

(Pictured: Allen Lawrance, Alice Vossbrinck, Alan Yanahan, Katherine Noble; missing from photo is Catherine Dana)



List of Excellent Teachers at UIUC (indicates Outstanding rating)*

Fall 2010

May Berenbaum, Juraj Cech, Michelle Duennes, Larry Hanks, Mathys Meyer, Nicholas Naeger, Katherine Noble*, Laura Steele, Andrew Suarez, Alice Vossbrinck

Spring 2011

Brian Allan*, May Berenbaum (109, 199), Juraj Cech, Michelle Duennes*, Jo-anne Holley*, Fred Larabee, Gwyn Puckett*, Johnny Yu

Fall 2011

Catherine Dana, Andrew Debevec, Mark Demkovich, Lawrence Hanks (401, 482)*, Jo-anne Holley, Jungkoo Kang, Sindhu Krishnankutty, Tara McGill, Linnea Meier, James Whitfield, Joseph Wong, Johnny Yu

Spring 2012

Brian Allan (361, 526)*, Jo-anne Holley*, Fred Larabee, Tara McGill, Andrew Suarez, James Whitfield

Fall 2012

Sarah Hughson, Andrea Walker, Jungkoo Kang, Mark Demkovich, Bettina Francis, May Berenbaum, Nicholas Naeger, Marsha Wheeler, Andrew Suarez, Frederick Larabee, Lawrence Hanks, Tania Jogesh

Ellis MacLeod/DuPont Award for Outstanding Teaching – Rob Mitchell (2011), Jo-Anne Holley (2012)

Campus awards

Undergraduate Entomology Research Award – Allen Lawrance (2011); Alan Yanahan (2011); Phoebe Barkan (2012); Claire Johnson (2012); Robert Orpet (2012)

Robert H. Davis Undergraduate Research Prize – Claire Johnson (2011)

Robert Emerson Memorial Grant – Robert Mitchell (2012)

Isabel Norton Award – Sindhu Krishnankutty (2011); Robert Mitchell (2012)

Lebus Fund Award – Michelle Duennes (2011)

Francis M. and Harlie M. Clark Research Support Award – Fred Larabee (2011); Jaqui O'Connor (2011); Diana Arias Penna (2011); Scott Shreve (2011); Joe Wong (2011); Tania Jogesh (2012); Brendan Morris (2012); Andrea Walker (2012)

Herbert Holdsworth Ross Memorial Fund Award – 2011: Aron Katz, Sindhu Krishnankutty, Massimo Pessino, Mami Randrianandrasana; 2012: Tania Jogesh, Fred Larabee, Brendan Morris, Andrea Walker

PEEB: Most Outstanding Talk by a pre-prelim/MS student candidate- Nicholas Naeger (2012)

Ellis MacLeod/DuPont Award for Outstanding Teaching – Robert Mitchell (2011); Jo-anne Holley (2012)

John G. & Evelyn Hartman Heiligenstein outstanding Teaching Assistant – Nicholas Naeger (2011)

2010-2012 Environmental Toxicology Scholar – Ling-Hsiu Liao

2011-2014 Illinois Distinguished Fellowships – Andrew Debevec

2012-2015 Illinois Distinguished Fellowships – John Maddux

2011-2012 Illinois Fellowship – Allen Lawrance

2011 Dissertation Travel Grant – Jo-anne Holley

2012-2013 Dissertation Completion Fellowship – Scott Shreve

2011-2012 Cell and Molecular Biology Training Grant – Katherine Noble

2009-2011 Cell and Molecular Biology Training Grant – Marsha Wheeler

Society of Systematic Biologists Awards for Graduate Student Research – Aron Katz

Off-campus awards

2012 Howard Hughes Memorial Institute International Research Fellowship – Tolulope Agunbiade

Entomological Society of America President's Prize for Student Oral Presentations Competition: Rob Mitchell and Nick Naeger 2011; Fred Larabee in 2012

Pollinatarium news

The UI Pollinatarium officially opened to the public in June 2009; in 2012 alone, over 2700 people came to visit. In their numbers were students in every second grade class in Champaign, home schoolers, Urbana school district fourth graders, Parkland College classes, visiting beekeepers, Girl Scouts, Boy Scouts, passers-by, master gardeners, master naturalists, an agricultural tour group from Montana, and a few bee biology celebrities. We're now the official meeting site of the Illinois State Beekeepers Association, official participants in the Central Illinois Museum Consortium (and hosted three meetings), and official partners with UI Department of Plant Biology graduate students in their outreach program called Plants iView, to work with Urbana Middle School to offer a plant-themed after-school program.

Some of the visitors we've had at the Pollinatarium in 2012:

Elementary

Public: All of Champaign Unit 4 Second grade classes [-900]; students from Barkstall, Kenwood, Southside, Stratton, Bottenfield, Carrie Busey, Dr. Howard, Garden Hills, Robeson, Washington, Westview

Private: St. Thomas Catholic School(K-3), St. John's Lutheran Buckley, IL (1st grade), Chesterbrook Academy, Prince of Peace Community Early Learning, St. Joseph,IL (Kindergarten, First, Second, Third, Fourth, Fifth), Next Generation, Champaign, IL (2nd & 3rd)

Middle School (5-8): Heritage Prep Academy (6th), Chicago Public Schools through Peg O'Donoghue, Associate Chancellor, Thomas Jefferson Middle School (7th grade science), JW Eater School- Rantoul, IL (6th grade)

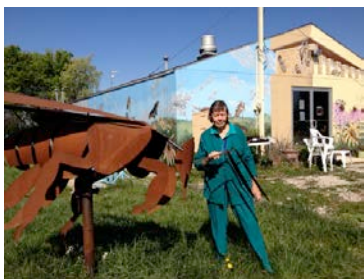
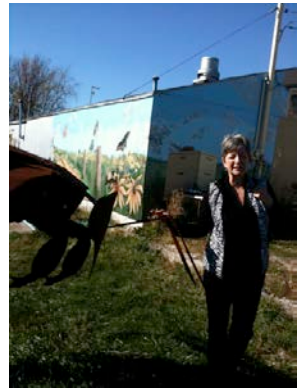
High School: 4-H Summer camp Crop Sciences (8-12th grade); RAP I Biotechnology program, Dept Crop Sciences

College: Lincoln College, Lincoln, IL; Parkland Community College Plant Biology class; Parkland Community College Introduction to Horticulture class, Parkland Community College Environmental Biology class; Parkland Community College Plant Biology class; University of Minnesota; UIUC IB401 Introduction to Entomology; UIUC CPSC 270 Applied Entomology; UIUC Counseling centers paraprofessional elementary education

Community Groups: UIUC Plants iView Urbana Middle School; Urbana Park District Spring Day Camp; Cub Scout Pack 55 – Tolono, IL; Orpheum Girls Do Science camp; TAP IN Academy (middle school); National Pollinator Week 2012-- Insects and Music performance at the Pollinatarium, Alex Wild's photography workshop, Bee ID and bee box workshop; Agronomy Day Tours; Champaign County Audubon Society

Visitors from 14 states: *Arizona* (Tucson), *California* (Fullerton, Parlier, San Carlos, San Francisco, Sebastopol), *Connecticut* (Middletown, New Haven), *Florida* (Gainesville), *Illinois* (Arlington Heights, Buckley, Carlinville, Carlyle, Carol Stream, Champaign, Chicago, Cissna Park, Dewey, Elgin, Elwood, Hoffman Estates, Hopedale, Lincoln, Lombard, Mahomet, Monticello, Mount Vernon, Normal, Paxton, Peoria, Plainfield, Rantoul, Rochester, Rockford, Savoy, Schaumburg, St. Joseph, Tolono, Tuscola, Urbana, Waggoner), *Indiana* (Anderson, Mishawaka), *Kentucky* (Frankfort), *Massachusetts* (Arlington), *Michigan* (Albion), *Minnesota* (Lake Elmo, Lakeville, New Ulm), *New York* (Ithaca, New York City), *Oregon* (Portland), *Texas* (San Marcos), *Wisconsin* (Cedar Grove, Madison), *Washington, DC*; *Wyoming*
And six countries (Bulgaria, Canada, Colombia, Italy, Korea, UK)

Photos (next page): Top row, l-r: National Academy of Sciences Home Secretary John Brauman, Executive Director Ken Fulton, Foreign Secretary Michael Clegg, May Berenbaum; Dr. Randy Cohen (1987 alumnus) with family: Alan Berenbaum, SMSC NY, seminar speaker for Electrical and Computer Engineering; *Second row,* Dan Papaj/University of Arizona, Jay Evans/USDA-ARS Beltsville MD, Joel Siegel/USDA-ARS Parlier CA, Patrice LeGro/Koshland Museum; *Third row,* Marla Spivak/University of Minnesota, Johanne Brunet/University of Wisconsin, Ring Carde/University of California Riverside; *Fourth row,* Mark Moffet/Harvard University, Richard Conniff/Old Lyme CT; *Fifth row,* Mary Lou Barker/Tucson AZ, Bert Holldobler/Arizona State University, Chancellor Nancy Wise and Gene Robinson/UIUC

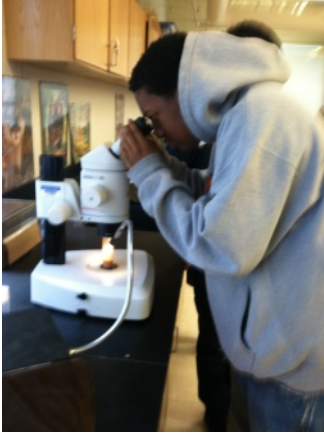


“Night Bugs” event launches National Moth Week (by Terry Harrison)

On the evening of Saturday, July 21, 2012, the UIUC Pollinarium hosted Night Bugs, as a run-up to the first-ever National Moth Week (July 23-29). For the Night Bugs event, three “black light sheets” were set up on the trail between the prairie and wooded areas on the Pollinarium grounds. As darkness fell, the approximately 30 insect enthusiasts of all ages who attended the gathering began checking the sheets to find insects that were attracted to the black-lights. Insects of interest were collected into plastic Petri dishes and brought inside the Pollinarium, where they were given an up-close and personal inspection under dissecting microscopes before being returned to the outdoors and released. Expert entomologists were on hand to identify and provide information about the captive critters so that the collectors were able to learn a little bit about what they were seeing under the scopes. By the time the event wound down around 11pm, many interesting insect species had passed under the scopes. Appropriately to the spirit of National Moth Week, moths put in a respectable showing. In particular, there were quite a number of species characteristic of the prairie planting, including *Stereomita andropogonis* (larva in flowers of big bluestem grass), *Coleotechnites eryngiella* (flowers of rattlesnake master), two species of *Mompha* (stems of evening primrose), and various *Eucosma* and *Epiblema* species (roots of prairie composites). Also appearing was *Fulgoraecia exigua* (the only North American species of the small family Epipyropidae), the larva of which is unusual for a moth, in that it is carnivorous on planthoppers.



Outreach-- Urbana Middle School



National Pollinator Week 2011-2012



UIUC Entomologists Explore Cambodia, the Kingdom of Wonder!

By Fred Larabee

In June 2012, several members of the Suarez lab travelled to the Cardamom Mountains in southwestern Cambodia to collect ants for a variety of projects. In addition to Andy Suarez, the team consisted of Dietrich Gotzek (post-doctoral researcher in Animal Biology), Bill Wills (graduate student in Animal Biology), Fred Larabee (Entomology), John LaPolla (Assistant Professor from Towson University) and Brad Wright (graduate student from Towson University). We received a tremendous amount of help organizing the expedition from Vittoria Elliott and La Pengly from Conservation International.

The primary purpose of the trip was to characterize the ant biodiversity of the rainforests of the Cardamom Mountains. This area contains the highest, wettest and (until very recently) largest continuous tract of evergreen forest in Cambodia and is notable for its isolation from other mountain ranges in the region. A half-century of political conflict has prevented fieldwork in Cambodia, and, because of its remoteness, the Cardamoms have been particularly underexplored. With assistance from the local Forest Ministry and CI, our goal was to survey as many different habitat types at different elevations as we could in one week of collecting in the Phnom Somkos Wildlife Sanctuary. We sampled litter ants using a standardized ant survey technique (Winkler litter sampling) and hand-collected in rotten logs, under stones, inside twigs, and anywhere else we could think to look. All the ant specimens are currently being DNA barcoded and vouchered at the Smithsonian Institution for use by other ant researchers. A secondary project we worked on was for the Ants at the Global Picnic project, headed by Rob Dunn (North Carolina State) and Nate Sanders (University of Tennessee). The purpose of this research is to measure variation in the response of ant communities to different type of resources throughout the globe. At last count, data have been collected at over 175 sites worldwide with the Suarez lab contributing data from Cambodia, Uganda, Argentina, Arizona, Florida and Illinois.

Finally, we also hunted for trap-jaw ants for a comparative biomechanics project Andy and Fred are working on. Colonies were found mostly under rotten logs and in leaf-litter and were collected live to bring back to the United States. In all, we found fifteen colonies of *Odontomachus* and two colonies of *Anochetus* species. Thankfully, all colonies survived the trip home and are currently happily living in Morrill Hall. The mandible snaps of these ants have been filmed with high-speed videography and this fall we will use X-ray CT-scans to examine the morphology of their mandible muscles.

In addition to the amazing ants we collected, we were fortunate to find many other entomological treats. We saw leks of stalk-eyed flies (family Diopsidae), enormous *Scolopendra* centipedes, vinegaroons, membracids with truly astonishing pronotal ornaments, and earwigs with cerci at least two centimeters long. And then there were the literal entomological treats: many restaurants served arthropods as main dishes. We sampled roasted crickets from a street vendor and found a restaurant that served weaver ants and tarantulas (all of them were delicious). I guess there were some vertebrates too... (for the curious we saw gibbons, macaque monkeys, hornbills, giant geckos, eagles, and many other amazing birds).

The trip was not without some casualties. Nearly everyone dealt with dehydration and some kind of gastrointestinal problem (Andy was the exception; he was particularly choosy about what he ate and drank). And then there were the blood-sucking parasites... The station sleeping area was infested with fleas, ticks were in grassy meadows, mosquitos were ever-present in the wet forests, horse flies were occasional pests, and the land leeches haunted all of our dreams. Despite constant application of insect repellent, Fred managed to catch dengue fever. Based on when the symptoms showed up, it was probably from a mosquito in the capital, Phnom Penh, where he least expected it. Dietrich was also incapacitated by some unknown illness for a week after he returned to Illinois.

Photos 1, 2, 3 taken by photographer Stéphane De Greef

Photos 4, 5, 6 taken by Fred Larabee

Fred, Andy and Bill collect *Odontomachus* trap-jaw ants from a rotten log.



Fred and Andy sort specimens after a long day of collecting



The Team



John and Dietrich share a lunch of rice while out in the field



Fred and Dietrich keep dry
Bill and Fred crammed into the back of the truck

Entomological Society of America Mixers 2010-2012



Illinois Entomologists in the News

8/25/2012: Professor Jim Whitfield has recently been elected the new President-Elect of the International Society of Hymenopterists.

7/26/2012: Scientific Animations Without Borders (SAWBO) has been selected to receive the 2012 Champaign-Urbana International Humanitarian Award in the area of Research/Education.

6/13/2012: Congratulations to Department Head May Berenbaum, who was recently named an Honorary Fellow of the Royal Entomological Society, in recognition for her eminent and distinguished service to the field of entomology!

6/12/2012: The Robinson lab develops a technique to probe the relationship between gene expression and transcription factors in the honey bee.

3/31/2012: The Bee Research Facility and the Institute for Genomic Biology offered a short course "Bees and Beekeeping" on Saturday, March 31, 2012.

3/13/2012 : Emeritus Professor Gilbert Waldbauer's newly released book, *How Not to Be Eaten: The Insects Fight Back*, details the amazing strategies insects employ to find their food -- and to prevent themselves from being food!

3/9/2012: The Robinson lab investigates the molecular basis of novelty-seeking behavior in honey bee scouting and foraging (*Science*)

2/15/2012: Dr. Sam Heads and Dr. Steve Taylor describe a new species of a grasshopper-like insect from Belize (*ZooKeys*).

2/7/2012: Professor Brian Allan collaborates on a study investigating the response of squirrels and raccoons to increased tick density (*EcoHealth*).

1/26/2012: The Pittendrigh Lab appears on *America's Heartland*, speaking about the Scientific Animations Without Borders project.

12/5/2011: Dr. Andrew Suarez contributes to a study regarding mutualistic interactions in the imported red fire ant (*PNAS*).

11/18/2011: Department head May Berenbaum discusses her five favorite insect books (The Browser).

10/5/2011: Dr. James Whitfield collaborates on a study that infers traits of the last universal common ancestor, the most recent organism from which all life descends (*Biology Direct*).

9/27/2011: The Robinson lab links observed behavioral states in bees to discrete patterns of expressed genes (*PNAS*).

7/29/2011: The BugScope project at the University of Illinois has been awarded the Science Prize for Online Resources in Education! Bugscope is an online service provided through the UI Beckman Institute and allows classrooms anywhere in the world to remotely control a scanning electron microscope and view insects on a grand scale. The browser-based software includes a live chat session where students can have questions answered by Bugscope staff as well as volunteers from the Department of Entomology (*Science*)

7/20/2011: Postdoctoral researcher Dr. Wenfu Mao leads a study identifying several detoxification enzymes in honey bees that break down pesticides (*PNAS*).

6/20/2011: Department head May Berenbaum discusses honey bee decline in a brief interview (*Smithsonian Magazine*).

6/15/2011: Dr. Gene Robinson discusses the new i5k initiative to sequence the genomes of 5,000 insects (*American Entomologist*, *PCT Magazine*).

5/25/2011: Dr. Gene Robinson discusses the recent finding that queen determination in honey bees is primarily driven by a specific and strongly conserved protein in royal jelly (*Nature*).

4/22/2011: The Pittendrigh lab identifies cellular pathways in *Drosophila melanogaster* that are affected by methamphetamines (*PLoS ONE*).

4/12/2011: Members of the Robinson lab compare sequence data from ten bee species to identify several genes and biological processes in social insects that may be driving the evolution of sociality (*PNAS*)

4/5/2011: Dr. Kevin Johnson and colleagues demonstrate that lice diversified before the Cretaceous-Tertiary extinction, suggesting a much earlier date for the radiation of birds and mammals (*Biology Letters*)

3/10/2011: Dr. Brian Allan discusses the ecology behind the recent spike in tick-borne diseases (MSNBC).

3/1/2011: Members of the Pittendrigh lab develop instructive animated videos that play in cell phones, which will be used in educational programs in developing nations (CNET).

2/4/2011: Postdoctoral researcher Dr. Sam Heads describes the first fossil representative of the extant grasshopper genus *Schizodactylus*, and finds that the genus has changed very little despite 100 million years of evolution (*ZooKeys*).

1/31/2011: Congratulations to department head May Berenbaum, who has been awarded the UI College of Liberal Arts & Sciences Dean's Award for Undergraduate Teaching!

11/17/2010: Dr. Sydney Cameron discusses the bumble bee decline in North America (Nature News).

9/28/2010: The University of Illinois has the highest ranked entomology doctoral program nationwide, according to an analysis conducted by the National Research Council. The data were obtained from a variety of statistics from the 2005-6 academic year, including faculty publications, grants, student GRE scores, financial support, program size, and time to degree. For more information and to view the data, visit the National Academies Press and view the free download options.

9/15/2010: Dr. Andrew Suarez is named as one of six University Scholars at the University of Illinois.

LOCAL

The News-Gazette
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UI RESEARCHER

BUMBLEBEES IN DISTRESS

Prof's in-depth study shows populations are taking big hits

By PAUL WOOD

wood@news-gazette.com

URBANA — Scientists know that bee populations are suffering disastrous drops in population, especially among commercial bees used in agriculture.

But a University of Illinois researcher has conducted the first in-depth national study of bumblebees in the wild, and she says the results are distressing.

Entomology Professor Sydney Cameron said that bumblebees, which are critical in pollinating berries and heirloom tomatoes, have suffered declines in population and in their geographic range since records keeping began in the late 1800s.

Cameron's two teams, one in the west centered at Utah State University, and one in the east, searched out museum and university collections for records of bumblebee population and diversity; then went into the wild over the course of three years.

They found that endangered bumblebee populations have lower genetic diversity than healthy bumblebee species. Among the endangered species is *Bombus pennsylvanicus*, once one of the most common bumblebees in the Midwest.

The endangered species are also likely to be infected with *Nosema bombus*, a fungal parasite.

Cameron said researchers have yet to prove a cause-and-effect relationship between the parasite and the decline, but the problem deserves further study.

Funguses are known to hurt frog and bat populations, she added.

The study, whose co-authors include Jeffrey D. Leichter and Leslie F. Soltz, is in the *Proceedings of the National Academy of Sciences*.

The abstract of the study, "Patterns of Widespread Decline in North American Bumble Bees," is available at <http://dx.doi.org/10.1073/pnas.1014428107>.

Cameron said the analysis found that populations of four of the eight species studied have declined by as much as 96 percent, and their surveyed geographic ranges have shrunk as much as 87 percent.

"We have 50 species of bumblebees in North America. We've studied eight of them and four of these are significantly in trouble," said Cameron, who led the study. "They could potentially recover; some of them might. But we only studied eight. This could be the tip of the iceberg," she said.

The study looked at eight species of bumblebees in the U.S., relying on historical records. One of them is now extinct or heading in that direction,



The News-Gazette

University of Illinois entomology Professor Sydney Cameron holds a museum drawer full of different species of bumblebees in a systematic lab at Morrill Hall in Urbana on Wednesday. She is studying why wild bees are dying off.

Attract bumblebees to your yard

You can encourage bumblebees to visit your yard by planting native and other plants from the list compiled by University of Illinois Professor Sydney Cameron and a former student at U-I, Heather Hines.

All herbs, especially carnit, lavender (from the Mediterranean, but hybrids should grow here), agastache, wild bergamot (monarda), boragin,

wild roses (the single petal, old-fashioned variety, such as Rugosa), Japanese anemone, frog shoe (depaul), Jacob's Ladder (*Polemonium*), campanula (blue bell), lachesis (butterfly bush — many varieties and colors, but the best seem to be the blues and purples), later summer flowers such as sunflowers, goldenrods and asters bloom; clover.

tion, the professor said.

The researchers compiled a database of more than 73,000 museum records, then went into the field to get more than 16,000 specimens from those 400 sites.

"Because it was a conservation mission, we retained the bees we didn't need," she said.

Some of these contractions have occurred in the last two decades.

Cameron said people should be aware of the decline as a loss to nature and to the agricultural industry.

She encourages people to plant native species that can provide habitat for the big bees.

"We have 50 species of bumblebees in North America. We've studied eight of them and four of these are significantly in trouble."

SYDNEY CAMERON

University of Illinois entomology professor

Faculty



Brian Allan. A lot has happened in the Allan Lab over the last two years! Most notably, the lab has expanded from “just Brian” at the time of the last newsletter to now include an adroit team of postdocs, grad students, technicians, and undergrads. Multiple projects in medical entomology are now up and running, and here are a few of the highlights. Dr. Andrew Mackay is leading a study on urban wetlands and their role in the ecology of mosquito populations and mosquito-borne diseases such as West Nile virus. Dr. Page Fredericks and Johnny Yu are supervising multiple projects in the molecular lab revolving around the identification of pathogens and host DNA in vectors with long life cycles (e.g., ticks and kissing bugs).

Ph.D. student Allie Gardner is conducting experiments to understand mosquito oviposition habitat selection based upon the composition of leaf litter in aquatic mesocosms. And Brian is supervising umpteen projects on ticks in the midwestern U.S. while starting a new project also on ticks in Kenya. The Kenya project is off to a great start – Brian made a trip to the region in July for preliminary field surveys. Kenya is an amazing place for biology in general, and tick biology in particular, since it is the global hotspot for tick diversity! Over 70 species of ticks have been reported from Kenya, and Brian found more than a few of them on this recent trip. It was tick heaven.

Teaching continues to be fun for Brian, who has resurrected the departmental course in vector biology. It is a course that was once taught by absolute luminaries from the field of medical entomology at UIUC, so it’s an honor simply to be teaching the course that was once taught by Hoogstraal. The first crop of undergraduate and graduate students completed the first iteration of the course this spring, and it will hopefully be a consistent course offering in the future. The next two years will hopefully be more of the same for research and teaching – setting up new projects and wrapping up old ones while involving students in research both in the lab and in the classroom. I expect the next two years will pass as fast as the last two – time flies when you’re catching ticks!

May Berenbaum. That I’m writing a newsletter update for 2012 means that the dire predictions about the



Mayan calendar and the end of days were a little off. In the absence of an apocalypse, then, Mayan entomology is an apt theme for this newsletter update. The stingless meliponine bees called *xunan-kab* (*Melipona beecheii* and its relatives) were arguably the most important domesticated species in Mayan civilization, kept traditionally in log hives by Mayans for over 2000 years; their honey was so valuable as a sweetener and medicine that it was used as a medium of exchange. Sadly, due to deforestation and Africanized honey bee incursions, the stingless bees and stingless beekeeping are now endangered. Of course, challenges to beekeeping are not unique—American apiculture has had tough times, too. Over the past two years, we’ve been working to figure out how honey bees metabolize the multitudinous pesticides they encounter as a consequence of modern agricultural and apicultural practices; postdoctoral associate Wenfu Mao has identified three

cytochrome P450 monooxygenases that metabolize pyrethroids and organophosphates and student Ling-Hsiu Liao is characterizing the esterases that break down essential oils in flowers and in beehives treated for varroa mites. Much of my travel this year was bee-related. In September, I went to Arlington, VA for the acronym-dense EPA FIFRA SAP (Environmental Protection Agency Federal Insecticide Fungicide Rodenticide Act Scientific Advisory Panel), and a month later I went to Alexandria, VA for the National Stakeholders Conference on Honey Bee Health. In between, I went to Bozeman, Montana, where I was (unexpectedly) one of three people to receive the E. O. Wilson Biodiversity Technology award. Much to my great embarrassment, the program spectacularly misidentified me as “the world’s foremost bee entomologist”; truth be told, I’m not even the University of Illinois’s foremost bee entomologist (indisputably Gene Robinson!). D deservedly or not, I thoroughly enjoyed the trip to Bozeman, the best part of which was visiting Yellowstone National Park with the legendary Edward O. Wilson, whose ear I

talked off during our 3-hour round-trip bus commute from Montana State to the Park. When Chicago's Garfield Park Conservatory invited me in November to speak at their beekeeping workshop, I took advantage of the proximity to meet Hannah, who took a break from her studies at University of Chicago for shopping and dining on the Magnificent Mile. Hannah's continuing involvement in UChicago's improv troupe OffOff provides her parents with multiple reasons to travel to Chicago. She did her first ventriloquial solo show January 2012, debuting her edgier more college-oriented act, featuring John Wayne Casey, the unintentionally creepy prop comic clown, and Marzipan Lavender Sparkle (aka "Marty"), the surly foul-mouthed unicorn. Hannah's ability to write dialogue, honed by years of ventriloquism, has paid off in not only in her screenwriting classes but also in several national competitions. Her feature-film script "Risk 101" (about a failing college that improves as its most seriously slacking students start dying in mysterious ways) won the "Best Dark Comedy award" at the Broad Humor Film Festival in Los Angeles and a Gold Award at the California Film Awards in San Diego. Amazingly, Hannah will be graduating in June! Her BA thesis is a study of college comedy films of the new millennium, which has meant watching hours of wildly diverse films, ranging from Bollywood's award-winning "3 Idiots" to the execrable "Bikini Spring Break".

Beyond bees, several Mayan codices mention a white, inch-long "grub" (*mescuillin*) that tunnels through agave leaves, almost certainly the larval giant skipper *Aegiale hesperiaris*, eaten by ancient and contemporary Mayans as well as occasional intoxicated mescal drinkers in bars across the U.S. Our work with Lepidoptera, particularly microleps, continues apace. Research on parsnip webworms and wild parsnips continues with an international flair; we're using population genetics to reconstruct the history of introduction of this European interaction around the world. Student Tania Jogesh is tracking down the plants (with help from Plant Biology's Stephen Downie), student Allen Lawrance checking on the caterpillars and Colorado State collaborator Paul Ode tracing the encyrtid parasitoid *Copidosoma sosares*. In stark contrast with the fussily oligophagous parsnip webworm, the navel orangeworm *Amyelois transitella* feeds on almost any nut or fruit once it hits the ground. With Hugh Robertson and Kim Walden sequencing its genome, student Katherine Noble is annotating its detoxification enzymes while students Katie Dana and Mark Demkovich are assessing this insect's amazing ability to break down all manner of toxins. Microlepidoptera were also why I went to Denver for the annual meeting of the International Lepidopterists Society; I presented postdoc Terry Harrison's survey of microlepidoptera diversity in biofuel feedstock crops, reconstructed prairie and corn and soybean fields (with the surprising discovery of 157 species in prairie and 125 species in switchgrass). While in Denver, I skipped out of the conference to meet my Denver cousins, all of whom (Berenbaums and Berenbeims) were gracious and hospitable. Inspired by snippets of family history, I started tracking down information on the various and sundry sides of the family. Among the findings, I discovered that the Yedwal family name on my paternal grandmother's side, Americanized from Yedwabnik, in its original Polish means "silkworm." Given that "Berenbaum" means "pear tree" in German, I was clearly destined to study plant-insect interactions...



Stewart Berlocher This has been a pretty good year for the Berlochers. The kids are moving along in life, and Jeanine has a great blog on biking, nature, and the changing seasons at Meadowbrook Park. And things are moving along well with my research on sympatric speciation and the intricacies of how insects adapt to novel host plants. I have a new graduate student in the lab, and Hugh Robertson and I are sequencing the genome of *Rhagoletis pomonella*. Assembly of the short reads is coming together well, if a bit slower than we would like. Before I retire, I would like to think that those of us working on this problem have done all we could to achieve and cherish a just and lasting understanding of sympatric speciation. When I have the time, I am also continuing my research on local history, specifically on Abraham Lincoln and Urbana, and on the Big Grove.



Sydney Cameron. Hi everyone. In the last couple of years we have continued to investigate the patterns of bumble bee decline in the U.S., publishing the results of a 3-year study last year in *PNAS*. We're continuing to follow up patterns of decline with studies of possible causes, testing the hypothesis that an invasive pathogen may have come into the U.S. from Europe in the early 1990s. I have a new student in the lab this year, John Maddux, who is spending some of the semester working up his thesis proposals for the Master's degree. Michelle Duennes continues to work on the population genetics of *Bombus ephippiatus* in Mexico and Central America, and just published her first major paper on the subject in the journal *Phylogenetics and Evolution*. My postdoc

Haw Chuan Lim is working on multiple fronts with our *Bombus* decline research, including a comparative study of gut bacterial symbionts in both declining and stable bumble bee populations. This year I also spent a month in Argentina as a Fulbright Specialist, working with a group at the University of Comahue in Bariloche on bumble bee decline in Patagonia. The story there is striking, with the rapid loss of their single native Patagonian bumble bee species, which disappeared within a year of their coming into contact with an invasive European bumble bee (*Bombus terrestris*), introduced originally into Chile for greenhouse pollination. We'll fill you in on the results of our current studies next time we check in.



Fred Delcomyn It seems hard to believe that it's been only two years since the last newsletter – I guess traveling makes the time fly. A family vacation to Europe was the highlight, including the first-ever visit to Denmark for my children's spouses and our grandkids to meet my cousins and others. As the saying goes, a good time was had by all. Nancy and I have also done some non-family travel, most notably with two trips offered by WILL radio/TV, our local PBS station. We went with a group to Costa Rica in 2010, and to Cuba last spring, both fascinating destinations that are hard to describe in words. The biggest family change is with our daughter Julia. Her fiancé is a New Zealander and has a faculty position there. She has now emigrated with her year-old daughter, and will live there permanently. Nancy and I

took a trip there to visit in November/December 2012. Skype is wonderful, but it's still not the same as being there.

Photography has become even more of a passion, and this summer I began to offer photos for sale at the local Farmer's Market. I'm glad I don't have to make a living at this, but it's been fun, and posting photos on my photo website and on Facebook does sometimes elicit a positive response, which is always encouraging. I can't wait to see what the next two years will bring!



Bettina Francis For the past two years I have been working with algal toxins: specifically, identifying the mammalian toxicity of "golden algae" (*Prymnesium parvum*). Algal blooms are a common occurrence in lakes all over the U.S., and certain species have long been known to pose risk to livestock when blooms occur, but in the past *P. parvum* was rarely found outside coastal waters. This has changed, and a massive fish kill in Pennsylvania in 2010 suggests that *P. parvum* may become a problem nationwide. Neither its active toxins nor its mammalian toxicity are understood, so we are working with extracts of the algae: difficult to obtain,

frustrating to quantify! In addition to my work with algae, my student Lisa Powers is studying the reproductive and developmental biology of cave-dwelling bats. She has been fortunate to gather 2 seasons of data in the absence of white nose syndrome (WNS), but with the disease present in 4 bordering states, it is inevitable that it will reach Illinois in the very near future - and may already be active, since the fungus thrives in cool conditions and exerts its effects during hibernation.

Our family has been increased by the addition of a third grandchild – and first granddaughter, Aliyah. Since she is now two, and did not stay still long enough for a good picture, I'm including a picture of George and me on our first trip to Glacier Park last summer.



Larry Hanks. Since the last newsletter, students Joe Wong, Ken Robertson, and Becca Striman all received their Master's degrees, and Rob Mitchell graduated with his PhD. Joe is working toward his PhD and has been joined by new Master's students Linnea Meier and Christina Silliman. We also have a new lab manager, Dr. Judy Mongold-Diers, who is of great help to everyone in the lab. My spouse Jean now manages the Office of the Dean in the College of Engineering and is very happy in her new position. Our daughter Rebecca just started at Urbana High School and continues to play soccer and practice the piano, while Mason just started middle school and also has graduated from Wii to Minecraft, whatever that is. Species: *Sternotomis bohemani bohemani* Photographer: Poul Beckmann



Barry Pittendrigh. It has been another busy year for the Pittendrigh laboratory. New people have joined the laboratory, including Keon Mook Seong (Ph.D. student) and Dr. Siwoo Lee (on sabbatical) and Dr. Kent Walters completed his post-doctoral projects dealing with -omics of drug toxicity and has moved on to a position at Wabash College. Laura Steele completed her M.S. degree and is now working on her Ph.D. in the Pittendrigh laboratory on the molecular basis of pesticide resistance and is actively involved in our Scientific Animations Without Borders (SAWBO) program. Tolulope Agunbiade received a Howard Hughes Pre-Doctoral Fellowship for her work on IPM-omics and SAWBO in West Africa. Alice Vossbrinck has continued her work on the genomics of the cowpea bruchid and Brett Olds is in the process of completing his work on the genomics of head and body lice. Susan Balfe and Weilin Sun continue to deal with the many issues associated with our funded grants (e.g., RNAi resistance in beetle systems), keeping the laboratory running smoothly, and dealing with many aspects of SAWBO. The SAWBO program continues to grow and we received new funding this past year to work on a variety of topics ranging from vector-borne disease to prevention of postharvest losses. This program has kept Francisco Seufferheld and Jeannine Koninckx busy with our growing laboratory and virtual teams of programmers, artists, and animators. The SAWBO program has also resulted in two awards for the laboratory – a Sheth Distinguished Faculty Award and the 2012 Champaign-Urbana International Humanitarian Award.



Hugh Robertson. My laboratory is now reduced to technician Kim Walden and me, with all students graduated. We're entirely focused on sequencing insect genomes, with seven underway and more planned, most in collaboration with colleagues in the department. They take a lot longer than we had hoped, but we've finished several, although some big ones are a struggle (*Rhagoletis* and *Diabrotica*). We've had a productive collaboration with Kevin Johnson at the INHS, trying to figure out how to use next-generation DNA sequencing to accelerate phylogenomic studies. We are currently trying what we call partial genome assemblies with automated gene building of a small subset of conserved genes, using the encoded proteins for the phylogeny. Along with Chris Dietrich, we recently won a NSF Tree-of-Life project to tackle the hemipteroid orders over the next five years, in part using this approach.

Otherwise life in Urbana continues as normal. Our daughter Erica turned 14 and started high school at UHS after three years of middle school at the Campus Middle School for girls. She's on the freshman volleyball team, with practices or matches every day except Sunday, which is pretty intense. Gabriel turned 26 and is trying to combine Parkland and UIUC into a degree in

ACES. Christina has a new art studio in downtown Champaign, which she enjoys when not taking care of the rest of us, our bichon Zaker, and the basement. I try my best to find new kitesurfing opportunities to supplement our regular outings to Cape Hatteras, this year several weeks in Cape Town visiting my Mom and sister over the year-end holidays, and in Hawaii visiting my brother going to and from the International Congress of Entomology in South Korea. That was a good meeting, including excursions with ex-UIUC students Rob Mitchell, Annie Ray, and David Lampe.



Gene Robinson. This has been an exciting year for me: in January, 2012, I became the director of the Institute for Genomic Biology. The IGB includes roughly 70 faculty and 100 faculty affiliates from over 30 departments, plus about 350 graduate students, 350 undergraduates, and 100 postdoctoral associates. The IGB is dedicated to team-based interdisciplinary research; there are no laboratories headed by individual scientists in this institute. Instead, there are teams of scientists that form a research team that conducts fundamental or applied genome-powered research related to health, agriculture, or energy. The IGB is a new research institute, opening in 2007 with a beautiful \$75 million, 186,000 sq. ft. building in the center of campus just east of the Morrow Plots, that iconic cornfield that is the oldest outdoor laboratory of its kind in the Western hemisphere and a National Historic Landmark. That's quite an illustrious neighbor to try to keep up with, but we're more than holding our own. Supported by a superb staff of 45 scientific, administrative, and clerical specialists, IGB scientists are making significant discoveries and publishing many impressive papers -- two papers from the IGB appeared in the August 31 issue of *Science* alone, an impressive daily double! IGB scientists also have garnered almost \$35 million in research income this year from federal, philanthropic, and industrial sources. In becoming IGB director, I am proud to continue the long tradition of our Entomology Department in providing campus leadership.



As you can tell, I'm quite excited about my new job, but the old one is still captivating as well. I try to participate in all aspects of departmental life as best as I can, and I appreciate my beloved entomology colleagues cutting me a little slack here and there. I still run my laboratory of about 20 postdocs, graduate students, undergraduates, and technical staff, devoted to elucidating the mechanisms and evolution of insect social life. We continue to focus on honey bees, but also rely on an ever-expanding roster of related species, some with social lifestyles and some with solitary or less social lifestyles. By sequencing their genomes, we are able to use state-of-the-art methods to address the venerable question of how insects, each with a brain the size of a grass seed, are able to evolve the abilities to form societies that rival our own in complexity. Among our research highlights this year was a paper from the doctoral research of graduate student Sophia Liang published in *Science* that elucidated the molecular basis of scouting behavior in honey bees, and used intriguing similarities between those results and the molecular basis of novelty-seeking in humans to assert that bees have personalities, too. Writing this for alums of an entomology department, I suppose I'm preaching to the choir on that point!

I am also proud to report exciting developments on the home front. Julia continues to enjoy working at the Spurlock Museum of World Culture. Oldest son Aaron left Google after three years to become deputy director of operations in North Carolina for the presidential campaign and intends to go to graduate or business school after he recuperates from the mud-slinging. Middle son Daniel graduated from Washington University and quickly landed a job at Epic, one of the largest medical software companies in the nation. And youngest son Sol is a freshman in computer science here at UIUC. We are fortunate to have one of the finest computer science programs in the country because we love having Sol close by -- it makes helicopter parenting even easier!

Andy Suarez. The Suarez lab has reached a new milestone in terms of personnel this past year. Specifically, we are the largest we have ever been! Currently we have graduate students Jo-anne Holley, Fred Larabee and Andrea Walker in Entomology, Bill Wills in Animal Biology, and our newest student is Selina Ruzi from PEEC. We also had three postdocs in the lab this year. Dietrich Gotzik started his



second year working on population genetics of the genus *Solenopsis*. Eli Sarnat developed identification resources for ants intercepted in quarantine and has moved onto a project working on *Pheidole* of Pacific Islands. Finally, Adrian Smith joined the lab from Arizona State University and is working with Larry Hanks and me on the chemical signaling in ants.

It seems the lab made it nearly every continent to collect ants this past year: Andrea took the ant course in Uganda; Fred, Bill, Dietrich and I collected ants in Cambodia, Jo-anne surveyed *Linepithema* in Brazil, and Bill and I went to Argentina for his thesis and a project called Ants at the Global Picnic. Bill, Fred and Adrian also spent considerable time collecting ants in Florida. Unless I forgot a trip, it seems that we did not manage to collect in Europe this year, although we did spend more than enough time in European airports on our way to and from Asia...

Finally, I will end by mentioning that Elissa and I got married this past February! Elissa also became a permanent resident of the United States so we no longer have to worry about her getting deported.

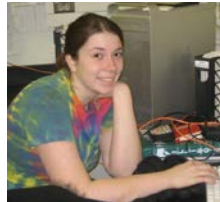


Charles Whitfield Having finished up as PI on an NSF grant on “A systems approach to brain and behavioral state in the honey bee” with co-PI Amro Zayed, I’m currently still working on a USDA project with PI Tom Sappington (Iowa State) on western corn rootworm genomic resources. With student Chen Fu, I published a paper in 2012 in *PLoS ONE* showing that *Apis mellifera* orthologs of some clock-dependent *Drosophila melanogaster* locomotory genes play a role in the transition from hive bee to forager. In terms of travel, I was co-organizer for International Union for the Study of Social Insects (USSI), section on Genetics of Social Behavior, in Copenhagen, Denmark, in 2010. I still enjoy teaching Honors Biology every fall and Genes and Behavior in alternate years.



James Whitfield. My laboratory has turned over quite a bit since the last newsletter, with the “finishing” of Alex Wild as postdoc on our *Heterospilus* project (although he continues to contribute there), and the M. S. graduation of Jaqui O’Connor (now at Durham University in UK, continuing her studies –see photo) and end of Phoebe Barkan’s (also see photo) undergrad work in the lab before her own graduation. On the flip side, Andrew Debevec arrived from Cornell last year on a University Distinguished Fellowship, and Kyle Parks just started this fall after an M. S. at Clemson. Yali Zhang (another photo) continues in the lab as an undergrad to complement Diana Arias’ research with her own taxonomic focus. The lab as a whole continues to be focused very much on large-scale phylogenetic and descriptive taxonomic work on tropical microgastrine wasp parasitoids of caterpillars. We’ve had a good last few years in producing systematic and ecological results, and are hoping to focus even more on that with the arrival of the new students and the finishing of my textbook (finally appeared in April to my relief!).

On a more personal level, Sydney and I continue to enjoy our yearly vacations at the Dethier cottage in Maine, as well as the local music scene both there and here in C-U! We are also enjoying seeing our efforts (along with the main instigator John Marlin) to populate the campus with woodland and prairie wildflowers start to bear fruit!



Yali Zhang, Phoebe Barkan, Jaqui O’Connor

James Sternburg. Jim turned 93 in February 2012!



Jim Sternburg, May Berenbaum, Stewart Berlocher: center, Stewart Berlocher, Jim Nardi, Jim Sternburg, Hugh Robertson

Affiliates and Associates

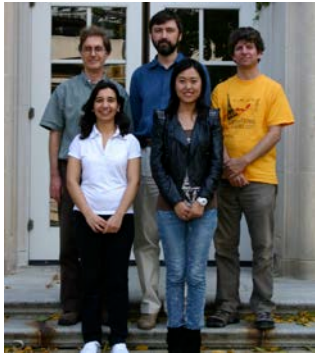


Marianne Allelyne. A lot has changed for me professionally since the last newsletter, but some things have stayed the same. I still teach the graduate Insect Physiology course, and because of the interactions with our dedicated students it is still probably the favorite part of my job. I also continue my research on the insect immune system through my collaboration with Leellen Solter and our shared graduate student Gwyn Puckett. We are studying the responses of the gypsy moth after ecologically and physiologically relevant exposures to a variety of pathogens and a parasitoid. I have also become very interested in the topic of bioinspiration – how we can learn from nature in general, and insect in particular, and use our knowledge for technological innovations (this topic is also referred to as biomimicry). I have lectured on the topic in various venues, have developed new courses and modules and am getting ready to start a blog about this topic. The most interesting part of bioinspiration to me is how it brings people from different disciplines together, forcing them to think

differently, with biologists playing a prominent role in the process.

I have also completed coursework myself on how to teach online. The School of Integrative Biology is offering more and more courses online and I am one of the people who helps faculty to convert their content to the online environment. It has not been a smooth road. This is so new to us, but also to the College and the University, but we are learning every day and cooperation among the different players on campus has been quite good. The program I am most proud of is the online Masters in Science Teaching of Biology. We are able to expose middle and high school teachers to the latest developments in biology (e.g. BioInformatics, Darwinian Medicine, BioInspiration) and get an advanced degree which helps their career, while they can continue to work at their jobs and be with their families. The Department is hopeful that in the future we can also develop an online program in entomology. Over the next two years, a big chunk of my time will be taken up by my duties for the Entomological Society of America. I was asked by the incoming president of ESA, Rob Wiedenmann, to serve as co-chair of his Annual Meeting Program Committee. This means that for at least three years I will be involved in the planning of the meeting. The best part of this job is that I again get to work closely with Rob (my PhD advisor), as well as with the fellow co-chair Luis Cañas from the Ohio State University. I also take these ESA duties very seriously because I realize that I am representing a great Entomology Department.

On a personal level much has remained the same. Andrew has completed his tenure as Associate Dean for Research in the College of Engineering, and is now back to teaching and running his large lab. Our sons are growing. Harmen is now 11 and Willem is 8 years old. They are doing well, developing interests that are sometimes foreign to me (Minecraft, Greek Mythology, Martial Arts), but I do not mind, as long as they humor me when I take them to cemeteries to experience a periodical cicada emergence, or plan trips around our quest to see all *Archaeopteryx* fossils. As a kid that's what you have to endure when you have a scientist Mom and Dad.



Chris Dietrich The Dietrich lab had another busy year, adding MS student and treehopper fanatic Brendan Morris and hosting two international scholars, Inés Catalano from Argentina and Cao Yanghui from China (front left and right in photo), both of whom study systematics of microleafhoppers. PhD student Sindhu Krishnankutty completed her dissertation on biogeography of the leafhoppers of Madagascar. We also teamed up with faculty from UI Computer Science and ECE to create InvertNet.org, an NSF-funded initiative to build an online virtual museum comprising images and associated data for all holdings of 22 midwestern arthropod collections, including the >7 million insect specimens at the Illinois Natural History Survey. Our

engineering colleagues are currently testing a robotic system that will automate image capture for whole drawers of pinned insect specimens and facilitate zoomable, tiltable 2D and 3D reconstructions of the specimens. This will greatly reduce the cost of collection digitization and provide unprecedented access to these collections.



Edward DeWalt. Entomological research collections are a rich source of data about species, including distribution information in both time and space. Recent NSF and USFWS grants to have allowed me to gather nearly 30,000 museum and new specimen records for stoneflies across the Midwest (IL, IN, IA, MI, MN, OH, Ontario, WI). Stoneflies are the queen of the river, being the most environmentally sensitive of all aquatic insects. Some of this museum digitation work began with UIUC Entomology alumnus Colin Favret (now University of Montreal). Colleagues at the INHS (Yong Cao, Leon Hinz, Jason Robinson, Tari Tweddale) are helping to create pre-European settlement distribution models (Maximum Entropy models) for up to 100 species across this area at a medium watershed and reach scales. These distributions will help with assessing range loss for many species and modification of

climate variables in the models will help us understand how ranges might change in the future due to climate change. These predictions have direct bearing on the conservation of a large assemblage of environmentally sensitive aquatic insects.



Rosanna Giordano When I completed my doctoral degree and left the University of Illinois, I assumed that I would not return. Surprisingly, I am back, due to Felipe receiving a position as curator at the Illinois Natural History Survey (INHS), now part of the University of Illinois. I was given a 0% appointment at the INHS, which means that I constantly scramble to secure funds for both my research and salary. At the moment we are in the grips of completing the genome of the soybean aphid, *Aphis glycines*, and a population

genetic study, using SNPs, which, among other things, will hopefully help us to pin down the geographic origin of this recent invader to North America. Financial support for this research has been generously provided by the soybean farmers of Illinois and the Midwest via the Illinois Soybean Association, and the United Soybean Board. Aphids, with the aid of symbionts, derive nutrients from phloem, a rather poor food source, and succeed at being formidable pests. We would like to contribute to the process of determining some of the physiological characteristics that allow the soybean aphid to overcome plant resistance genes and to determine if symbionts play a role. While the sea of corn and soybean of Illinois does not encourage a communion with nature as the Green Mountains of Vermont and Lake Champlain, it has been a pleasure to return and have the opportunity to work closely with Jim Nardi, Glen Hartman, Curt Hill, Theresa Herman, Anitha Chirumamilla, Dave Soucek, and Ed DeWalt, and have the support of the staff at the Keck Center.

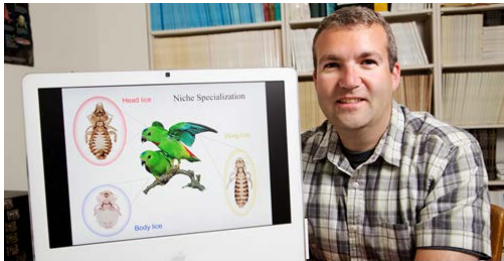
When weather allows and I am not in the lab, I am pulling weeds or digging in my garden in an attempt to transform a formerly neglected house and garden that we purchased into a landscape attractive to pollinators and birds.



Michael Gray Mike is a native of southwestern, Iowa. He graduated from the University of Northern Iowa in 1977 with a BA in biology and MS and PhD degrees in entomology from Iowa State University in 1982 and 1986, respectively. Following the completion of his PhD, he served as a postdoctoral research associate at South Dakota State University, Brookings, South Dakota. In March 1988, he began his extension entomology career at the University of Illinois. His research and extension interests have revolved around the management of the western corn rootworm, especially its adaptation to crop rotation. Mike is frequently invited to discuss integrated pest management (IPM) issues on national and regional levels related to corn and soybean insect management. In 2008, Mike began serving as a program leader in the Energy and BioSciences (EBI) Institute at the University of Illinois. His EBI team is focused on discovering pests that may influence the

biomass production of perennial grasses such as switchgrass and *Miscanthus* that may be used as feedstocks for biofuels in the future. In 2008, it was Mike's honor to serve as President of the Entomological Society of America. He currently serves as a Professor in the Department of Crop Sciences and as Assistant Dean for the Agriculture and Natural Resources Extension Program, College of ACES, UIUC.

Sam Heads



Kevin Johnson. The past two years have seen the graduation of two students in my lab from the Entomology Ph.D. program: Emilie Bess and Mathys Meyer. Both were also successful in getting permanent jobs, Emilie as an Entomologist with the USDA in Seattle and Mathys as a faculty member with University of Pikeville, Kentucky. Congratulations to them both! On the research front, I've recently published in *BMC Biology* results on avian feather

lice showing evidence for repeated adaptive radiation of different louse ecomorphs across birds. The University of Illinois covered this work in a press release and video. I've also gotten to do a bit of traveling to the Dresden Meeting on Insect Phylogeny and the International Congress of Entomology in South Korea.

Richard Lampman

Brenda Molano-Flores



Ephantus Juma Muturi The medical entomology lab at the Illinois Natural History Survey conducts research on mosquitoes and the pathogens they transmit. Although the major emphasis is on mosquitoes associated with natural and artificial container habitats such as waste tires, storm water catch basins, and tree holes, we recently expanded the research to include the study of malaria and its vectors. The primary goal the lab is to elucidate how human-mediated environmental alterations influence mosquito ecology and human risk of exposure to mosquito-borne pathogens. Last summer, we studied how land use patterns influence the ecology of West Nile virus and its vectors in Champaign-Urbana area. We also received funds from Illinois Department of Public Health to study the ecology of *Culiseta melanura*, the epizootic vector of Eastern Equine Encephalitis in South Cook County. We are currently compiling the results of this research for publication. A Ph.D

student, Allison Gardner, joined the lab and she is jointly co-supervised by me and Dr. Brian Allan. She is interested in studying how environmental factors influence mosquito population dynamics and the risk of mosquito-borne pathogens. A new post-doctoral researcher, Dr. Jeffrey Bara, has also joined the lab. He will be studying how environmental factors influence the outcome of mosquito-virus interactions focusing mainly on dengue, Lacrosse and Sindbis viruses.

Jim Nardi. Insects of almost every order have been my laboratory companions during the last few years, but I have spent most of my time with members of the Coleoptera, Lepidoptera and Strepsiptera.



Study of insect stem cells in moths and beetles. The remodeling that insects undergo at each molt implies that stem cells must be orchestrating the repopulation of tissues during growth and aging. As suspected, ubiquitous populations of stem cells are showing up throughout the tissues of insects. Remodeling was assumed to cease after the molt to the adult insect, but it turns out that cells are constantly being replaced in the midgut epithelia of insects. One of our recent publications focused on the stem cells of adult beetle guts. Some of the most impressive populations of midgut stem cells are

found among predatory beetles, such as this rove beetle. Some populations of stem cells have often been overlooked since they appear only transiently during development. In *Manduca* we have found paired organs in all thoracic and all abdominal segments that supply massive numbers of granular cells. These blood cells are responsible for remodeling of basal laminae that cover all basal epithelial surfaces of cells lining the insect body cavity. The cells of these organs in freshly dissected animals have the same refractive index as surrounding cells and consequently do not appear as discrete organs; only when they are labeled with a specific probe for granular cells are they visible.



With colleagues in Oxford, England and Murcia, Spain we have completed a *study addressing the relationship of the enigmatic order Strepsiptera to other insects.* Representatives of the beetle families Rhipiphoridae and Meloidae share a parasitic life style and strikingly similar morphology as larvae with all extant families of Strepsiptera. The manuscript compares sperm ultrastructure of the most primitive strepsipteran family Mengenillidae with that of members of the two beetle families. The features of this most primitive family of Strepsiptera presumably have departed the least from those features of a

hypothetical ancestor that they share with the Coleoptera.

A Children's Book on Gardening and Science.

A mouse and a toad are the guides through a garden's world of vegetables, weeds, insects, and other creatures, offering the young reader biological observations and experiments along the way.



Susan Ratcliffe. When I began my entomological studies at the University of Illinois back in 1993, I had no idea where it would lead me. What a wonderful ride it has been during the last 19 years. I currently serve as Director of the USDA-NIFA North Central IPM Center. As a result of my efforts to promote IPM on regional and national levels, I recently received the International IPM Award of Excellence during the 7th International IPM Symposium that was held in Memphis in March 2012. I also am involved in the Illinois School IPM Program. In 2009, I began working with the Westville School District and after

one year in the program that entire school district was managing pests without pesticides. In 2010, I began collaborating with University of Illinois Housing and the Water Station to implement verifiable IPM programs in the residence halls' kitchens and dining halls. In addition, we are expanding the use of IPM to student housing and other buildings on campus, including the Henry Administration Building. I was awarded the U.S. EPA Innovator Award in recognition of my efforts to promote school IPM in Illinois. My most recent endeavor involving IPM is my collaboration with the Spurlock Museum to develop an IPM program for museums and the use of heat to address infestations of artifacts.

Many of you may remember my family from when I was a graduate student. Mary, a freelance writer, is now 30 years old. Carolyn, a systems designer for Rockwell Collins in Cedar Rapids, Iowa, is 26 years old. Robert, a second-year of law school student at George Mason University, is 25 years old and is interested in intellectual properties law. Last but not least, my loving husband of 32 years continues to practice criminal law and play plenty of golf.



Leellen Solter. Research efforts in my lab are now focused in two major areas- lepidopteran immune responses to naturally occurring pathogens with Marianne Alleyne and graduate student Gwyn Puckett, and honey bee microsporidia (nosema disease) with post doctoral researcher, Wei-Fone Huang. Gwyn is exploring response of the gypsy moth (our model host) to a variety of pathogens, including microsporidia and viruses that infect gypsy moth in natural populations. We are also orally inoculating the host in contrast to more frequently used injection method of introducing the pathogens. The 2-D gels are gorgeous (!) and we will begin analyzing the infections this year. We are also working with Drs. Peter Yau and Brian Imai at the Biotechnology Center here on campus.

Wei-Fone and I are working as part of the USDA CAP project team on honey bee health and are exploring the differences between the two microsporidian pathogens that cause nosema disease, *Nosema ceranae* and *Nosema apis*. *N. ceranae* appears to have replaced *N. apis* globally and little is known about the interactions of this species with the host in North America or with *N. apis*. Our recent studies have shown that fumagillin, an antibiotic used as a prophylactic treatment in honey bee hives, may exacerbate *N. ceranae* infections rather than suppress them over a foraging season.

The one-week short course in insect pathology I teach every 2-3 years with USDA colleagues Lerry Lacey and Rich Humber went “international” in 2011. We taught the course in La Plata, Argentina in June 2011 and I taught a similar course in Camden, Australia in Feb. 2012. We are currently working on the next venue - hopefully back on campus in 2013. I’ve served as president of the Society for Invertebrate Pathology for the past two years, a “task” that I’ve thoroughly enjoyed.

The ‘old house’ remodel that Phil and I have spent the past 15 years completing (almost) now needs to be revisited (sigh- you will probably hear about this until I retire...), and we spend most weekends managing our small woods and prairie at the Salt Fork River. Our son Ravi, age 10 when I graduated from the Entomology Dept., is now 26 and just completed a third-year special project (microcredit) in Peace Corps, this time in Guinea. (Re the photo taken in Benin: he’s not taller than Phil- he was standing on a rock...). Best wishes to all! Photo: Phil, Ravi and Lee in Benin, W. Africa



Joe Spencer The past several years have been busy ones as my western corn rootworm (WCR) research in the Illinois Natural History Survey has focused on beetle behavior in *Bt* and non-*Bt* refuge corn. Non-*Bt* refuges are essential to delaying insect resistance to *Bt* crops; they provide reservoirs of *Bt*-susceptible adults that will mate with *Bt*-resistant adults emerging from *Bt* hybrids. Curiously, the science of insect resistance management for *Bt* crop technology is parameterized with out-of-date data on pest biology that was often generated long before commercialization of any *Bt* crops. I’ve made the direct study of WCR biology and ecology one of my priorities in an effort to learn how configurations of refuge affect behavioral expectations of today’s WCR in *Bt* corn. What better way to test how well refuges perform, than to observe WCR as they use refuges? With my student, Sarah Hughson, I am measuring patterns of WCR abundance, movement and mating behavior that reveals flaws in assumptions about WCR behavior. The current failure to incorporate ecological principles into integrated pest management and insect resistance management threaten the sustainability of US corn production.

In addition to a wide range of studies on WCR and other pests of field crops, 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.

Felipe Soto-Adames

Saurabh Sinha



Steven Taylor It's been a busy year in my lab at the Illinois Natural History. Graduate student Alan Yanahan and I completed a study of ground beetles on algific slopes in Jo Daviess County, Illinois. Alan also wrapped up field work for his thesis research on the Carabidae of Braidwood Dunes and Savannah in 2012, and now it's all about data analyses, writing and graduation! My research focuses mostly on cave biology. Although they have too few appendages and, irritatingly, lack an exoskeleton, I've been working on a project focused on white nose syndrome of bats in Illinois with other researchers at INHS and NRES. Turning to the important animals—invertebrates—my active projects in the last year include:

1) Cave invertebrate bioinventories in the Shawnee National Forest with Felipe Soto-Adames, Sam Heads (both INHS) and Tony Yannarell (NRES). I'm expecting we'll find some interesting creatures, perhaps springtails, even though the area is well studied.

2) Bioinventories in Nevada caves. We've found some new species, including an attractive new harvestman of the genus *Taracus* (Sabaconidae).

3) Cave biology of southern Belize with Sam Heads and others. With support from the Subterranean Ecology Institute, we returned for a second expedition in 2012, visiting new sites and discovering still more new species, including a fabulously troglomorphic pseudoscorpion—pale coloration, elongate



appendages, no eyes. I was fortunate that my wife was able to come on the trip and help with the fieldwork and logistics. Sam Heads and I published a species description of a new orthopteran from my 2011 Belize fieldwork, and Felipe Soto-Adames and I are putting the finishing touches on a description of two new springtails from the 2011 samples. Working with Jason Bond (Auburn University), I'm expecting to have a paper out in 2013 describing a new spider from Belize, and Jason, Petra Sierwald (Field Museum) and I are slowly working on the

description of half a dozen new species of millipedes from the caves in Belize, some of which are awesome pale cavernicoles.

4) Working with Kevin Johnson and others to wrap up a molecular study of cave crickets in Texas.

5) Alan's thesis research at Braidwood Dunes and Savannah is part of a larger invertebrate study there that also includes Lepidoptera (Jim Wiker), leafhoppers (Jamie Zahneiser, INHS), Orthoptera (Sam Heads), springtails (Felipe Soto-Adames) and true bugs (Dan Swanson, University of Michigan Museum of Zoology and Scott Bundy, New Mexico State University). We're compiling a growing list of several hundred species from this 315-acre site.

Though we may not be seeing it here in the USA for some time, I had the opportunity to play a small role in a three-part 3D series that has just come out, titled *Galapagos 3D with David Attenborough*, a collaboration between Sky TV and Atlantic Productions in the UK (<http://sky1.sky.com/sky1hd-shows/galapagos-3d-with-david-attenborough>). My small role involved a visit to a lava tube cave – it was a lot of fun!

My wife JoAnn Jacoby, an associate professor and Head of Reference, Research and Scholarly Services in the University Library, has been keeping very busy as well – her work has taken her to Portugal and Germany in the last year, and we managed to travel together to Slovakia for a meeting I had there. We're both looking forward to more research and travel in 2013.

David Voegtlin

Richard Weinzierl

Academics/Postdoctoral Scholars



Susan Balfe Susan is a graduate of Purdue University and began her career at Purdue as a research field technician in the Department of Entomology. She has worked in the field of entomology for some 27 years; 14 of those years have been spent working with Dr. Barry Pittendrigh. Susan has extensive knowledge and research experience working with pest insects that attack cowpea in the field and in storage: specifically, the cowpea weevil, *Callosobruchus maculatus*. Some of her most recent efforts have focused on expanding the development and research surrounding the Bioassay Omics Facility.

Susan's interests expand beyond research and management and have grown into the field of computer graphics. She has played an active role in the creation, development and organization of the SAWBO database and is continuing to improve upon the project mission.



Sam Beshers Although I still spend the majority of my time working with the Neuroscience Program, I am pushing to give more to my Entomology side. I have enjoyed working this year with Bill Wills and Andy Suarez on a review of body size variation in ants, a deceptively complex subject that deserves greater attention. We plan to submit that in the early spring. I am working on reviews of several other aspects of colony organization and behavior in social insects that I expect to complete this year, and I am excited about speaking to the department in March about my theoretical work on division of labor.

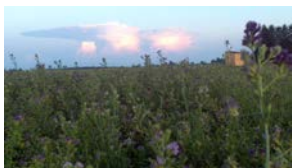


Lesley Deem. Hello. This year finds me splitting my time between the Department of Entomology and the Illinois Natural History Survey. I was very happy to go from academic hourly to academic professional. For the department, I run the Pollinarium. I am happy to say we have a steady supply of visitors and the number that comes continues to grow each year. As well as classes coming to the Pollinarium, I am also traveling to classrooms in and around Champaign-Urbana. My other half-time position is as a programming specialist for the Species File Group at the Illinois Natural History Survey. The species file websites and databases provide tools for working with taxonomic information on insect groups and other taxonomic groups that are subject to the International Code of Zoological Nomenclature.

Page Fredericks



Terry Harrison. Terry Harrison is interested in biosystematics of Nearctic microlepidoptera. He presently is in the process of describing several new species of microleps from Illinois, including two prairie-restricted species of Gelechiidae and an *Orbexilum onobrychis*-feeding tortricid. In addition, his present research involves analyses of arthropod biodiversity in biofuel crops and native prairie. He is also the scientific coordinator for BeeSpotter, a citizen-scientist-based initiative for monitoring bees in Illinois. Also, he recently collaborated with Donald Davis and Charles Mitter on LepTree, which is part of the Assembling the Tree of Life project.



Karen Kapheim This has been an exciting year for research, as I have had the opportunity to work with several bee species in a variety of experimental settings. As a postdoc in Dr. Gene Robinson's lab, I am involved in three projects aimed at understanding how social behavior evolved in bees. We are

taking several unique approaches to this age-old question by looking in the genome, the brain, and the gut for clues about the mechanisms underlying behavior. We have recently completed full genome sequencing for five bee species. Sequenced species include a highly social stingless bee from Brazil, an orchid bee which likely has flexible social behavior, the alfalfa leaf-cutting bee – a solitary bee that is



commercially managed in the U. S., and two other solitary bees, including an important blueberry pollinator in the southeastern U.S. Here is a picture of one of our new field sites in the alfalfa fields south of campus. The shelter holds many thousands of nests for alfalfa leaf-cutting bees (*Megachile rotundata*). I have also included a picture of a female orchid bee (*Eufriesea mexicana*) collecting resin from a recent collecting trip to the Chamela-Cuixmala Biosphere Reserve in Jalisco, Mexico. We have recently finished sequencing the genome of this species. We hope comparisons between features of these genomes will provide insight into how sociality evolved. We are also taking a more detailed look at one aspect of social behavior – reward response – with several experiments aimed at reconstructing the gene networks in the brain responsible for differences in how social and solitary bees perceive rewarding stimuli, such as food. I have also been working at the other end of the bee – in the hindgut! We have isolated and sequenced a ribosomal RNA gene common to all bacteria from the hindguts of individual honey bees within several colonies to investigate whether gut microbial communities vary across social castes. Perhaps we will find a link between bee social behavior and microbial gut symbionts!

Hongmei Li. The year of 2011-12 has been great for me! The #1 good news is that I was awarded a prestigious postdoc fellowship from the American Association of University Women (AAUW) in April 2012. The #2 good news is that my second baby, Micah, was born on May 9, 2012. Mia, my old daughter, turned 4 in February and enjoys her pre-school life in Next Generation. Her dance recital in June from Art In Motion was a blast for us and her. My husband Wayne is working for the College of Fine and Applied Arts now as an IT professional, and he still likes to play his D&D games. I am going to harvest honey from my two backyard bee colonies, and hope they will continue to do well next year. Back on track with my research; things are going forward as well. Collaborating with Jian Ma's lab in Bioengineering, we are analyzing the RNAseq data and revealing intriguing results from DNA methylation knockdown bees. I am getting the manuscript together so we can submit the paper soon. Also, my *Drosophila* study showed that several important genes from the oxidative phosphorylation pathway affect social behavior, and I am eager to do more studies to find out why... I helped on the beekeeping short course this spring and loved the conversations with some senior beekeepers in this state. I was also serving as the president of the Society of Postdoctoral Scholar (SOPS) here at UIUC. The annual research symposium of SOPS in January 2012 turned out great, with more than 100 scholars and postdocs attending. I also completed the Certificate in Foundations of Teaching from the Center for Teaching Excellence and polished my teaching skills. I am also taking online classes to get myself ready for future teaching opportunities. I am looking for a faculty position again this year. My future research direction is going to be epigenomics and gene regulation in social insects, social behavior and metabolism. Let me know if your department is hiring!

Haw Chaun Lim. My work on *Nosema bombi* in the lab of Sydney Cameron has certainly been challenging and exciting. For the past two years, much has been accomplished, too. We have finished screening for *Nosema* in 2000+ bees collected from the 1980's to early 2000's. The results will tell us if there was a sudden rise in *Nosema* prevalence around 1992, when commercial bumble bee breeding purportedly started here in the US. Extensive genotyping of *Nosema* collected from Europe and North America has also been conducted. Together with the screening data, these results should give us a clear picture of the population history of *Nosema bombi* in North America.



Andrew Mackay I recently joined Brian Allan's lab as a postdoctoral researcher. My broad interests are the ecology and behavior of mosquitoes of public health importance. Much of my current research focuses on how urban stormwater management practices influence arbovirus transmission risk. Two subjects we have been investigating are: (i) what effects

do stormwater detention basins and their associated flora have on vector and avian host dynamics, and (ii) does the adoption of emerging stormwater best management practices (eg. green infrastructure) alter how populations of urban *Culex* species respond to rainfall. It's been great living in a temperate climate again, though I am hoping for more snow (don't hate me - I really want to x-county ski this year).

Wenfu Mao



Matthew McNeill. We have started to get initial results from a medium throughput pipeline to analyze hundreds of brains Axel Brockman and I dissected from honey bees after they collected food rewards in a variety of conditions. This method allows us to examine regions in the whole bee brain that have been activated by the food reward. This summer, Karen Kapheim and I collected hundreds of bees, from one solitary and one social species, after they received food and drug rewards. In the fall, we will use RNAseq to analyze the brain transcriptional response to those rewards to identify transcriptional components that respond differently between the two species. These components may be important to the evolutionary transition from solitary to social behaviors.

Personally, after two years, I am finally taking full advantage of the honey in the lab: I am learning how to make mead!



Charley Nye Another season has passed here at the Bee Research Facility, and the Robinson lab bees are thriving. A warm winter left the lab colonies in a better position than they have been in years, followed by an early spring that gave them an abnormal head-start. I try to take a picture of the first pollen I see coming into our hives, and this year we saw maple pollen coming in on February 28th! While the later ramifications of such an early spring had me silently fearing what was to come, the heat and drought seemed to have not been as harsh as I feared. The hot, dry summer brought complications to our research, but I suppose every summer has its difficulties. Things are winding down now as we begin to prepare for our next "Bees and Beekeeping" short course. Having started the course again after a three-year hiatus, a morning of lectures and an afternoon of beekeeping outside in the sunny spring couldn't have gone better. As for myself, I'm making lots of mistakes in my garden and trying to keep our new dog Huck from diving into our flock of chickens we have running around our backyard. Joy and I adopted him from the local Humane Society in February and got the chickens in April. I'll spare you the stories in between, and just say they are all living in harmony now.

Clare Rittschof. I joined Gene Robinson's lab as a post doc in September 2011. I earned my Ph.D. from the University of Florida working with Jane Brockmann on the evolution of behavioral decision rules in a large web-building spider. My general interests are in behavioral plasticity. I am currently studying how colony environment affects aggression levels in individual honey bees.



Adrian Smith. I am a postdoc working in both the Suarez and Hanks lab on chemical communication in ants. After completing my PhD at Arizona State University in 2011, I came to Illinois to continue my research on fertility signaling and reproductive division labor. I am enjoying working with a new set of species here at Illinois, and am glad to be back in the Midwest.

Weilin Sun

Kim Walden

Staff

Todd Fulton. Greetings! Who knew that 25 years ago when I accepted the part time Insectary job, that I would still be doing it? I continue to enjoy the job although in the past I've thought about letting the job go, I just can't "walk away". Many times my children "visited with the bugs" while I worked, and now my grandchildren on occasion have come for a visit. I still maintain my RN professional license; however I have "retired" from full time work in the medical field

Audra Weinstein. I've passed milestone year #5 in Entomology – it really just flew by! I can't believe how many students have graduated since I started...just when I got to know them too. I'm just so proud of them. It's such a bumpy ride at the end getting the thesis reviewed and paperwork sorted; I don't know how they do it. Karen, my office-mate and teammate for the last 4.5 years, left to take another position on campus earlier this summer and is greatly missed. I'm hoping to trick May into giving away the theme for next years' IFFF now...I really want to want to win the t-shirt design contest and since I'm not artistic at all it would give me an unfair advantage of hiring someone to create something.

Colloquium Speakers

Spring 2011

Wulfila Gronenberg, University of Arizona, Tucson, *Social insects—social brains?*

Antonia Monteiro, Yale University, New Haven, *Butterfly eyespot patterns as model systems for integrating evolution, development, physiology, and behavior*

John D. Reeve, Southern Illinois University, Carbondale, *Applying diffusion models to insect movement in real landscapes - tales from two systems*

Zhiwei Liu, Eastern Illinois University, *Early evolution and host use in the order of Cynipoidea (Hymenoptera)*

Wade Ryberg, Texas A & M University, *Predation, community assembly, and the scaling of prey diversity*

Stephen Yanoviak, University of Arkansas at Little Rock, *Behavior and ecology of tropical canopy ants*

Ming Chen, Kansas State University, *Molecular basis for plant susceptibility and resistance*

Steven A. Juliano, Illinois State University, *Context-dependent resource competition and the success of invasive mosquitoes*

Dietrich Gotzek, Department of Animal Biology, UIUC, *The problem of species delimitation in fire ants*

Emilie Bess, Ph.D. candidate, UIUC, *Biogeography and phylogenetics of Hawaiian bark lice*

John Tooker, Pennsylvania State University, *Factors influencing insect pest populations: host-plant chemistry and genetic diversity*

Don Steinkraus, University of Arkansas

Xuguo "Joe" Zhou, University of Kentucky, *Gene and biology – the yin and yang of the superorganism*

Debra Delaney, University of Delaware, *Unmanaged pollinators along the East Coast*

Fall 2011

Dave Dussourd, University of Central Arkansas, *Glues and poisons: Botanical weaponry vs. insect ingenuity*

Antonia Monteiro, Yale University, *Butterfly eyespot patterns as model systems for integrating evolution, development, physiology, and behavior*

Jaga Giebultowicz, Oregon State University, Corvallis, *Circadian organization of gene expression and physiology in insects*

Paul Ode, Colorado State University, *Reciprocal interactions across three trophic levels: re-formed and novel associations*

Patricia Victoria Pietrantonio, Texas A&M University, *Dissecting the molecular mechanisms of reproductive control in fire ant queens: brain and ovary crosstalk?*

Daniel Strickman, USDA-ARS, *Evolution of mosquitoes: A story with a bite*

Jay Evans USDA-ARS, Beltsville, MD, *Honey bee genomics and disease*
Johanne Brunet, University of Wisconsin-Madison, *How far do pollinators move plant genes via pollen?*
Shannon LaDeau, Cary Institute of Ecosystem Studies, *Ecological complexity and disease vectors:
Exploring the phenology and composition of urban mosquito communities in Baltimore*
Bert Hölldobler, Arizona State University, Tempe, *Multicomponent and multimodal signals in ant
communication*
Heather Hines, North Carolina State University, *The genetics underlying the mimetic radiation of
Heliconius butterfly wing patterns*
Dena Smith, University of Colorado, Boulder, *Evolution and ecology of insects: What we can learn from
the Cenozoic fossil record*

Spring 2012

Alex Harmon-Threatt, Washington University, *Preference and proteins: Understanding resource use of
pollinators for conservation*
Karen Kapheim, UIUC, *Developmental influences of social flexibility in a neotropical sweat bee
(Megalopta genalis)*
Adrian Smith, UIUC, *Policing of worker reproduction in the ant Aphaenogaster cockerelli*
Patrica Pietrantonio, Texas A& M University, *A chamber of secrets: molecular mechanisms involved in
reproduction of the red imported fire ant Solenopsis invicta Buren*
Mark Moffett, Smithsonian Institute, *Life and colony size among the ants*
Kent Walters, UIUC, *Methamphetamine alters behavior in Drosophila melanogaster, disrupting energy
metabolism and hastening mortality*
Robert Mitchell, UIUC, *Chemical communication in cerambycid beetles and the molecular basis of
olfaction*
Sindhu Krishnankutty, UIUC, *Systematics and biogeography of leafhoppers (Hemiptera: Cicadellidae) in
Madagascar*
Jason Bond, Auburn University, *Phylogenetic approaches to evaluating relationships and species
boundaries in highly structured taxa: Lessons learned from trapdoor spiders*
Dan Papaj, University of Arizona, *Signal uncertainty in plant-pollinator interactions: studies with bees
and butterflies*
Duane McKenna, University of Memphis, *Molecular phylogenetics and evolution of beetles: Insights
from genes and genomes*

Fall 2012

Rensen Zhang, Institute of Tropical and Subtropical Ecology, South China Agricultural University,
Allelochemical-mediated interactions between plants and insects
Christina Grozinger, Penn State, *Genomics of honey bee social behavior and health*
Rachel Winfree, Rutgers University, *Global change, pollinator biodiversity, and ecosystem services*
Joe Spencer, Illinois Natural History Survey, *They're back! The making and remaking of resistant western
corn rootworms*
Saurabh Sinha, Computer Science, UIUC
Ring Carde, University of California-Riverside, *Navigation of moths and mosquitoes to odor sources*
Blair Siegfried, University of Nebraska, *Developing sustainable approaches to corn insect pest
management*
Doris Lagos, UIUC, *Contributions to the systematics of the genus Aphis (Hemiptera:Aphididae)*
John Yoder, University of Alabama, *The adult Drosophila abdomen as a model for development and
evolution*
Jungkoo Kang, UIUC, *Modeling evolution of resistance of insects to transgenic crops*

Fall Picnic 2011

Top row, l-r: Alumni speaker Dan Strickman with May Berenbaum; Andy Suarez, Brian Allan, Stewart Berlocher, and Barry Pittendrigh; Rob Mitchell with ant cookie

Second row: Alex Wild with Jo-Anne Holley, Gail Kampmeier and Don Webb; graduate students; ants on a log



Christina Grozinger (2012 Alumni speaker, seen here with fellow alumna Diana Cox-Foster and her husband Harland Patch and their daughter at the 2012 Entomological Society of America meeting in Knoxville, TN



GRADUATE STUDENTS



Tolulope Agunbiade. I am a PhD candidate in Dr. Pittendrigh's lab. My research is focused on the application of genomic tools to understand the population dynamics of cowpea pests in West Africa. I am also involved in the Scientific Animations Without Borders (SAWBO) helping with liaising with volunteers for translation and recording of the animations in the different languages and doing audio overlays. The highlights of the year have been passing my prelims and also getting the International Student Fellowship from the Howard Hughes Memorial Institute.



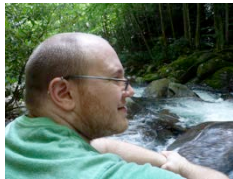
Diana Arias-Penna. It has been three years since my arrival in the Department of Entomology, where I became part of Jim Whitfield's lab crew. Since the last Entomology Newsletter (2009-2010), significant events have occurred in my life. I married in Colombia at the end of 2010, I took my preliminary examination early in 2012, my first niece Adélie has just been born (August 28th, 2012), and my interest in *Glyptapanteles* has soared. For those who do not know,

Glyptapanteles are minute parasitoid wasps that attack exclusively larval Lepidoptera hosts. I fell in love with them in early 2010 and ever since my interest in them has flourished. I am excited because I leapt from a vicarious approximation to direct contact with them. For my research, I am taking advantage of a plethora of Neotropical material deposited here at UIUC. I am focused primarily on filling basic gaps concerning taxonomy, accurate species delimitation, phylogeny and host specialization within this hyperdiverse group.



Catherine Dana. I received my B.A. in Integrative Biology from UC Berkeley in 2005, where I worked on the feeding behavior of parrotlets, home range size and distribution of the coast horned lizard, and sex-role reversal in cichlids (fish). From there I moved on to UC Irvine, where I worked as a lab technician generating stably transgenic *Hydra*. With this strangely diverse skillset, I decided to finally pursue my true love of entomology in graduate school. (I always knew I loved invertebrates -- I just had to pick a group!). I'm starting my second year in the Berenbaum lab, where I have been working on detoxification systems in navel orangeworms. I am also interested in getting back to my roots in animal behavior and working with the eusocial honey bee. Being

involved in public outreach has always been important to me, and I'm happy to say that I will be one of the Outreach Coordinators for EGSA this year.



Andrew Debevec. I am a second-year Master's student investigating a small genus of parasitoid wasp called *Xanthomicrogaster* in Jim Whitfield's lab. This is a rare genus that is found from southern Mexico to central Argentina, and presumably everywhere in between. I am in the process of describing 8 to 12 Costa Rican species, all of which are undescribed. I received my Bachelor's of Science from Cornell University in 2011, and hope to enjoy many more years here at the University of Illinois!



Mark Demkovich My name is Mark Demkovich, and I am a second-year Master's student. My current research focuses on detoxification systems in navel orangeworms and honey bees. I am using known detoxification inhibitors for cytochrome P450 monooxygenases, glutathione-S-transferases, and carboxylesterases to test for synergism with organophosphates sprayed to control navel orangeworms. For honey bees, my research involves cytochrome P450s and their roles in the metabolism of the most commonly detected pesticides in hive samples.



Michelle Duennes. This fall I'm starting my third year as a PhD candidate in Sydney Cameron's lab. For my dissertation I am studying the phylogeography and population genetics of a widespread montane bumble bee (*Bombus*) species complex in Mesoamerica (some of my research on this system was recently published in the journal *Molecular Phylogenetics and Evolution*). I am also studying color pattern development in *Bombus* by characterizing the phenotype of nearly every currently recognized species to look for common pattern elements that exist across the genus. Outside of academia, I'm in my third season of playing roller derby with the Twin City Derby Girls as skater Polly Nator. Polly Nator also made several appearances

during our celebration of National Pollinator Week, as I have been the event coordinator for this for the past three years. As Polly Nator, I have also been collaborating with music composition graduate student, Barry Morse, as well as fellow entomology graduate student, Jungkoo Kang, to compose performance art pieces featuring music inspired by insects, as well as live amplified insects sounds and poetry about insects. My photo was taken at our most recent

performance at the Krannert Art Museum to celebrate the 100th birthday of composer and artist, John Cage. I was also recently elected president of the Entomology Graduate Student Association.



Allison Gardner. I am a first-year PhD student from Armonk, New York, working with Brian Allan and Juma Muturi. I graduated from Williams College in 2010, and over the past two years I completed my MS at the UIUC College of Veterinary Medicine, where I studied the impact of vegetation, aquatic chemistry, and weather conditions on *Culex* mosquito production in storm water catch basins. I plan to continue my work in vector ecology, spatial analysis, and statistical modeling in the entomology department. I also enjoy playing alto saxophone in the Parkland College concert band, volunteering with the Champaign County Master Gardeners, and playing bridge and board games.



Sarah Giers I am interested in a broad range of scientific topics, including speciation, conservation, and genomics. I worked with odor receptor-driven behavioral responses of *Drosophila melanogaster* as an undergrad. I am currently in Stewart Berlocher's lab, where I will be working with odor receptors and how they drive speciation in tephritid fruit flies.



Jo-anne Holley. Four years after arriving in CU, Alex Wild and I have completely settled in. Our house now has a small but flourishing prairie garden that the insects adore, and our backyard houses two honey bee colonies. My dissertation research on the ant genus *Linepithema* is coming along well. This genus hosts the highly invasive Argentine ant, and I'm studying the behavior of its congeners to understand the evolution of traits associated with its invasive success. I've studied nine species of *Linepithema* in the field and will now turn my attention toward the genetics to elucidate how many queens are in each nest among other traits. Alex is now working 100% as a freelance photographer and photography instructor, a change he really enjoys, especially since he is still closely associated with the Entomology Department.



Sarah Hughson. I am a first year Master's student studying the western corn rootworm beetle with Dr. Joseph Spencer in UIUC's Illinois Natural History Survey. I am studying the behavior and ecology of the western corn rootworm beetle in experimental corn and soybean fields as well as grower fields. As an undergrad I developed a strong interest in invertebrates and their behavior. I received my Bachelor's of Science from Saginaw Valley State University in Saginaw, Michigan.



Tania Jogesh. I am a doctoral candidate in the lab of Dr. May Berenbaum. This is my fourth year in the Department. Over the last three years I have been working on the coevolution between wild parsnips and parsnip webworms in New Zealand. Along with the NZ project, I am studying the population genetics of wild parsnip over its entire invasive range. Last year, I passed my prelims and am now moving toward the completion of my PhD.



Jungkoo Kang I am very interested in applying my training in ethology, entomology, mathematical modeling and crop ecosystem ecology for improving farmers' profit and agroecosystems. For my M. S., as an insect behavioral ecologist, I studied the behavior of western corn rootworm, a major insect pest of corn, to investigate the impact of the insect behavior on the high-dose refuge strategy for transgenic corn. As a Ph. D. candidate, I have gained expertise as a mathematical modeler, and I developed simulation models of western corn rootworm, European corn borer, cowpea weevil, and sugarcane borer to investigate insect resistance to transgenic crops expressing compounds controlling insect pests. The main goals of my future research are 1) to develop strategies for managing insect pests for economic, sustainable crop production, 2) to improve the durability of current insect-management options by managing resistance by pests and diseases, and 3) to develop education programs to promote Integrated Pest Management (IPM) practices for farmers' profit and sustainable agriculture.

Aron Katz. Aron Katz. I am a Master's student in the Springtail Lab headed by Dr. Felipe Soto-Adames. This is my third year in the Entomology Department at UIUC and I love it! I have been studying and working with insects for the better part of the last 8 years. I have been involved with all kinds projects from ecology to IPM, but I am



most interested in hexapod systematics, evolution, and bioindicator studies. Currently, for my Master's research, I am using a combination of color pattern, morphology and molecular data to understand evolutionary relationships and species boundaries within North American *Entomobrya*, a genus of Collembola with variable and conspicuous color patterns. It is also my third year as a teaching assistant for Dr. Richard Weinzierl's Applied Entomology class. Aside from spending most of my days collecting and staring at springtails, I am also a drummer in a local blues band and enjoy weekly BBQ's. My girlfriend Monique and I also like to take nightly adventure walks around town and within the small patches of forest amongst the corn. Though graduation is hopefully a semester away, I look forward to spending a few more years in Champaign-Urbana working toward a PhD.



Sindhu Krishnankutty. Hi all! Hope everyone had a good year. My 2011-2012 was eventful. I defended my PhD thesis and so this is final year of my student life. I thoroughly enjoyed working in my project that aimed to find out the origin of leafhoppers in Madagascar. Yes, we found an interesting biogeographic pattern. Other than thesis defense, Madhu and I are proud parents of baby boy, Ananth Krishnan Siddappaji. [We made sure he also has a long name]. My parents (who are awarded the prize of the most supportive parents by me) could visit us and had a wonderful time. I feel fortunate to be a part of this department. The immense support that we received from our friends, faculty and staff in this department during difficult times can never be forgotten and I am deeply grateful for that.



Doris Lagos I am a doctoral candidate with Dr. David Voegtlin. My research is about aphids. I study the taxonomy and systematics of *Aphis*. The classification of the genus *Aphis* needs to be revised because solely taxonomic studies are often ambiguous due to the complexities of convergent morphologies and cryptic species. Species within this genus are difficult to discriminate using only morphology and most dichotomous keys rely on host plant association to identify species. However, molecular studies together with morphological, biological, and ecological information can aid accurate identification and reveal the identity of undescribed species. Therefore, the main objective of my research is to contribute to the improvement of

aphid classification systems and to the knowledge of biodiversity of aphids. Outside of research, I love to spend time with my children, David Alejandro and Katherine Elena, and husband Tony Kutz. Also, I enjoy giving presentations about insects especially for elementary school kids. My hobbies are cooking, knitting and dancing.



Fredrick Larabee. My third departmental newsletter? Already? Look at that kid in the 2008 newsletter! He's so naïve and idealistic. He has no inkling of the challenges that are ahead of him or that he's going to change research interests about half a dozen times before settling on something. Since the last newsletter I completed my Master's thesis on predator avoidance in trap-jaw ants during their interactions with pit-building antlions. I'm now working on a comparative study of trap-jaw mandible morphology and snap kinematics, still in the lab of Andy Suarez. I've been fortunate to be able to travel a fair amount for research over the last two years. Earlier this spring I participated in the Applied

Phylogenetics Workshop at Bodega Bay. In the search for more specimens to include in my project, I visited ant collections at the University of Utah, UC Davis and the California Academy of Sciences. In the summer of 2012, I traveled to Cambodia to bring back live trap-jaw ants (see full account elsewhere in the newsletter). While there, I contracted dengue fever and a still-unidentified bacterial infection that sent me to Hotel Carle for a few days after returning from the field. Fortunately, I was able to take a couple of less hazardous field trips to Archbold Biological Station in Florida in the summers of 2011 and 2012.

Melissa and I moved to a house in Urbana from Champaign this summer and are really enjoying the change of pace so far. The proximity to Black Dog Ale House is kind of a double-edged sword...



Allen Lawrance. I am a second year MS student in May Berenbaum's lab. I received my BA in entomology here at the University of Illinois in 2011. This department has made me feel at home ever since I began working as extra help in May's lab while in high school. I try my best to be involved within the department. I docent at the Pollinatarium most weekends and last year I served as outreach coordinator for EGSA, which was a busy yet rewarding experience. I am very pleased that Club Insecta is running strong after I passed on the reins of club president after finishing undergrad. For my master's project I have been studying host plant recognition by both adult and larval black swallowtail butterflies by using both molecular and behavioral methods. Outside of the

lab I enjoy socializing with other students and am an aquaria enthusiast.

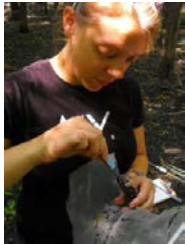


Ling-Hsiu Liao. My area of interest lies largely in detoxification in social insects. Under the supervision of Dr. May Berenbaum, I study the esterase detoxification system in the western honey bee. We hypothesize that the age-related division of labor in honey bee colonies affects each individual such that xenobiotics are processed differently depending on caste, age, and task. I hope my study will further develop ways to improve the health of honey bee colonies and understand the impacts of pesticide usage.



John Maddux. This fall I am beginning my Master's degree in Sydney Cameron's lab. I completed my undergraduate work at Missouri State University in Springfield, MO, where I majored in biology and biology education. During the last year of my undergraduate study I decided to forego teaching high school science in favor of a career in research and the professoriate. In the coming months I will begin studying the evolution of mimicry systems in bumble bees. I also hope to pursue my interests in the behavior and biology of bees in general. I remain passionate about K-12 education and hope to build on my past experiences by working with K-12 educators to improve the teaching of insect science and evolution in the schools. Most of all, I'm looking forward to an exciting next few years in entomology at Illinois!

Tara McGill I just completed my second year as a graduate student in Professor Gene Robinson's lab. I finished up my Master's thesis on the location of brain gene expression in response to odor valence in the honey bee. I have a passion for doing insect outreach! Because of my love for outreach, I've acquired a few "pets" (106 lubber grasshoppers) that I maintain for outreach efforts. This past year I developed several lessons using insects to enhance elementary school science curriculum in Champaign and Urbana, IL. After I completed my Master's, I moved with my husband to Chicago, IL where I hope to find a position developing curriculum designed to teach students general biological concepts through insects.



Linnea Meier. I am a second-year Master's student advised by Dr. Larry Hanks. I am currently studying the effects habitat fragmentation on longhorned beetle (*Cerambycidae*) communities. In addition to examining differences in the overall diversity of cerambycids between different patch types, I am also eager to see if certain species are more sensitive to habitat fragmentation, and what life-history or other traits might account for this sensitivity. Besides research, teaching and outreach are very important to me. I hope to become increasingly involved in our department's outreach efforts in the coming years.

Before I came to UIUC I had my amazing daughter, Sophie (now 2.5 years old). When I am not working I am happily spending time with Sophie and my husband, Lujack. I also love to run, especially on trails when I can get to them.



Brendan Morris. Since arriving in Urbana-Champaign last January, I've learned quite a few things about temperate-zone life. For one, the psychological effects of snow are severely misrepresented in the movies and there is certainly nothing whimsical about slipping on ice. Perhaps most importantly, I have realized the necessity for functional differences between my spring/summer and fall/winter fashion choices; it's good thing I have a basement! Climate aside, I've thoroughly enjoyed my transition into the Dietrich lab, getting to know the Department and scouting the area for prime treehopper localities. My master's research is exploring the biogeographic origins and systematics of a group of endemic Caribbean treehoppers (*Membracidae: Centrotinae*). With any luck and probably a few ritualistic dances, my upcoming fieldwork in the region should compensate for the relatively rapid succession of my first Illini treehopper season.



Nicholas Naeger. I am a PhD candidate in Gene Robinson's lab interested in the molecular aspects of evolution and behavior. I am currently working on a project to compare brain gene expression profiles responsible for initiating an instinctive (hard-wired) behavior or a learned behavior. Drone honey bees make mating flights where they search for a new unmated queen from another colony only at a specific window of time in the afternoon. The timing of mating flights appears to be completely hard-wired in honey bees. By comparing transcriptional profiles in brain regions of drones with that of workers trained to fly for food at that same time window, we will look for genes specific to hard-wired motivation, learned motivation, or reward seeking in general. Additionally, I have been working with queenless honey bee workers that

develop their ovaries. Contrary to current literature, we have found that these bees do not act as selfish individuals that stop performing hive tasks and focus on personal reproduction; rather, we find that reproductive workers change their behavior from the normal division of labor based system where individuals specialize on specific tasks to an alternative form of sociality where all individuals perform all tasks and all work is shared. This form of sociality is utilized by extant groups of orchid bees, the sister clade to the honey bees, suggesting that ancestral behavioral states re-emerge in queenless hives.



Katherine Noble. I am a student in May Berenbaum's lab, where I have been studying detoxification enzymes in the navel orangeworm (a pest that threatens delicious things like pistachios and almonds)! We are currently working on an RNAseq project to complement the navel orangeworm genome assembly taking place in Hugh Robertson's lab. I am happy to be championing the cause of the Almond Joy (my favorite candy). The last two years have brought other sweet things: I am now the proud parent (with Alice Vossbrinck) of two beehives that we maintain in Urbana.

Kyle Parks. I am a first-year PhD student in Dr. Jim Whitfield's lab. I got my BS from University of Massachusetts Amherst and my MS from Clemson University. I will be working on parasitoid microgastine wasps that attack caterpillars. After sweating it out in the South for two years, I'm very glad for the change of scenery in IL!



Massimo Pessino I am Massimo, PhD candidate in my fourth year of studies. My advisors are R. Edward DeWalt and Rosanna Giordano. My research is focused on aquatic insects and I am currently working on projects examining the biogeography and population genetics of several taxa of stonefly in midwestern North America.



Gwyn Puckett. As a doctoral student co-advised by Dr. Lee Solter and Dr. Marianne Alleyne, I am studying the physiology of the European gypsy moth, an invasive forest pest. My research is focused on the immune system response during an infection by the various entomopathogens. I am using proteomic techniques, such as 2-D electrophoresis that allows for visualization and analysis of the expressed antimicrobial peptides. Most immune studies rely on injecting the host subject to induce a systemic effect. By feeding the microbial pathogens to the gypsy moth larvae, I am mimicking one of the most likely paths of infection found in nature. My goal is to better elucidate the relationship between the insect host and its natural microbial enemies.



Maminirina Randrianadrasa. I am working on my PhD research under the direction of Dr. May Berenbaum. My main interest is silk production in Lepidoptera, mainly wild silkworms. I study the mechanical and chemical properties of silk and the effects of UV-light on their production. I also focus on the natural history and genetic diversity of one Malagasy species of wild silkworm, *Antherina suraka*. I am currently more or less done with my fieldwork in Madagascar and mainly doing lab work. I hope my work will help in a certain way conserve the remaining forests in my country. Apart from entomology, I enjoy swimming and traveling.



Keon Mook Seong I am from South Korea. I completed my MS in 2010 in Seoul National University. The focus of my Master's thesis was to investigate the biochemical, physiological and molecular mechanisms associated with resistance to xenobiotics on the genomic and proteomic scales. I performed the identification and characterization of acetylcholinesterase and voltage-sensitive sodium channels from various medical insects such as bed bugs and head lice. This is my first year at the University of Illinois as a graduate student in the PhD program. I am excited to be joining Dr. Barry Pittendrigh's lab and UIUC. I am interested in studying the gut microbes of head and body lice and the effects of xenobiotics on metabolism in *Drosophila* species for my PhD research.

Scott Shreve. I am in what should be my final year of my PhD. While I am looking forward to this milestone, the prospect of finishing the dissertation, finding a job, and moving can be overwhelming. I have been working with Kevin Johnson, studying species of primarily asexual bark lice with small, isolated sexual populations. I am trying



to understand how the distributional and genetic diversity patterns related to reproductive mode arose in these species. I am particularly excited by the prospect of developing a novel use of cytonuclear disequilibrium to examine the evolution of reproductive mode within species. The biggest news, however, is the birth of Hannah Shreve in the summer of 2011. She enjoys many of her insect board books, especially *I Like Bugs*. We've been working on learning the insect orders, but she has a long way to go. Unfortunately, there are very few opportunities from her books to teach her "Psocoptera."



Christina Silliman. I am in my second year as a graduate student in the Hanks lab. My interests center around the impact of early-life experience (for example stress or nutrition) on adult phenotype. I am currently looking at individual variation in pheromone profiles of the longhorned beetle, as well as the maturation of cuticular hydrocarbons throughout development. I enjoy most insect-related activities, sewing, games, and a good garage sale.



Laura Steele. I completed my Master's degree in May 2012 with my thesis focused on a genomic analysis of DDT-susceptible and DDT-resistant *Drosophila melanogaster* laboratory populations. I am continuing on at Illinois as a doctoral student working in Dr. Barry Pittendrigh's laboratory. My current research is looking the metabolic effects of methamphetamine on *Drosophila*. I also have been very involved in the extension project Scientific Animations Without Borders. This past summer, I adopted a second dog from the local humane society. When I'm not working, I enjoy reading, running, collecting insects, walking my dogs (Luna and Tris), and scrapbooking.



Alice Vossbrinck. I am a master's student in Barry Pittendrigh's lab working on the transcriptome of the cowpea weevil, which is an important pest in tropical areas of the world. As the social chair of EGSA, I enjoy hanging out with the other grad students and planning fun events like the fall camping trip. Outside of school, I spend my free time outdoors with my dogs.



Andrea Walker. I am in my second year in Andy Suarez's lab working toward my master's degree. This first year has been full of adventure for me, as I began conducting citizen science in order to repeat a survey of house-infesting ants that UIUC graduate M.R. Smith performed in the late 1920s, to compare results and changes in urban ant diversity over time. I am also studying colony nest movement in tramp ants and performing local pitfall trapping. This summer I attended Ant Course held in Uganda, which was amazing and quite a departure from my urban field sites mere minutes from the lab. At Ant Course I identified and brought back over 40 genera of ants, adding to my collection and gaining quite a fondness for African formicids.

Back home at UIUC, I am also an avid swing dancer with the Illini Swing Society, a group dedicated to enjoying the various forms of swing dance. Prior to grad school at UIUC, I completed my bachelor's degree at Texas A&M University. While there, I studied braconid wasps (in the genus *Eurytenes*) with Bob Wharton and got my first introduction to ant research with Micky Eubanks, studying red imported fire ants.



Marsha Wheeler. I am a fourth year Ph.D. student in the Robinson lab. My research is broadly focused on how nutrition influences honey bee physiology and behavior. I am in the process of analyzing an RNA-seq data set aimed at studying the nutritionally-responsive gene expression changes in the pars intercerebralis of the honey bee brain. My goal is to uncover the gene expression changes in the pars intercerebralis that are upstream of major hormonal, physiological and behavioral changes.



Joseph Wong. Fourth year grad student currently in the Hanks lab studying 'bycids. Current research in chemical ecology of cerambycids. Host plant volatiles, pheromones and responses to these chemicals. I enjoy board games, naps and sports in my free time. I also like cats.



Alan Yanahan. I'm a second year master's student working with Dr. Steve Taylor at the Illinois Natural History Survey (INHS). I grew up in the far northern reaches of Illinois and headed south to Champaign to earn my BS in entomology. Having decided to stick around for graduate school, I now study the ecology and diversity of carabid beetles in Illinois sand prairies and sand savannas. My favorite part of working with the INHS has been the opportunity to survey in habitats that I didn't even know existed in Illinois: algific talus slopes in the extreme northwestern corner and caves in the deep south. Outside of entomology, I like to cook, read, and play pick-up basketball games.

RECENT GRADUATE STUDENTS

M.S. (end of)2010

Becca Striman, Seasonal and diel periodicity of cerambycid beetles in East-Central Illinois: The potential for cross attraction (L. Hanks)

Ph.D. 2011

Emilie Bess, Biogeography and phylogenetics of Hawaiian bark lice (K. Johnson)

Terry Harrison, Microlepidoptera of Illinois hill prairies (M. Berenbaum)

Lauren Kent, Evolution of the GR family of gustatory and odorant receptors in mosquitoes (H. Robertson)

M.S. 2011

Juraj Cech, Mathematical quantification and statistical analysis of *Bombus* (Hymenoptera: Apidae) dorsal color patterns (S. Cameron)

Benjamin Hottel, Attracting dark-eyed fruit flies, *Drosophila repleta* (Diptera: Drosophilidae), in swine facilities using color and odor (S. Ratcliffe)

Fredrick Larabee, Evolutionary co-option of trap-jaw ant mandible strikes: defensive interactions with antlions (A. Suarez)

Jaqueline O'Connor, Phylogenetic patterns of host specialization in two tropical Microgastrinae (Hymenoptera: Braconidae) parasitoid wasp genera (J. Whitfield)

Joseph Wong, Blending synthetic pheromones of cerambycid beetles to develop trap lures that simultaneously attract multiple species (L. Hanks)

Ph.D. 2012

Sindhu Krishnankutty, Systematics and biogeography of leafhoppers in Madagascar (C. Dietrich)

Mathys Meyer, A morphological phylogeny with a taxonomic revision of African species of *Goniodes* (Insecta: Phthiraptera: Ischnocera) *sensu lato* from the Galliformes (Aves) (K. Johnson)

Robert Mitchell, Chemical communication in cerambycid beetles and the molecular basis of olfaction (L. Hanks and H. Robertson)

M.S. 2012

Laura Steele, Genome-wide sequencing and an open reading frame analysis of DDT susceptible (91-C) and resistant (91-R) *Drosophila melanogaster* laboratory populations (B. Pittendrigh)

Johnny Yu, Polyadenylation of ribosomal RNA in response to picornavirus infection in honey bees (*Apis mellifera*) (M. Hudson)

Entomology Graduate Student Association

2011-2012 Officers

President: Jo-anne Holley

Secretary: Laura Steele

Treasurer: Michelle Duennes

Outreach Officer: Allen Lawrance

Faculty Liaison: Katherine Noble

Social Chair: Alice Vossbrinck

GSAC Rep: Fred Larabee: As the GSAC Representative, I met with six prospective students during the Entomology Department's IFFF/Recruitment Weekend Extravaganza. I was then responsible for accumulating and conveying the feedback of the current graduate students to GSAC. We have a great group of new students entering the department for the 2012 academic year, and I hope everyone helps them get settled and feel welcome.

I also wanted to share my experiences from 2010 as outreach coordinator: This was my second, and last, year as Outreach Coordinator for EGSA. We continued the department's excellent tradition of spreading insect knowledge and appreciation throughout the Chambana community. We participated in approximately 20 events at local elementary schools, libraries and community centers (not counting events EGSA members spearheaded on their own). Even more exciting, from a coordinator's point of view, over half of the department's graduate students participated in outreach at some point throughout the year.

2012-2013 Officers

President: Michelle Duennes

Secretary: Andrea Walker

Treasurer: John Maddux

Outreach Officers: Catherine Dana & Brendan Morris

Faculty Liaison: Katherine Noble

GSAC Rep: Linnea Meier

Social Chair: Alice Vossbrinck

2010-2011 Officers

President: Scott Shreve

Secretary: Laura Steele

Treasurer: Michelle Duennes

Outreach Coordinator: Fred Larabee

Social Chair: Jaqui O'Connor

GSAC Representative: Rob Mitchell

Faculty Liaison: Jo-anne Holley

The Entomology Graduate Student Association is looking forward to a great 2010-2011 year. We have a great group of new entomology students this year who have already been very active, and we're excited about how they will shape the EGSA in the future. The social calendar has already begun with a camping trip, and a venture through the corn maze. Veteran outreach coordinator Fred Larabee returned to build on our success last year in introducing the younger generation to insects. The highlight of the year, as always, promises to be the Insect Fear Film Festival in February. The theme has not yet been decided upon, but the traditional art show, petting zoo, and Bug Scope activities will be there. We want to thank the efforts of all the out-going officers, especially Rob Mitchell, president for 2 years. Our success this year will rest in large part on their work the past few years.



CLUB INSECTA

From Tyler Hedlund, President (2012):

In its third year, Club Insecta is still providing educational opportunities to its members, other students, and the public as a whole. Undergraduate and graduate students from all majors have the opportunity to explore their interest in insects on whichever level they choose, be it related to their studies, or on a casual level to see what the insect world holds. There are members who are majoring in entomology, integrative biology, and chemistry, along with others that are majoring in business, English, and the many different engineering programs U of I has to offer. All are a part of this club because of a common interest in insects. Even the variation in interests holds many questions and thoughts. Some members are interested in raising and breeding insects, while others want to expand their collection, and still others just want to come and ask questions to expand their breadth of knowledge.

Club Insecta has its own insect collection that grows more and more every year. Parts of this collection can then be brought along for different educational outreach programs to schools in central and northern Illinois. Other activities the club takes part in include collecting trips, paper discussions, insect and arachnid keeping, museum visits, movie nights, and visiting and reviewing restaurants around the Champaign-Urbana area.

Photos: top, Insect Day on the Quad with 2011 Club Insecta President Robert Orpet and 2012 President Tyler Hedlund; bottom, Club Insecta at the Mississippi River Museum and Aquarium





International Ants

In its 29th year, the Annual Insect Fear Film Festival remains the longest-running insect film event as well as the longest college celebration of insects in the United States. And in keeping with our international theme, if you search “insect film festival,” you’ll find articles about Bug 2 at Plymouth University. Last year, Peter Smithers asked me for advice on how to put on a film festival, and On March 11, 2011 he wrote:

Dear May--Just thought I would let you know that the Plymouth Insect Film Festival “Bugs on Camera” ran for the first time a few weeks ago and was a roaring success. Thanks mainly to the excellent model that you have developed....It was a wonderful day and we are defiantly on for next year. Many thanks for your inspiration.” Peter Smithers, Biomedical & Biological Sciences, University of Plymouth.

As befits our theme this year, International Ants, we did have some special guests from far away (albeit not far enough to involve crossing an international border). Corrie Moreau came from the Field Museum and University of Chicago. She’s an expert on the evolution and diversification of ants. Corrie not only works at the Field Museum, she’s an exhibit there—it’s “The Romance of Ants” – (that’s Romance, not Rome Ants): “this exhibit tells the story [in graphic novel form] of how Corrie went from playing with ants on the sidewalks of New Orleans as a child, to studying with E.O. Wilson at Harvard University, and eventually to joining the scientific staff at the Field Museum. This innovative exhibit mixes media including a giant living ant farm, and larger than life color photographs of ants by insect photographer Alex Wild.”

Why ants? Have we been there and done that already? In 1997, our 14th festival featured ants (and, as long-time attendees will recall, our one and only experience with full frontal male nudity) and ants have appeared in other festivals, including our 4th (Female Insect Fear Films) and our 25th (when we showed “Antz” as part of our festival honoring animator Simon Smith). Suffice it to say there is no other single family of insects that has more profoundly affected our life on this planet than the family Formicidae, to which all 12,000 species of ants belong. To put that number in perspective, this one family of insects has more species than all of the birds in the world (10,000) and way more than the number of mammals (less than 5700, in 153 families). In some ways, those 12,000 ants are strikingly similar—you don’t need a degree in entomology to recognize an ant. They all have those characteristic elbowed antennae and a peculiar and highly distinctive node-like “ant waist” (which by the way is now a Korean K-Pop term). They all share certain types of behavior, as well—they’re all social, living in colonies and exhibiting all kinds of behaviors that we humans value—teamwork, self-sacrifice, sharing information and teaching, defense to the death of home and family, domestication of crops and animals, burial of the dead--along with other human behaviors we’re not too proud of, including slavery, child labor, and occasional cannibalism. But even within a single species, they can be staggeringly variable. There’s about a 500-fold difference in size between the smallest and largest workers in the Asiatic marauder ant species *Pheidologeton diversus*. That ant, by the way, is found throughout southeast Asia from India to Taiwan and the Philippines. Ants occur naturally on every continent except Antarctica and make up an estimated 15 to 25% of all terrestrial animal biomass in most places (more than the human biomass).

That they occur everywhere people do is not a coincidence—we’ve done ants (wingless and consigned to an earthbound existence after mating) a tremendous favor by bringing them along with us wherever we go. Over 60 of the ants found in North America didn’t start out here. America is a giant ant melting pot. So, one reason ants enjoy an international reputation (if enjoy is the right word) is that they are our fellow travelers. This is particularly true for the so-called tramp ants-- three dozen or so generally small, nonterritorial, omnivorous opportunists that are assisted by human transport. They include some very annoying species--pharaoh *Monomorium*, whitefooted *Technomyrmex difficilis*, and rover *Brachymyrmex patagonicus*. But they also include game-changers. *Anoplolepis gracilipes*, the yellow crazy ant, *Linepithema humile*, the Argentine ant, *Pheidole megacephala* the big-headed ant, *Solenopsis invicta* the red imported fire ant, *Wasmannia auropunctata*, the little introduced fire ant (little red fire ant/electric ant). Their effects on people are enormous. Some of them, like fire ants, injure people directly by biting and stinging, and pose health threats by infesting electrical outlets, traffic signals and agricultural fields—they cost Texas \$300 million annually and California’s estimated losses over 10 years are projected at 3 to 9 billion dollars. Other invasive ants are more insidious, causing problems by completely altering food webs, ultimately endangering not only other invertebrates, but vertebrates and even plant species wherever they invade.

According to our own Andy Suarez in a PNAS paper published in 2005, the vast majority, 94%, of ant interceptions at ports of entry in the U.S. involved cases “where ants were found on plants....orchids and bromeliads (49%), fruits (14%), other ornamental plants (11%), and *Acacia* (4%). Less important categories included cactus, sugar cane, ferns, moss, and nonplant material, such as soil, pallets, and military cargo.” This is about the only plot

point that's at all accurate in our first film, "Glass Trap." This film was a DEJ Productions film but First Look Studios acquired the rights in 2005, when First Look bought DEJ Productions. According to Eriq Gardner, 12/9/11, First Look was sued by Polsky Films, which had financed print and advertising for Nicholas Cage's movie *Bad Lieutenant: Port of Call-New Orleans* and claimed that Nu Image/First Look "ran off" with the profits ("top executives siphoned off revenue"). Maybe that's why no one at Nu Image/ Millenium (which bought First Look) ever returned my phone calls, emails or faxes... The budget for production was only \$475,000 (estimated) and filming took a whole 12 days June 11, 2004 on location in Los Angeles. The director, Fred Olen Ray, is responsible for at least 87 films (including some under pseudonyms); among his credits are *Hollywood Chainsaw Hookers*, *Curse of the Erotic Tiki*, *Twilight Vamps*, and 7 movies with "Bikini" in the title, including *Bikini Hoe-Down*, *Bikini Drive-In* and *Bikini Frankenstein*. "Glass Trap" went straight to DVD in 7 countries. Recognizable cast members include C. Thomas Howell (Curtis) who started his career in *ET The Extraterrestrial*; former pin-up/Playboy/soap opera star Stella Stevens (Joan Hightower), and Martin Kove (Corrigan) (also, Cobra Kai Sensei John Kreese in *Karate Kid*). The action starts in Sierra Gardens Nursery, where blood starts flying immediately. Cut to a pickup carrying trees entering a lobby/garage of a high-rise where janitor/ex-con Curtis is sweeping the lobby and hard-hitting executive Hightower is working on Saturday on her magazine. Plants get wheeled into the lobby and put by the window. Turns out those trees are from the nursery that is dealing in "Illegally imported flora" and is being investigated by Agent Lacera, ex-FBI but now working for a "section of the USDA ...so secret that the President doesn't even know it exists". Dead bodies begin to accumulate, along with rustling plants, dripping slime, and ominous antennae. Of course, the power goes out, and once there's an ant's eye view of spilled sugar in the coffee break room, the audience knows what's up. Spoiler alert: Those were no ordinary trees. A ship called the Scarlet Dragon linked to a terrorist cell in Nevada and a missing stockpile of plutonium from Iraq transported the trees; a plutonium seal leaked onto the trees and "whatever was on the trees". As evidenced by the telltale formic acid residue, ants were on the tree—specifically, *Camponotus obscuripes*, "a carpenter ant from Asia!" As in most movies of this ilk, radioactivity speeds up metabolism and causes the ants to grow to the dimensions (and temperament) of an angry Rottweiler. Not to give away the ending but suffice it to say that the solution involves "enough DDT to flatten Texas. We're going to have an old-fashioned bug barbecue."

Our second feature, "The Bone Snatcher" (2003), earned a 0% rating on Rotten Tomatoes. It is, however, certifiably international--an unusual collaboration between Canada, UK and South Africa. The budget was about \$6 million and filming took about 60 days. The cast included few recognizable faces--Scott Bairstow, as Dr. Zack Straker, was a regular in the television series Party of Five and Rachel Shelley as Mikki played Kate Payne in the television series Ghost Whisperer. The film credits did list an ant wrangler, Nicole Jennings, who must have worked on the one scene with a few real ants (most were CGI). The movie was shot in Western Cape, Capetown, and Namibia. The movie opens in the Namib Desert, arguably the least hospitable place on the planet (averaging in its driest parts less than 2 mm of rain annually, with a team looking for diamonds (in something called a volcanic puff)—a dark, crunching sounds come from inside what looks suspiciously like an anthill. What's the logical thing to do when you find an unusual topographic feature? Hit it with a pick and break it open. "Hey guys come look over here!" is followed by screams, red wavy filter shots, and the opening credits roll. Cut to Vancouver, BC, and we meet Zach Straker, systems analyst and expert in emergency survival, dealing with a critical temperature drop in an Antarctic field station. Once the crisis is averted, Zach is summoned to Namibia to the mining expedition gone horribly wrong--several men from the mining expedition are missing. Hijackers are suspected but some of the locals know otherwise, as indicated by superstitious jiggling of a bug-like amulet. Two skeletons identified by a metal plate as belonging to the miners are discovered but something's not right—"they've only been dead for 6, 7 hours but look at the state of them! The bones are picked clean"... The team follows odd tarsi-like footprints that go on for "bloody miles" and change from two to four feet. They also walk by numerous shrine-like structures... Spoiler alert—as the locals know, the problem is Esekhulu, who "takes what belongs to her—the animals, the people, and she drinks the life from their bones and in this way she lives forever." Esekhulu is "bones that walk, flesh that disappears"—an ant colony that kills vertebrates to steal their endoskeletons and use them for more efficient locomotion. Thus, this may be the only movie ever made that deals with endoskeleton envy among arthropods... What's used to dissolve their prey? Formic acid, of course.

In addition to the feature films, as usual, we showed a number of thematically related shorts—in this case, a series of international ant shorts or cartoons. These included *The Grasshopper and the Ant* (1911) and *Travels of an Ant* (1983) from Russia, *Fly Tales* from France/Canada, a BN cookie ad from France, *Ferdy die Ameise* from Germany, a series of Budweiser commercials from China, and a Termidor commercial from Australia.

28TH ANNUAL INSECT FEAR FILM FESTIVAL

The Department of Entomology & The EGSA Present:

KILLER WASPS



Saturday,
Feb. 26th, 2011
Foellinger
Auditorium
Doors open at
6 PM
ADMISSION
FREE!

ACTIVITIES
Insect Petting Zoo
Insect Art Contest
Face Painting
Binoculars

28th Annual Insect Fear Film Festival

Feature Films:
Monster From Green Hell 7:40 PM
Swarmed 9:15 PM
Courtesy of Syfy Channel

Special Guest:
Swarmed Producer
Gordon Yang

FUNDED BY BONY

Saturday, February 28, 2011 Foellinger Auditorium Killer Wasps
Welcome to the 28th Insect Fear Film Festival, the original and oldest IFFF (although not the only IFFF--the former Santa Clarita International Film Festival founded in 1994 in 2005 became the IFFF, International Family Film Festival and, in 2011, to celebrate the International Year of Forests, 2011 (Forests 2011), the United Nations Forum on Forests Secretariat (UNFFS) partnered with the Jackson Hole Wildlife Film Festival to found the International Forest Film Festival (IFFF). As usual, we've had some unusual press attention; our festival struck a resonant chord with Scientific Computing Advantage Business Media Rockaway NJ. And guest who traveled the farthest to get here is Gordon Yang, producer of "Swarmed," who flew here from Toronto to introduce our second feature. Festival stalwart Nathan Schiff traveled here with alumna Ellen Green from Stoneville MS accompanied with a small subsample of his enormous collection of dead wasps on pins (no doubt making him the object of nightmares in the wasp world).

At our first killer wasp festival, the question naturally arises--Why wasps? This in turn raises the question, what exactly is a wasp? It's not so obvious--when most people say "wasp," they think yellow and black stinging hymenopterans that fly out of paper-like football-shaped nests to wreak havoc on unsuspecting humans. When an entomologist says "wasp," it can mean any of about 100,000 different things (or 100,001, if you include "white Anglo Saxon Protestant"). A true wasp is, according to a standard entomological text, a species in the order Hymenoptera that has the first abdominal tergum, or propodeum, "intimately associated with the thorax and separated by a distinct constriction from the rest of the abdomen"--in other words, a wasp is a hymenopteran that is wasp-waisted. Yes, hornets and yellowjackets, the angry buzzing yellow and black stinging creatures with the paper football nests, are wasps. Yellowjackets tend to nest in the ground, hornets hang their nests in trees. But they're only a tiny slice of the wasp world. There are some almost-wasps--the xiphidryids and orussids, or wood wasps, which may or may not be sawflies. Beyond that, it's hard to generalize. Among the true wasps, there's amazing diversity. The largest is the aptly named mammoth wasp, *Megascolia procer*. Indonesia. Females can have a wingspan - 3.25" to 3.5". She needs this massive body to capture and paralyze the grubs of the largest beetles of the world (rhinoceros beetles) for her larvae (2.5 inches). At the other extreme are the smallest wasps, which are the smallest insects in the world; the fairyflies, the mymarids, the smallest of which is less than 0.15 mm long, smaller than a single-celled amoeba (albeit, at 0.3 mm, a large single-celled amoeba). In between are other carnivores, other parasites, and even some vegetarians.

Not only is all this wasp business going on without threatening humans, much of it has gone on and literally changed the course of human history. During the Han Dynasty in China, court official Cai Lun is said to have invented the process of making paper from rags and other plant fibers in 105 CE after watching paper wasps making their nests. About 1600 years later, in 1719, when the rag supply wasn't keeping up with the demand for paper, French naturalist Rene Antoine de Reaumur was inspired by his observations of paper wasps to suggest using wood fibers, including sawdust and other byproducts of the lumber industry to make paper (kicking off the recycling industry). Not just paper but for much of human history the ink on the paper owed its existence to wasps. The tannin-rich galls formed by oak gall wasps *Cynips gallae-tinctoriae* and *Cynips insana* provided the world with the first permanent ink (a vast improvement on the smudge-prone charcoal-based inks). Wasps have even improved human health. According to the Edinburgh Clinical and Pathology Journal 1884, Dr. Alexander Wood, a Scottish physician, invented the hypodermic syringe with a hollow needle-point: "first the idea struck him as he was examining the sting of a wasp under the microscope". More recently, after Naoko Takahashi, from Japan, set a world's record for the women's marathon at the Sydney Olympics, she revealed she owed her speed to VAAM, Vespa Amino Acid Mixture, VAAM Hornet Juice, the "patented scientific sports drink derived from giant hornets that boosts human endurance and stamina." The energy drink contains extracts of grubs of *Vespa mandarinia*, giant hornets (world's largest hornet, with a 3 inch wingspan and a quarter-inch long stinger) that fly 100km a day at up to 25 km/hour.

Wasps make us healthy and wealthy, too, by contributing to maintaining our food supply. If you love Fig Newtons, you have a wasp to thank. California is second only to Turkey for worldwide fig production, with 18,357 acres producing \$18.4 million in 1995. Fig production took off in California only when fig wasps were imported in the 1890s for pollination. It took ten years for growers to identify the proper species for pollination and determine overwintering requirements to synchronize wasp life cycles with the plants. Beyond pollination services, wasps provide pest control services, too--the species that are the natural enemies of plant pests provide about 4.5 billion dollars worth of biological control in the U.S. alone.

So much money revolves around wasps! It's a wonder that so little seems to have gone into the making of our first feature in 1958, *Monster from Green Hell*. When the film was released, film critic Paul Beckley of the *Herald Tribune* remarked that it "has almost nothing to recommend it." Puppet maker Gene Warren described the wasps as "stuck together with wire and spit—no armatured figures at all." Their cheap construction meant the puppets couldn't be moved quickly without falling apart. Moreover, the wings on the wasp models are so tiny that one couldn't get off the ground if a crate of dynamite were ignited underneath it (spoiler alert). Because the producers and writers disagreed on how large these wasps should be, they're actually different sizes in different shots—from Great Dane to cow to house size. There was only enough budget for 2 ½ fully detailed puppet heads—and the one they made has compound eyes that roll in their sockets.

Basic plot—Jim Davis plays Dr. Quent Brady, a scientist who fires rockets full of test animals of various and sundry species into space to see what happens when they are exposed to radiation... He shows Dr Dan Morgan the disturbing test results with a guinea pig, whose coat changes color, a spider crab, and alligator who's "been in a trance ever since he got back."). A rocket full of wasps, though gets lost crashes off course in a remote African jungle. He worries about the consequences, given that (in one of cinema's great understatements, when it comes to radiation, "There's a lot of difference between 40 seconds of exposure and 40 hours." Reports of strange happenings come out of a region of Africa named "green hell". Then, in this Atomic Age, Dr. Brady, who just fired rockets into outer space, plans a 400-mile safari on foot to reach the rocket crash site. Why on foot? Because the producer Al Zimbalist saved on expenses by using large amounts of footage from the 1939 film *Stanley and Livingston*, a fictionalized account of the 19th century Scottish missionary and the search to find him. That's why you'll see elaborate shots of hundreds of African tribesmen massing on the veldt, interspersed with close-up shots of five or six guys and why vegetation shifts abruptly from African savanna to what looks suspiciously like California chaparral. Long story short, a local tribesman informs the doctor's daughter Lorna of her father's demise in *Green Hell* and brings back a stinger the size of a traffic-cone; Brady determines that the stinger did indeed come from a wasp by examining it under the microscope (amazing histological technique). Forty-two minutes then go by with not a single giant stop-motion wasp. Then from nowhere there's a stop motion snake! There are many howling errors from which to choose--How about the compound eyes that roll in their sockets? How come cosmic radiation turned the wasps nocturnal? How about the 19th century costumes? How about the brief stock footage of an erupting volcano—in color?!

Our second feature, "Swarmed" (2005) comes to us from Syfy (formerly Sci Fi Channel, until they discovered they couldn't copyright "Sci Fi") and Reel One Entertainment. The movie first aired April 2005. Michael Shanks, of *Stargate* fame, is scientist Kent Horvath, who is working on a new pesticide to kill yellowjackets. His assay kills 6 out of 8 but the two survivors end up with elevated pheromone levels and major anger management issues. Deaths ensue, starting with the janitor, then a mortician. Cristina Brown (Carol Alt) is a local scientist teaching a class on bees who is called in to investigate the deaths (and explain what pheromones mean to bees). Agent Doug Heydon, played by Booth Savage, tells her about the pesticide research and she goes to investigate. In the meantime, an exterminator, Q (Richard Chevolleau) borrows some of the souped-up pesticide to kill pests, not knowing that the spray not only makes the wasps angrier, it makes their venom more potent. ("Yellow jackets are sadistic psychotic killers..."). When it looks like things can't get worse, it appears that Phineas Washburn, owner of Washburn's Tasty Sauce, is planning a burger cook-off; because the mayor's ethically compromised due to campaign contributions, the cookoff isn't going to be called off. Spoiler alert—a shotgun and flamethrower are used to dispatch the wasps (rivaling the chainsaw used in "Mosquito" to dispatch killer insects). Inspired touches in this film—yellowjackets are in fact sometimes called "meat bees" because as carnivores they are attracted to meat (commonly used in baited traps). Yellowjacket alarm pheromones have been identified and they do attract nestmates. The best thing, though, is Carol Alt, who plays the entomologist Cristina Brown; Alt is a supermodel (1982 *Sports Illustrated* Swimsuit issue cover). She placed #5 on askmen.com's list of "Top 10 Models Of All Time". SyFy very generously arranged for the film's producer, Gordon Yang, to come to our festival. Trained as an architect, he studied film at York University and has produced over a dozen films. He was line producer for "Swarmed" (and he tells me the line producer is the guy who keeps his finger in the dike). Although CGI was used for some scenes, real yellowjackets were used in many others. The animal handler for the film had two assistants who glued the end of the abdomen shut with SuperGlue to prevent them from stinging the actors—Gordon Yang had to demonstrate their harmlessness by placing them on his own skin to convince the cast. Although the film was shot in Dundas, Ontario, the movie was set in the fictional town of Dundas, Indiana (note that the *Gourmet* TV news reporter says "about" and not "about"). The budget was \$1.2 million and all scenes were shot in 18 days (post-production took four months).

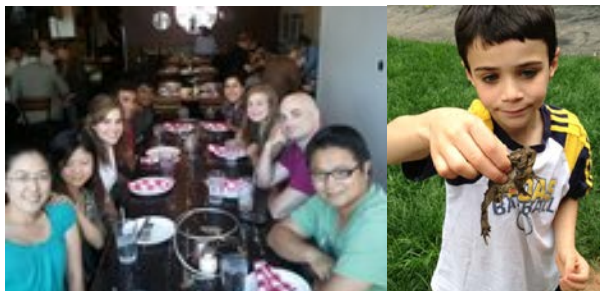
As for shorts, we showed an episode of the charming *Minuscule (La Vie Privee des Insectes)*, a French television series described as a cross between *Tex Avery* and *Microcosmos*, as well as trailers for the classic *Wasp Woman* (1959), about a cosmetics magnate who experiments with wasp royal jelly in search of eternal youth.



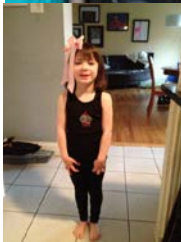
ALUMNI NEWS

Tom Baughman. With staff shortages, I've had to help with other programs at IDPH (Illinois Department of Public Health), the swimming pool licensing program and the lead paint program, in addition to toxicology. I guess it's job security if there's twice as much work to do as you can possibly get done in a day. At least the hours are limited. In my leisure, I continue to enjoy running, bike riding, walking, cross-country and downhill skiing, and playing trumpet in the Crystal Lake Community Band and at church. My wife, Theresa, enjoys Jazzercise, bike riding, and walking. She is also a champion sales and coupon shopper. Nathaniel (17) is going into his senior year of high school and will be applying to colleges soon. He's thinking about civil engineering. He has been very (over) active in our church's youth ministry program and also plays trumpet (especially enjoys jazz band). Jennifer (13) is going into 8th grade and is our animal lover. She wants to be a veterinarian. She has a goldfish named Squirrel and a delightful and social hamster named Carmel. Did you know you can potty-train a rodent? Jennifer also plays oboe.

Ross Bell. I continue, in my retirement, by working on manuscripts of Carabidae of Vermont and New Hampshire and a summary of the Rhysodini (Carabidae) of the world.



Yehuda Ben-Shahar. We moved to St. Louis in 2008 after five years of postdoc work for Yehuda, and med school/ residency for Sarah in Iowa City. We are now both assistant professors at Washington University. My position is in the Biology Department while Sarah was recently promoted to assistant professorship in the Psychiatry Department at the Washington University School of Medicine as a physician-scientist. Sarah's research is now focused on human psychiatric genetics,



while I'm still following the behavior of fruit flies and honey bees. As you can imagine, the role of genes in behavior is a major topic of discussion in the Ben-Shahar/Hartz household nowadays.

Our two wonderful kids Itai (8) and Noa (5) are growing fast and have adjusted well to life in St. Louis. This included becoming avid Cardinals fans. However, one thing we probably will never get used to is the St. Louis-style pizza, which often includes Provel, a funny-tasting synthetic "cheese-product". For some reason the locals love the stuff. St. Louis is a wonderful place – we hope you can come visit!

Damayanti Buchori. I am an academic faculty at the Department of Plant Protection, IPB. I have been active in research on biological control and insect diversity studies. I teach undergraduates, master's and PhD students. I am a member of the Plant Protection Commission, of the Ministry of Agriculture, and Plant Quarantine Commission, Ministry of Agriculture. My interest spans from ecology, pest management, conservation, quarantine issues and biotechnologies as it relates to pest management. I am the vice president of the Indonesian Entomological Society, from 2012-2015.

William Campbell. Having recently moved to Colorado from North Carolina, my wife Elaine and I are actively exploring Colorado and the Denver area.



Ember Chabot. Currently employed as a professional instructor at both the New York Botanical and Brooklyn Botanic Gardens in New York City. This fall I will begin as the new science teacher at Bay Ridge Preparatory Upper School in Brooklyn teaching biology, ecology and earth science. Luckily, I've found a strong contingent of Illini fans in the city with whom I faithfully watch football and basketball games whenever I can.

Chun-Liang Chen. My family has moved to San Antonio, Texas from Ohio since January 2012. Both my wife and I are working in the South Texas Research Facility. My two daughters--Angela will be 10th grader and Ivana will be 7 grader. We miss the Entomology department and UIUC friends.

Li-Chun Chio (1976 Doctoral degree) and **Eddie Hang Chio** (1977 Doctoral degree) Greetings from the Chios in Indianapolis. This is an update since 2008. Li-Chun continues to work at Eli Lilly and Company. The pharmaceutical industry as a group continues to face the toughest challenges in health care; thousands of employees have been laid off in the past years. Lilly announced in 2009 it would cut cost by at least \$1 billion and eliminate 5,500 positions by the end of 2011. It did. After teaching "Biopesticides" at the National Taiwan University since he retired from Lilly in 2006 and Li's recent involvement in a car accident, Eddie decided to spend more time at home and in writing. Eddie published an article entitled "Biopesticides, its future research and applications" in the World Pesticides March issue in China (World Pesticides 32(2): 16-30, 2010) and two review articles about spinosyn insecticides (Spinosyn insecticides: Part I. Blockbuster Products from a Remarkable Discovery. Formosan Entomol 1-13, 2011; and Spinosyn Insecticides: Part II. Triple Winner of the US-EPA Presidential Green Chemistry Challenge Award, Formosan Entomol 15-23, 2011). Eddie is proud to be involved in spinosad insecticide discovery. Spinosad products collectively are now a billion-dollar product.

A personal note--Eddie and Li-Chun love to travel. They have been in Alaska, Hawaii, Canada, Japan, China, Taiwan, Cambodia and many European countries. We just came back from a 10-day vacation in Peru in May, 2012. In addition, they have been promoted as grandparents since 8/22/07. Eddie's current email address is ehc13029@gmail.com. Hope to hear from you guys soon. Be good.



Robert (Bert) Clegern, The past two years have seen our move into a "retirement" community near Baltimore, so we are busy. Activities include teaching environmental topics in the local Elderhostel program, player/coaching the senior (read slow motion) softball team, chairing the residents' Grounds Committee (includes things entomological), and travel whenever possible. Trips have included the Maritimes, west Texas, the Lesser Antilles, southern California, Albuquerque, the Berkshires, and the northwest. Obviously, we are playing no travel favorites. The picture is of Linda and me a few years ago on the Eiffel Tower. Life continues to be good.



Joel Coats. I'm still enjoying my research/teaching job in the Department of Entomology at Iowa State University. The highlight of the past couple of years was getting promoted to Distinguished Professor. My lab group continues to work on green chemistry for control of arthropod pests, specifically mechanisms of action of terpenoids as insecticides and repellents, as well as environmental risk assessment of plant-expressed *Bt* insecticides. Recent professional travel has included trips to China, Mexico, Thailand, and Germany. Our family is scattered across the country and doing well. I always look forward to seeing everyone at the Illinois Mixer at the ESA National Meeting in November.



Randy Cohen. My life as an administrator has come to an end; I am no longer Chair. This means that I can finally enjoy life again. Susan is still a roving clinical scientist. The kids are all fine: Rachel is a post-doc at the University of Washington; Sarah is getting her Master's in Art History from Fresno State University; and finally, Josh is starting his PhD at the University of Oklahoma studying mammalian paleontology.

Glenna J. Corley. After receiving my M.S. in 1952, I obtained my Doctor of Medicine in 1956. I was Board Certified in Pathology in 1961. I was able to use my knowledge of Entomology throughout my medical practice, and now in agriculture as I manage my Centennial farms.

Ed Cupp. I'm retired but act as a technical consultant to the Mectizan Donation Program to control "river blindness" and to a black fly pheromone/trapping project at the University of South Florida. I also volunteer as chair of a technical committee advising a 6-nation river blindness control program in the Americas. Risk of infection has been reduced to ~4% of a population originally estimated at ~1 million. Bought a boat and Mary and I are learning to be sailors. Still fly-fish whenever I can. Best wishes, Ed.

Eric Day. Been busy with 3 new state record insects here in Virginia in 2011 and continuing havoc from the Emerald Ash Borer and Brown Marmorated Stink Bug. The three new state records: walnut twig beetle, *Pityophthorous juglandis*, the bean plataspid, *Megacopta cribraria*, and the spotted wing drosophila, *Drosophila suzukii*.

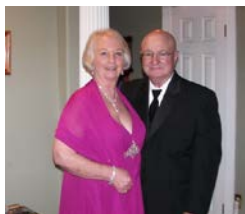
On the home front, the boys have spread their wings and flown away. Gordon graduated from George Mason University in May and is going to Senegal in the Fall with the Peach Corp. Graham is a Junior/Senior in Mechanical Engineering here at Virginia Tech. Nan and I look just like we did in Grad School and we are still keeping busy with our little farm in Craig County, VA.



Andy Deans. Heather Hines and I moved to Penn State in June, which is very exciting for us. I am the new director of the Frost Entomological Museum, and Heather has a split appointment between Biology and Entomology. We're also expecting our second child - a boy - in July 2012.

Tobias Dirks. Beginning in February of 2011, I seriously began establishing a company dedicated to increasing awareness of the potential of alternative, renewable energies, solar in particular, in this corner of Georgia by offering photovoltaic solar systems in various sizes including single-family dwellings: also energy-saving devices such as conditioners which eliminate wasteful "reactive" energy from household systems and hence from the grid, as well as solar-powered lighting, isolated security devices, and wireless remote control of appliances and lights. In June of 2012, the company named ENERGYWARE is just taking off. A 4.5 kilowatt solar array with 18 panels mounted on 5 racks at the rim of a brick wall along the driveway of my home is on-grid and used for demonstration. Two more panels are used to charge batteries which are connected to an inverter which has 120V AC ports for backup or emergency use. I am hindered in this venture by my persistent Parkinson's Disease, so most of the physical work must be done by others.

Last summer and fall we had several renovations of the house completed. The 100 ft. wrap-around deck was rebuilt from the decking up, and the garage was converted to a den. A 250 square-foot barn-type building now serves as a storage building and research lab for the business. Finally, one of our two dogs now lives in a very large house with heating/fan and lighting placed in a spacy pen. It was intended for both dogs, but Buddy (the resident) did not let Sadie stay. She now lives inside.



John Eaton. After eleven years, retirement continues to be a great job. Peg and I celebrated our 50th anniversary in September 2011. I garden and still hunt and fish a bit. Most of our time is spent with our children and grandchildren who live nearby. Our oldest granddaughter Eliza graduated high school and is off to Christopher Newport University to study and run cross-country and track. Our grandson Neal is a rising senior. This April we were blessed with another granddaughter, Leah, who is our youngest son Kent's daughter. Life is good. Go Illini and hello to all.



Mohammed Farooqui. I continued to chair the Department of Biology at the University of Texas Pan American in Edinburg, Texas. This is my 13th year of Chairmanship of the Department of Biology and I am expected to continue. I also continued to serve as the Coordinator of an NIH funded Bridges to the Ph.D. Program in collaboration with the University of Texas Medical Branch at Galveston. I am teaching a course in Environmental Toxicology which I had developed here and this course for me is an inspiration from Dr. Robert L. Metcalf who was my thesis supervisor at the University of Illinois.



Colin Favret. In 2006 I married an oceanographer working at Los Alamos National Lab. Karen took a change of station and we moved to Maryland, where I continued my aphid research as a collaborator at the USDA Systematic Entomology Laboratory. Soon thereafter I founded AphidNet, LLC, doing insect systematics work for several private and public entities. AphidNet today is partnered with an engineering firm to develop robotic and machine vision entomology applications. No sooner had we bought a house and welcomed the arrival of two children, Zakary, now three and a half, and Anaïs, now two years old, than I was offered a faculty position at the University of Montreal. We immigrated to Canada in January of this year and are very happy in this dynamic and multicultural environment. I am enjoying teaching and working in French and excited about academic opportunities as I establish my research program.

Harland Fowler. Greetings from the class of 1969. I have many pleasant memories of my time at the University of Illinois. My tenure with Dr. Horsfall and my graduate committee will remain a significant highlight of my life. My career spanned a period of 30 years: twenty-five years as a medical entomologist for the Department of Defense and the Environmental Protection Agency and 5 years with the Health Department in Florida. Currently I am involved with the ROTC program at Embry-Riddle University. I send my best wishes to everyone in the Department of Entomology.

Frank Fraembs. Enjoying retirement. . . saw a bat parasite the other day, which I identified from my memories of entomology courses taken and taught.

Jerry Freier. I am still living in Fort Collins, Colorado, working for USDA's Centers for Epidemiology and Animal Health. My work involves studies on biological issues related to arthropod vectors and the transmission of vector-borne diseases. At present I am developing spatial models on ecological factors associated with climate change and predicting how climate changes will impact animal agriculture, including the establishment of invasive species in new areas. When not working in the computer lab, I spend much of my time hiking, biking, skiing, and pursuing my musical interests by performing in a wind ensemble and an orchestra. Melanie and I now have three grandchildren to enjoy and watch grow.

Erin Grossman (Otto). I work as a training specialist for PPQ's Professional Development Center. I design, develop, and deliver training to both PPQ personnel and DHS-CBP Ag. Specialists.

Susan Halbert. The Florida Department of Agriculture continues to find newly established arthropods and other pests. I have research projects on psyllids and citrus greening disease and on Texas phoenix palm decline, caused by a phytoplasma transmitted by unknown planthoppers. I also have participated in the giant African land snail eradication program in Miami, and in surveys for the bean plataspid, a soybean pest that was found in Florida in 2012.



Reed Johnson. After spending two years as a postdoc at the University of Nebraska we moved to Wooster, OH so that I could join the Entomology Department at The Ohio State University - Ohio Agricultural Research and Development Center. I am continuing to do research on honey bees and their response to pesticides and xenobiotics. My wife, Courtney, and I have a two-year-old son, Graham.

Photo: Reed with alumna Diana Cox-Foster at USDA-EPA Honey Bee Health Stakeholders meeting, Alexandria, Virginia, October 16, 2012

Keith Keyt. I retired at the end of 2008. I moved into a new condominium in January 2010. I now enjoy spoiling my grandchildren, two boys and 2 girls.

Laura Kimball. I am a test writer for the ACT exam but most of my time is devoted to raising our 3 kids! Our girls are 8 and 6 and our son is 2. We moved to Minneapolis in 2009, from Milwaukee, in order to be closer to my family.



Lisa Knolhoff Research scientist at Pioneer Hy-Bred International and living in Des Moines, Iowa

Don Kuhlman. Enjoying retirement. Winters in Arizona. Travel, mostly in U.S. the past few years. Enjoying Cardinal baseball...when they win. Still keeping season tickets for football and basketball. Some volunteer activities. Yard mowing. Sorting photos taken in past 50 years.



Richard Lipsey. Forensic toxicology nationally and internationally with many high profile cases with some of the top nationally known toxic tort attorneys. Dr. Richard Lipsey, Toxicologist; (904) 384-1639 or 398-2168,4339 Ortega Forest Dr., Jacksonville, FL 32210. Peer Reviewer, American College of Toxicology, CNN Contributor Society of Toxicology, Former University of Florida Professor, Toxicology; Adj Prof, Univ. N. FL, teaching OSHA HazMat certification;

Florida State College - Institute of Occupational Safety & Health (former chairman);

Univ of Florida Med. Center, Jax, FL, Poison Info Center, Jax., Clinical Tox Advisory Comm.

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Jonathan Lundgren (from entsoc.org) USDA-ARS “is recognizing outstanding ‘early career scientists’ who have been with the agency for seven years or less. The top prize, the Herbert L. Rothbart Outstanding Early Career Research Scientist Award, will be presented to Jonathan G. Lundgren of ARS' North Central Agricultural Research Laboratory, Brookings, S.D. He was recognized for innovative research on multi-trophic interactions within agricultural systems, emphasizing how generalist predators are affected by farm management, and how biodiversity improves pest management.”



John Marlin. I am retired but work part time finishing up old projects and helping with some ongoing matters. I still keep an eye out for *Polyergus* and native bees. To that end I am heavily involved with establishing plots of native plants, both prairie and woodland. My biggest project of the past few years has been Mud to Parks, which has restored aquatic habitat by dredging sediment from rivers. The mud is then taken to distressed land like old industrial sites for use as topsoil. We moved over 100,000 tons from Peoria to the old US Steel South Works site in Chicago and are about to do it again. See our web site for details and video. I teach LEGO once a month to 3 classes of special education students at a local grade school.



My wife Diane is on the city council and loves it. Both children are grown and doing well.

Photos: planting and a Mud to Parks restoration project.

John Matteson, Retired Research Scientist. Anna-Marie and I continue to have good health and are great-grandparents for the second time. We also continue to be involved with our county’s lake and ground water quality.

Bill Medler. I have been filling my retirement with gardening and volunteer work. My wife is still working so I'm bidding my time here in rural Illinois before we snowbird down to South Florida for the winters. We have room for plenty of visitors so keep that opportunity in mind in your moderately distant future. The house will become available in 2015 for those of you who like to make plans that far ahead.

William Charles Moye. Retired in 2000 (?) after 18 years with Shell - then 19 years with DSM. Enjoy seeing the news on the entomological front at the U of I. Special to see items dealing with classmates from my time in the Natural History Survey. No longer active in profession, now fully committed to grandparent role and church and community functions.

Mohammad Naeem. I was given the assignment of working as Dean of Faculty of Crop Protection Sciences of the Agricultural University, Peshawar since 18 December, 2008. I completed that term on 17-12-2011. I remained as Focal Person/ Dean till 28-02-2012 as the decision of the chancellor about 2 months time. After completion of the term I am given the assignment of working as chairman of the Dept. of Entomology. During my tenure as Dean I did not have very much time to guide M.Sc. Hons. and PhD students. However, one of my PhD student has completed his thesis and his thesis was sent out to foreign countries for evaluation. Two of my M.Sc. Hons. students have completed their research work and thesis. I had come to the USA and had visited the Dept. Entomology and met some of my professors at UIUC in April, 2008. Our assignment was to develop linkages with some Universities in the USA. Since UIUC was my own university I therefore visited UIUC. The Vice Chancellor of my University is also a graduate of the UIUC.

Robert Novak. Joined the faculty of Global Health at the University of South Florida in 2011. Research and teaching in the area of public health entomology with a focus on the integrated management of malaria, onchocerciasis and recently yellow fever in Central Africa.

Jimmy Olson. I have now been retired from the academic life for almost 5 years, having hung it up in August 2007. I miss the daily contact with students, but I don't miss the administrative hassles and petty politics that go with being a professor in an institution of higher learning here in the U.S. these days. On a sad note, I lost my wife, Carolyn, to complications associated with congestive heart failure last July. We were soul mates for 24 years and I do miss her companionship. Otherwise, I am enjoying retirement and recommend it to anyone who can afford it!!

Bridget O'Neill Now in regulatory ecotoxicology at E.J. DuPont, living in Oxford, Pennsylvania.

Lance Peterson. I started doing woodcarving after retirement and my wife and I have taken up ballroom dancing as a social activity. We continue to support musical programs in the community and church. With 5 children, and their families, in 5 different states outside of Florida, we also do a lot of traveling.



Christopher Pierce. Greetings and salutations! Life in Missouri has been keeping my family and me busy. Emerald ash borer and Imported fire ant have been problematic in Missouri and Iowa this year. My wife, Kelly, is a kindergarten aide at our daughter's school. Our daughters, Eliza and Crosby, are in third grade and kindergarten this year. On Friday, May 25, Missouri's Emerald Ash Borer Awareness Program joined the World Champion St. Louis Cardinals in sharing the importance of the "Don't Move Firewood" message to the ash bats favored by roughly half of all professional baseball players. My boss, Mike Brown, State Plant Health Director of Missouri USDA APHIS PPQ, threw out the first pitch and I joined him as his very special sidekick, the emerald ash borer. We also visited with baseball fans throughout the stadium. It pays to be an entomologist. Best wishes and continued success to you and yours. ILL-INI!

Roscoe Randell. Retired from Extension Entomology group, UIUC in 1992. Consulted for 10 years. Since 2000 I have volunteered at hospital and church. Plus maintain a garden, walk each day.

Hilary Reno. I am still enjoying a part-time schedule as an Instructor in Medicine at Wash U here in St. Louis. I am a hospitalist as well as an Infectious Disease attending, still running the county STD clinic, and trying to fit in some clinical research. I started up a night-time report for residents to improve their educational experience at night, and almost always have interns or residents at the STD clinic with me. Teaching clinical medicine is a constantly moving target and a great challenge. I have taken up running, finished three half-marathons, and am training for the Chicago marathon...why not?

Our boys, Ian (6) and Kieran (2), are fabulous fun, and I'm lucky to spend so much time with them. We have a thriving garden, and the boys are getting a good education in our insect pests. Shaun is now an associate professor of English at the local community college. We have been able to start traveling more and have enjoyed recent trips to LA, Florida, and Chicago.



Joseph Sheldon. After 36 years of college teaching in Pennsylvania, my wife Donna and I have retired to our roots and family in the Pacific Northwest. We built and live in a near net zero-energy green home nestled in the evergreen forests of Washington state. I currently serve as Vice Chair of the Board for Pacific Rim Institute for Environmental Stewardship, lead birding tours of the area, and teach the Ecosystems of New Zealand course in New Zealand for the Creation Care Study Program.

Dan Sherrod. I'm now coming up on 30 years with DuPont and continue to enjoy the work and associated travel around the U.S. Our three children are all adults and more or less out of the house. We have three grandchildren who are the light of our lives.



Joel Siegel. I am currently working on the control of the navel orangeworm, the primary lepidopteran pest of California almonds and pistachios. My research includes basic biology, chemical and biological control, and evaluation of application efficacy and technology. I am finishing my 5-year stint as coordinator of an areawide program to control navel orangeworm in California almonds, pistachios and walnuts. Currently I am cooperating with Dr. Berenbaum and her laboratory in investigating the detoxification system of navel orangeworm and am peripherally involved with the

research of Dr. Hugh Robertson as he sequences the navel orangeworm genome. It has now been 15 years since I left Champaign and traded endless fields of corn and soybeans for the more varied landscape of the central valley of California (endless citrus, almond, pistachio and stone fruit trees interspersed with grapevines, not counting the occasional dairy).

David C. Smith. My greatest accomplishments have been personal rather than professional. My teaching of biology has continued uninterrupted, but I now am enjoying a return to research after a long hiatus. Many years ago, I suddenly became a single parent to two young daughters, Sarah and Hannah, who are now both college graduates and recently married.

Robert Snetsinger. B.S. University of Illinois, 1952; M.S. UIUC, 1953; Ph.D. UIUC, 1960

Interest: I am involved in helping the general public establish butterfly gardens. This involves creating new butterfly-friendly habitats and restoration of neglected waste areas and selective management of vegetation. For the past seventeen years, I have been developing the Snetsinger Butterfly Garden in Tom Tudek Memorial Park in the State College area. In 1996, the three-acre site was old-field habitat with a flora of agricultural weeds; initially there were eight resident species of butterflies. By gradually enhancing the site with 70 some species of mostly of native plants that provided nectar sources for adult butterflies and host species for caterpillars, 31 species of butterflies were residents as of 2007. In late May of 2008, *B.t.v.* spray drift from Centre County's gypsy moth control polluted the Garden, killing the larvae of Monarchs and other species of butterflies. In 2008, 22 resident species survived and in 2009, 17 resident species were present in the Garden. In 2010, there was some recovery; in 2011, there were 24 resident species were observed and the numbers of butterflies observed were nearly back to the 2007 numbers
Snetsinger, Robert, Carlos Rosario & Hipolito O'Farrill-Nieves, 2012: Termite Research at Penn State. FFEM Newsletter 11: (1): 3pp.

Snetsinger, Robert, 2011: Manual for Butterfly Gardeners, Who Will Save the Butterflies; 275 pp. Published by: Friends of the Frost Entomological Museum, % Dept. Entomology, Penn State.

Snetsinger, Robert, 2011: Report on the Butterflies of Centre County, Pennsylvania. FFEM Newsletter: 10:(2) 8-9.

Snetsinger, Robert, 2011: Report on the Butterfly Garden in Tudek Memorial Park, State College PA. FFEM Newsletter: 10: (1) 3-4.

Snetsinger, Robert, 2010: Whitney Farm, A Chronicle and Genealogy of A Lake County, Illinois Farm Family: 225 pp.: Lake County Farm Heritage Association, 236 Prairie Lane, Lake Zurich IL 60047.

Snetsinger, Helen Mills (Robert Snetsinger Editor), 2010: A Prairie Farmer and His Family, The Story of Theodore S. Mills, and His Family in the Early Days of Lake County, Vernon Township, Illinois: 64 pp. Lake County Farm Heritage Association



Bruce Stanley. Diane and I have moved to the country in Lodi, NY. We have a small farmette (8 acres) in an historic old farm house where I work from home. I still work for DuPont in their Agricultural Biotechnology business, but my career is winding down and I am looking toward the future. I still have many pleasant memories of my time as a student at the UIUC, and I wish everyone in the department well. I'd welcome hearing from any of my old friends or students wondering what life is like as a scientist in industry.



Daniel Strickman. USDA ARS National Program 104 is Veterinary, Medical, and Urban Entomology. Due to restrictions on funding, I have accumulated additional duties during the last two years, including management of 13 projects dealing with methyl bromide replacement and crop protection, as well as administration of our overseas labs. On the positive side, it has been entomologically fascinating to get exposure to such a broad swath of our field. On the negative side, it is a lot of work!

If you ever want to visit one of our labs, do a collaborative project, or chat about ARS -- give me a call!

Victor Tofaeno. Great to hear from your corner of the world. I got my MS in entomology in 1962 at U of I having done work at the Illinois Natural Survey Bldg. with Dr. John Kramer. In 1962 I changed courses and went into medicine at Boston University and became a board-certified general surgeon in 1971. I immediately returned to my native American Samoa and worked there till 1978, and joined the U.S. Air Force and was stationed at Nellis AFB in Las Vegas, NV. I left the AF as a Lieut. Colonel in 1981 and set up practice in Las Vegas, where I practice until retiring and returning to American Samoa in 2000. There they put me back to work as Chief of

Surgery at the LBJ Tropical Medical Center, a 150-bed acute care hospital. I became Assistant Medical Director in 2002 and Chief Medical Officer in 2006. In 2008 I retired for medical reasons and continue to live in Am. Samoa with my wife. All 6 kids have grown and I have 12 grand-children. I have not kept in touch with anyone from Illinois since Sue Watkins and her husband passed away while living in Arizona. That's a brief note about me since leaving Illinois. Would love to hear from anyone that might remember me as a student in those days. Regards. P.S. My last name Williams was changed to Tofaeono in 1983 to keep my Samoan identity. Most people still call me Dr. Williams.

Mike Toliver. Transitions ... My dad died last summer, and Peg's mom died this spring. Our daughter graduated from Eureka College and moved to Georgia to be with her boyfriend so we are empty-nesters. I got a sabbatical this last spring (first in 23 years) and Peg and I spent a lot of time down in the southeastern U.S. Saw and photographed lots of interesting critters, including a number of butterfly species I'd never seen before. I'm still secretary of the Lepidopterists' Society, but I've given up my role as one of the Lepidoptera editors for *Zootaxa*, though I might do it again at some future point. I hope to finish out my career at Eureka College (31 years and counting) in about 4-7 more years. Then we'll see what's next.



John Tooker. I am enjoying being a faculty member in the Dept. of Entomology at Penn State. I have five grad students now, which is about two too many, but they are all great, which makes it fun and eventful. We are studying a range of issues from basic to applied that keeps every day interesting. Satisfying the various job responsibilities while managing graduate students, undergrads, and a technician does not leave much room for my own research, but it does keep me off the mean streets of central Pennsylvania. Having a bunch of Illinois graduates/associates in our Department makes every day more fun.

Charles Vossbrink. Our family is doing fine considering the economy. Alice is studying Entomology at the University of Illinois. She has her dogs Mudge and Nelly to keep her company and a wide variety of faculty members to give her the benefit of their knowledge and wisdom. We're proud to have another U of I Entomologist in the family. Kate lives in New Jersey and is the manager of a "Honeybaked ham" store. She is a real natural at dealing with people who don't want to cooperate. She said she learned it from her experience working in child day care. They are thinking of transferring Kate to Albuquerque, NM. Madeline is now in Colorado but by the time of this publication should be back east studying for a master's in biostatistics at Columbia University in NYC. Madeline graduated from Skidmore College last year. She wrote a nice senior thesis on Cryptography. At first I thought I only understood the title but as I read more I was not sure I understood the title. Our son, Henry, is in a transition program learning various job skills at our local High School. He has a much higher recognition rate in our town than I do. Henry loves animated movies and Polka music. My wife, Bettina, who once worked for Dr. Fraenkel (before many of your times), now teaches part-time at a local junior college (Gateway Community College) and helps me with my writing. I still work for the Connecticut Agricultural Experiment Station where their motto is "Putting Science to Work for Society". You can imagine. I went to China recently to work with the Microsporidia people at the Sericulture Institute. They are studying the microsporidial parasite *Nosema bombycis* pretty heavily because of its effects on silk production. We wish everyone the best.

Chiou-Min Wang. I started my new job at the University of Texas Health Science Center at San Antonio in January 2012. Many thanks to Dept. Entomology for my graduate study.

Arthur Weis. The last few years have been eventful. I have continued as director of the Koffler Scientific Reserve, the University of Toronto's 880 acre field station, located 35 miles north of the city. My laboratory is working on several ecological and genetic issues related to evolution of plant flowering phenology in response to climate change. My graduate students and post-docs are making use of KSR's Experimental Climate Warming Array, a setup that uses infrared heating elements and a precise command and control system to maintain canopy temperatures 3 degrees warmer than ambient. We are trying to see how quickly summer-flowering annuals could evolve to take advantage of longer growing seasons through change in critical photoperiod.

The screenshot shows the Amazon.com website with search results for books by Gilbert Waldbauer. The page title is "Gilbert Waldbauer" and it shows "Books by Gilbert Waldbauer" with 9 results. Two books are visible:

- How Not to Be Eaten: The Insects Fight Back** by Dr. Gilbert Waldbauer and James Nardi (Feb 13, 2012). It has 2 customer reviews and is available in Hardcover (\$18.90, Prime), Kindle Edition (\$15.37), and Paperback (\$12.49, Prime). The Kindle Edition is marked as "Auto-delivered wirelessly".
- Fireflies, Honey, and Silk** by Dr. Gilbert Waldbauer and James Nardi (Dec 7, 2010). It has 1 customer review and is available in Paperback (\$21.95, Prime), Hardcover (\$40.00, Prime), and Kindle Edition (\$11.44, Prime).

Academic Alumni

Susan Fahrbach. In addition to the usual teaching, research, and conferences, I recently decided to try my hand at writing a textbook. Things seem to be on schedule for the 2013 publication of *Developmental Neuroscience: A Concise Introduction* by Princeton University Press. I'm not planning on retiring on my royalties, but who knows?

Peter Price. Since I came to Arizona I have been working on the Arroyo Willow Stem-Galling Sawfly (*Euura lasiolepis*) for 29 years, so I hope to complete 30 years next year and publish results relevant to climate change. The host plant is the Arroyo Willow (*Salix lasiolepis*) and the population dynamics of the sawfly is clearly driven by winter precipitation which provides for vigorous growth of the plant in high precipitation winters, many favorable oviposition sites for the sawflies, and high larval survival in the galls. With a drying climate in Arizona populations of the sawfly are collapsing.

The last paper our lab group published written while in Illinois was "Interactions among three trophic levels: influence of plants on interactions between herbivores and natural enemies. *Annu. Rev. Ecol. Syst.* 11:41-65, 1980, by Peter Price, Carl Bouton, Paul Gross, Bruce McPherson, John Thompson, and Arthur Weis. This paper has now been cited almost 1,500 times in the literature (June 2012).

In 2011 a new *Insect Ecology: Behavior, Populations and Communities*, was published by Cambridge University Press, authored by Peter Price, Robert Denno, Micky Eubanks, Deborah Finke, and Ian Kaplan.

A demanding pastime is the reclamation of a stretch of the Great Green Greasy Rio de Flag, the main drainage through Flagstaff, which is dry most of the year. It was dredged and left poorly vegetated in the 1960s, so I'm on a team revegetating the area in our neighborhood with native shrubs and trees, and watering as needed, which is frequently in this hot dry weather.

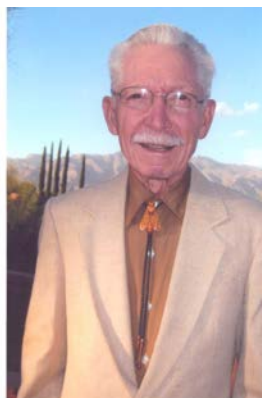
Greetings to all, Peter Price



Amy Toth. In August 2010, I joined Iowa State University's Department of Ecology, Evolution, and Organismal Biology as an Adjunct Assistant Professor, and in August 2011, I started as an Assistant Professor with a joint appointment in the ISU Department of Entomology. ISU has been a remarkably friendly and collegial place to work, and I have been very pleased to find excellent collaborators on campus, both within and outside of entomology. My laboratory now consists of three postdocs, two graduate students, a research associate, a part-time beekeeper, several research assistants and undergraduate interns, as well as two high school students and two high school teachers. I have been lucky enough to receive NSF and USDA funding for some exciting new research projects and will be researching the evolutionary genomics of social behavior in wasps and exploring the importance of nutritional stress and viruses on honey bee health.

On a personal note, my husband Fernando Miguez and I were thrilled to welcome a new baby boy into our lives on March 27, 2012. Leo Sebastian Miguez is a wonderful and good-natured little guy, and his brother Felix, now 4, thinks he's the bees' knees!

Obituaries



Roy J. Barker. July 9, 1924 - January 28, 2012 [from *Arizona Daily Star*] “Roy was preceded in death by his parents, Bernard Joseph Barker and Olive Luella Crocker; his siblings, Merle Wayne Barker, Shirley Rose Carolyn Oster and David Allan Barker; first wife, Ellen Remley Barker and son, Brian Lloyd Barker. Roy is survived by his wife, Mary Lou Criss Barker; son, Jeffery Scott Barker; grandchildren, Steven Craig Barker, Carolyn Valery Barker and many cousins, nieces and nephews. Roy is missed by all. A Memorial Service will be held at 11:00 a.m., Saturday, February 11, 2012 at Our Saviour's Lutheran Church, 1200 N. Campbell. In lieu of flowers, donations can be made to Our Saviour's Lutheran Church for the Barker Fund (outreach to local and worldwide development projects).”

Roy J. Barker, an alumnus of our department, died on January 29, 2012 after a lengthy illness. Roy grew up on a Missouri farm plagued with fleas, flies, armyworms, and grasshoppers. An entomology 4-H club introduced him to the book *Destructive and Useful Insects* by C.L. Metcalf and W.P. Flint, professors of Entomology at the University of

Illinois. Barker attended the University of Missouri on a Sears-Roebuck Scholarship (\$15 a month) and, after serving in World War II as an army cannoneer, graduated in agricultural chemistry. He applied to the graduate program in chemistry at Illinois. Denied admission to that program, he was encouraged by C.W. Kearns, a pioneer in the field of insect toxicology at Illinois, to take graduate chemistry courses and major in entomology. A grant to study metabolism of DDT in house flies funded Barker's PhD thesis. He explored biological magnification of DDT by earthworms and, as he described it, “established my reputation in the booming insecticide industry as a trouble maker.” His work in fact provided the first evidence of bioaccumulation of DDT in food webs, based on data collected right on the UIUC campus. Roy was awarded his Ph.D. in entomology in 1953. Roy had a long and illustrious career in entomology and made many important contributions to the field, particularly through his work at the Carl T. Hayden Bee Research Center in Tucson, Arizona, on honey bee nutrition and toxicology. His pride in UI Entomology was matched by his tremendous generosity; he provided the funds to endow the first named chair in our department, which, with typical modesty, he asked to be named the Kearns, Metcalf and Flint Chair in Insect Toxicology (after his advisor Clyde Kearns, and former faculty member Clell Metcalf and Natural History Survey Entomologist William Flint). In retirement, Roy was a civil air patrol pilot, a Scoutmaster who was awarded the Silver Beaver, and a volunteer naturalist with the U.S. Forest Service.

Carl Joseph Jones- [www.mccammonammonsclck.com] “Jones, age 63 of Maryville, passed away suddenly Friday, February 10, 2012. He was professor and head of the University of Tennessee's Department of Entomology and Plant Pathology. In 2008, Dr. Jones received the Lifetime Achievement Award from Bayer Animal Health and the international association of the Livestock Insect Workers. They recognized him for a career of outstanding contributions to animal health and productivity through veterinary (livestock) entomology and for his contributions to medical and veterinary entomology at the national, regional, university and local levels. He was on the faculty at the University of Illinois College of Veterinary Medicine from 1989 until coming to UT in 2000. He received his BS from Cornell University and his MS and PhD from the University of Wyoming. He was an active member of First United Methodist Church in Maryville and sang in the chancel choir with son, Chris. He was an Eagle Scout. Survived by his wife, Frances, of 30 years; daughter and son-in-law, Heather and Brian Carter of Rockford, TN; daughter and son-in-law, Wendy and Matt Bruns of Maryville; son, Christopher Jones, at home; brother, Joseph Jones of Berne, NY; uncle, Francis Uhlir of Cortland, NY and uncle, Charles Uhler of Sun City, AZ. A memorial service will be held on Saturday, February 18, at Maryville First United Methodist Church with Pastors Brenda and Larry Carroll officiating. The family will receive friends following the service in the church fellowship hall. In lieu of flowers, memorial contributions may be made to the National Wildlife Federation or the Christopher Matthew Jones college fund at Capital Bank.”

James P. Kramer On Thursday, June 2, 2011, retired entomologist James P. Kramer, 83, of Arlington, VA died from complications after surgery. He is survived by his wife of almost 51 years, Martha W. Kramer of Arlington; identical twin, John P. Kramer of Ithaca, NY; daughter, Martha (Nathaniel) Parsons of Fairfax, VA, son Christopher (June) Kramer of Louisville, KY, daughter Jennifer (Mark) Mainardi of Arlington, VA, and nine grandchildren. A private memorial was held.

Milton Sanderson



[from the *Champaign-Urbana News-Gazette*] LEWISTOWN, Pa. – Milton W. Sanderson, 102, of 829 Dry Valley Road, Lewistown, Pa., formerly of Urbana, passed away at his home on Wednesday (Dec. 12, 2012). Born July 29, 1910, in Pittsburg, Kan., he was a son of the late Flora May (McKinley) Sanderson and William Calvin Sanderson. He is survived by his wife, Carol A. (Bingman) Sanderson, whom he married on Sept. 26, 1993. Also surviving are his son, Steven C. Sanderson, and wife, Jenny Bloom; stepchildren, Michele M. Smith and Christopher D. Clemens; granddaughter, Kathy Rasette, and husband, Matt; great-grandchildren, Rachel and Rian Rasette; three nieces; and four nephews. He was preceded in death by one son, Joe Sanderson; two brothers, Johnny Sanderson and Wayne Sanderson; and one sister, Helen (Sanderson) Schenck.

Milton received a Ph.D. in entomology at the University of Kansas. Prior to graduation, he taught entomology for two summers at Lake Michigan, for the University of Michigan. After graduation, he worked as an assistant professor of entomology at the University of Arkansas. In 1942, he became a professor of entomology at the University of Illinois and an entomologist at the Illinois State Natural History Survey, where he worked for 35 years. He had scholastic and honorary memberships in Alpha Phi Omega, Phi Sigma and Sigma Xi. In his lifetime, he authored nearly 100 papers and seven books. A colleague and close friend, Dr. Robert Woodruff, dedicated a book to Milton, saying: "It is with great pleasure that we dedicate this volume to Dr. Milton W. Sanderson, the dean of North American *Phyllophaga* specialists, for over 50 years." Post-retirement, as a professor emeritus at Northern Arizona University, he and a colleague completed studies of Montezuma Well. After moving to Lincoln, N.M., he changed his focus to botany and published a paper on the wildflowers of the Capitan Mountains, which he presented to the New Mexico State University at Alamogordo. Upon moving to Pennsylvania, in 1993, he continued his botanical studies. With the assistance of his wife Carol, he focused his attention on the wildflowers of central Pennsylvania, and sent the results to the Morris Arboretum of the University of Pennsylvania. The Sandersons also published two editions of "A Guide to Common Pennsylvania Wildflowers." In Pennsylvania, he belonged to the Pennsylvania Native Plant Society and the Towpath Naturalist Society. In lieu of other expressions of sympathy, donations may be made to the American Red Cross, for the victims of Hurricane Sandy."



John D. "Jack" Unzicker Ph.D., 73, of Springfield, passed away Sunday February 12, 2012, at Memorial Medical Center. [from the the State Journal-Register February 19, 2012] Jack was born in Harvey, IL, on May 8, 1938, the son of John R. and Phyllis Lomax Unzicker. He was preceded in death by his parents and sister, Barbara Nicks. Jack is survived by his wife Sherryl Ann Unger. He also is survived by his son, Timothy J. (wife Karri Christiansen) Unzicker of Naperville, IL, step-son, John F. (wife Lori) Unger of Pagosa Springs, CO; a step-granddaughter, Savannah Unger; a step-daughter, Heather (husband Frank) Willenborg of Springfield; a step-son, James W. (wife Mindy) Unger of Lubbock, TX; 2 step-grandsons, Christopher James Unger and James W. Unger Jr.; a step-

daughter, Shannon M. (husband Craig) Garrett of Springfield; a step-granddaughter, Chalen Garrett; his brother, Donald Unzicker of Venice, CA.; and previous wife Carol [Vandenberg] Bond, mother of Timothy J. Unzicker. Jack earned his Associate Degree in 1960 from Thornton Junior College in Harvey, IL. He earned a BS in Zoology in 1962, an MS in Entomology in 1963, and a PhD in Entomology in 1966, all from the University of Illinois at Urbana-Champaign. In 2004, Jack was inducted into the Bremen High School Hall of Fame.

Jack worked in various capacities at the Illinois Natural History Survey in Champaign, IL, from 1960 to 1986. During that time, he authored 34 scientific articles and three books in the field of Entomology. He later worked as a sales associate for Biomet, Inc., in Warsaw, IN, as a campaign coordinator for State Rep. Helen Satterthwaite (103rd District), and as a semi-tractor trailer operator for J & R Schugel of Urbana, IL. From 1987 to present, Jack worked with the Illinois General Assembly. Initially employed as a rules analyst for the General Assembly's Joint Committee on Administrative Rules, he later joined the Office of the Speaker as a House of Representatives Democratic Staff research analyst specializing in environmental and public utility legislation and policy.

Jack had a life-long passion for research, whether scouring fields and streams for insects, analyzing a complex piece of legislation, or searching flea markets and the Internet for family collectibles. Jack took great pride in his work ethic and thrived on mentoring others. Jack cherished the time he spent with his family and took an interest in their hobbies and activities. Jack enjoyed writing in his spare time and participated in community theater when he was younger. Jack also was a member of First Christian Church in Springfield.

Don Webb

URBANA (News Gazette)



– Dr. Donald Wayne Webb, 73, passed away Wednesday (Sept. 5, 2012) peacefully at home. Dr. Webb was an entomologist with the Illinois Natural History Survey for over 40 years. Dr. Webb was born on July 12, 1939, in Brandon, Manitoba, to Orville and Ivy Webb. He married his high school sweetheart, Lois (Kelly) Webb, on May 12, 1961; she survives. Also surviving are daughters, Janice (Mark) Wettstone and Diane (David) McClain; grandchildren, Maggie McClain, Bradley McClain, Evan Wettstone, Ryan (Laura) McClain and Christopher McClain; and great-grandchildren, Tyler and Aiden McClain. He was preceded in death by his parents and brother, Barry. Dr. Webb earned his Bachelor and Master of Science degrees from the University of Manitoba. In 1981, he earned his Ph.D. from the University of Illinois. He earned the North American Benthological Society Distinguished Service Award in 1999. Dr. Webb was a renowned entomologist who traveled extensively throughout the world doing research. He published numerous manuscripts and catalogs. He was an avid sports fan and loved playing racquetball, softball, golf and pool. His most cherished time was sitting on the front porch playing his guitar and visiting with friends and family. He was a loving and generous man who loved helping others - especially those special neighborhood friends. He was very loved and will be missed by many. Please join us for a Celebration of Life at the Stonecreek Event Center (Kennedy's) from 3 to 5 p.m. today (Monday, Sept. 10). A private graveside service for close family will be held later in the week. The Webb Family would like to thank all the wonderful doctors and nurses of Carle Foundation Hospital and Carle Hospice who took such good care of him. In lieu of other expressions of sympathy, please consider a donation in his memory to the John Bouseman INHS Library Endowment Fund, 1816 S. Oak St., Champaign, IL 61820, or Carle Hospice, 206A W. Anthony Drive, Champaign, IL 61822.

Births

Micah Ming Byarlay: Hongmei Li and Wayne Byarlay May 9, 2012 6lb 13oz

Katherine Elena Kutz: Doris Lagos & Tony Kutz June 2, 2011 6lb 6oz; 19 in

Hannah Jane Shreve: Scott & Amy Shreve June 23, 2011. 7lb 11oz; 20.5in

Adrien Donnell Alaux: Cindy McDonnell & Cedric Alaux December 25, 2011 (Avignon, France)
7lb 2oz; 20in

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