



Department of Entomology
University of Illinois at Urbana-Champaign



Entomology

Newsletter 2007-08

Entomology *Newsletter 2007-08*

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Cover photograph: Cotton harlequin bugs, Tectocoris diophthalmus on Hibiscus in Brisbane, Australia. Courtesy of Anthony O'Toole. These bugs are included in the 2009 Orange & Blue Insect calendar published by the Department of Entomology in celebration of 100 years of Entomology at Illinois. Newsletter design: Jana Waite



It's been two years since the last newsletter came out, which would seem like a long time until it's put in an entomological context—only 2/17th of the nymphal life of a 17-year cicada, and only 2/350,000,000th of the evolutionary history of cockroaches on the planet. For such a brief interval, there's still a lot of news to report.

The years 2007-08 were banner years for Illinois insect headlines. As they do in terrestrial ecosystems, social insects also appear to dominate the media. Gene Robinson and I ended up a documentary called "Silence of the Bees," which aired on PBS, talking about disappearing bees (and ultimately this program went on to win a Peabody award and two Emmy awards), Andy Suarez's stable isotope study of Argentine ants was written up in venues ranging from *Science Daily* to the *Thaindian News*, and a paper written by Charlie Whitfield and Amro Zayed on positive selection in ancient and recent invasive expansions of the honey bee made the rounds from *USA Today* to John Hawkes Anthropology weblog. Publicity notwithstanding, in the Academic Analytics 2006-07 Faculty Scholarly Productivity Index ranking, our department dropped from #1 to #3 among Entomology departments nationwide (but ranked first in the subcategories of grants and awards per faculty). Leaving aside the observation that UC-Davis may well have gamed the system (no sour grape berry moths here), they somehow also managed to snag one of the Häagen Dazs Postdoctoral Fellowships (along with Penn State) created in the wake of Colony Collapse Disorder. We're thinking of asking Ben and Jerry for a fellowship, and, if they won't do that, at the very least we can ask them to bring back "Honey I'm Home" ice cream.

Speaking of bee-related food, in my quest to convert the former Bee Lab into a science center dedicated to pollinators (the "Pollinarium"), I tried everything I could think of to attract funding, including pitching the idea to General

Mills on the occasion of the 25th anniversary of the Honey Nut Cheerios BuzzBee (they went with sponsoring Bill Lester's #22 Nascar Craftsman Truck instead). As it turns out, I should have stayed closer to home; local developer Peter Fox took an interest and has been extraordinarily generous in funding almost the entire project. The building is slated to reopen in October with over two dozen exhibits on, quite literally, the birds and the bees.

In terms of numbers, although honey bee numbers are dropping across the nation, our faculty numbers are holding steady. For six years, I've reported on the status of the Kearns, Metcalf and Flint Chair in Toxicology; I can finally happily say that the chair was filled by (former) Purdue professor Barry Pittendrigh as of June 1. Along with Barry comes the body louse genome—there was plenty of room inasmuch as it's the smallest insect genome yet sequenced. As affiliates, we've added Dave Soucek, Paul Tinerella, and former students Felipe Soto, Richard Lampman (at the Illinois Natural History Survey), and John Marlin (Waste Management Research and Information Center, now known as the Illinois Sustainable Technology Center). As for teaching, last year we were back in business with IB484, Biological Control, taught by INHS affiliate Raghu Sathyamurthy. Well, he's gone back to Australia, so once again Biological Control is for the moment an orphan. We now have responsibility for delivering 2/3 of the new IB honors core curriculum, as well as half of the new genetics course (IB204). And a small personal triumph—IB460, Introduction to Entomology was redesignated IB401, so that it now has a lower number than the core courses for which it's a prerequisite.

In terms of students, when reorganization led to the elimination of all curriculum codes (essentially, majors) within life sciences, we configured an Individual Plan of Study in entomology with LAS to allow entomologically-inclined undergraduates to pursue their passion. Lynn Fennema is the first to complete her degree under this rubric, and she started her graduate program here in fall 2007. Since that time, we've added

two more IPS students—Allen Lawrence and Alan Yanahan. I'm thinking of sending a letter to all undergraduates named Alan, Allan, Allen, or Alana to see if they'd like to join, too.

Our faculty have been busy writing books over the past two years; Gil Waldbauer's *Aquatic Insects* is his EIGHTH book, Jim Nardi's *Life in the Soil: A Guide for Naturalists and Gardeners* (University of Chicago 2007) is his third, and my *The Earwig's Tale—A Modern Bestiary of Multi-legged Legends* (Harvard 2009) is my fifth. And our outreach efforts continue—the 25th annual Insect Fear Film Festival was a resounding success, with an actual Hollywood director in attendance (Simon Smith, director of "Bee Movie" and probably the most financially successful maker of insect movies of all time). National Pollinator Week is a new initiative, and the Illinois Natural History Survey had its 150th anniversary celebration, coincident with its official administrative move from the Illinois Department of Natural Resources to the University of Illinois.

One more thing—in 1909, the Board of Trustees of the University of Illinois approved the establishment of an independent Department of Entomology on the Urbana-Champaign campus. Although entomology as a subject had been taught, primarily under the aegis of the Department of Zoology and Entomology, since 1876, the creation of a separate department allowed entomologists on the campus to chart their own course. For the next 99 years, Illinois entomologists have set the standard for the discipline nationwide. Next year will be our 100th birthday.

We're doing two things to celebrate. First, we're coming out with an insect calendar, with each month represented by an orange and blue insect, and, along with standard calendar dates, we'll include a few noteworthy dates in departmental history. The other thing we're doing is having a 100th birthday party. We're hosting a one-day symposium; after the fashion of the Founder's Award at the Entomological Society of America, each session is organized around a distinguished past faculty member who has

made a lasting contribution in an area of insect science and will feature an invited alumni speaker who is having a contemporary impact on that area. Each session will be introduced by an Illinois entomologist, who will present a brief biography of the honoree and then present a brief overview of his or her own work as it relates to the faculty pioneer. We'll also have a profusely illustrated dinner talk recounting the history of the department, courtesy of our incredibly comprehensive departmental archive.

Speaking of archives, although some other departments have celebrated their centennials with a book, as befits the 21st century, we will share our celebration digitally through a UI entomology centennial website. The public lectures will be uploaded to YouTube and the alumni lectures will be downloadable as podcasts. Also through this website, we'll make available vast stores of archived UI audiovisual material for the entomological community. Professor William Horsfall (on the faculty from 1947 to 1988) recorded almost every conceivable insect behavior and entomological practice of the 1940s and 1950s on thousands of feet of 16-mm film. We have, for example, footage of crop dusters being readied for takeoff in 1944, the death and dismantling of the UI Quad diseased elm trees in 1954, and the 1956 periodical cicada emergence in Cook County. These (and the others) should be popular on YouTube (although perhaps not as popular as that spaghetti-eating cat video).

December 11, 2009, has been chosen for our symposium because it is the day before the annual meeting of the Entomological Society of America in Indianapolis, IN. Most entomologists attend the annual meeting and it is our hope that, by scheduling our symposium immediately before its start and by providing transportation to attendees from and to Indianapolis, we can maximize alumni attendance. **You are all invited and I hope to see you all here next December!**

May Berenbaum



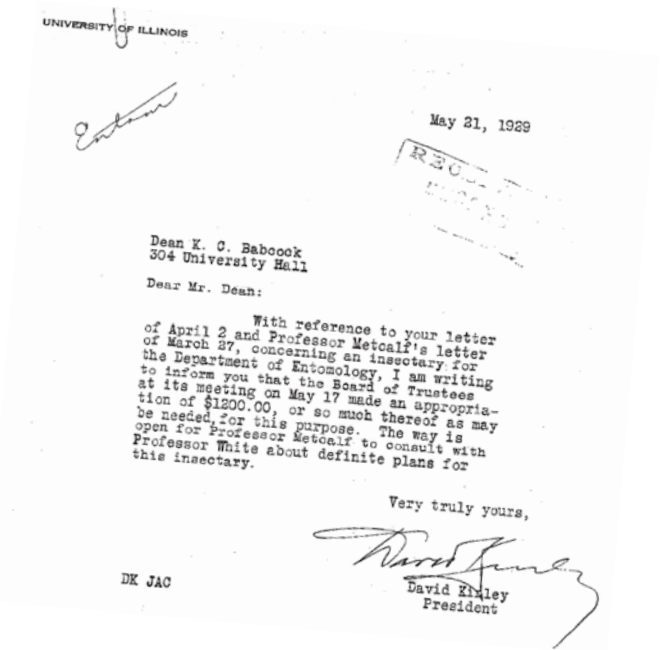
new facilities

New Insectary

In connection with efforts to centralize Animal Care campuswide, vacated vertebrate animal care space in the Morrill Hall basement provided an opportunity to construct a new insectary, which replaces the fifth floor insectary that has been unmodified since 1966. After some delays, the new insectary was completed in January 2008 and it's already occupied by mosquitoes and leafcutter ants. The project ran slightly over its estimated cost, but the cost over-run alone was more than ten times greater than the cost of the entire original department insectary, constructed in May 1929, for the then-princely sum of \$1200.

Our new insectary is designed to meet USDA guidelines for insect containment. All wall and ceiling penetrations are sealed; a containment vestibule serves four insectary rooms, ventilation is through 80-mesh screens, and negative pressure is maintained in all rearing rooms. Other than an initial puzzling mass suicide of psychodids prior to occupancy, the new facility has been remarkably inimical to the normal Morrill Hall uninvited arthropod fauna.

The old fifth-floor Morrill Hall insectary (left) has been replaced by a new facility (right) in the basement of Morrill Hall. The new facility now meets all USDA guidelines for insect containment. Below is the letter from University of Illinois President David Kinley authorizing an insectary in 1929.



The UI Pollinatarium



Since January 2008, our department has been actively pursuing a timely opportunity to meet the need for public engagement in science. The construction of a new Bee Research Facility for Dr. Gene Robinson allowed us to reconfigure the former Bee Research Facility (i.e., nondescript pole barn on South Farms) as a science center devoted to pollinators and pollination. Our motivation has been the fact that the level of knowledge about pollination in the general public is surprisingly low, despite its importance as an ecosystem service maintaining the vast diversity of flowering plants.

The UI Pollinatarium is dedicated to all creatures, 2-, 4-, or 6-legged, that assist flowering plants in meeting their reproductive needs. Our hope is that the Pollinatarium will be both a campus resource for research and teaching and a major regional attraction for the community and its visitors. Its location in the midst of the Arboretum brings together flowers and pollinators physically and conceptually, for optimal effectiveness and appeal. Multiple exhibits are planned to acquaint visitors with the importance of basic and applied research across a broad range of disciplines, including ecology, evolution, plant biology, insect physiology, animal behavior, crop sciences, and conservation; changing exhibits will relate to world events and ongoing research on the campus. Moreover, the Pollinatarium will be the physical home of BeeSpotter (<http://beespotter.mste.uiuc.edu/>), a

UI web-based citizen science effort launched in October 2007 to engage the public in monitoring the distribution and abundance of Illinois honey bees and bumble bees.

We are exceptionally fortunate that developer Peter Fox has taken an interest in this project and has made an extraordinary effort to bring it to fruition. He arranged for an architect to draw up plans for the renovation, for

local businesses to donate HVAC, plumbing, and electric work, and for a Boy Scout Troop to take on site cleanup and prairie restoration as a service project. Mr. Fox has devoted hours to helping us plan this project, with his personal goal of having it as a community resource available for every elementary school in the area for class visits. Our department and our colleagues at the Illinois Natural History Survey are providing expertise and materials for exhibit construction, and we hope to partner with campus outreach organizations, including 4H, Master Gardeners and Naturalists, and the Osher Lifelong Learning Institute in maintaining the site.

It seems remarkably apt that the Pollinatarium effort has advanced based almost entirely on altruism, which befits the social behavior of the honey bee, the nation's premier managed pollinator. We hope to be (bee?) seeing you there soon!



new facilities

Bees and Beekeeping Short Course 2008



bees, bees, and more bees

The University of Illinois Bees and Beekeeping Short course was held again this year, the first time it was offered at the new Bee Research Facility. This course has been offered since 1997 and is supported by the Department of Entomology, the Section of Ecological Entomology at the Illinois Natural History Survey, and the Illinois Cooperative Extension Service. It is staffed by members of Gene Robinson's research group, colleagues from the department and other parts of campus, and outside specialists. This year the course featured lectures and workshops on many important topics for beginning and advanced beekeepers, including Colony

Collapse Disorder, mite control, sting allergies, and seasonal management.

This year's course had a new wrinkle: the hands-on "field" component of the course, in which participants get detailed instruction in handling large colonies of honey bees, was done entirely indoors in the facility's new state-of-the-art indoor flight chamber! This allowed us to hold the course in the spring, rather than the summer. Spring is an easier time for beekeepers to attend. In addition, we did not have to depend on rain-free weather to conduct the field work. The course was a big success and we plan to offer it again in 2009.



Gene Robinson helps the class to get suited up for the "field" component (top and bottom left) and Karen Pruiett gives classroom instruction and laboratory work (top and bottom right).

National Pollinator Week

June 22-28, 2008



Largely thanks to the efforts of graduate student Cindy McDonnell, UI entomologists and friends participated in the nationwide celebration of pollinators, June 22-28, 2008. Our contribution to the effort featured, among other things, a guided nature walk at Meadowbrook

Park, a native bee identification workshop at the Champaign Public Library, and a booth at Urbana's Saturday Market on the Square with informative displays, a pollinator-product scavenger hunt, a drawing for pollinator-themed prizes, face-painting, and bee balloon pollinators.

BeeSpotter

BeeSpotter (<http://beespotter.mste.uiuc.edu/>) is a web-based partnership between citizen-scientists and the professional science community to educate people about pollinators by engaging them in an effort to obtain baseline information on the population status of honey bees and bumble bees. Beespotter's register and then log in to upload photos they've taken; they can try to identify their specimens with the user-friendly color-based keys or leave it for the content master, graduate student Terry Harrison, to identify. Species identity, date, and locality are entered into the database, where they can be cross-referenced; moreover, over 7000 historical records of bees from the INHS collection can be accessed and cross-checked with contemporary sightings to determine if ranges have shifted with time. The site, created by Michael McKelvey, also includes topics for visitors who would just like to learn about bees; there's a guide to photographing bees, identification keys,

"bee-ographies" of *Apis mellifera* and Illinois' 11 bumble bee species, descriptions of colony collapse disorder and bumble bee declines, resources for teachers, and instructions on making a bee-friendly garden. In just about a year of operation, over 500 citizen-scientists from all over the state have uploaded over 1500 photos.

On August, 14, 2008, our website proved its scientific worth in a particularly dramatic fashion. A beespotter near Peoria snapped two unambiguous photographs of a rusty-patched bumble bee, *Bombus affinis*. This bee, historically known from a wide range of localities throughout eastern North America, has declined precipitously; once abundant in Illinois, *B. affinis* was even thought to be locally extinct. That a citizen-scientist could show conclusively that *B. affinis* is still in our state is evidence of the power of having many interested people watching for and caring about bees.

bees, bees, and more bees

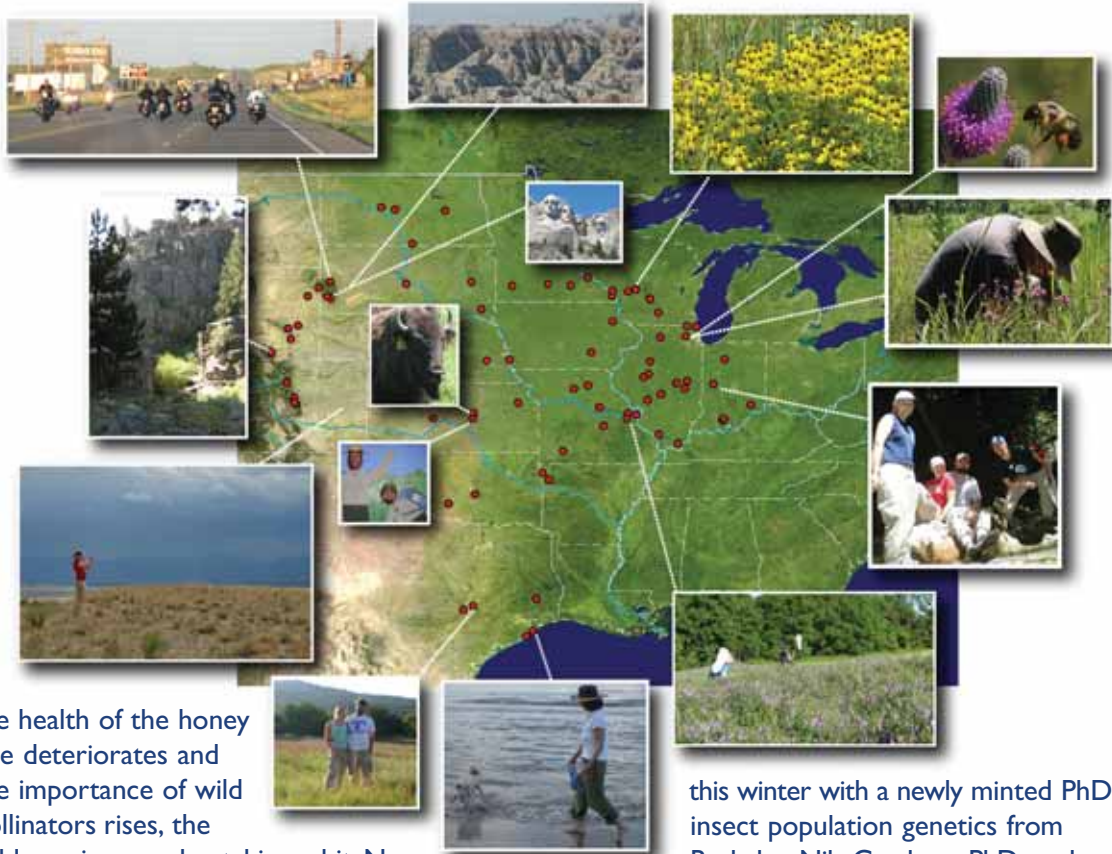
Bumble Bees in the Wild

Essay by Sydney Cameron, Jeff Lozier, and Isaac Stewart

With the serious concern nationwide over the declining health of honey bees, evinced by widespread reports of colony collapse and death, the importance of other pollinators, particularly wild native species, looms large. The irony is that as

Bombus decline. We are working with a team at the USDA Bee Biology and Systematics Laboratory in Logan, Utah. Our Illinois team includes Drs. Sydney Cameron and Leellen Solter; Jeffrey Lozier, a postdoc who joined the Cameron lab

bees, bees, and more bees



the health of the honey bee deteriorates and the importance of wild pollinators rises, the wild species are also taking a hit. No other wild pollinators have had more press recently than the bumble bees (*Bombus*). Both in Europe and North America multiple species are declining in abundance and geographic range. While the problem has been apparent in Europe for decades, the U.S. is only just beginning to collect the hard data required to determine the extent and potential causes of population decline in some of its species. Recently, we began a large-scale effort to monitor the status and population structure of targeted bumble bee species ranging across the Western and Mid-western U.S., and an investigation of the microsporidium *Nosema bombi* as a potential factor in

this winter with a newly minted PhD in insect population genetics from Berkeley; Nils Cordes, a PhD student who arrived from Germany with a diploma in social insect behavior and an interest in insect pathogens; Isaac Stewart, entomologist with an interest in teaching high school biology (currently in Illinois' graduate education program in Biology); Whitney Stewart, a middle school biology teacher in Champaign; and last but not least, Elizabeth Peregrine, a graduate from Uni High who began her first undergraduate term at Purdue this fall.

This was a spectacular team, which completed 84 bumble bee site surveys across 15 states this summer. And what a time! When I asked Isaac,

one of our team coordinators, to supply a summary of the summer surveys, he sent a beautiful essay, the highlights of which I include below. Jeff made up the summer highlights map, indicating some of the best of the survey hotspots. In Isaac's words:

"While reflecting on our research this past summer on bumble bee diversity and decline I couldn't think of anything more appropriate than the diversity of locations we visited. Our research team had the pleasure of seeing the prairies of the Midwest, the forests of Indiana, the Rocky Mountains of Colorado and Wyoming, the Badlands and Black Hills of South Dakota, and the Gulf beaches of southeastern Texas, to name just a few highlights. Through approximately 10,000 miles of driving, we had our share of experiences. I will do my best to describe some of the more entertaining and productive occasions.

"Our first major trip of the summer, following a stop at one of Illinois' few topographically unchallenged areas near Carbondale, found us enjoying some of Missouri's amazing prairie restoration and preservation projects. Mike Arduser of the Missouri Department of Conservation and James Trager of the Shaw Nature Preserve were gracious enough to help guide our team to some of the best that Missouri has to offer, including the Busch Conservation Area, Shaw Nature Preserve, and Spring Creek Gap, after which I collapsed into a pile of spikey pine cones from exhaustion after hiking a most formidable trail. From there it was on to Kansas where forgotten permits threatened to end the day early, but fortunately the staff of the Tallgrass Prairie National Preserve gave us permission to collect anyway. We did find some bees, but not nearly the numbers we were hoping for. Remember, our goal was to survey bumble bee populations at multiple sites per state to build baseline data that would enable us to assess the current status of multiple species. The absence of workers may have been due to the unusually cool spring, which caused everything to emerge late, including the floral resources upon which the bees depend.

"Our next trip found much greater success along roadsides and in some of the state parks of Indiana. Some of these roadsides made us glad that we had a vehicle with four-wheel drive, and we were able to get good numbers of bees to provide data for the study.

"Next up was a trip that Whitney and I took south through Missouri and into Arkansas. Thankfully, we had a place to stay with faculty from the University of Arkansas, as that night we brought with us a power-

ful storm that downed two trees in the yard of the home where we stayed. Next we drove into Oklahoma. Needless to say, the people of Oklahoma were more than curious about what we were doing along the road with large nets. We heard many theories as to why bees are disappearing, including one from a colorful gentleman in southern Oklahoma who postulated that chickens are responsible for the loss of populations. We also met a talkative park ranger who enjoyed chatting about giant grasshoppers and Bigfoot, to name some topics of conversation. From there it was on to Texas, which offered luxurious swimming, eating, and general good times from gracious hosts that were willing to put us up for the night. The 95°+ temperatures did not prevent us from finding bumble bees.

"A short time after we returned home from the Texas trip, we set out for the eastern side of the Colorado and Wyoming Rocky Mountains. The Rocky Mountains offered such a diversity of bumble bees not found in our area, some of which mimic one another in color pattern, that they were troublesome to identify in the field. After a stop at the insect collection at the University of Wyoming in Laramie to get our bearings, we surveyed all over Wyoming. Unfortunately our minivan met a rock that was near the size of a boulder. This put a large enough hole in our muffler to cause an asphyxiating effect in the cabin of the car. We had to head to Rapid City, South Dakota, to get a replacement. Unfortunately, due to Sturgis bike week (big motorcycles!) that weekend (we drove right through it unknowingly), the local National Car Rental had only an SUV that offered about 50% of the carrying capacity of our van. After the sacrifice of a few pairs of shoes and some other miscellaneous bits and pieces we were able to squeeze ourselves, the bees, and the collecting equipment into the new car with only a few items that required lap storage.

"After this near fiasco we found our way back toward Illinois, stopping at the famous 'Wall Drug' (original Wall Drug Store in Wall, SD) and the Badlands. From there we moved into North Dakota, on into Minnesota, and finally into Wisconsin. In the interest of time we did bypass the Spam Museum of Minnesota, but this is definitely on the list for next summer.

"In the end Nils and Jeff have more than enough bees to keep them busy over the course of the winter screening for pathogens and collecting microsatellites, respectively. I would say this qualifies the summer as a successful one."

bees, bees, and more bees

May Berenbaum. You'd think as an entomologist I would be accustomed to dramatic metamorphosis, like that of *Sitaris muralis*, a meloid beetle that begins life as an egg on or near the ground and progresses through a long-legged first instar triungulin stage that hikes up a flower to attach to a female bee and get transported into a bee nest, whereupon it eats honey as it progressively turns campodeiform, scarabeiform, and/or vermiform, and ultimately becomes a bright shiny adult. Like those triungulins, over the past two years I've found myself dragged into the nests of bees. Before 2006, the extent of my publications on honey bees consisted of four papers on honey biochemistry and one paper in *American Bee Journal* on bees in heraldry. In 2005, Gene Robinson asked if I'd be interested in helping with the annotation of the honey bee genome (specifically the cytochrome P450s) and the National Academy of Sciences asked if I'd serve as chair of a committee charged with investigating the status of pollinators in North America. Our report was released in October 2006, just a week before the entire honey bee genome was published in *Nature* and just a couple of weeks before reports of mysterious honey bee disappearances began to surface. As honey bees disappeared due to what became known as Colony Collapse Disorder, our report, predicting apicultural disaster if losses weren't stemmed soon, appeared positively prescient. An invitation to write an op-ed piece on pollinator decline for the *New York Times* in March 2007 led to an invitation to testify before a Congressional subcommittee and another invitation in June to testify before another Congressional subcommittee. Now with graduate student Reed Johnson and postdoctoral associate Wenfu Mao, we're involved in investigating pesticide synergism and cytochrome P450-mediated metabolism in honey bees and, after working almost exclusively on lepidopterans for 30 years, I've been transformed into a "bee expert" by print, film, newspaper, radio, and every other kind of media in search of a pithy quote.

Not that I've given up on lepidopterans—Art and I are still working on parsnip webworms and wild parsnips, here and abroad (now that webworms have invaded New Zealand). In theory, we're writing a book on our 30 years of research on this interaction, although our biggest challenge may be finding a publisher, given the uncertain market for books about parsnips and other umbelliferous root vegetables. Guodong Niu is busy working on detoxification of mycotoxins by navel orangeworms, which name notwithstanding infest almonds, pistachios, and figs in California, and Terry Harrison is still cataloguing microlepidopterans in Illinois hill prairies. Even

Bridget O'Neill, who has spent most of her work at SoyFACE examining impacts of elevated carbon dioxide on Japanese beetles and soybean aphids, has managed to incorporate painted lady caterpillars into her project.

On the personal front, our family travel, as usual, has tracked entomological commitments and we've ended up in some unusual destinations. Spring break 2007 was at University of Alaska at Fairbanks, just in time for the International Outdoor Ice Sculpture competition (at -15 degrees); although it's not a traditional spring break destination, we did manage to pet the musk oxen on the UA campus and visit the dogsledding museum in downtown Fairbanks. Summer 2008 was a fabulous trip for the whole family to the 23rd International Congress of Entomology in Durban, South Africa. We all gave talks in the Insects and Culture symposium—Richard talked about insects in movies and Hannah gave a lecture/performance on insects in ventriloquism. Organizer



Marcel Dicke remarked that it was probably the first time in the history of the Congress that an insect actually gave the talk. Maybe we can all do an encore performance at the 24th International Congress of Entomology in Daegu, Korea, in 2012...

Stewart Berlocher. The Berlochers have had a great year, even though we didn't go to South Africa this summer like the rest of the department. (We only went to Texas, but the enchiladas are better there). Austin is 15, which means he is a full-fledged teenager. Dungeons and dragons is where it's at right now (better than cars, although those are looming up in the near future). Paul is 10, and is a natural naturalist and geologist—dad has someone to indulge his inner paleontologist with. Jeanine is continuing to both volunteer for all worthy causes, and become the world's first knitting yoga master. Stewart gets to play guitar from time to time with

“The Stewart Berlocher Experience.” Research-wise, the apple maggot story is marching right into the future of massively parallel gene sequencing. Things are good.

Sydney Cameron. With my two PhD students, Heather Hines and Claus Rasmussen, finishing up this semester, the lab is changing. Their outstanding productivity over the last couple of years has led to the completion and publication of comprehensive molecular phylogenies of both the bumble bees (*Bombini*) and the stingless bees (*Meliponini*), including new insights into their ancient divergences and patterns of dispersal and speciation. The *Bombus* phylogeny has confirmed that Müllerian mimicry and not phylogenetic history is likely the principal explanation of the often-near identical color patterns of distantly related bumble bee species. The role of thermoregulation in color patterning remains to be more thoroughly examined and the evolutionary mechanisms that lead to the convergent color patterns is our next investigation. We have made preliminary inroads into identification of the hair pigments that determine the color patterns and Emily Floess, an undergraduate in the lab, documented the progression of pupal hair development. The next stage is to uncover gene regulation of pigment expression.

Heather has accepted a postdoc at North Carolina State University to expand her interest in color pattern evolution by studying butterflies, focusing on genetic and regulatory mechanisms of pattern changes. Claus' next step is to spend a year in Brazil under the guidance of stingless bee expert, João Camargo, expanding his knowledge of comparative morphology.

New faces in the lab include postdoc Jeff Lozier, who is directing research on *Bombus* population genetics in our midwestern regional study of bumble bee decline (see p. 8). Besides assessing the current population structure of targeted species in the Midwest, we are using the recently databased Hymenoptera collections of the Illinois Natural History Survey to collect population structure data from 40-year old specimens (collected by our own Gil Waldbauer!). Jeff has been developing microsatellites for genotyping multiple species to assess changes in population structure and diversity over time. With the assistance of Jennifer Grixti and Jeff, we have also constructed our own database of 25,000+ *Bombus* collection records obtained from museums throughout the Midwest and Texas. The database is our framework for evaluating changes in distribution and relative abundance over the last century. Jennifer made good use of the INHS bumble bee database to complete

an excellent study (in press) of Illinois bumble bees over the last century, concluding that the ranges of multiple species have declined and several species, although historically rare in the state, have nonetheless disappeared from Illinois since the first half of the 19th century. Lee Solter of the INHS and Nils Cordes are heading the investigation of bumble bee pathogens as possible agents of recent species decline. Michelle Duennes is the newest graduate student in the lab; she will be taking on a population level analysis of color pattern polymorphism in a clade of Mexican/North American bumble bees.

Excellent undergraduates in the lab have made new contributions as well. As mentioned, Emily Floess documented the chronological changes in development of bumble bee hairs and the timing of pigment production during pupal development. This research sets the stage for future *in situ* hybridization studies of expression of pigment genes. Tim O'Connor, an honors student in my lab, made news as co-author on a *PNAS* paper on vespid wasp evolution (this while only a sophomore!), and again in his junior year when he was awarded a prestigious Goldwater Scholarship. Tim just returned from a semester in Costa Rica as an Organization for Tropical Studies student, and intends to complete his undergraduate degree next spring.

Other highlights over the last couple of years include collaboration on an international effort to reclassify the bumble bees based on the new phylogeny. I am honored to have been elected a Fellow of AAAS. Jim Whitfield and I will be taking our first UI sabbaticals this fall, looking forward to time at the University of Montana where Jim will work on his multi-authored entomology textbook, and I will delve into color pattern evo-devo with a colleague, Doug Emlen. We also expect to see some spectacular scenery from our office windows and feel the Rocky Mountains underfoot. Catch you again in 2010.

Fred Delcomyn. There's an old saying that all good things must come to an end, and as far as university careers are concerned, that's certainly true. After 36 plus years on the faculty here, my active service comes to an end at the end of September, 2008. I know that some people do really think in terms of careers when they start out, but I never did. I just wanted to do my research and contribute to the life of the department by teaching and by helping in other ways. I remember the shock I felt at a faculty meeting some years ago when I realized that I was the longest-serving active faculty member in the room. I was in the middle of a sentence that started, “I remember back when ...” and I had a flashback to

faculty

Gil Waldbauer and Jim Sternburg saying the same thing 30 years ago. How time flies!

Colleagues and friends have asked me about my plans for the future. Certainly they involve remaining here in Urbana and intellectually active. Our five-acre plot can take as much time as I care to devote to it, and I have a number of writing projects I want to pursue. Furthermore, there is continued interest on the part of engineers and computer scientists in the biology of locomotion, so I will stay involved with that. On the other hand, retirement is also about rest and relaxation, so that's in the picture as well. It's been a great run. I can't wait to see what happens next!

Bettina Francis.

Several projects on which my laboratory was working are now completed. The work on interactions between saw palmetto and mutagens, which was part of Wachareeporn Trinachartvanit's dissertation, has been accepted by *Environmental Toxicology and Pharmacology*. Katy Lustofin finished her work on the effects of plant alkaloids on chicks and fruit flies and is now teaching at Marietta College in Ohio. Marwah Farooqui, an IB undergraduate, extended that project to the synthetic insecticide imidacloprid, which acts by the same mechanism as nicotine, coniine, and anabasine. Interestingly, it has somewhat different effects on chick embryos. Marwah is now in her first year of medical school.



I'm still working with neuroscientists who want to examine the effects of specific genes (usually those that alter levels of neurotransmitters) on cognition. While the original project remains unpublished due to an empirical shortage of one critical genotype, a later project did have enough subjects—I am now co-author on a paper in *Frontiers in Neuroscience*. Not where environmental toxicologists usually publish!

Meanwhile, I have two grandsons: Robert David Francis was born at the end of July. His father has tenure in the Department of Speech and Hearing at Purdue, so I expect to see a lot of my grandsons. His brother, now 4, is not impressed by Robert's smiles (as I am!), but is nonetheless very protective. My younger son recently began working for *Business Week* and has moved to Washington, DC. We are hoping that his wife can follow him before year's end: the two-body problem does not get easier with time.

Larry Hanks. Not much has changed since the last newsletter—same old same old. Some of my students graduated and moved on (Emerson Lacey, Em Kluger, Dominic Philpott), leaving Pete Reagel,

Annie Ray, Liz Graham, Rob Mitchell, and Matthew Richardson (in PEEC), and me, of course. Courses have been completed, grants garnered, papers published, and committees sat upon. The least publishable unit: my report, with co-authors, of a raven that learned to turn on a water faucet at Death Valley National Park (video link, <http://www.life.uiuc.edu/hanks/raven.html>). That incident was recorded on my vacation—the productivity just never stops. Perhaps as a result, I've just been promoted to full professor. So, much like the clever raven, I have adapted to the bleak, sometimes hostile academic environment.

Jim Nardi. In the last year I have directed my examination of pattern formation in insect epithelia to the poorly understood internal gut epithelia of insects. Specimens having very different diets and habitats were chosen



for this study: (1) fungus-feeding Hemiptera, (2) certain aquatic and predatory members of this order, and (3) larval specimens of Antarctica's only insect, a midge in the family Chironomidae provided by Dave Denlinger at Ohio State University. Close examination of the architecture of these tissues and their cells have demonstrated how our limited knowledge of this "hidden" insect anatomy has led to an oversimplified view of the structure of these elaborate tissues, their microbial inhabitants, and some of their novel secretory cells. An ultrastructural study of the interaction of immature Strepsiptera with the immune cells of *Polistes* continues in collaboration with colleagues here and at Oxford University. Study of "hidden" life in the soil also continues; the University of Chicago Press published *Life in the Soil: A Guide for Naturalists and Gardeners* in October 2007.

Barry Pittendrigh. The Pittendrigh laboratory is starting to settle in here at UI, after our recent move from Purdue University. Weilin Sun, Susan Balfe, Lijie

faculty

Sun, and Hongmei Li all started at Illinois along with myself at the beginning of the summer. We also had several new graduate students join our laboratory this fall: Jungkoo Kang (co-supervised with David



Onstad), Bret Olds (co-supervised with Ken Paige), and Darrin King. We are continuing our efforts to work on body louse genomics, the molecular basis of pesticide resistance, the “omics” of the digestive system of fruit flies and cowpea bruchids, and

we have an active research program in Africa on the pests of cowpea in the field.

Along with the move this last summer, I had a busy travel schedule with two trips to Africa (one to Nigeria and the second to Burkina Faso). This was part of a long-term USAID-funded collaborator research program on pest insects that impact cowpeas, a major source of protein for many people in Sub-Saharan Africa. We have recently received funding to expand our efforts into Benin and Mali. The project is a mixture of insect ecology, molecular biology, and development of novel extension approaches to train farmers in environmentally benign insect control strategies.

On a personal note, we are very much enjoying our new home, new neighbors, and new budding friendships here in Urbana-Champaign. We are still unpacking boxes at our home (something we will be doing for awhile) and trying to get settled into a routine. Quintin has entered grade six and Natalia has started kindergarten. Both are still actively collecting butterflies, so my hopes of a next generation of entomologists have not faded (yet). Julia finished her PhD this past spring and has accepted a position in extension. We are actively working on a couple of projects together, which we started at Purdue, dealing with teaching genomics to students, something I hope to continue here at Illinois.

Hugh Robertson. In 2006 I wrote about our sabbatical in South Africa. In contrast the last two years have been spent mostly in central Illinois, working on a variety of insect genome projects, especially the chemoreceptors they encode. The *Apis* and *Tribolium* projects are now published, and we're involved in the *Nasonia*, *Acyrtosiphon*, *Pediculus*, *Ixodes*, and other projects currently underway. With the ~100x reduction in cost of genome sequencing in the past two years, this trickle of arthropod genomes is

set to become a flood in the next two years and just keeping one's head above water for us old-timers who don't do computation will be rough going.

Most importantly I took on my third postdoctoral fellow, Kevin Wanner, a Canadian from British Columbia. Kevin helped us take a more experimental approach to the odorant and gustatory receptors, and, in a collaboration with Chuck Luetje's laboratory in Miami, managed to identify the receptor for the queen bee pheromone. This was relatively low-hanging fruit, however, and now we face the daunting task of trying to identify receptors for the many other pheromonal components in bee society, not to mention floral odors and other environmental chemicals. Similar tasks face us for each of the other genomes we work on, now primarily with USDA funding for moths and parasitoid wasps. Kevin moved on to an assistant professor position at Montana State University this spring, but we look forward to ongoing collaboration. Meanwhile, both graduate students in the lab are trying to finish up, Lauren Kent on mosquito chemoreceptors and Lisa Knolhoff on corn rootworms, and starting to envisage life beyond Illinois. My lab manager, Kim Walden, had her second child, Samantha, and we welcome her back to the lab this fall. Our group is rounded out by two Masters in Biology students, Catherine Seul working on *Daphnia* opsins and Jessica Kelch on novel *Drosophila* chemoreceptor candidates.

This past summer 2008 we returned to South Africa on our bi-annual pilgrimage to my home country, in part to attend the International Congress of Entomology held in Durban, which was a great success. We preceded it with 10 days in Madagascar, which was an amazing experience in so many ways, and our visit was greatly enhanced by the assistance of Rinha, Mike Irwin's assistant there. We ended up with 10 days in Cape Town visiting my Mom and helping her wrap up my Dad's affairs following his death in April, hit by a car while jogging. I'm 52 now, and my Mom is 84, but she still kept ahead of Erica and me on a walk up the flanks of Devil's Peak, the eastern peak flanking Table Mountain. It will take some doing to be that fit when I'm her age.

At home, Gabriel undertook his first solo long-distance drive out to Seattle for a summer internship at his uncle's company there, and returns to Parkland this fall while moving into his own apartment. Erica enters her last year at Leal School with mixed emotions. Now that she enjoys reading, thanks to JK Rowling, school is a lot more fun and she will miss Leal this time next year. Christina, while not remodeling various parts of our home, has a small artists studio in the old Urbana post office where she and

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our new dog, a bichon named Zaker, hang out while Erica is in school. Otherwise most extra-curricular activities center around Clinton Lake and sailing windsurfers, a Hobie catamaran, or our small cabin boat, that is if I'm not off kiteboarding at Cape Hatteras in North Carolina.



Gene Robinson. Two years ago I wrote in the Newsletter about the imminent publication of the honey bee genome sequence, and I looked forward eagerly to the new vistas it afforded. We are indeed busy using this awesome resource to enhance discovery in my laboratory's studies of the molecular basis of social behavior in honey bees. It also is very gratifying to see many other labs making such good use of the genome sequence.

We also have high hopes that the honey bee genome sequence will help us solve the mystery of Colony Collapse Disorder (CCD). Shortly after CCD was discovered, the USDA asked us whether we would be willing to use our newly developed "whole genome" microarray to see whether large-scale measurements of gene activity might give some clues as to what's wrong with the bees. We, of course, agreed and together with May Berenbaum's lab began to address this issue. May's student, Reed Johnson, is doing a superb job on this difficult project, and together with Tom Newman from my lab we are making good progress. We also are appreciative of alum Sue Ratcliffe ('99), Extension Specialist in the Department of Crop Sciences and Co-Director of the North Central Pest Management Center, who was able to obtain emergency funding for this project. This case also provides yet another example of the synergy between basic and applied research—the honey bee genome sequencing project was funded mostly by NIH to help understand the mysteries of social life, but it led to the development of a powerful tool to address CCD.

Looking to the future, we are working to position ourselves to be able to take full advantage of the impending revolution in genome sequencing. The strong push that is taking place now to lower the cost of sequencing human genomes for biomedical purposes will produce an amazing collateral result: sequencing costs so cheap that hundreds, maybe even a thousand, insect genomes will be sequenced within the next 10 years! We watch these technical

developments very carefully here because our department is "Ground Zero" for insect genomes. Many faculty in our department have been involved in at least one genome sequencing project, and Hugh Robertson probably has been in all of them so far! To provide new resources to study the mechanisms and evolution of eusociality we currently have a project with Roche Ltd. to obtain 1.2 giga-bases of sequence from 12 strategically chosen bee species that run the gamut from solitary to highly social. We're just getting sequence that codes for genes so far, but we hope this is a prelude to full genome sequences soon.

It's been an eventful year on the home front. Oldest son Aaron graduated from Washington University in St. Louis and middle son Daniel graduated from Champaign Central High School. Daniel is off to Wash U himself and Aaron accepted a position at Google. When told that Aaron was debating whether to accept the job or volunteer for the Obama campaign, little brother Sol, a strong Obama supporter said, "Take the job—IT'S GOOGLE!" We're sad that Silicon Valley is so far away from Champaign, but also very excited and proud. Julia continues to enjoy working on campus at the Spurlock Museum of World Cultures and is proud that the Spurlock is progressive enough to employ their own insect pest management specialist, but she also complains that she just can't seem to get away from entomologists. And Sol is already a sophomore at University High School—do I sound younger by saying "little brother?"

James Sternburg. I have been a part of Entomology from 1945 as a freshman to 1988, faculty member from 1934 to 1988, emeritus to date. Co-author with the late John Bouseman of *Field Guide of the Butterflies of Illinois* and *Field Guide of Silk Moths of Illinois*, published by the Illinois Natural History Survey, and with John Bouseman and James Wiker, *The Field Guide to the Skipper Butterflies of Illinois*. I did the photography of all three. At present James Wiker and I are working on a *Field Guide to the Sphinx Moths of Illinois*. While in the US Navy, 1942-1945, based in Trinidad BWI for one year, I was able to see much of the island, and to collect insects on weekends when not on duty as an aerial photographer. Recently, I've been to Yellowstone, Banff, Canada, and various places in Michigan. Hobbies include insect



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photography, gardening, and keeping 30 aquariums with tropical and native fish.



Andy Suarez. Well, after five years I am finally settling into the department, just in time to come up for tenure. It has been a fantastic year. I graduated my first student (Chris Smith, PEEB, now at Arizona State), sent a postdoc to start

his first job (Joe Spagna as an assistant professor at William Patterson), and have two new Entomology grad students joining the lab (Joanne Holley and Fred Larabee). Despite the lab turnover, we are all very excited to start the new academic year with a bang (and perhaps some roller skating). The past year was filled with lots of adventure including research trips to examine invasive ants in their native Argentina (me and Jo) and Jamaica (Bill), a study abroad course and workshop on Argentine ants in South Africa, and (the icing on the cake) the Ant Course, which was held at Rancho Grande in Venezuela this year (I almost did not come back from that one). The past year was not all fun and games of course (ok, yes it was); we also got a few papers out, including one of Chris' thesis chapters that was picked up by MSNBC and Yahoo News.

Gil Waldbauer. Recent years have been good to me. In 2006, Harvard University Press published my seventh book, *A Walk Around the Pond, Insects In and Over the Water*. This book elicited my first unfavorable review, by a professor of English at a southern university who thinks that my book includes too many *facts!* I wonder what he expects from a nonfiction book. In 2007, the University of California Press accepted my eighth book, *Fireflies, Honey, and Silk, How Insects Enrich Our Lives*. You can imagine the insects I include—cochineal, wasps that taught our ancestors to make paper, pet singing crickets, and even the stars of flea circuses. Now I am working on another book that deals with the ways that insects defend themselves against predators. I have been thinking about doing this book for a long time. Aposematism and mimicry have been the subjects of much of my research. Jim Sternburg, Mike Jeffords, and I did the first and only field experiment that demonstrates the efficacy of Batesian mimicry.

My personal life is graced by my fiancée, Phyllis Cooper, whom I have known for 50 years. We got

together some years after our spouses died. Health problems have delayed our marriage. Phyl had a hip replaced and I have had both of my knees replaced. Before these problems slowed us down, we spent weekends exploring the small towns of central Illinois and took trips to the Outer Banks of North Carolina, the Ozark Mountains and Hot Springs, Arkansas, and around Lake Michigan through Michigan and Wisconsin. I hope it won't be long before we will be mobile enough to resume our travels.

Charlie Whitfield. It was an eventful and wonderful summer for me. I was in Uganda for a few weeks in May helping my (then-)fiancée look for monkey pox in rodents. In July, Joanna Shisler and I got hitched on the Big Island of Hawaii, where we spent much time snorkeling, gazing at the smoking Kilauea caldera, and looking (not seriously) at the 'for sale' signs in the Puna district (somebody said they had some land to sell us in the Royal Gardens subdivision).

Our laboratory is moving right along. My postdoc, Amro Zayed, will be taking an assistant professor position at York University. I'm fortunate that he has delayed his start so he can continue working in my lab for another year. Amro is helping me in my transformation from molecular biologist to evolutionary molecular biologist. Amro has been using a large set of single nucleotide polymorphisms (SNPs) that we developed in the honey bee (*Apis mellifera*) to look at the effects of positive selection on the genome as a whole. In a paper published in *PNAS* earlier this year, Amro showed that functional (gene-coding) regions of the genome are adaptively evolving in response to positive selection. Positive selection was associated (in this study) with two range expansion events, one ancient and one much more recent. In the ancient event, *A. mellifera* expanded from Africa into western and ultimately northern Europe. We think that genomic changes associated with this expansion may be related to surviving harsher European winters, which in the honey bee involves behavioral adaptations such as honey hoarding, huddling in a winter cluster, and changes in worker division of labor. The more recent expansion involves the invasive introduction of Africa-derived honey bees into South America, where they partly replaced and partly hybridized with previously introduced European honey bees. Interestingly, Africanization of honey bees in the New World (that is, mixing of European- and African-derived portions of the genome) appears to be non-random, with hybridization favored in gene-coding regions. Although we have some guesses, we do not know why this would be the case.

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On the more mechanistic end of the lab, my graduate student Jason Ebaugh has been doing some fantastic biochemical work with one of our favorite proteins, called Erk7, which is expressed in the honey bee brain and associated with behavioral division of labor between nurses and foragers. Jason has shown post-translational modification of Erk7 (both phosphorylation and N-glycosylation) and protein abundance changes associated with both foraging and orientation (“training” flight) behavior. Jason will be publishing this work very shortly and I hope graduating early next year. My other graduate student, Chen Fu, has initiated a novel approach that just might be a big story. Chen has decided to study complex honey bee social behavior (such as nursing and foraging) by knocking out genes in fruit flies. The idea is that, although flies don’t have nurses and foragers (or any other kind of division of labor as far as I know), they do have phototaxis, circadian behavior, foraging strategies, and a sort of aggression—all of which differ in honey bee nurses and foragers. After testing three genes associated with nurse/forager differences in the bee brain, Chen has found that two of these genes affect locomotor activity in the fly, but only at specific times of day. We suspect that the function of these genes may be to alter an animal’s response to light stimulus or, perhaps, to act in the output of the circadian clock irrespective of light.

My challenge over the next year is to put our evolutionary and mechanistic studies together into some kind of coherent whole. I suspect that adaptation in honey bee populations—e.g., to temperate conditions in Europe—involves changes in many “behavioral” genes. So pursuing these evolutionarily interesting genes may lead us to the same genes that we have identified already and have been studying from a more mechanistic perspective.

Jim Whitfield. The last couple of years have seen some emphatic shifts in the lab, toward more biodiversity-related work with PhD student Josephine Rodriguez, who is heading up collaboration with Dan Janzen and Winnie Hallwachs in Costa Rica (just published in *PNAS*), and toward working with outstanding undergraduate students (Chris Grinter, who won the Outstanding Undergraduate in Entomology research award in 2007, and Paul Masonick and Stephanie Laurusonis, both still involved with projects in the lab). Some things never change, though: continuing revisionary taxonomic studies of braconid wasps (now in collaboration with Paul Marsh, formerly of the Systematic Entomology

Laboratory in Washington, DC, and with my new postdoc, Alex Wild), molecular phylogenetics of microgastrine braconids and relatives, and phylogenomics of the viruses associated with these wasps. None of these research areas will run out of things to investigate any time soon!

My three-month visit to New Zealand in 2006 has continued to yield collaborative fun with biomathematics folks in New Zealand and Germany, on topics more theoretical than I would have ever anticipated contributing within (of course I leave the real math to them!). One of the pleasures of being a systematic entomologist continues to be the ability to travel around the world and see new sights (the latest being the wonderful wildlife in South Africa after the ICE meetings!) and make new friendships.

On a more personal note, Sydney and I are finally getting to enjoy our renovated garden in Champaign as it brings in bees and butterflies (not to mention possums and garter snakes). This fall we are taking our (first-ever!) sabbaticals to Montana and Wisconsin. We’re also happy to see former students doing so well—Andy Deans on the faculty at North Carolina State University, Won Young Choi as senior entomologist at the National Biological Resources Institute in Korea, and Alejandro Valerio on an NSF Planetary Biodiversity Initiative postdoc at Ohio State University.



Art Zangerl. New Zealand continues to be a fascinating study in what promises to be rapid evolution. Initial findings, published in *PNAS*, indicate that very complex patterns of selection on parsnip chemistry have resulted

from recent reassociation with parsnip’s archenemy, the parsnip webworm. At the moment, webworms definitely have the upper hand, devastating populations that they have colonized (substantial majorities of plants in these populations are unable to convert any of their buds into seeds). Recent funding from NSF will allow us to document responses to selection and also explore the pleiotropic effects on pollination success of this selection to reduce floral herbivory. In addition to this work, I am involved in assessing the effects of insects on sustainability of biofuel crops and this fall, I am teaching half of our major’s course in genetics. Between New Zealand and the U.S., I now have plenty of field seasons to keep me warm.

Faculty Recognition

Gene Robinson was awarded a Swanlund Chair, the highest form of recognition at the university (his chair brings our departmental total of Swanlund chairs to two, giving our department the highest percentage of Swanlund chairs on campus). This endowment was made possible by a gift from alumna Maybelle Leland Swanlund, who received a degree in library studies from Illinois in 1932 and who died in 1993. She provided a \$12 million endowment for chairs to attract leaders in the arts and sciences at the University and to recognize current faculty members who have made exceptional contributions in their fields.

In fall 2008, Hugh Robertson was designated as a Richard and Margaret Romano Professorial Scholar by the College of Liberal Arts and Sciences. As Dean Sarah Mangelsdorf explained, the designation is “based upon recognition of your outstanding achievements in your research. We take considerable pride in your accomplishments and value you greatly as a key leader in research on molecular evolution.”

Student Awards

Rita and Arnold Goodman Fellowship—Mami Randrianandrasana
Graduate College Minority Fellowship—Marsha Wheeler
Francis M. & Harlie M. Clark Research Support Grant—Ann Ray, Josephine Rodriguez
Robert Emerson Memorial Grant—Heather Hines
IB201 Outstanding Teaching Assistants—Jamie Zahniser
Herbert Holdsworth Ross Memorial Fund Award—Ann Ray, Scott Shreve, Sandra Yi, Sindhu Krishnankutty
Ellis MacLeod/DuPont Award for Outstanding Teaching by a Graduate Student in the Department of Entomology—Liz Graham (2007), Sara Kantarovich (2008)
2007 John Henry Comstock Award (ESA)—Daniela Takiya
Educational Project Award, Board Certified Entomologists of Mid-America, for Bugscope Project; William H. Luckmann Award for Student Research in Applied Entomology—Ann Ray
Outstanding Undergraduate Research Award—Chris Grinter (2007)

Incomplete List of Outstanding Teachers at Illinois Fall 2006-Spring 2008

(number of semesters)

May Berenbaum (3)	Mathys Meyer
Sydney Cameron	Katelyn Michelini (3)
Bettina Francis (3)	Robert Mitchell
Elizabeth Graham (2)	Bridget O’Neill (2)
Patrick Halbig (2)	Dominic Philpott (2)
Lawrence Hanks	Peter Reagel
Terry Harrison	Hugh Robertson
Heather Hines	Gene Robinson
John Kane	Josephine Rodriguez
Sara Kantarovich (2)	Raghu Sathyamurthy
Lisa Knolhof	Andrew Suarez (2)
Sindhu Krishnankutty (2)	James Whitfield

awards and recognition

Karen Pruiett Named 2008 Chancellor's Academic Professional Excellence Award Winner

"The Illinois Bee Research Facility is the foundation for an active and diverse research program that brings in over \$1-2 million per year to the campus and involves over 25 undergraduate and graduate students per year. The Bee Research Facility provides major support for the research of two faculty members and research support for several distinguished faculty members from diverse units on campus through collaborative projects. As manager of the Bee Research Facility, Karen Pruiett coordinates the needs for precisely staged and collected bee samples and provides invaluable assistance to all.

"One of Ms. Pruiett's main activities is to maintain an operation of about 100 colonies of honey bees so that healthy bees of the correct age and genetic stock are available for the many projects that are conducted. This involves a highly specialized form of expertise, one that requires skill in both commercial and scientific aspects of beekeeping, and Pruiett is among the best at it in the nation. She has over 25 years of experience as a beekeeper and does an excellent job of maintaining the bee colonies. She places the colonies in groups of about ten in specially selected sites throughout the area and then carefully inspects and manipulates the colonies to ensure their health and well-being. She engages in bee breeding, one of the most complex aspects of beekeeping, and has mastered the technique of instrumentally inseminating queen bees. Thanks to her, researchers have available thousands of bees in just the right condition for experiments that probe their behavior, brain, and genes.

"It must be pointed out that the beekeeping aspects of Pruiett's job have gotten more difficult during her tenure—the challenges of beekeeping are increasing at an alarming rate due to increased parasites, pathogens and other stresses. But while bee operations are collapsing across the country due to "Colony Collapse Disorder," our bees are thriving and providing excellent material for research, thanks to Pruiett's superb technical skills and hard work. Pruiett keeps up with the latest developments by reading trade journals extensively and consulting with many beekeepers locally and throughout the country. She is innovative and creative in her practice of beekeeping.

"Pruiett is also a superb teacher and makes significant contributions to the training and teaching acti-



vities at the bee lab. Many of the students that do research on bees on this campus have never before worked with honey bees. But the research demands a high level of technical proficiency, both for scientific purposes and for safety reasons—after all, bees do sting. Pruiett is in charge of providing training to all new students, and she also excels in this. Pruiett also contributes to the teaching mission by working with classes that visit the Bee Research Facility for demonstrations and other forms of instruction. She is an excellent instructor and routinely gets excellent reviews from these classes.

"Ms. Pruiett also makes significant contributions to our outreach mission. The Bee Research Facility receives over 100 calls per year from citizens who have problems with bees or other stinging insects or from beekeepers who seek advice on how to care for their bees. Pruiett handles the bulk of these calls. She provides accurate and clearly articulated information and she delivers it with a friendly professionalism that reflects extremely well on our campus. Pruiett also plays a major role in the University of Illinois Bees and Beekeeping Short Course that I direct. This course has been offered annually for most of the past decade and draws participants from Illinois and neighboring states. The workshops that Pruiett offers are always among the most popular. She has an engaging style of instruction that really draws people to her. Pruiett also is responsible for setting up virtually all other aspects of the short course. Her expert preparation makes everyone look good."

(from Gene Robinson's nominating letter)

Rachel Galun Receives 2007 LAS Alumni Achievement Award



The LAS Alumni Achievement Award is given to an individual who has “demonstrated the values derived from a liberal arts and sciences education.” Dr. Galun has spectacularly demonstrated these values in a variety of ways—

by rigorous application of the scientific method, by assuming responsibility for leadership within the academic community, by distinguished service to her chosen profession, and by using knowledge to improve the lives of other people. She is an alumna of whom we have every right to be proud and who has, in turn, earned our praise and our gratitude.

Dr. Galun’s academic history is a clear demonstration of her extraordinary scholarship and strength of character. Although she began her career in science obtaining one of the first master’s degrees to be awarded in plant sciences at Hebrew University of Jerusalem, her pursuit of a doctoral degree was interrupted by the 1947 Arab-Israeli War and she served four years in the military as a medical entomologist. This fearless woman, at the conclusion of her military service, traveled to the U.S. to complete her education. Here at Illinois, she worked with Gottfried Fraenkel, among the greatest living entomologists of the era, where she developed the interest in insect behavior and nutrition that would serve as the focus for her work for the next five decades.

After completing her doctoral degree, she immediately dedicated herself to elucidating the chemical basis for the behavior of blood-feeding parasites of humans; these organisms cause pain and suffering not only via their action as parasites but are globally a major mortality source for humans via their role as vectors of human pathogens. Over the course of a 50-year career, she has advanced the understanding of chemically mediated vector behavior arguably more than any other scientist. Much of her early work has achieved textbook status; among other contributions, she pioneered the identification of pharmacologically active substances from leech saliva (including anticoagulant and anesthetizing substances), documented the components in blood that stimulate feeding by

mosquitoes and ticks, characterized pheromones used by ticks to aggregate on their hosts, and identified an entirely novel class of pheromones, the abstinons, used by mating flies to deter inappropriate (heterospecific or homosexual) matings. Each of these signal contributions stimulated new (and still ongoing) research enterprises; adenine nucleotides and glutathione, for example, discovered by Dr. Galun to be feeding stimulants for mosquitoes and ticks, respectively, over 30 years ago are now known to be feeding stimulants for a vast array of blood-feeding arthropods.

Her interests extend beyond the laboratory and she has been actively involved in the development of environmentally responsible and sustainable approaches to managing human disease vectors. Dr. Galun was first to document, carefully and incontrovertibly, resistance to permethrin, a pyrethroid insecticide in the head louse. The existence of resistance to pyrethroids was at the time vigorously disputed by the pesticide manufacturers and Dr. Galun’s work established beyond all doubt that, in fact, head lice are as capable of developing metabolic resistance to pyrethroids as they are to the organochlorine compounds the pyrethroids had been developed to replace.

Moreover, she has continued to innovate and expand her vision. She has been among the earliest and most effective advocates of the use of biotherapy—harnessing the highly specific feeding habits of human parasites to treat refractory or otherwise incurable conditions. Leeches, for example, are now routinely used to facilitate reattachment surgery by removing extraneous blood, and the use of aseptically reared “surgical maggots,” species that selectively ingest infected wound tissue, faces growing acceptance around the world as a satisfactory method for managing deep bone infections and other wounds that are unreachable by surgery or antibiotics. Her research, publications, and advocacy were critical to establishing these forms of complementary/alternative therapy worldwide. Dr. Galun has kept up her research efforts at an age when majority of scientists are content to bask in the glow of past accomplishments; two years ago, for example, she was involved in a survey of over 1000 ticks belonging to six different species for the presence of West Nile virus in Israel, implicating two of the species as hitherto unsuspecting vectors of this disease.

Dr. Galun’s influence extends well beyond the pages of scientific journals. Like most other outstanding scientists, her service runs the full gamut,

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Galun *(continued from p. 19)*

encompassing service on no fewer than three editorial boards as well as advisory boards, organizing committees, review teams, and the like, too numerous to recount here. But beyond such service, Dr. Galun is an international force for the betterment of human health and welfare. Throughout her career, she has been actively engaged in promoting entomology in the developed as well as the developing world. Shortly after she returned to Israel, she founded what may well have been the first Department of Entomology in that nation and served as its head for 20 years.

An active member of many international organizations, including the World Health Organization, she was one of the founders of the International Centre of Insect Physiology and Ecology in Nairobi, Kenya, today the premier institution conducting entomological studies in all of Africa. She has twice been elected President of the International Congress of Entomology, an illustration of the high regard in which she is held by the world entomological community. Despite political pressures, she has been successful in participating in and promoting

scientific collaborations between Israel and Egypt. Her network of collaborations extends far and wide and her work has influenced the development of entomology across the globe.

The many successes of Dr. Galun in the face of what would seem to be daunting obstacles reflect not only great scientific acumen but also tremendous diplomatic skills, deep insight into human nature and diverse cultures, and an abiding dedication to improving the world through research. She has traveled the globe and partnered with scientists from almost every continent (North America, South and Central America, Europe, and Africa) in her determination to reduce the injury, suffering, and disease inflicted by human parasites. By her rigorous application of the scientific method, by learning about and recognizing the values of other cultures, and by applying knowledge to improve the lives of other people, Dr. Galun is the embodiment of the values of the liberal arts and sciences curriculum.

Unfortunately, Dr. Galun was unable to be in Champaign-Urbana on October 27, 2007, to accept her award. May Berenbaum accepted on her behalf.

awards and recognition



Alumni abounded at the special meeting convened April 23-24 in Beltsville, MD, at the USDA-BARC facility to set priorities for research on colony collapse disorder in honey bees. The meeting was organized by alumna Diana Cox-Foster; in attendance were Christina Grozinger, Zachary Huang, Steve Sheppard, and May Berenbaum.

Marianne Alleyne. The main area of my research involves the study of selected physiological factors that influence a larval lepidopteran host's immune response and metabolism after parasitism by braconid wasps. Results will help explain the diversity of immune responses and counter responses among related insect hosts and parasitoids and give us insights into physiological factors determining host specificity and non-target effects of parasitoids. I am collaborating with Entomology graduate student Robert Mitchell and Dr. Boris Odintsov, research scientist at Biomedical Imaging Center, Beckman Institute. Using MRI technology we are now able to image live parasitoids while still in the host. Our goal is to follow parasitoid development of the same individuals over consecutive days.

I still teach Insect Physiology, which I really enjoy because of the students. I serve as the vice-president of the Integrative Physiology and Molecular Insect Systems Section of the Entomological Society of America, which is actually quite enjoyable too, mostly because of people with whom I serve.

My family life is pretty awesome. Andrew and I are just amazed about how time flies. Our sons, Harmen and Willem, are now 7 and 4 years old. They are handsome and smart (I married well), but also very different. We have now been in C-U for almost 15 years; I guess it is our home now!

Sam Beshers. I am continuing my lab and theoretical work on division of labor and colony organization in ants, with the help of lab colonies of *Atta texana* and computer simulations. This summer the new, state-of-the-art insectary opened in the basement of Morrill Hall and the ants are quite pleased with the new digs. My wife, Lynn Wiley, has become Head of Acquisitions in the University library, our son Max is a junior (c'est impossible!) at Oberlin College, and daughter Caroline is enjoying her subbie year at Uni High.

Axel Brockmann. I joined Gene Robinson's lab in May 2004 to work on the neural and molecular mechanism of honey bee dance language. Whenever I talk to colleagues about it, I get a smirk or they tell me how they would do it better. When I told this to my former boss (B. Hoelldobler), he gave me the advice to get involved in additional projects to be on the safe side. In some ways these are all good signs. But where am I right now? Well, I have worked on other projects. We just submitted a study, which was a collaboration with the Sweedler lab, using quantitative peptidomics to identify neuropeptides involved in honey bee foraging. In addition, I joined the ongoing

project on foraging-related experience plasticity. Regarding the dance language project, Gene and I published an anatomical study on brain pathways and regions involved in navigation and dance language last year. Based on those data, I did a microarray study on gene expression changes during honey bee orientation flights. During these flights, bees learn solar movements and calibrate the time compensation in the sun compass system, necessary for proper navigation and communication of directional information. At the moment I am analyzing the data. Although we still might be far from identifying the neural and molecular basis of dance language, we have a good idea where to look and where to go. I think Gene was right. It was the right time to start such a project, and I'm happy to be part of it.

Chris Dietrich. Last year, the Dietrich leafhopper lab graduated its first PhD student, Daniela M. Takiya, whose dissertation comprises the first comprehensive phylogenetic analysis of the sharpshooter tribe Proconiini, which includes the infamous glassy-winged sharpshooter and numerous other vectors of xylem-borne plant pathogens. Daniela, a native of Brazil, now has a faculty position at the Universidade Federal do Rio de Janeiro in Brazil and continues her research on leafhopper systematics. PhD candidate Jamie Zahniser has nearly completed his dissertation, which focuses on the phylogeny and higher classification of Deltocephalinae, another large and economically important group of leafhoppers. PhD student Sindhu Krishnankutty received her Master's degree after completing a phylogenetic and taxonomic study of the North American sharpshooter genus *Cuerna*. She is now focusing on the phylogeny and biogeography of the leafhoppers of Madagascar for her PhD research. Although activities in the leafhopper lab continue to include molecular and morphology-based phylogenetic analyses, major emphasis is now being placed on the development of user-friendly tools for synthesizing taxonomic information and identifying species. Two NSF RevSys (Revisionary Syntheses in Systematics) awards have facilitated postdoctoral fellow Dmitry Dmitriev's development of 3I (Internet-accessible Interactive Identification; see <http://ctap.inhs.uiuc.edu/dmitriev/>), which enables taxonomists to create virtual online revisions of large groups of species in relatively short periods of time. Using 3I, we have completed a revision of the tribe Erythroneurini (a group of microleafhoppers comprising more than 1100 species, including numerous pests of grapevine) and are working on a revision of another large and economically important group of microleafhoppers, Empoascini.

Michael Gray. During the past two years, I have initiated some new programs and taken on several additional responsibilities. My primary focus continues to include serving as a Professor, Extension Entomologist, and Extension Coordinator in the Department of Crop Sciences. Throughout most of my career, my research has been aimed at improving our understanding of the management of insect pests of corn, primarily the western corn rootworm. In 2008, I began serving as one of the program leaders within the Energy and BioSciences Institute. This effort is a joint project between the University of Illinois and the University of California at Berkeley and is funded by British Petroleum. Our specific research program is focused on assessing the potential impact of insect pests and plant pathogens on the biomass production of *Miscanthus x giganteus* and switchgrass (*Panicum virgatum*).

In January 2007, I began a new assignment (25% time) as Interim Assistant Dean for Agriculture and Natural Resources Extension Programs in the College of ACES. Perhaps the most exciting opportunity for me occurred when I became President of the Entomological Society of America in December of 2007. This has been a very humbling experience and an honor to serve entomologists throughout our very diverse discipline.

Kevin Johnson. My research on the higher systematics of parasitic lice has taken interesting turns in recent years. Data from the 18S ribosomal RNA gene supported two origins of parasitic lice from free-living bark lice. To follow up these results, NSF has provided support for sequencing additional genes to determine if these results can be confirmed with more data. Two new students, Emilie Bess and Scott Shreve, have joined the lab to work on biogeography of bark lice—so these obscure, but diverse insects are getting some much needed attention. Despite delving into the world of free-living insects, I'm also continuing work on bird-louse systems. Recent examination of factors important in changes in host specificity has produced the exciting result that generalists are derived from specialists in dove lice.

Richard Lampman. After my postdoctoral work on *Diabrotica* attractants with Robert Metcalf ended in 1990, I joined the Medical Entomology Program at the Illinois Natural History Survey (now part of the University of Illinois' Institute of Natural Resource Sustainability). After being retrained by Robert Novak in culicid bionomics and undergoing many adventures with used tire piles, field and laboratory

testing of attractants and repellents, and screening natural products for larvicidal activity, I specialized in the ecology and behavior of *Culex pipiens* and *Culex restuans*. At the time,

this seemed like a poor choice for getting extramural funds, as most were flowing to projects with *Anopheles* vectors and exotic *Aedes*, but in 1999 that changed with the introduction of West Nile virus in New York. In 2002, Illinois had the largest WNV outbreak worldwide (of course, overshadowed the next year by the outbreak in Colorado). I have had a great deal of fun working with mosquito abatement managers and public health personnel throughout Illinois. WNV showed us how little we knew about vector ecology of these species. When Robert Novak left the program in 2007, I was the interim director for over a year, until the search committee found a replacement (Barry Alto). I hope to continue working with *Culex*, as well as some of the recent introductions to Urbana-Champaign, like *Aedes (Ochlerotatus) japonicus*.

Hongmei Li. She received a PhD from Purdue University. Her advisor is Dr. Barry Pittendrigh. This is Hong-Mei's first year in the department.

Jeff Lozier. I am a postdoc in Sydney Cameron's lab studying the conservation genetics and molecular ecology of several bumble bee species in the midwestern U.S. Our project is aimed at ascertaining patterns and causes of apparent declines in several previously common regions. My research focuses on the use of molecular markers to understand demographic history, and I am particularly interested in the integration of museum specimens into such studies to more rigorously compare genetic patterns in historical and modern populations.

David Onstad. His book, *Insect Resistance Management*, was published in late 2007 by Academic Press (Elsevier). Barry Pittendrigh, Joe Spencer, and Lisa Knolhoff from Illinois were other chapter authors.

Karen Pruiett. I have been a hobbyist beekeeper since 1974 maintaining 20-30 colonies of hungry bees. In January 2007, I took the position as bee research specialist in the Robinson lab and have been a professional beekeeper since that time. Because of the lab's unusual application of honey bee science, I



have continued to learn about this fascinating member of the Hymenoptera.

Susan Ratcliffe. I serve as Director of the USDA North Central Region Integrated Pest Management Center (ncipmc.org) and Panel Manager for the North Central Region Integrated Pest Management Grants Program. My position provides the opportunity to participate in many diverse programs and projects. Through my involvement with soybean rust, I received the USDA Secretary of Agriculture's Group Honor Award for Excellence as a member of the national response team. On a personal note, Bruce and I recently celebrated our 28th wedding anniversary and continue to enjoy spending time with our children. Mary (Ratcliffe) Wyczolkowski (26) and her husband Daniel live in Champaign, Carolyn (22) will graduate from the University of Illinois in May 2009, and Robert (20) is a junior at the University of Illinois.



Moushumi Sen Sarma. I am trying to understand the underpinnings of the honey bee dance language using molecular techniques. When successful foragers find an attractive food source, they return to their colony

and advertise the location of this site in terms of distance, direction and quality. The dance language is composed of a set of stereotyped and quantifiable symbolic movements. Species differ from each other in the output of the behavior, best described as dialects of the language. Through gene expression profiling, I am looking for molecular signatures of species differences in the behavior, as well as answers to questions such as what a honey bee needs in order to collect information about a food source and convey this information to its nestmates. I am focusing on brain regions that are candidates for being involved in the dance behavior as well as genes that act as markers of neuronal activity.

Leellen (Lee) Solter. I am currently working in collaboration with the Cameron lab on studies of bumble bee population decline. Sydney and I chose two of many possible factors to evaluate—population genetics of selected *Bombus* species and the role of microsporidian pathogens in declining vs. stable populations. Our graduate student Christina North recently completed a survey of pathogens and



parasites in Illinois *Bombus* spp. populations. Nils Cordes, our doctoral student, will use molecular characters to determine whether the microsporidium *Nosema bombi* is an introduced bumble bee pathogen (from Europe) or is a holarctic species

that occurs naturally in North America. In addition to the bee studies, I have recently released two microsporidian pathogens against the oak-defoliating gypsy moth in northern Illinois. Monitoring studies over the next three years will show whether the pathogens established in the gypsy moth population. Other studies include describing a new microsporidium isolated from the black vine weevil, and microsporidia infecting several beetle species that were imported for biological control of the hemlock woolly adelgid.

In addition, I continue as research leader of the Section of Ecological Entomology at the Illinois Natural History Survey; in that capacity I have been involved in bringing the Surveys into the University of Illinois as an Institute of Natural Resources Sustainability and in planning for our 150th anniversary celebration.

I'm sure that everyone would be disappointed if I didn't mention that Phil and I continue our old-house remodel; we recently pulled out the ceilings in the living room and den. Our son Ravi graduated from University of Redlands in May 2008 and is exploring grad school and other career possibilities.

Felipe N. Soto-Adames. After completing my PhD and postdoctoral training in Hugh Robertson's lab I was awarded an NSF postdoctoral fellowship to work in the laboratory of Chris Simon at the University of



Connecticut. After a year there, Rosanna and I moved to the University of Vermont in Burlington, where we spent nine years, first as a postdoc in the laboratory of Jan Conn and later as Research Assistant Professor. During my time in Vermont I continued to work on springtail systematics, but also collaborated with Jim Vigoreaux and David Maughan to study the evolution of insect flight muscle proteins. Last year I accepted the insect systematist and curator of entomology position at the Illinois Natural History Survey, which

affiliates and other academics

was left vacant after the retirement of Don Webb. Rosanna and I moved back to Urbana on August 23, 2007. My office is 295 Natural Resources Building, where I will continue studying the systematics of Collembola.

Kevin Steffey. While helping my wife, Ria, raise our rambunctious and delightful son, Lucas (born in April 2006), I have managed to continue my career as an extension entomology specialist in the Department of Crop Sciences. The issues associated with management of insects in corn and soybeans continue to change with the dramatic changes that are occurring in agriculture, so there has been no loss of opportunities to keep growers and their advisors educated about pest management. Among the many educational meetings I have conducted and educational papers I have published, I also managed to publish a couple of journal articles of note: Gray, M.E., K.L. Steffey, R.E. Estes, and J.B. Schroeder. 2007. Responses of transgenic maize hybrids to variant western corn rootworm larval injury. *J. Appl. Entomol.* 131: 386-390. Hutchins, S., and K. Steffey. 2006. The Entomological Society of America: A proposal to members for organizational renewal. *American Entomologist* 52: 150-166.

For two years, I have been the Coordinator for the Off-Campus Graduate Studies (OCGS) program for the Department of Crop Sciences. In 2007, our program was approved for granting an MS degree in Crop Sciences by delivering courses via the internet. This change from face-to-face meetings has resulted in a marked increase in student numbers while retaining, or even increasing, the rigor of the program. In 2008, I was part of a team of extension specialists that was honored with the 2008 College of ACES Team Award for Excellence for our University of Illinois *Corn & Soybean Classics*, a series of meetings that have been conducted annually for more than 10 years, with an average attendance of about 1100 people. I also was recognized by the Entomological Society of America by being elected as a Fellow in 2008. Both honors are highlights of my efforts in extension education, for which I am most grateful.

Steven Taylor. During the past year, I have happily continued my affiliation with Entomology. Working with Jim Nardi and others, we recently submitted a manuscript on "Distinctive features of the alimentary canal of a fungus-feeding hemipteran, *Mezira granulata* (Heteroptera: Aradidae)." The work with Jim has expanded this year to include collaboration with Paul Tinerella (also an affiliate from INHS), and the three of us are working together on a study of

the alimentary canal of various true bugs, with an emphasis on aquatics and semiaquatics.

I'm thrilled that Maminirina Randrianandrasana, whom I advised for her MS degree in Entomology, has returned from Madagascar to pursue a PhD with May Berenbaum.

My interest in other twisted-winged parasites continues, with a short note published on Strepsiptera with Jeyaraney Kathirithamby (apparently, I tend to work with people who have very long names), who recently visited the University. The strepsipteran work has expanded to also include Amy Toth and Hollis Woodard (both in Gene Robinson's lab) and Jim Nardi—we're looking at the interface between host and parasite tissue in *Xenos*, which parasitizes *Polistes* wasps.

When not working on true bugs or Strepsiptera, I've been focusing on cave biology. In collaboration with a couple of out-of-state researchers (Jean Krejca, Texas; Mike Slay, Arkansas TNC), I'm finishing a bioinventory grant looking at caves in Great Basin National Park, which was fabulously fun (envision hiking to caves among the bristlecone pines at timberline), and resulted in the discovery of several new species.

On the home front, my wife, JoAnn Jacoby (a librarian at the University), and I bought a new home in Champaign which is keeping us busy when we are not traveling. She'll be accompanying me to Australia this fall, where I'm attending the 19th International Symposium of Subterranean Biology.



Paul Tinerella. I have had an exciting first year settling in to duties and research at the Illinois Natural History Survey Entomology Collections. Earlier this year saw the completion of a successful NSF-

funded Biological Research Collections grant that began in 2005 and facilitated databasing of more than 300,000 specimens of Hymenoptera in the INHS holdings, including some of the most important historical holdings for that group on the planet. The completion of this project has made available a wealth of specimen-level data that a number of



external scientists are now using. Among these projects is a large-scale population genetics study on select North American bee taxa, using specimen holdings collected 40+ years ago! This past year the insect collection was especially active with external scientific loans and visitors. Collection accessions this year included part of the W.U. Brigham water beetle collection, of which an undetermined number (thousands) are still being processed, as well as a large plant bug (Miridae) collection from J. McPherson, Southern Illinois University.

On research news, my water bug (Heteroptera) systematics lab at INHS is fully operational. The lab saw its first training activities this year with completion of a research project by undergraduate student Christine Fleener. Christine was among the first to gather sequence data in the lab. In addition, she received general insect morphology training and specifics as relevant to her project contributing to higher-level phylogenetics of the water boatmen (Corixoidea). Christine's project was supplemented by an undergraduate research award from the Illinois State Academy of Science, where she presented a poster at the annual meeting. Not bad for an astronomy/anthropology major!

Taxonomic and systematics research on world water bug faunas continues, especially with monographs in preparation for continental African Corixoidea and Notonectidae (backswimmers), Malagasy water boatmen, backswimmers, and pygmy backswimmers, select South American water bug families, Illinois and regional Nearctic faunistics, and work toward further synthesis and reconstruction of water bug and true bug phylogenies. A systematics monograph on New Guinea and Oceania pygmy water boatmen (Micronectidae) was published most recently. Field work continues, in support of research on these groups and regions.

The water bug bioacoustics lab is in its early stages of development and great progress was made this year with generating preliminary audiospectrographic and functional morphology data. Students at all levels are actively being sought for projects on all aspects of bug bioacoustics underwater!

Amy Toth. After completing my PhD in the Program in Ecology and Evolution at Illinois in 2006, I have continued my work on the social behavior of bees and wasps as a postdoc with Gene Robinson. We have been working on experiments to understand how nutrition can influence division of labor in *Polistes metricus* paper wasps, and also measuring wasp brain gene expression—this has involved testing and conducting the first experiments with *Polistes*

microarrays. Recently, I began a USDA postdoctoral fellowship in which I will be using these arrays to study dominance behavior in *Polistes*. My mentor for this project is Christina Grozinger, and I will likely be moving to Pennsylvania State University to work with her early next year. In the meantime, my husband Fernando Miguez and I made a baby! Our son, Felix Fernando Miguez, was born January 7, 2008, and he is a very happy and extremely curious little fellow. On an entomological note, Felix has already shown great interest in ants, bumble bees, and spiders.

David Voegtlin. I retired in August 2007 with the understanding that I could keep my office and lab and continue to oversee the midwest suction trap network. There are 42 traps in this network and traps range north-south from Crookston, MN, to Portageville, MO (the bootheel), and east-west from Dundee, MI, to Brookings, SD. The primary goal is to monitor the movement and abundance of the soybean aphid but all aphids are counted and identified. During the growing season weekly counts of the soybean aphid are placed on the web (<http://www.ncipmc.org/traps/index.cfm>). I hope to continue this long enough to keep graduate student Doris Lagos supported through her PhD research. Doris has a marvelous eye for detail in the aphid genus *Aphis*. A long-term goal is to produce an on-line key to the aphids of the Midwest.

Richard Weinzierl. I continue to conduct fruit and vegetable insect management research and extension programming, with most of my efforts directed to insect management in apples, peaches, sweet corn, and pumpkins. Two graduate students are working with me. Moneen Jones (PhD program, NRES) is quantifying baseline susceptibility of two populations of oriental fruit moth to a range of reduced-risk insecticides; her work also includes observational studies of oriental fruit moth phenology and natural enemies. Stephanie Dold (MS program, Entomology) has begun studies of the impacts of short-cycle cover crops on arthropods associated with pumpkins and cucumbers. I continue to teach Introduction to Applied Entomology in ACES, and in March I completed a one-year term as President of the North Central Branch of the Entomological Society of America.

Alex Wild. I am a postdoc in Jim Whitfield's lab where I work on various taxonomic and phylogenetic projects in braconid wasps. My interests are in natural history and evolution, and braconids are the latest group in a career spanning systematic research on ants, beetles, and other insects. Aside from

research, I do a great deal of macrophotography; my insect photo galleries are posted at www.myrmecos.net.



Amro Zayed. Thank you Illinois! The last two years have been very eventful. After spending a very long winter ('06) catching up on the honey bee literature, I finally got to put on a bee suit and get some hands-on experience with honey bees in the spring of '07. Then, I

was off to France to conduct a very cool honey bee experiment. The French bees have kept me very busy in the lab, but I did take a break to write a *PNAS* paper with Charlie Whitfield showing strong signatures of positive selection acting on the honey bee genome. My spouse, Jennifer Grixti (INHS), was a very “busy bee” too—she spent the '07 summer trekking all over Illinois to survey bumble bees, in collaboration with Colin Favret and Sydney Cameron. Her work, showing substantial declines in the Illinois bumble bee fauna will appear soon in the journal *Biological Conservation*.

On the home front, we were delighted to have our first baby, Jason Alexander, this summer (June '08). A few weeks prior to having Jason, we learned that I was the successful candidate for a faculty position in our hometown of Toronto, Ontario, Canada (York University, my *alma mater*). We'll be moving back to Toronto in the summer of '09. Although we are happy to be returning to Toronto, we are sad to be leaving our good friends and colleagues here. We have had great memories in Urbana-Champaign, and it will always be our second home. Thank you all for making our experience here great.

Also affiliated with the department are Cedric Alaux, Susan Balfe, Catherine Eastman, Scott Kreher, Wenfu Mao, Brenda Molano-Flores, Tom Newman, David Soucek, Weilin Sun, and Kim Walden (pictured below with new daughter, Samantha Grace).



Staff

Todd Fulton. I've worked in the insectary for 19 years. What started as a part-time job while in school has turned into a part-time career. I continue to be happily married. My 4 children are almost all grown up; only 17-year-old Kelly is still at home. If you see hand drawn pictures in any of my rooms they serve as reminders of the children's visits years ago. The oldest, Chad, is married and has provided me with two grandchildren, ages 4 and 9 months; he's a Champaign County deputy sheriff. Andy is also married and a Sergeant in the Marine Corps. Rachel will be getting married Oct. 25, 2008, and is a psychology graduate of the UI. Kelly, a junior at Mahomet High School, loves Marching Band and socializing, but continues to be an Honor Roll student. She looks forward to attending College and is taking some college prep classes currently. My wonderful wife Vickie, is a R.N. at Carle Clinic in the Allergy Department; she is also a Nursing instructor at Parkland. I'm working as an R.N. full time at Safeworks Illinois in Champaign. I guess I'll continue to keep the “bugs under control” a few more years, provided they continue to flourish under my care.

Karen Trame. I have been with the Department of Entomology since August 2007; prior to that I worked in the College of Education. I am enjoying my work and learning new things everyday, such as how many interesting ways folks can spell Entomology and checking my coffee mug for bugs every morning. Most of all, I had no idea so many people were fascinated by insects. Judging by the phone calls the Department receives daily and the descriptive inquiries, insect collection is a popular hobby.

I live in rural Champaign County with my husband, two kids, one dog, and am surrounded by corn, beans, and, of course, insects.

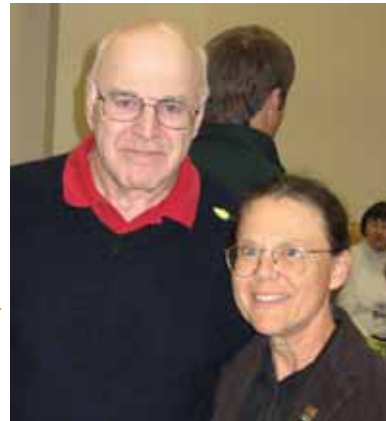
Audra Weinstein. Well, times have certainly changed since the last newsletter—wow, I wasn't even here. I was fortunate enough to work with two of the three staff members of the previous reign: Leta and Jerald. Jackie was gone by then, but we had met and served on a committee in another life.

I began my experience in Entomology in January 2007 after working in Physics, Cell and Developmental Biology, and of course, the med school.

I am the proud parent of three great kids (yup, put that in writing) and one grandchild (you're right—too young to be granny). I spend whatever free time on the basics: traveling (not really, but daydreaming about it), reading, and Ebertfest.



Jodie Ellis and Matt Ginzel



Don Webb and Susan Halbert



Rachel Galun and Gene Robinson



A looper joins the festivities

ESA Mixer in Indianapolis

ESA mixer



Ann Helm, Charlie Helm, Carol Anelli, Bruce Stanley, Chris Maier, and Peter Price



Lisa Knolhoff and Jim Hunt



Nathan Schiff and Steve Sheppard



Tugrul Giray, Rosanna Giordano, and Felipe Soto

Colloquium Speakers

Spring 2007

- David Soucek, Illinois Natural History Survey, *Bio-energetic effects of coal-related contaminants on freshwater invertebrates*
- Henry Hagedorn, U. of Arizona, *Open access: the revolution in academic publishing*
- Chris Organ, Harvard U., *From the fossils of cells: genome architecture and evolution in dinosaurs, pterosaurs, and other extinct reptiles*
- Barry Pittendrigh, Purdue U., *Genomics and proteomics of xenobiotic resistance*
- Nathan Sanders, U. of Tennessee, *The determinants of diversity, from M² plots to the planet*
- Scott Kreher, U. of Illinois, *The molecular basis of olfaction in the Drosophila melanogaster larva*
- Aleksandar Popadić, Wayne State U., *Pulling an insect's legs and wings—selected evo-devo stories*
- May Berenbaum, U. of Illinois, *History of entomology at UIUC*
- Charles W. Fox, U. of Kentucky, *Insect genetics, behavior, and evolution*
- John Lill, George Washington U., *Tritrophic interactions and the evolution of diet breadth in insect herbivores*
- Steven Reppert, U. of Massachusetts Medical School, *Sun-compass of migrating Monarch butterflies*
- Paul Switzer, Eastern Illinois U., *Beetles gone wild! The secret sex lives of Japanese beetles*
- David Severson, U. of Notre Dame, *Aedes aegypti genomics: what's next?*

Fall 2007

- Dietmar Schwarz, U. of Illinois, *Exotic plant invasion as a trigger for hybridization and speciation in native insects*
- Richard Newcomb, HortResearch, *The molecular basis of olfaction in insects*
- Jeyarany Kathirithamby, U. of Oxford, *Biodiversity and systematics of Strepsiptera*
- Douglas Emlen, U. of Montana, *The origin and evolutionary diversification of beetle horns*
- David Denlinger, Ohio State U., *Antarctica and its insect* (alumnus speaker)
- Stephen Hendrix, U. of Iowa, *Community ecology of solitary bees in fragmented tallgrass prairie landscapes*
- Lorne Wolfe, Georgia Southern U., *A tale of two continents: ecological and genetic determinants of life history evolution during biological invasions*
- Bruce Stanley, DuPont Agriculture & Nutrition, *Implications of pest resistance to crop protection, products, and traits*
- Sean Brady, Smithsonian Institution, *Evolving eusociality: coevolution and social evolution in ants and bees*

John Stireman III, Wright State U., *Host-associated genetic differentiation and adaptive radiation in phytophagous insects and their parasitoids*

Tony Zera, U. of Nebraska, *Wing polymorphism in Gryllus crickets: endocrine and biochemical basis of the trade-off between dispersal and reproduction*

Martin Wikelski, Princeton U., *First insights from radio tracking flying insects*

Spring 2008

Marcelo Ramalho-Ortigao, U. of Notre Dame, *Sand fly functional genomics: vector-based strategies against Leishmania*

Jianyong Li, Virginia Tech U., *Insect yellow genes: what are their physiological functions?*

Brian H. Smith, Arizona State U., *New insights into encoding organismal, integrative, and systems learning and memory through distributed plasticity in the honey bee brain*

Mike Kaspari, U. of Oklahoma, *Toward a biogeography of brown food webs*

Andrew Michel, Ohio State U., *Of pests and people: understanding rapid evolution to environmental change using insect pest systems*

M. Alex Smith, U. of Guelph, *Case studies in COI DNA barcodes of hyperdiverse parasitoid assemblages: initiating and focusing species discovery and biodiversity estimation*

Paul P. Tinerella, Illinois Natural History Survey, *Bugs, bauplan, and bioacoustics: towards a synthesis of the water bugs (Heteroptera: Nepomorpha)*

Anna Dornhaus, U. of Arizona, *Go to the ant, thou sluggard! Or maybe not: are social insects as effective workers as we think?*

Claus Tittiger, U. of Nevada, *Pine bark beetle hazmat tools for seduction*

Consuelo De Moraes, Pennsylvania State U., *The role of plant volatiles in mediating interactions among plants and insects*

James Zahniser, U. of Illinois, *Systematics of the leaf-hopper subfamily Deltocephalinae: phylogeny, classification, and grassland biogeography*

Claus Rasmussen, U. of Illinois, *Molecular phylogeny of stingless bees: insights into divergence times, biogeography, and nest architecture evolution*

Heather Hines, U. of Illinois, *Insights from bumble bee phylogenetics: historical biogeographic patterns and the evolution of mimetic coloration*

Roy E. Ritzmann, Case Western Reserve U., *How do insects and insect inspired robots deal with barriers?*

Fall 2008

- Lisa Knolhoff, U. of Illinois, *Resistance to crop rotation in western corn rootworm: from behavior to gene expression*
- Diana Cox-Foster, Pennsylvania State U., *Honey bee health—Dissecting the role of parasites and pathogens in declining colonies* (alumna speaker)
- Osee Sanogo, Illinois Natural History Survey, *Selfish bacteria and emerging pathogens in arthropod vectors: a case study of intracellular bacteria in culicine mosquitoes and ixodid ticks*
- Tim Judd, Southeast Missouri State U., *The distribution of macro and micronutrients in colonies of the wasp *Polistes metricus**
- Matthew Turnbull, Clemson U., *Roles of gap junction channels in insect immunity*
- James Cronin, Louisiana State U., *Host-parasitoid spatial and temporal dynamics in real landscapes*
- Larry Phelan, Ohio State U., *Biological buffering: mechanisms for soil microbial modulation of above-ground herbivory*
- Felipe Soto-Adames, Illinois Natural History Survey, *Phylogenetic distribution and evolution of some small proteins of the insect flight muscle*
- Robert W. Sterner, National Science Foundation, *A model organism for the study of ecological stoichiometry*
- Greg Dwyer, U. of Chicago, *Ecology and evolution of infectious diseases in gypsy moth*
- Alex Wild, U. of Illinois, *Genetic versus morphological taxonomy and the evolution of *Linepithema* (Hymenoptera: Formicidae)*
- Claire Kremen, U. of California, Berkeley, *Honey bee pollination 'crisis': can native bees take up the slack?*



Recent Graduate Students

Doctor of Philosophy 2006

Katrina Lustofin. Toxicology of three plant neurotoxins in *Drosophila melanogaster*, *Gallus gallus domesticus*, and *Mus musculus*.

Master of Science 2007

- John Kane. The effects of ultraviolet-B radiation on the survivorship and development of *Anopheles gambiae* larvae.
- Emily Kluger. Effects of habitat fragmentation and host plant community composition on genetic structure and population dynamics of the prairie-endemic weevil *Haplorhynchites aeneus* (Boehman).
- Doris Lagos. Species of the genus *Aphis* in the mid-western states of United States of America.
- Joel Morris. The biology of *Culex restuans* and *Culex pipiens* in stormwater catch basins of the Midwest.
- Dominic Philpott. Validation of a morphological character for distinguishing between the armored scale insects *Chionaspis pinifoliae* (Fitch) and *C. heterophyllae* Cooley (Hemiptera: Diaspididae).
- Mami Randrianadrasana. Feeding habits in immature stages of *Isoperla nana* Walksh (Insecta: Plecoptera: Perlodidae) in Jordan Creek (Vermilion County, IL).

Doctor of Philosophy 2007

- Emerson Lacey. Chemical ecology of Clytini (Coleoptera: Cerambycidae).
- Ephantus Juma Muturi. Ecology and management of rice-land mosquitoes with special reference to *Culex quinquefasciatus*.
- Daniela Takiya. Systematic studies on the leafhopper subfamily Cicadellinae (Hemiptera: Cicadellidae).
- Rodrigo Velarde. The opsins and nuclear receptors of the honey bee.

Master of Science 2008

- Sara Kantarovich. Novel gland associated with spongiform tissue in *Pyramica rostrata* (Hymenoptera: Formicidae).
- Robert Mitchell. Insect frass as a pathway for transmission of bacterial wilt of cucurbits.
- Christina North. Survey of pathogens and parasites of bumble bees (*Bombus latreille* spp.) in Illinois and selected areas of northern California and southern Oregon.

Doctor of Philosophy 2008

- Heather Hines. Bumble bees (Apidae: *Bombus*) through the ages: historical biogeography and the evolution of color diversity.
- Dmitri Novikov. Pressure treatment of polytene chromosomes and computer vision techniques for high resolution cytogenetic studies.
- Claus Rasmussen. Molecular phylogeny of stingless bees: insights into divergence times, biogeography, and nest architecture evolution (Hymenoptera: Apidae: Meliponini).

Illinois Entomologists

in the news



8/29/2008: The J. Whitfield lab discovers an unprecedented diversity in the Microgastrinae, a group of parasitic wasps (*PNAS*).

3/25/2008: The Berenbaum and DeLucia labs discover that elevated CO₂ levels can sabotage plant chemical defenses, subsequently increasing their appeal and susceptibility to insect pests (*PNAS*).

2/25/2008: Amro Zayed and Charlie Whitfield demonstrate that invasive honey bees adaptively exploit the genetic diversity of preexisting populations (*PNAS*).

1/30/2008: The Berenbaum lab investigates the recent reassociation of parsnip webworm with parsnip in New Zealand, after a separation of over 100 years (*PNAS*).

12/18/2007: The Suarez lab contributes to a *PNAS* study explaining the invasion success of Argentine ants.

11/2007: The University of Illinois has launched the BeeSpotter web portal, designed to aid the public in identifying and reporting populations of honey bees and bumble bees. The site, a work in progress, allows users to submit bee pictures and the locations where they were taken. <http://beespotter.mste.uiuc.edu/>

9/28/2007: The Robinson lab leads a new study in *Science*, publishing genetic evidence for the evolution of eusociality through maternal behavior.

Diversity among parasitic wasps is even greater than suspected

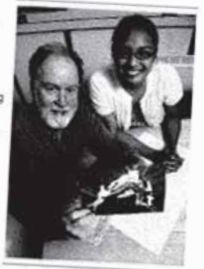
A tiny wasp that lays its eggs under the skin of unwitting caterpillars belongs to one of the most diverse groups of insects on Earth. Now researchers report that its diversity is even higher than previously thought.

(To see an audio slide show on the research, please go to: <http://publicaffairs.illinois.edu/slideshows/Microgastrinae>.)

By combining ecological and genetic data with the painstaking detective work of taxonomy, the researchers have dramatically increased - nearly doubling - the estimated number of species reported of six very species-rich genera of parasitoid wasps.

The subfamily to which these wasps belong, Microgastrinae, gets its name from its tiny abdomen. The wasp itself is quite small, about the size of the lead at the tip of a pencil.

By looking at the physical characteristics (morphology) of more than 2,500 wasps, the taxonomists identified 171 provisional species of microgastrine braconid wasps. But a comparative sequence analysis of a piece of a specific gene, a



The New York Times



...in the news

8/31/2007: The Robertson lab uncovers the odorant receptors that allow male bees to seek queens.

6/26/07: Entomology department head May Berenbaum testifies before the 110th Congress on the importance of pollinators in ecosystems This follows Dr. Berenbaum's previous testimony on colony collapse disorder (3/29).

3/2/07: Losing Their Buzz - Dr. Berenbaum discusses honey bee decline in a New York Times op-ed piece.

3/1/07: The Cameron lab publishes a new evolutionary history of vespid wasps.

3/2007: Academic Analytics has rated the UIUC Department of Entomology #1 in the nation by a wide margin in their 2005-06 Faculty Scholarly Productivity Index. This index, as reported by the Chronicle of Higher Education, measured departments in several factors: faculty publications, other works citing these publications, grants awarded, and many others.

Jayaraman, K.S. 2008. Entomologists stifled by Indian Bureaucracy. *Nature*. 452: 7. Published online: 6 March 2008. May Berenbaum and Mike Irwin were quoted.

Making the grade

Published Online Oct 3, 2007

By Amy F. Reiter

URBANA – Inside a paper bag, Brett Likens found an entire ecosystem.

The eighth-grader was in science class last Wednesday, and the biodiversity in the bag didn't faze him. He logged his finds – measured in types and quantities of beans – and calculated the diversity of his bagged environment. The more diverse his environment, the healthier it is. Simple.

Or at least, educator Jan Hari makes it feel that way.

"She's my favorite teacher," Brett said. "We do like different kinds of labs with, like, pennies and beans. We sort of weird activities."

Hari, a 19-year veteran of science teaching, recently won a national award for the quality of her lessons. The Entomological Society of America gave Hari its 2007 President's Prize for Outstanding Achievement in Secondary Education.

The science teacher isn't the only educator gaining kudos this fall.

Ant invaders eat the natives, then move down the food chain



Ant invader study
New research from the Argentine ant, *Iridomyrmex humilis*, is one of the most successful invasive species in the world, having colonized parts of the continent in addition to its native range in South America. A new study sheds light on the success of the invader.

The findings, from researchers at the UIUC and the University of California at San Diego, appeared in the *Proceedings of the National Academy of Sciences*.

The Argentine ant is a tiny, aggressive and adaptable, trait that have helped it to its success around the world. Once seen only in South America, the ant is now found in parts of Asia, Australia, Europe, North America and South Africa. It most likely made its way to these continents on ships carrying wool or agricultural products.

Under the right conditions, the Argentine ant marches through a new territory, wiping out – by out-

ing and out-competing – most of the native ants and many other insects. In the process it radically alters the ecology of its new home.

The Argentine ant thrives in a warm climate with abundant water, and is often found on agricultural lands around the world. But it continues to spread across, and it continues to invade. Andrew Suarez, principal investigator on the study. The ant is highly social, and sometimes forms "super-colonies" made up of millions of workers spread over vast areas. In previous research, Suarez identified a super colony in California that stretched from San Diego to San Francisco.

In the new study, Suarez and his colleagues followed an invasion of Argentine ants across Baja California, in southern California. The researchers tracked the invasion for eight years, collecting data on conditions before and during the invasion.

Rather than competing in an ant's success. Only by following an invasion over time can researchers begin to understand that other alien species to win and over the natives, he said.

the rate of heavy to light invasions. (Indicative weights of invasions.)




Thursday, August 21, 2008

Keys to Ant Social Status Found
An ant's fate, like a person's, is determined by both nature and nurture, it turns out

Posted August 19, 2008

By Clara Moskowitz, LiveScience

Whether an ant becomes a dominant queen or a lowly worker is determined by both nature and nurture, it turns out.



The New York Times Science

Bees Vanish, and Scientists Race for Reasons



Good morning Creating a buzz about massive,

First, the birds disappeared from our suburban landscape, as the West Nile Virus practically wiped out some species. Now, our bees are mysteriously vanishing.

As any fifth-grader can tell you, without the birds and the bees, people are in trouble.

While we know what killed our birds, and some species are staging comebacks, the disappearing bees remain a mystery.

"There is a general consensus that it is now a reaching crisis," says professor May R. Berenbaum, head of the department of entomology at the University of Illinois, and research arm of the National Academy of Sciences that studied the status of pollinators in North America.

Beekeepers in more than 20 states this winter are reporting that their honeybees have



"mysteriously vanished, leaving behind no clues as to their whereabouts," Berenbaum says. There is no evidence of foul play, no bee carcasses and the combs are already about to be abandoned.

Already attacked by various parasites such as mites, bees might be falling prey to some new predator, a virus or bacteria, or a man-made pollutant.

"Basically, bees live in cities. They bump into their neighbors and diseases can travel," Berenbaum notes.

There is even bioterrorist fears that maybe something is showing up in bees first before it hits us," says Charles

Lorence, who runs Lorence's Honey Bee Haven in Aurora and teaches bee-keeping through park districts in Geneva and Wheaton.

While Lorence says he figures parasites are a more likely cause for the colony collapse, he hopes scientists figure it out.

"In the fall of 2005 and the winter of 2006, I lost 85 of my retired teacher who was forced to buy replacement bees.

At May's Honey Farm in McHenry County near Harvard, owners are looking pretty good," says Tim May, one of the bees with 1,400 hives and more than 50 million bees.

"Last year we were down to 200 hives," May says, blaming mites for the devastation. "There are so many more problems than there were 20 or 30 years ago, you just hope

in the news

24TH Annual Insect Fear Film Festival

It was particularly apt that the 24th Annual Insect Fear Film Festival was held February 24th. Special guests included Peter Genovese, reporter from the *Newark Star-Ledger*, Newark, NJ, who is writing a book about insects and devoting an entire chapter to IFFF. This, by the way, isn't the first book it's mentioned in—*The Film Festival Guide: For Filmmakers, Film Buffs, and Industry Professionals* (Film Festival Guide), by Adam Langer; the Booklist review says “Everything's here, from the big and famous (Cannes) to the small and specialized (Insect Fear Film Festival).” We have a web presence as well—the Cinema Arts Center of Huntington, Long Island, provides a link to our festival alongside links to film festivals in Woodstock, the Hamptons, Lake Placid, NY, and Seattle along with the Long Island Gay and Lesbian Film Festival and something called “Trashfest.”



We all see insects through a cultural lens—in this case a 35-mm lens. Eastern and western traditions vary greatly in their approach to life, especially with respect to insects. In Japan, for example, the Shinto religion recognizes deified spirits in rivers, trees, and mountains. Buddhism, the other major religious presence throughout Japanese history, emphasizes spiritual unity with nature. Transmigration of souls also means that stepping on a cockroach might jeopardize the health of some ancestor. This kind of unity with nature is seldom encountered in Western civilization where people have viewed nature as red in tooth and claw and basically there to serve some useful function; the best way to appreciate it is to build a fence around it and charge admission (nature is a nice place to go snowmobiling).

So, it's not surprising that the insect fear film genre began in Hollywood with the idea of payback time for Nature after human activities upset the natural order of things—atomic radiation, for example. Now, if any nation was entitled to contemplate the dire consequences of radiation, it was post-war Japan. But the radiation-induced giant mutant insect of the

1961 film “Mothra,” Japan's first entry into the big bug genre (daikaiju eiga—giant monster movie), was profoundly different from the radiation-induced giant mutant arthropods of 1950s Hollywood films. By 1961, Hollywood had produced giant ants, grasshoppers, tarantulas, scorpions, and centipedes. A giant moth seems an unlikely source of horror unless you happen to be a giant wool sweater. But Mothra taps into arguably the culturally most significant insect in Japan—*Bombyx mori*, the Japanese silkworm, the world's only domesticated insect and source of one of the most remarkable natural fibers. Silk is the threadlike viscous secretion of the salivary glands of a caterpillar in the family Bombycidae. All caterpillars make silk, but few in as grand a style as the silkworm caterpillar. The salivary glands, stretched to their full length, are almost 10 times the length of the mature caterpillar itself and about half its total weight. *Bombyx mori* uses the silk to spin a cocoon at pupation time; caterpillars spin at a rate of about six inches a minute in continuous strands of up to a half-mile in length through the minute openings of appendages called spinnerets, beneath the mandibles. The silk is spun as a dry fiber, a feat that cannot yet be

accomplished by human chemists. And it's remarkable stuff—its density is very low so it's light and comfortable, its elasticity is high so it's highly crease-resistant. It's lustrous and shiny and highly absorbent, and, in proportion to its weight, it's the strongest natural fiber known; a silk cable can sustain heavier weights than a metal cable of comparable dimensions. It's a superfiber—no wonder Mothra shoots out silk to defeat her enemies; no screenwriter could come up with a better weapon.

So maybe it's not surprising that Mothra isn't evil by big bug film standards. She's not bent on human destruction; basically, she just wants to rescue a couple of tiny fairy priestess friends of hers with whom she communicates telepathically from the clutches of an unscrupulous entertainment industry mogul from Rolisica (i.e., America).

You know how, at IFFF, I like to point out the biological improbabilities of the movies? Well, I gave up on this one. It's easier to point out things that are even remotely similar to actual biology. Mothra undergoes the basic lepidopteran life cycle—she lays eggs (repeatedly throughout her film career) and spins a cocoon in which to pupate. Onscreen she does seem to grow very large very quickly, but in reality so does the real thing; in the course of a month or less, silkworms increase in size about 10,000-fold, eating 24,000 times their weight in mulberry leaves in the process (which might explain why there are no mulberry trees in evidence anywhere in Tokyo). That's about it, I think. Directed by Ishiro Honda, with special effects by Eiji Tsuburaya.; the film cost \$700,000, the most expensive movie made in Japan at the time. “Mosura” from “Moth” minus dental fricative and “-ra,” a common ending for monster names (Godji-ra, Game-ra). When it arrived in the U.S., it played in double bills with “The Three Stooges in Orbit.” Tremendously popular, she returned in “Godzilla vs the Thing” in 1964 and subsequently in 11 more films, always as an ally of Japan in opposition to less enlightened monsters.

Mothra's impact extends well beyond Japan. Type “Mothra” into Google and you'll pull up

pages not only in English and Japanese but also in German, Norwegian, and Polish. And her influence has even extended beyond popular culture. When biologist Jill Yager discovered a primitive remipede crustacean in underwater caves in the West Indies, she named it *Pleomothra*, for “swimming Mothra” (redundant because Mothra swims in the movie—first “butterfly stroke?”) and placed it in the family Godzilliidae. The real-life *Pleomothra* differs from the movie version in that it's less than an inch long. On the other hand, godzilliids are simultaneous hermaphrodites; if art imitates life, this might explain why Mothra can lay eggs in so many movies without any sign of Mr. Mothra. And it's not just biologists who have been inspired by Mothra; there's an automated software testing environment developed in 1988 designed for mutation analysis. According to DeMillo 1991, “Using Mothra, a tester can create and execute test cases, measure test case adequacy, determine input-output correctness, locate and remove faults or bugs,” of course.

For our second feature, we chose the 1993 remake, titled “Godzilla vs Mothra: Battle for the Earth,” the second-biggest grossing film of that year in Japan, just behind “Jurassic Park.” Mothra is summoned back to fight Desghidorah, a three-headed monster unleashed by developers and threatening to suck all of the energy out of the planet. Among the 1996 upgrades—there are three, not two, tiny singing women (one of whom is evil), there is Fairy-mothra, a miniature version on whom the tiny girls ride, and now Mothra the adult can shoot electrical flames out of her antennae. I'm not altogether certain where that comes from. Deathless lines? “A worm is a worm, no matter how big it gets.”

One other distinction of the 24th festival—aptly enough, it was the first to include insect origami as one of the pre-film displays.



25TH Annual Insect Fear Film Festival

February 23, 2008, Foellinger Auditorium



insect fear film festival

We were optimistic in 1984 in calling our festival the First Annual Insect Fear Film Festival but it turned out to be appropriate. At 25, IFFF is the oldest university-sponsored celebration of insects; it is, however, no longer the

only university-sponsored celebration of insects. If imitation is the sincerest form of flattery, we have been sincerely flattered over the years—Purdue’s Bug Bowl, Washington State’s Insect Cinema Cult Classics, and Iowa State’s Insect Horror Film Festival to name a few. Even other disciplines have imitated us—our campus is also the home of the University of Illinois Computer Fear Film Festival (also about bugs but of a different sort. To me they don’t seem scary—after all, how many real arthropods will go away if you just shut them off and turn them back on again?). We’ve shown 66 feature films, more shorts, and entertained thousands of people. No genre escapes our notice—over the years we’ve shown animation, live action, bloated blockbusters that took five years and \$100 million to make, and first time films shot on a shoestring in 19 days (“Tail Sting,” mutant genetically engineered scorpions—only 13 days of shooting with a guy in a foam scorpion suit), gorgeous Technicolor extravaganzas with amazing CGI effects involving Cray supercomputers and low-budget films with not so special effects (e.g., the Volkswagen bug equipped with fur-covered PVC pipe-legs in “Deadly Spider Invasion,” shot in Wisconsin), experimental films, Army training films, breakfast cereal commercials, Japanese anime, and kung fu instructional videos. The oldest film we’ve shown was one of the first cartoons ever made, the 1912 “How a Mosquito Works” by Winsor McCay; the newest is “Bee Movie,” which wasn’t even out on video when we showed it at our 25th festival!

Occasionally, our films are award-worthy—“Bee Movie” was nominated for a Golden Globe, and at our 14th, the all-ant program, we showed “Angels and Insects,” one of very few IFFF films to win an Oscar (costumes) and the only one in the history of the festival to feature full frontal male nudity. We’ve reached out to the community to showcase insects; at our 16th festival, an all-mosquito program, we had a blood drive and collected 22 pints of blood. And we’ve brought Hollywood to the prairie. At our 17th, Bees on TV, we had Norman Gary, bee wrangler for “Terror Out of the Sky,” “Candyman,” and “Invasion of the Bee Girls” (the only soft-core porn insect fear film), and at our 20th we had Bert I. Gordon, Mr. B.I.G., whose fame was based on 20 years of movies featuring oversized arthropods. For our 22nd, the Forensic Insect Fear Film Festival, we did receive a letter from William Petersen, Gil Grissom of CSI.

This year we wanted to do something special and we succeeded beyond our wildest expectations. Simon Smith, by virtue of his work on two



Dreamworks films, “Antz” and “Bee Movie,” could be the most successful insect filmmaker of all time (\$170 million for “Antz” and over

\$300 million worldwide for “Bee Movie”). Smith, who has been in computer animation for 20 years, is a man whom Stephen Spielberg regards as a genius. “Bee Movie” basically began as a Jerry Seinfeld joke—making a movie about bees and calling it “Bee Movie” (B-movie). As it turned out, “Bee Movie” is anything but. The film features an A-list of actors: Jerry Seinfeld, Renée

Zellweger, Matthew Broderick, Megan Mullally, John Goodman, Chris Rock, Kathy Bates, and Patrick Warburton, among others. Co-directed with Steve Hickner, the screenplay was written by Jerry Seinfeld, Spike Feresten, Barry Marder, and Andy Robin. The film opened the weekend of November 2007 with box office gross receipts of \$38,021,044, second only to “American Gangster.” By February 8, 2008, it has grossed \$126,448,146 domestically and \$155,194,178 overseas.

This is not to say it was universally praised. The film was criticized by *New York Times* science writer Natalie Angier and Pulitzer-prizewinning entomologist Bert Hölldobler for depicting female social insect workers as males. Other entomologists complained about the fact that male bees are equipped with stingers in the film and that bees perform only one task for their entire lives in the hive. Yes, our job is to explode the myths, but we also used our 25th festival as an opportunity to exhort our colleagues to lighten up a little. Technically, bees don’t talk, wear sneakers and turtlenecks, or drive little cars inside their hives. This didn’t bother anyone? It’s a cartoon, for crying out loud. Animation works best when it can invert reality—animation is the province of the little guy as hero—bunny over hunters, mice over cats—and there are no littler guys than insects. It’s not as if Jerry Seinfeld and collaborators were unaware of bee biology. Seinfeld actually visited a Long Island apiary (and was stung in the process) and the director flew Cornell bee biologist Tom Seeley to Glendale, California for two days of de-briefing. Why wasn’t the real biology in the film? According to Simon Smith—it just wasn’t very funny and funny takes priority over entomological accuracy in a Jerry Seinfeld film.

Simon actually learned so much about bees that he gave up honey for a while, after finding out



that the lives of 12 bees go into every teaspoon. Despite the fact that “Bee Movie” is emphatically not a documentary,

Cineplex, a German chain of movie houses, and the BEEgroup at University of Würzburg produced a 3-minute film “Die Honigmacherinnen” to show before screenings of “Bee Movie.”



While the science community might not have appreciated it, at least the film reviewing community appreciated the film as an opportunity for bee-labored puns; according to *Variety*—“Bee Movie finds box office honey/Dreamworks’ feature stings competition” (11/11/07). For his part, *New York Observer* film reviewer Rex Reed wrote, “I’ve just seen Bee Movie and I’m bee-sotted.” Illinois alumnus and IFFF friend Roger Ebert understood the film better than most. In his Answerman column, in response to the criticism that the movie took liberties with bee biology in that drones only mate and die, Ebert wrote, “So either have Jerry play a worker bee, or have him face dire consequences. But it gets more complicated.



Jerry’s character, Barry B. Benson, gets upset that humans are stealing all the honey, but Frank B. Chavez III of Hayward, Calif., writes me: ‘Someone should have told Seinfeld

that honey, what we eat, is actually what the bees vomit up. It’s a waste product, and when we take it, the bees are likely glad to be rid of it.’ So now we are looking at a movie where Barry fights to defend vomit and dies. Now there’s a movie that would qualify for a special category in the Insect Fear Film Festival at the University of Illinois: movies about what insects fear.”



Entomology Graduate Student Association

2007-09

Things are good this year! As usual, our IFFF t-shirts were a big hit, our group's main fundraiser. This summer, EGSA contributed funds to National Pollinator Week activities, organized by our own Cindy McDonnell.

	2007-08	2008-09
President:	Sara Kantarovich	Rob Mitchell
Secretary:	Rob Mitchell	Scott Shreve
Treasurer:	Lisa Knolhoff	Michelle Duennes
Outreach:	L. Fennema & L. Graham	Lynn Fennema
Social Chair:	John Kane	Liz Graham
GSAC:	Reed Johnson	Emilie Bess
Faculty:	Bridget O'Neill	Nick Naeger

So far in AY2009 we went camping in Bell Smith Springs and went to the corn maze in Rantoul (editor's note—shouldn't that be "corn maize"?)

graduate students



Emilie Bess. I've become fully immersed in the world of bark lice during the first three years of my PhD program. My research with Dr. Kevin Johnson at the Illinois Natural History Survey focuses on the diversity and

biogeography of Hawaiian bark lice in the genus *Ptycta*. I've been fortunate to spend about four months collecting insects in Hawaii. My research has also taken me to foreign lands to work with bark louse experts in Japan and Australia through NSF's East Asia Pacific Summer Institute. With my coursework, prelim exam, and fieldwork complete, I'm looking forward to spending a productive year in Champaign. Lab work and writing will keep me busy, but I'll enjoy spending time with friends, frolicking in the downtown Champaign nightlife, and taking some weekend trips to Chicago, St. Louis, and my hometown of Indianapolis.

Ember Chabot. I received my BS from Oneonta State University in New York this past May where I majored in environmental science with a concentration in biology. It was there that I began work on my current research on golden stoneflies under an Illinois alumnus, Jeff Heilveil. I came to Illinois to complete this project under Ed DeWalt with an ultimate goal of reintro-



ducing an extirpated species. In the few hours I'm not doing things of the academic nature I like to SCUBA dive, play music, cook, and hike up my phone bill by yakking to friends back home.

Nils Cordes. This is my first year at the University of Illinois. Before I came here, I got my Master's degree from the University of Bochum, Germany, studying learning behavior in termites. My whole research life has been devoted to insects, mainly to



behavioral ecology of social insects like honey bees, bumble bees and termites. This has led me to do research in some of the most beautiful places on this planet, the South African Soutpansberg Mountains and the Philippine island of Panay. Now, I kind of changed tracks by starting my PhD on the pathology of one of my favorite insects: the bumble bee. As part of the project on bumble bee decline in the U.S., headed by Sydney Cameron and Leellen Solter, I research susceptibility to a number of pathogens and try to find out about the effect that pathogens, especially Microsporidia and trypanosomes, have on their bumble bee hosts. Together, we hope to find out what is responsible for the recent disappearances of some of the bumble bee species.

Stephanie Dold. I am a first-year Master's student working in Dr. Weinzierl's lab, and I graduated with a BA in political science from Illinois. Although the



exact subject of my thesis is unknown to me right now, I am working on a specialty crops grant investigating the impact of mustard and buckwheat cover crops in a cucurbit cropping system.

Specifically, I am collecting

data relevant to the arthropod community, but the project itself also encompasses pathogens, weeds, and plant biochemistry. For now, I am most interested in the effects of agronomic practices on native pollinators and the community ecology of the Collembola and Acari. I have a strange (and unrelated to my research) interest in forensic entomology, and it is a career goal of mine to conduct research and/or study entomology in Russia (or any post-Soviet, Russian-speaking country.)

Michelle Duennes. In May 2008, I received a Bachelor's degree in biology from the College of Mount St. Joseph in Cincinnati, Ohio, where I have lived all my life until August of this year. During my undergraduate career I studied DNA degradation in museum insect specimens, with Dr. Gene Kritsky as my advisor. I also participated in a survey of *Cicindela marginipennis*, the cobblestone tiger beetle, for the state of Indiana. I am a first-year Master's student in Dr. Cameron's lab and I am interested in working with social insects.



Lynn Fennema. After completing the Individual Program of Study in Entomology for my undergrad degree in 2007 I decided to stay at Illinois for my Master's degree. I work in the Berlocher lab studying the behavior and

genetics of *Rhagoletis pomonella*, the apple-maggot fly (of course!). I'm looking at whether the flies use the waxes on the surface of their host plants as a cue to oviposit. I'm also the outreach coordinator for the EGSA; I go to local schools and give presentations about insects, it's a lot of fun! When I'm not convincing flies that a marble is a piece of fruit, I enjoy long-distance running, reading, movies, and Cubs games.

Elizabeth Graham. Native to the Southside of Chicago, I returned to the Illinois in 2005 to work on my PhD with Dr. Larry Hanks after completing my

MS with Dr. Andrew Storer at Michigan Technological University. My work in the Hanks lab lets me combine my background in forestry with entomology by studying tree stress and its association with cerambycid beetles. I am currently using dendrochronology methods to track beetle emergences and growth rates throughout a tree's life. My research requires me to use dangerous power tools (chainsaws, band saws, etc...), which keeps my life interesting. At last check I still have all my fingers and toes! Besides research, I manage to have lots of fun in central Illinois. I am a season ticket holder for Illini football and am looking forward to another great season. I come from a giant family, so I go back to the Southside on a regular basis. I am also a HUGE Springsteen fan; I went to five E Street concerts this year alone. I was front row center for one of the shows and got a guitar pick from Little Steven (a.k.a. the greatest night of my life)! My other obsessions include cooking, baking, playing cards, various bad tv shows, and my animals—Ray, the Little Kitty, and Chief.

Patrick Halbig. I am currently finishing my degree specializing in the epidemiology and ecology of vector-borne disease. My research has specifically focused on the patterns of transmission for endemic malaria in an agricultural-village complex in central Kenya. I have also completed field experiments in the Chicago region related to West Nile virus transmission. I am particularly interested in the spatial and temporal patterns of mosquito population dynamics and the estimation of parameters relevant to outbreak prediction and control.

I also have a strong interest in the history and philosophy of biological science as it pertains to epistemology and educational theory. I have completed a historical review of evolutionary theory from pre-Darwinian thought up to the current 'new synthesis,' which attempts to incorporate developmental biology and post-genomic implications into the Darwinian lineage. I am currently preparing manuscripts that compare twentieth century representations of evolutionary theory in both academic and educational contexts.

My outside interests include dusting off vinyl records, discussing theory, seeking out new blends of latakia-based tobacco, and rooting for various teams/businesses in the world of sports. Please do not hesitate to contact me if are interested in any of the topics I have mentioned.

Terry Harrison. I am interested in biosystematics of Nearctic microlepidoptera. My present research, on microlepidoptera of Illinois hill prairies, also incorpo-

rates a conservation component, in testing hypotheses of optimal reserve design. I am also the scientific coordinator for BeeSpotter, a citizen-scientist-based initiative for monitoring bees in Illinois. In addition, I am collaborating with Donald Davis and Charles Mitter on LepTree, which is part of the Assembling the Tree of Life project.



Heather Hines. I will be completing my PhD this fall after 6.5 years in the Cameron lab. Several milestones in my research have occurred in the last few years. Our phylogeny of the bumble bees of the world, done in collaboration with Drs. Sydney Cameron and Paul Williams, was published. I followed this with a paper on historical biogeography, divergence times, and diversification patterns in the bumble bees. The phylogeny also served as a starting point for a collaborative paper on the reclassification of bumble bee subgenera.

Stemming from discussions at the Social Insect seminar led by Jim Hunt, I collaborated on a phylogenetic study of the evolution of sociality in the vespid wasps. In the last year I took on some basic chemistry techniques, which I used to decipher the pigments imparting coloration in bumble bees. These pigments will help target candidate genetic mechanisms by which bumble bees can achieve such exceptional color diversity. I also have been studying Müllerian mimicry in Southeast Asian bumble bee mimicry complexes, which has sent me on collecting trips to Myanmar (only weeks before riots broke out there in August 2007) and Malaysia.

After leaving here, I will begin a postdoc with Dr. Owen McMillan at North Carolina State University studying differential gene expression in wing color polymorphisms of *Heliconius* butterflies, a model system for Müllerian mimicry. Ultimately I plan to apply this training toward understanding the genetics underlying color pattern evolution in bumble bees. Thanks to everyone in the department, including faculty, staff, and students, for a wonderful graduate school experience!

Joanne Holley. Alex and I arrived here in August and have enjoyed a smooth transition into the entomology department and our respective labs. My interest over the years has been the causes of ant invasions, so I've been looking forward to joining the Suarez lab was for some time now. Andy and I will be using comparative methods to find life history traits that may pre-adapt Argentine Ants for invasive

success. Traits of note include queen number, fecundity, colony organization in multiple nests and worker size. Photo (by Alex Wild) is of *Pheidole megacephala*. Introduced populations are dense with sprawling colonies of aggressive workers so that few other ant species survive their encroachment.



Reed Johnson. I received a Bachelor's degree in biology from Wabash College and a Master's in biology from Wake Forest University. My Master's thesis research looked at the chemical defenses in a wasp-mimicking arctiid

moth. For my PhD research I am working on a real hymenopteran, the honey bee, with May Berenbaum. I have been working on colony collapse disorder and using microarrays to try to find a good marker for bees on the verge of disappearing. I am also interested in honey bee cytochrome P450s and their role in helping bees detoxify natural toxins and pesticides.

I try to spend a week in Montana each year visiting my parents between hiking and camping. Around Champaign I bike as much as the weather allows and I enjoy baking things for lab potlucks and various get-togethers. I've also gotten into coffee roasting, which is really surprisingly easy.

Lauren Kent. I am finishing up my work in Hugh Robertson's lab on the expression and molecular evolution of taste receptor genes in mosquitoes. My next move will ideally take me into more applied work on malaria. Specifically, my interests lie in the molecular interactions between *Plasmodium* spp. and anopheline mosquitoes.

I'm originally from Connecticut, but came to the Midwest to attend Washington University in St. Louis, where I received my BA in Biology. I still miss the hills and beaches of the East Coast, and despite my newfound appreciation for flat terrain as I practice roller-skating, I can't wait to get back to hills and a coast.

Lisa Knolhoff. I am finishing up my PhD in the lab of Hugh Robertson, where the focus of my project has been on the molecular basis of a behavioral resistance trait. The western corn rootworm is commonly controlled by yearly rotation of crops to interrupt the life cycle of this insect. Rotation-resistant females, however, circumvent this cultural control method by laying eggs in soybean fields that are in yearly rotation with corn. I recently gave my exit seminar to the

department, so now all I have to do is write and defend—deceptively simple for just two little words! My research usually takes me to such exotic places as Illinois cornfields, but I did manage to do a little hiking this summer as well. While I am a little sad that this will be my last semester here, I am excited to be starting my postdoc work soon.



Sindhu Krishnankutty. I am a PhD candidate in the lab of Dr. Chris Dietrich. This is my fourth year in the department. I received my Master's degree from the same lab in 2006. My PhD research is to understand the origin of

leafhoppers in Madagascar using an integrated approach of phylogenetic inference and biogeographic and dating analyses. Leafhopper diversity in Madagascar is amazing. With nearly 70,000 leafhopper specimens from Madagascar, I am getting many new species. On a personal side, my husband Madhu is also working on his PhD here. In my spare time, I enjoy the beautiful neighborhood in Orchard Downs, cooking, and music.

Doris M. Lagos. I am a native of Peru and a PhD candidate in Dr. David Voegtlin's lab. I also received my Master's degree in Entomology from Illinois under Dr. Voegtlin. I study the systematics of aphids, especially of the genus *Aphis*. I also work as a research assistant in aphid taxonomy. During the summer until mid-October, we monitor the incidence of soybean aphids, *Aphis glycines*, as well the presence of other aphids from suction trap samples located in ten mid-western states. Outside of research, I love to spend time with my son, David Alejandro, and my husband, Tony Kutz. My hobbies are cooking and knitting.



Fred Larabee. My wife Melissa and I made the 2200-mile trip with cats in tow from Portland, Oregon, to Champaign only a few weeks ago, but are already starting to find our place geographically and mentally. After spending

the last four years working in biochemistry and molecular biology labs, I decided to leave medically applicable research for where the action really is: insects! I'm still settling on a specific project and

advisor, but I think I want to focus on social insect behavior. So far, I have felt very welcomed by all the students and faculty we have met. In my free time, I like to host dinner parties, brew beer, get lost cycling, organize my sock drawer, and play board games. While in the Midwest I hope to learn to appreciate snowy winters and humid summers, catch fireflies, and learn what's so great about this "football" sensation that seems to be sweeping the country.



Ling-Hsiu Liao. Hi! I am new! I am from Taiwan, a small but highly diverse island. I received my BS in 2000 and completed my MS in 2003 in Taiwan. As a member of Dr. Man-Maio Yang's group in the Laboratory of Insect System-

atics and Evolution, I participated in studies on the diversity and evolution of galling insects, including host specificity of galling insects and their hosts, the circadian temperature patterns of galls, analyses of carbon isotopes in a psyllid gall, and systematic biology of cecidomyiid galls derived from *Machilus*. The focus of my Master's thesis was testing hypotheses on the nutritional adaptation of galling insects. I received Taiwan Entomological Society's Best Paper Award in 2007 for "Nondestructive quarantine technique—potential application of using X-ray imaging to detect early infestation caused by oriental fruit fly (*Bactrocera dorsalis*) (Diptera:Tephritidae) in fruit." I also received a Taiwan government scholarship in 2006 for three years of tuition and living expenses for study abroad. It is my first year in Dr. Berenbaum's lab. I still am adapting from life to research...but I am excited to be here!

Cindy McDonnell. I am a doctoral candidate in the labs of May Berenbaum and Mary Schuler. I am hoping to finish in the next year. For my research, I study the transcriptional regulation of cytochrome P450 genes in *Drosophila melanogaster*. I have chosen to focus on some individual genes that are differentially regulated between methoprene-tolerant and sensitive strains of flies to determine what role they play in methoprene resistance. I have recently started collaborating with Barry Pittendrigh, a new member of the faculty, on exploring the role of gene duplication and xenobiotic response across *Drosophila* species. Recently I have become active in a campaign to increase public awareness about pollinators. A group of us in the department collaborated with other scientists and community members to successfully organize a week's worth of events for National Pollinator Week

in June. We are now busily working on exhibits for the new Pollinarium, a pollinator discovery center on campus, and building momentum for National Pollinator Week 2009. For me, it's been a fun way to stay in touch with the public and talk about something I care deeply!

Mathys Meyer. Originally from Pretoria, South Africa, I moved to the U.S. in 1993. I received my Bachelor's degree in biological sciences from Knox College in 1999 and my Master's degree from Illinois State University in 2004. I am a graduate student in Kevin Johnson's lab at the Illinois Natural History Survey. My research looks at coevolution between galliform birds and their ectoparasitic lice. I am primarily concerned with alpha level taxonomy and phylogenetics of the Ischnoceran genus *Goniodes*. On a more personal note, my partner Karyla, my son Bix, daughter Rainier, and I live in a cooperative in Savoy.



Rob Mitchell. I am a first-year PhD student and recently completed my Master's degree on the vector relationship between striped cucumber beetles and bacterial wilt of cucurbits.

Despite my love for these tiny and energetic beetles, I have switched systems and now study chemoreception in the longhorned beetles (Cerambycidae). I have regrettably discovered that studying these beetles in the field does not provide near as many free vegetables as did studying an agricultural pest. Interestwise, I am enamored with insects, aquatic life, and nature in general. I also enjoy photography, video games, and fiddling with electronics. As the photograph might hint, my personal life took a twist last summer when I got married, but things have settled down since.

Nicholas Naeger. In his third year in Gene Robinson's lab working on his PhD.



Bridget O'Neill. I'm nearing the end of my PhD in May Berenbaum's lab wondering where the time has gone. I completed my Master's degree in 2006, titled, "The effects of soybean foliage grown under elevated CO₂ on longevity and fecundity of the Japanese beetle, *Popillia japonica* (Newman)." I am continuing my PhD research at the SoyFACE plots in Savoy, proceeding to unlock the mysteries of global climate change and

determine how herbivorous insects from multiple feeding guilds will be affected. I still work with Japanese beetles, that favorite insect of Illinois gardeners, and am finishing several experiments with the newly introduced soybean aphid. While collaborating with several members of the DeLucia lab in Plant Biology and with researchers in the Institute of Genomic Biology, I have slowly learned plant chemical profiling and microarray analysis. In my precious spare time I enjoy searching for random festivals, restaurants, and museums in the Midwest, supporting all things New England, and photography.

Maminirina

Randrianandrasana. She is a Ph. D. student advised by Dr. May Berenbaum. Maminirina graduated in August 2007 and is in her first year in the PhD program. She received the Rita and Arnold Goodman Fellowship in 2008. Maminirina volunteered last April for two months of fieldwork near Makira forests (northeast Madagascar) trying to rear saturniid wild silkworms. Maminirina's hobbies are photography and traveling.



Ann Ray. I have spent much of the past three summers in southern California conducting field work on the pheromones of longhorned beetles. I have also taken collecting trips to southern Arizona and the Sierra Madre Occidentale in Sonora, Mexico in each of the past three years. When I am not working, I enjoy running, bellydancing, knitting, baking cakes, hiking, and getting new hobbies.

Peter Reagel. I completed my MS in 2001 in the lab of Larry Hanks. I studied the mating system of the red milkweed beetle, *Tetraopes tetrophthalmus* (Forster) (Coleoptera: Cerambycidae). Both plant quality and the presence of female beetles appear to influence the accumulation of mated pairs of beetles on milkweed stems. I found no evidence that male beetles were attracted to female beetles by long-range pheromones, rather they accumulated by spending more time on milkweed stems on which they contacted female beetles. I have continued working in the Hanks lab on my PhD. I started by working on conservation biological control of armored scale insects but have gone back to working with longhorn beetles. I am interested in the chemical ecology of

cerambycids and in the response of the parasitoids of cerambycids to tree and host-produced volatiles. In my spare time I enjoy hiking, camping, and drinking lots of tea and coffee.



Josephine Rodriguez. Since the last newsletter, I have continued working with microgastrine parasitoid wasps and I am happy to report we are closer to understanding how diverse they are. In a paper in the *Proceedings of the*

National Academy of Sciences with the Whitfield lab collaborating with ecologists from the Area de Conservación Guanacaste (ACG) (Janzen and Hallwachs) and University of Guelph biologists (Smith and Hebert) we have discovered that the Microgastrinae are far more host-specific and species-rich than previously thought. Our approach combined taxonomic identifications with wasp natural history data and DNA sequences. The study included several thousand reared microgastrine wasps, but, see, I wasn't satisfied so I have been back to Costa Rica four times to collect an additional ~3,500 specimens in an effort to expand the inventory. My last trip was funded by my NSF Doctoral Dissertation Enhancement Project award from the Office of International Science and Engineering with Daniel Janzen, ACG Technical Advisor, as the international collaborator. The award funded the travel of my two undergraduate assistants Paul Masonick and Stephanie Laurusonis and exposed them to their first time collecting in the tropics. Our adventure can be seen at picasaweb.google.com/josephinejrodriguez/AreaDeConservacionGuanacasteCostaRica.

In June 2008, I participated in the Pan-American Advanced Studies Institute program, Cyberinfrastructure for International, Collaborative Biodiversity and Ecological Informatics at La Selva Biological Station. I came away with new ideas for my own biodiversity data as well new friends from the U.S. and Central and South America.

I continue my interest in photography. But when one is taking the pictures, you obviously aren't in the pictures, so I have to thank Brian Stauffer for allowing me to use the one printed here.

Scott Shreve. I am beginning the third year of a Master's program, working with Kevin Johnson at the Natural History Survey. My research project is a phylogeographic study of an eastern U.S. psocopteran where males are known from only two highly disjunct populations. Although the collecting in 2008 was not the bonanza of bark lice I was hoping for, I should still complete my Master's degree this spring. Despite the poor results, I can't complain too much about a collecting trip that took me through the Finger Lakes and Adirondacks, up into Vermont and New Hampshire. My non-entomological interests include reading and hiking.

Marsha Wheeler. Believe it or not, I was born and raised in Tegucigalpa, Honduras. I moved to the U.S. with the sole purpose of attending college but have now been in this country for almost nine years. During this time, I received a Bachelor's degree in biology (Earlham College), moved to Seattle for a taste of city living and moved diagonally across the country to pursue a Master's degree in Entomology from the University of Florida. At each of these points, I have found myself studying insects, particularly social ones. While an undergrad, I studied carpenter ants and their secondary endosymbionts and during my Master's I studied termites and their cellulase enzymes. I moved to Illinois to study honey bees with a specific interest in the interplay between nutrition and division of labor.

James Zahniser. I am finishing my degree this December and waiting to see where life will take me afterwards. Ideally, it will involve systematics of leafhoppers. This past year, I was fortunate to visit Zambia for two weeks with colleagues from the New York State Museum. I collected a lot of cool bugs, and the few grasslands that we visited harbored tons of grass-feeding leafhoppers—these are things I can get excited about. In the coming year, I am looking forward to graduating, celebrating, possibly taking some time off for reflection, and finding a job.

John Zukowski. His advisor is Dr. Fred Delcomyn. This is his third year in the department. John's hobbies are basketball, taking things apart, and video games.



John Anderson. Although I left the University of Illinois in 1964, some 44 years ago, for New Haven, I still enjoy the thrill of coming in seven days a week to the Connecticut Agricultural Experiment Station to work on medically important insects. To be sure, I have studied many economically important insects over my career, but mosquitoes, ticks, and now bed bugs are my main interest. I am currently spending much of my time determining the extrinsic incubation periods for horizontal and vertical transmission of West Nile virus by various species of naturally infected mosquitoes. I am also attempting to find effective ways of detecting infestations of bed bugs. My wife, Marilyn, who was with me throughout my years in the Department of Entomology at Illinois, and I celebrated our 50th wedding anniversary in late May by taking our family to Alaska for two weeks. While in Vancouver, British Columbia, we visited with Dr. Reinhart Brust, who also was a student of Prof. William R. Horsfall and a graduate of the department, and his wife Anne. Dr. Brust retired from the Department of Entomology at the University of Manitoba in Winnipeg a few years back and settled in Vancouver.

Michael Baker. I continue to work at the DNA facility of Iowa State University, running sequencing, genotyping, and DNA extraction services. I will soon be running the genome sequencing service. Lori and I have four children: Chad (23) and Whitney (14) (who we had when we lived in Illinois) and Dalton (7) and Delaney (5). All are currently involved in sports (baseball, softball, basketball, soccer, track, and cross country) which keeps us pretty busy. Lori was recently awarded the Innovative and Excellence Award at Mary Greeley Medical Center. We are all very proud. Entomologically, I am still working on getting out papers from my postdoc in Arizona. I am also working with Lee Solter on some microspondia descriptions. In my spare time I dabble with propagation and landscaping with native plants. I don't collect insects much anymore, but still love the opportunity to educate the kids on them when we are out in the wilds of Iowa. If anyone is in the Ames area, please stop by and say hello.

Barbra Ria (Barrido) Steffey. I'm taking some time away from the corporate world to raise our son, Lucas. Although I still work part-time from home, I'm thoroughly enjoying motherhood and a totally different set of priorities.

Yehuda Ben-Shahar. This last year was very exciting for us. Itai, our son (4) can now call himself a "big brother" with the addition of our baby girl, Noa.

Everyone is doing very well. I am finishing up a 5-year HHMI postdoctoral position at the University of Iowa College of Medicine, and Sarah is on her third year of psychiatry residency. We are moving to St. Louis this summer (2008). Sarah will finish her residency at Washington University hospitals, and will probably stay as a research fellow in the department (along with some clinical duties). I will start a new position as an assistant professor in the Biology Department at Washington University and will continue my studies on the molecular and genetic basis of behavior using *Drosophila* and other insect models. We are both very excited (and nervous) about the move, living in St. Louis, and our new jobs.

Lisa Carloye. I am teaching an integrated sciences course sequence for non-science majors in the Honors College. Students do research projects using insects to answer ecological questions, which is a good way for them to get up close and personal with entomology. Wade and I have two boys: Benjamin (6) and Garrison (4), who are full of personality and are a ton of fun. We welcome visitors, so give us a call if you happen to pass through Pullman!

Satish Chandran. Just traveling the world and enjoying retirement life.

Eddie Chio. Greetings from Indianapolis. We are hoping you have a wonderful year in 2008. We wrote our first Newsletter item in 2006 and would like to update you on what we have been up to since then. On December 31, 2006, Eddie retired from Eli Lilly where he had worked for almost 30 years. Retirement enabled him to pick up teaching at the National Taiwan University (NTU). He taught biopesticide and natural products as pest control agents for a semester per year at the Department of Entomology, NTU, where he obtained his BS and MS degrees. Retirement also enabled us to travel more frequently. In 2007, we cruised in Hawaii in January, took a New England states trip in September, a Korean trip in October, and another Taiwan trip in November. Eddie also toured Kuala Lumpur, Malaysia, in June when he was invited to give a talk. During the New England states trip, we celebrated Li's Golden Pig birthday with a few friends and relatives in New York City. In 2008, Li visited Eddie at NTU and they took a side trip in Okinawa. Eddie will go back to Taiwan to chair a marine natural product workshop in October. Besides that, Li and Eddie plan to take two more cruises in 2008, to Alaska in September and a river cruise in Europe in November.

Teaching awakened Eddie's love in bench science

and scientific writings. He published five scientific papers in 2007 and plans to submit a few more in 2008.

Eddie continues to keep in shape by refereeing soccer games and jogging. He has completed four marathons since retirement and will run the Toronto marathon on October 19, 2008.

Li continues to study antibodies at Lilly. Many of those antibodies could someday be cures for human diseases.

On August 20, 2007, Li and Eddie got promoted to grandparents. Eugene and Julie had their first baby, Jackson. To keep them hopping, their daughter Lora got married to Sean Cooney on February 29, 2008, in New Zealand. The whole family toured New Zealand before and after the wedding.

A final word, retirement is highly recommended. Cheers, Eddie and Li Chio, Eddiechio@yahoo.com

Robert (Bert) Clegern. We are still enjoying retirement. I'm teaching one course/semester at the University of Maryland's University College. Our antique business has now turned mostly into a hobby. Gardening is also a favorite pastime. Travels (driving) have included Costa Rica, Mexico, eastern Canada, Key West, the Rockies, and several other forays.

Joel Coats. I've been taking another turn as department chair (Department of Entomology, Iowa State University), this time as interim chair. I have seven graduate students currently in the lab group. My eighth book is forthcoming by the end of 2008. In December 2007, I was recognized as a Fellow of the ESA. I'm still having a lot of fun.

Randy Cohen. Since 2006 things haven't changed much for me professionally. I am still professor and associate chair in the Biology Department at CSUN. Susan is still a roving microbiologist. The kids have moved onto bigger things: Rachel is a graduate student at Michigan State University working on neuroendocrinology of green anoles. Sarah is a junior at CSUN working on art/art history. Josh is a freshman at UC-Berkeley specializing in paleobiology.

Lawrence Crain. Last summer we held a cicada seminar, including live specimens and a showing of the 1950s classic, "The Beginning of the End," starring Peter Graves as a UI entomologist. Pretty unique for a patent firm!

Eddie Cupp. I retired from academia two years ago but remain active professionally as a member of the Mectizan Expert Committee (MEC) and as a

consultant to the Onchocerciasis Elimination Program in the Americas (OEPA). The MEC is a technical committee that advises the Mectizan Donation Program. Mectizan is the trade name for ivermectin, a drug used in Africa and the Americas to combat "river blindness." The Mectizan Donation Program is a philanthropic organization supported by the Merck Company, which donates the drug free of charge. This program recently celebrated its 20th anniversary and during that time has given away more than 500 million tablets. I also serve as chair of the Program Coordinating Committee (PCC) of OEPA. The PCC is a technical committee that provides scientific, technical, and diplomatic information and advice to OEPA in its efforts to eliminate "river blindness" from the western hemisphere. OEPA focuses on six countries, is administered by the Carter Center (Atlanta), and is largely supported by a grant from the Bill and Melinda Gates Foundation.

Mary and I continue to enjoy retirement and remain active out-of-doors. We hiked the Grand Canyon in 2006 and recently toured the Galapagos Islands and Ireland. While in Ireland, we hiked the Dingle Way, a 65-mile walk around the peninsula. It was a fantastic journey back in time. We are currently plotting our next walking trips.

Eric Day. I have now been at Virginia Tech for 22 years managing the Insect ID Lab and conducting exotic pest surveys, which is like having a cool hobby and getting paid to do it. I have added curator of the insect collection to my list of duties. Our collection is relatively small at 500,000 insects, but was rescued from a possible splitting and move to another location in the state. I have started to upgrade cabinets and drawers and the dean chipped in for an air management system to keep humidity and temperature in the proper ranges.

On a personal note, Nan and I still live on a small farm in Craig County, VA, and we sell asparagus and hay. Nan's soil consulting business continues to do very well. Nan and I look the same as we did in graduate school but our kids are nearly grown up. Our boys, Graham and Gordon, are now 16 and 18. I tried to sell Gordon on UI but he has decided on George Mason in Fairfax, VA, for journalism. Graham will be an 11th grader in fall 2008 and takes every science and math course he can get his hands on.

Andy Deans. I recently completed a two-year postdoc with Fredrik Ronquist at Florida State University: a year on the Hymenoptera Tree of Life project and a year at Morphbank. In July 2007, I started as assistant professor of entomology at

North Carolina State University and director of their Insect Museum. It's an exciting position in a great department, and I love living in Raleigh. There is a large contingency of Illinois people here, including Harland Patch, Christina Grozinger, and Heather Hines (soon, I hope!), as well as several former PEEB students: Beth Ruedi, Julien Ayroles, and Amy Toth. It's like I never left Urbana! I miss the Custard Cup though.

Bill Delaplane. Here I am ca. 73,584,000 heartbeats or more since our last newsletter (at 70/min, a little too fast). Nothing new. No serious health problems at 93 (94 this September). The whole US will celebrate but not for me: it's Labor Day. I'd sure like to hear from any of you other old codgers. I'm at 113 West Michigan, Urbana, IL 61801. Phone: 217/367-4450. I bumped into Gil Waldbauer in early July (a young codger). We had a most enjoyable chat! Best wishes and continued success to all you alums of Entomology and staff. You're the greatest!! My brain is as bad as ever. It's my body (knees) that's giving me trouble—no pain, just a cane.

Tobias Dirks. Retired professor, pest control consultant. Board member of "Keep Dalton-Whitfield Clean and Beautiful."

John L. Eaton. After 32 years in the Department of Entomology and the Graduate School at Virginia Tech, I retired at the end of 2001. My wife of 47 years, Peg, and I now enjoy our children and grandchildren. The Virginia mountains are a great place to be and I enjoy gardening, fishing, hunting, and travel. I still recognize a few insects, but I am not active professionally. Hello to all.

David L. Evans. I recently completed 14 years on college governance with nine years on college council. In serving as chair of college council for two years, I represented the interests of 1400 employees. I continue to publish in various aspects of human biology and human anatomy and physiology.

Daniel C. Fischer. I now have six beautiful grandchildren with another on the way! I enjoy working on my antique cars in my spare time. My wife Lee and I are looking forward to my retirement in the next few years!

Susan Fisher. I now enter my 28th year on the faculty at Ohio State University. Is this possible? The word retirement occasionally finds its way into my vocabulary, although with five of seven still college-

bound, it seems unlikely. Somehow I was demoted to department chair in 2005 and am doing my best to make sense of what the administration wants. Does anyone know? We are again engaged in a battle over whether an entomology department should exist in the new millennium even as bed bugs and emerald ash borers invade our city and honey bees are disappearing. At times like these, only *The Daily Show* makes sense.

I am still doing research, albeit at a reduced level, on food chain transfer of persistent environmental toxins in aquatic food chains. I have acquired an interest (and a Templeton Foundation grant) to explore the nexus between evolution and religion. We've had some amazing speakers such as Jack Haught, Ed Larson, Owen Gingerich, and Francis Collins.

My teaching focus has changed considerably after finding myself in front of a class of 700 nonmajors in Biology 101. There's nothing like facing 1400 eyes filled with various levels of hostility and boredom to get one motivated. Among the pedagogical novelties that have arisen, largely out of sheer terror, are some DVDs (on YouTube under OSU Biology). Watch Coach Jim Tressel explain photosynthesis. Listen to DNA replication and protein synthesis rendered into rap. The list goes on.

On the home front, the kids continue to prosper and exasperate. I'm having great fun schlepping the musicians around to play their gigs. There's something incredibly civilized about listening to string quartet music on your own porch played by your own children on a summer day. When not otherwise occupied, I continue to attempt to defy the second law of thermodynamics with a paint brush on our very large barn that needs a new paint job. Maybe this year. Best to all.

Frank A. Fraembs. I have worked and I have not worked. Not working is better (I retired from teaching in the Zoology Department of Eastern Illinois University in 1996).

Jerome E. Freier. Most of my work currently is with the development of spatial models that are used in the analysis of animal diseases. Because so many animal diseases are vector-borne, I am able to enjoy working on the entomological issues. Other news is that my son, Joshua, is getting married in August and my daughter, Amanda, is expecting our first grandchild in September. We are happy and excited about the new family additions.

Robert L. Gerhart. Retired from Lederle Laboratories.

Tugrul Giray. Dear all, when I got the letter about this Newsletter, I checked the previous issues. I was surprised to see that I did not write any news since 2000. At that time I was a new assistant professor. The no-news must have been the tenure troubles—but all is well. I am an associate professor at the University of Puerto Rico, Department of Biology. I already have two academic offspring, Bert Rivera-Marchand (PhD 2006) and Devrim Oskay (PhD 2007). Grandpa Gene, you should be proud! Bert is an assistant professor at InterAmerican University, Bayamon, PR. Devrim started a postdoc at Washington State University (Pullman) with another Illinois alumnus, Steve Sheppard. My research on honey bees is continuing, both on mechanisms and ecological genetics of behavior.

I was in Turkey last year to study honey bees. At least 5 of 24 known subspecies are in Turkey, found in distinct geographic locations with contrasting ecological conditions. I will continue this research and hope to see you also in Turkey. It is a great place for research, tourism, great food, shopping, history...

On the family side, things are also great. Clara and I are happy and proud parents of daughter Deniz Yuisa (8), and son Suat Martin (5). You are welcome at our house in Puerto Rico anytime. Please give us a call when you consider tropical research or a tour in the Caribbean (787/447-8522 or tgiray2@yahoo.com).

Susan Halbert. Our job is to detect and manage new arthropods in Florida. On average, our inspectors find a new arthropod per month. We have eight identifiers. All bugs, except scales and whiteflies, are assigned to me. My recent activities include research on citrus greening disease, a vectored pathogen discovered in Florida in 2005.

Louis A. Jansky. Retired. Thanks for keeping me on your rolls.

Laura Heuser Kimball. After serving with my husband in the Peace Corps (in an IPM program) I returned to teaching high school science until last year. Now, my “classroom” has two students, Sophia (4/24/04) and Ariana (4/5/06). They both proudly share millipedes they find in the dirt and are happy to hold our pet snakes (yes, the same ones I’ve had since Illinois). In my free time, I write questions for the national ACT exam.

Gene Kritsky. Things have been typically busy since the last Newsletter. Jessee and I have been taking students to the Galapagos and Egypt and are now planning a trip to northern Italy. I am now into my

fifth year as editor of *American Entomologist*, of which Jessee serves as the editorial assistant and interim copy editor. *American Entomologist* has been more enjoyable than we originally expected thanks to the fine contributions we receive. My research activities this past spring and summer focused on the emergence of Brood XIV in Cincinnati and some new projects on the history of beekeeping. We hope to see many of you at the ESA meetings.

Phillip Lewis. Andrew is 4 now and loves his toy cars and playing ball. Jenny and I are staying busy around the house, our church, and the community. I continue researching control options for the latest international insect-du-jour—LBAM, *Sirex*, EAB, and ALB!

Richard Lipsey. I graduated in 1972 under Dr. Robert Metcalf and worked for Velsicol Chemical and Bayer Corp. (Chemagro) for four years as area manager of pesticide research and development in the Midwest and South. I then took a position at the University of Florida as an associate professor (with Herb Nigg, also class of 1972 and Dr. Metcalf’s lab) as the Florida state pesticide coordinator and taught pesticide toxicology.

I have been consulting as a forensic toxicologist since 1976 all over the U.S., testifying in depositions and trials about 80 times a year. Great career, but I turned 70 last week, so I will be selling the company within the next three years to anyone interested in sampling businesses and homes and testifying in court.

Chris Maier. It is hard to believe that 31 years have passed since I departed Urbana-Champaign to begin my first (and only) job at the Connecticut Agricultural Experiment Station in New Haven. During the last three decades, I have conducted research on the biology of lepidopteran leafminers, cerambycid beetles, and invasive alien insects. Lately, I have investigated the biology and detection of invasive insects that affect orchards and forests. I still devote some time to studying tabanids, asilids, and syrphids—after all, flies were my first love in the insect world. Occasionally, I work on important conservation issues, such as preservation of endangered insects and unusual habitats. I remain a serious collector and have now amassed about 250,000 insects, especially cerambycids, syrphids, tabanids, asilids, and gracillariids.

This summer my wife, three daughters, and I escaped to Maine where we rented a cottage near the Petit Manan National Wildlife Refuge. After a week of gorging on blueberries and romping in the spruce-fir forest, we were better prepared to face

the educational and scientific challenges that lie ahead. Naturally, many choice beetles and flies met their end during our vacation.

John C. Marlin. Our organization is now part of the UI (Illinois Sustainable Technology Center, formerly Waste Management and Research Center). Both children, Kate and John E., graduated from college. Diane is fulltime at the University. I still work with sediment and soil issues.

Eric S. McCloud. My son Owen is 18 months old. Home repair and renovation is now a “Red Queen” procedure in conjunction with child rearing.

Michael (Mickey) McGuire. In 2006, I accepted the job as assistant area director in the Northern Plains Area Office for USDA-ARS. We oversee 14 research locations in eight states and provide guidance and assistance across a wide range of programs. Personally, I enjoy mentoring newly hired scientists and research leaders and learning about diverse areas of science. I am the proud grandpa to Kailynn and Malakai whose family just moved to Fort Collins!

W. Charles Moyer. I retired from DSM Agricultural Chemicals in 2000. My career following UI consisted of 17 years with Shell at various locations in the U.S. and Canada, followed by 18 years with DSM, based in Augusta, but working as a board member for acquisitions during the late 1980s and 1990s. My time now is spent with my grandchildren, civic club activities, and church.

Ephantus J. Muturi. For the past year, I have been doing postdoctoral research at the University of Alabama, Birmingham. Besides good progress in research, I have adjusted well to the southern accent and delicious foods. I have also made some new friends. I was supposed to do some research in Kenya but post-election clashes in January changed my plans. My parents fell victims to the clashes and were displaced, but I am happy they are alive. Finally, I am proud to be an Illinois alumnus. I miss the great friends and faculty.

Lance G. Peterson. I retired from Dow AgroSciences in February 2000. At the time of my retirement I was an adjunct professor at Auburn University, Department of Entomology; a guest professor at Florida A&M University; and a guest member of the Graduate College at the University of Florida. I am a past president of both the Florida Entomological Society and the Georgia Entomological Society. I have kept

an emeritus membership in the Entomological Society of America.

Since my retirement I have taken up wood carving, specializing in realistic song birds, marine life, and big game animals. I have also carved several realistic butterflies and plan to do a series, along with the flowers they prefer to feed on.

My wife Jan and I have a blended family of five children and seven grandchildren in five different states; Florida is one of them. We therefore enjoy a great deal of travel to try to see them all on a regular basis. We also spend summers at our home on the shores of Lake Superior outside of Duluth.

Christopher M. Pierce. Hi all! We arrived in Jefferson City, MO, in January 2008 after spending four years in the Department of Entomology at Purdue University. Kelly and I now own our first house. Our daughters, Eliza and Crosby, are 4 and 18 months, respectively. I am currently coordinating and collaborating with state agencies in survey and outreach regarding invasive pests that threaten our agricultural and natural resources. ILL—INI!

Roscoe Randell. Retired in 1992, consulted 1992-2003. Volunteer part time, golf part time, fish some-time, garden part time, and walk about everyday.

William F. Rapp. My field work has become very limited. In March 2006 I broke my right ankle and in October 2006 they had to remove it. Recovery has been slow, but I am getting there. Hope to get out and do some collecting the summer of 2008.

Craig and Silvia Reid. Craig was the co-star and fight choreographer for a Japanese period piece, Samurai Short Films’ “Good Soil,” starring Shin Koyamada (co-star with Tom Cruise in “The Last Samurai”). His first book, *The Ultimate Guide to the Martial Arts Films of the 1970s*, will be out in 2009.

Hilary Reno. Shaun, Ian, and I are doing well in St. Louis. We decided to move out of the city and are enjoying our house and yard. Shaun continues teaching at St. Louis Community College and is taking on more administrative duties, much to my amusement. Ian is growing and playing and enjoying being 2 $\frac{1}{2}$. He loves soccer, his friends, and challenging us. We have enjoyed taking him across the country to visit friends and family. I am working part-time in my last year of an infectious disease fellowship at Wash U. I will be continuing on as an instructor in 2009. My clinical work and research is in STDs, and I’m the medical director of the St. Louis County STD Clinic.

It's a rewarding area. My time is spent teaching, seeing patients, and working on clinical research. Mostly though I spend my time with Shaun and Ian.

Alan Schroeder. It's been several years since I last wrote in this Newsletter—so I'll take a little extra space in this one. Continuous learning has been one of my mantras, and in that vein, I have earned an Executive MBA from the Anderson School of Management, University of New Mexico (2005), continued studying (and using in my work) French and Spanish, and last year, following several very frustrating experiences not being able to communicate with people I met in Georgia, Azerbaijan and Armenia, began to study Russian. In addition, I am learning all I can about agricultural standards and certification systems including Organic, British Retail Consortium—BRC, GlobalGAP, and Fair Trade, serving export markets with mangoes, lychees, wild fruits, cacao, coffee, cotton, and an assortment of fresh vegetables and spices. Food safety through processing and export is another interest and I have begun to work on international systems HACCP and ISO. Let's not forget that I also studied and practiced hard to earn a private pilot license in the 1990s and to stay current I continue to study changes in the federal aviation regulations, especially concerning airspace around Washington, DC—not a good idea to get lost up there and end up flying near the White House.

Basically what I do for a living now, or the job that found me as it were, is provide consulting services to USAID and the Millennium Challenge Corporation—and especially the companies that serve them—on overseas agriculture development projects. I do environmental assessments of agricultural inputs and outputs, with a strong focus on conservation. And I get to put into place policies that encourage the use of a plethora of good agriculture practices and IPM tools and tactics (yes Dr. Metcalf, who continues to inspire my career to this day, is smiling out there somewhere).

Occasionally, I get to learn something entirely new as employers task me with interesting and challenging jobs. Just this year I worked on the mitigation of risks associated with PCBs and asbestos in old irrigation pump houses in Armenia and on a complex puzzle of DDT/metabolites contamination in cow's milk in a Latin American country. My minor in chemistry has served me well. And, the MBA has been the cherry on top of the chocolate cake for my career.

Speaking of mantras (and food), my partner Sonia, and I meditate twice daily (TM for you meditation connoisseurs), practice Ayer Veda, eat mostly vegetar-

ian with the occasional seafood to spice things up (OK, I admit it, once in a while I indulge myself with bacon), don't watch TV at all, and work really hard to exercise daily. We chose not to have kids, and spend our money traveling and spoiling our many nieces and nephews. Since we don't watch TV, we have tons of time to spend with friends, reading, watching movies, and doing flying club stuff (did I not mention that Sonia, who is from Nicaragua and who used to marvel at those spray planes that would swoop down over the trees on the edge of the cotton field, release their toxic load of DDT, and pull up just before hitting the trees on the other side, wanted nothing more all her life than to fly). Well, she became a marine biologist and program manager at NSF (GK-12, for those of you who keep an eye on the Science Mecca here in DC) instead. That was, until she met me in 1993. One of the first things she asked me was "Don't you think it would be fun to learn to fly?" We've been flying since, and trying out different planes. My fear of flying has slowly dissipated over this time.

Three years ago we did something really wild—we bought a piece of property on the Pacific Ocean in southern Nicaragua and designed and built a house on it. Actually we just returned from a trip to landscape with tropical plants and furnish the house. We'll rent it out for a few years before living there part-time (alternating three months to take advantage of the great weather in Nicaragua when it is either freezing or hot and humid here). Our dream is to run an environmental education exchange venture between the US and Nicaragua. We are still trying to decide where we will live the other alternating months and what to name the new house.



David Schulz. Since moving from Champaign in 2002, my wife (Laura Clamon Schulz, MIP 2002) and I moved to Boston to do separate postdocs—I went to Brandeis University and Laura to Boston University. Somewhere along the way, my study animals picked up more legs, and I now work on cellular/molecular neuroscience questions in decapod crustacean models. In 2005 we welcomed our son James into the world, and he is about to turn 3. After Boston we moved to the University of Missouri, Columbia, where we have been since 2005. I am finishing my third year in the Department of Biological Sciences and keeping my fingers crossed that tenure is forthcoming.

Thomas G. Shanower. I started a new position in April 2007 (USDA-ARS) and have enjoyed it.

Joseph K. Sheldon. I retired in June 2007 as professor emeritus from Messiah College. My wife Donna and I moved to Whidbey Island, WA, where we built a new, very green (zero carbon, sustainable) home. I continue to teach for Au Sable Institute of Environmental Studies, Pacific Rim Campus.

Joel P. Siegel. Working on navel orangeworm, the primary lepidopteran pest of California almonds and pistachios. I am the project leader for an areawide program to control it.

Michael Slamecka. Hello everyone. No major changes in my life recently. Still trying to protect the people of the south side of Chicago and the suburbs from mosquitoes. Still having fun doing it.

Robert (Butterfly Bob) Snetsinger. For the past 13 years I have been involved in butterfly gardening and butterfly therapy. I have hosted field trips to butterfly conservatories and prime habitats, taught classes on butterflies and butterfly gardening for all ages, conducted programs for a Veterans Home on butterfly therapy and outreach, and assisted schools in planning butterfly gardens. My major effort has been the development of a three-acre public butterfly garden in State College (Tom Tudek Memorial Butterfly Garden). When I started 12 years ago, the area was old field habitat (agricultural weeds), and there were six resident species: 70% Cabbage Whites; 20% Clouded and Orange Sulphurs, and 9% Monarchs, typical of "man-scaped" habitats. Now 25-30 species complete their life cycles there. The numbers of the common four species has greatly increased and about 50% of the total population are butterflies other than the four common species, a kind of diversity index. The garden has been enhanced with 70+ species of mostly native, butterfly-friendly plants, which provide nectar for the adults and hosts for the caterpillars. The garden has become a way-station or stopover for migrating Monarchs in the fall. I grow the plants for the garden in an Entomology Department greenhouse; during the past two years, the Master Gardeners of Centre County have become involved and have been learning about holistic gardening and habitat enhancement. I am also involved with the Friends of the Frost Entomological Museum and the annual departmental "Great Insect Fair," which is held every fall at University Park and is attended by about 5000 adults and youth.

Daniel Strickman. One collaboration with UI since graduation—effects of magnetic fields on mosquitoes with Bob Novak and Mike Weissman (Physics).

Michael E. Toliver. I finished my term as editor of *The Journal of the Lepidopterists' Society*, and immediately took on the task of being one of the editors of the Lepidoptera section of *Zootaxa*. I've been elected secretary of the Lepidopterists' Society and begin my three-year term after the annual meeting in June. Peg continues her artistic career (pegtoliver.com) and has become a certified Yoga instructor. She also does graphic design and layout for *The Journal of the Lepidopterists' Society* and a local newspaper. Our daughter Colleen is a sophomore at Eureka College! She hasn't taken any of her old man's courses though; her interests lie in literature and writing.

Charles R. Vossbrinck. We're doing OK. Research involves microsporidia, invasive aquatic plants, and molecular biology. The girls and Henry are fine. Alice graduated from St. Mary's, Kate is going to Southern Connecticut, and Madeline started Skidmore College this year. Henry does his best in high school. Bettina and I teach part time at Quinnipiac University. We think of our friends in Urbana often and hope to stop by sometime.

Steve Wagner. Crop consultant—fertility, pest management, livestock environmental compliance.

Barbara T. Walton. Primary activities involve developing research strategies for EPA intramural research programs in nanotechnology, biofuels, homeland security, and other emerging areas. Completed MBA degree at the University of North Carolina-Chapel Hill in 2002 to round out business skills for administering R&D programs.

Arthur Weis. Things at Toronto are going great. Autumn colors are just as spectacular as I imagined. Donna and I are living in a big house on the reserve, with a terrific view. The dogs have lots of trails for taking me on my daily walk. On the work side, I just got a big grant to put up a new laboratory building, which means I will have a place to do my research!

Thomas H. Wilson. Environmental advisor for Perry Lakes Park and leading the effort to preserve this 900-acre mature canopy, floodplain hardwood forest. Conducting a flora and fauna survey with emphasis on birds and trees. Keynote speaker for Alabama Sierra Club annual workshop on preservation. Scholarship at Judson College named in my honor by alumnae.

Obituaries

Edward Becker. Dr. Ed Becker passed away on May 13, 2008, at the age of 85. He was a research scientist at Agriculture and Agri-Food Canada from 1952-1980 working as a taxonomist at the Canadian National Collection of Insects, Arachnids, and Nematodes (CNC) in Ottawa. His area of expertise was the systematics of click beetles (Coleoptera: Elateridae), which include many Canadian crop pest species. During his life, he published 36 scientific articles, book chapters and reviews. Following retirement, he became an honorary research associate and continued to come into work nearly every day for the past 28 years.

In addition to Ed's scientific work, he was active in many entomological societies and organizations, working as treasurer of the Entomological Society of Canada (1961-1985), Section A representative for the Entomological Society of America (1982-1984), editor of the *Coleopterist's Bulletin* (1983-1990) and president of the *Coleopterist's Society* (1971-1972). Perhaps his biggest contribution to entomology was through the CanaColl Foundation, a non-profit organization that Ed helped create and almost single-handedly nurtured for the past 36 years. The foundation promotes taxonomic research at CNC by providing funds to visiting entomologists who curate the collection. It currently has investments of \$475,000 and has awarded over \$200,000 in grants to nearly 300 researchers. Ed was recognized for his work by receiving the Queen's Silver Jubilee Medal (1978), the Canada Commemorative Award (1984) and was made a Fellow of the Entomological Society of Canada (1974) and an Honorary Member of the Entomological Society of America (1997). His tireless efforts to promote entomology and CNC have had far-reaching effects not only in Canada, but throughout the world. Ed's cheerful, positive attitude, sense of humor, and love of bowties will be sadly missed. (*Department of Entomology, University of California, Riverside website*)

Ralph March. Ralph Burton March died August 2007. He was 88. Dr. March, an eminent insect toxicologist, arrived at UCR in 1948 and became head of the Division of Toxicology and Physiology from 1969-72 and chair of entomology from 1978-83. He served as the first dean of the Graduate Division from 1961-69. He was noted for developing strains of house flies that were resistant to different classes of insecticides.



These colonies proved invaluable in studying the metabolism and mode of action of insecticides. Dr. March's wife, Robinetta Tompkin March, preceded him in death, as did a daughter, Janice A. March. He is survived by John S. March, Susan E. March, Kathleen Davidson and three grandchildren. (*Richmond Times Dispatch*)

Malethu T. Mathew. February 4, 2007

Arthur P. Morris. May 14, 2006

Edmund C. (Ed) Puddicombe. Passed away, at his home, Friday, March 14, 2008, after a long illness. Ed was born to Edmund C. and Florence (nee Carpenter) Puddicombe on December 30, 1914. Age 93 years. A lifelong Joliet resident, he attended Joliet Public Schools through Joliet Jr. College before transferring to the University of Illinois where he earned his BA and MS degrees. He was a member of the Lambda Chi Alpha Fraternity. During WWII, he served in the US Army Air Corps as a bombardier instructor and weather officer. Returning to Joliet, Ed started his teaching career in the Biology Dept at Joliet Twp. High School and Joliet Jr. College. His major teaching field was human anatomy and physiology. He wrote and illustrated his textbook, *The Human*, and sponsored the Students of Medical Sciences Club, which influenced many students to consider the medical field as a profession. He organized a series of lectures called *Your Doctor Speaks*. He was one of original Joliet Jr. College advisors. When the college moved to the new campus, he sponsored the Joliet Jr. College Fliers. He retired from Joliet Jr. College in 1975. He was a member of Phi Delta Kappa (Honorary Education) and Sigma Xi (Honorary Scientific) and twice won the Adam Award for scholarship at Joliet Twp. High School. He belonged to NEA, All (American Interprofessional Institute), Joliet Creative Writers, and First Presbyterian Church.

Preceded in death by his parents, a granddaughter Amy, and two great-granddaughters Olivia, and Gracie Dixon. Survived by his wife Lula (nee Rippy), his children Mark of Wilmington, June Pekol of Ft. Meyers, FL, John (Tracy, fiancée) of Joliet, and Diane (Howie) Scheidt of Harrisonburg, VA, nine grandchildren Julie and Laura Puddicombe, Alanna (Steve) Hunter, Robert Pekol, Arthur and Nicholas (Lydia) Puddicombe, Derek, Jason, and Tyler Scheidt, three step-grandchildren Cassandra Hulbert, Jessica and Emily Hall and three great-grandchildren. Special thanks to all Ed's caregivers during his extended illness. (*Joliet Herald News*, March 16, 2008)

Paul Riegert. Paul Riegert, 102 Mayfair Cres., Regina, SK, died 9 May 2002 at age 78. He is survived by his wife Betty and several children and grandchildren. Paul suffered a massive brain aneurysm on 23 April. At the time, Paul and Betty were in Saskatoon visiting their daughter. The doctor did not have much hope for recovery. Paul was well-known for his four booklets on the entomologists of Manitoba, Saskatchewan, Alberta, and British Columbia. He has also been very interested in his family tree and had just completed writing his life history. He wrote another book, *From Arsenic to DDT: A History of Entomology in Western Canada*. Paul spent 24 years at the Dominion Entomological Laboratory, Saskatoon, and then in 1968 he joined the University of Regina. Paul has been active with the Entomological Society of Canada, particularly with the Heritage Committee. (Submitted by Ed Becker)

(In May, by an agreement with the family of the late Dr. Kathryn Sommerman, I went to Moosehead Lake, ME, to evaluate her psocid collection, pack it, and ship it to the Illinois Natural History Survey at Champaign, where she was employed while doing her doctoral work. I promised to include here a brief obituary of Dr. Sommerman, which follows. Submitted by Edward L. Mockford, December 2001.)

Kathryn Sommerman. Kathryn Martha Sommerman passed away in October, 2000, after a long life of entomology with emphasis on psocids and biting flies. Kathryn was born in New Haven, Connecticut, January 11, 1915. She received the BS degree from the University of Connecticut in 1937. Choosing to pursue a career in entomology, she entered the Graduate School of the University of Illinois, where she received the MS degree in 1941 and the PhD in 1945. While at the University of Illinois she worked as an artist and assistant entomologist at the Illinois Natural History Survey. There, her ability as an illustrator was recognized and utilized. While there, she illustrated a book on the native shrubs of Illinois, and provided many illustrations for entomological works published by the Survey. She also published six papers on Psocoptera during that period, including her important revision of the genus *Lachesilla* north of Mexico (1946). Also during that time, she built up a sizeable collection of Psocoptera which she kept as her own, and added many specimens to the Natural History Survey collection.

Kathryn always regarded herself as primarily an entomologist and secondarily an artist. On that account, two positions that she held in the Washington, DC area from 1946 to 1953 (US Army Medical Center and USDA Bureau of Entomology and Plant

Quarantine) were not entirely to her satisfaction. In both, her skill as an illustrator was utilized, and she found little opportunity for research. However, she illustrated an important set of keys to adult and larval mosquitoes during that time.

In 1953, she left the DC area and settled briefly in Orlando, FL. I was doing graduate work at the University of Florida at that time, and we got together for several pleasant visits with much exchange of psocidological information.

In 1955, Kathryn moved to Anchorage, to work as a research entomologist with the US Public Health Service Arctic Health Research Center. The work involved studies on black flies, mosquitoes, and snipe flies, but in her spare time, she collected psocids.

Kathryn retired from her Alaska job in 1973. She had adapted well to the Alaska climate, but she knew that she could not afford to live in Alaska in retirement. Eventually, she found a cottage on Moosehead Lake in central Maine. There she spent the rest of her life surrounded by a forest of conifers and red maples, with abundant native birds and mammals.

Although Kathryn did not publish on psocids after 1957, she continued to collect them and to make life history observations on them. Her collection now resides in the Illinois Natural History Survey, Champaign, Illinois.

Robert Whitcomb; entomologist explored the microbial world

WASHINGTON - Robert Franklin Whitcomb, 75, a research entomologist at the Beltsville (Md.) Agricultural Research Center who identified more than 50 new species of leafhoppers and about 60 new species of microorganisms, died of brain cancer Dec. 21 at Hacienda Rehabilitation and Care Center in Sierra Vista, Ariz. He lived in Sonoita, Ariz. Mr. Whitcomb was known worldwide for his 1972 discovery of the genus *Spiroplasma*, a group of mollicutes, or small bacteria without cell walls. He worked on these microorganisms for the rest of his career.

"The world is essentially a microbial world," he wrote in a 1989 paper. "Although we may pretend to be eukaryotes, we are impostors. . . . Spiroplasma, although discovered a mere 17 years ago, may be the largest genus of any kind on earth and may contain more than a million species."

He also was deeply interested in birds, and one of his articles, which applied the ideas of island biogeography to mainland bird populations in the eastern deciduous forest, was considered a landmark study. It led to the current emphasis on the negative effects of forest fragmentation on biota, or all the living organisms of the forest. On the Agriculture Depart-

ment's Beltsville campus, Mr. Whitcomb was widely credited with the successful re-creation of its grasslands, a unique landscape in the Washington area that contains the progeny of plants seeded in Colonial times or before. More than 234 species live in the uncut meadowland, he told a *Washington Post* reporter in 1997, and it's managed naturally.

Few might expect a natural scientist to be born in New York City, as Whitcomb was. He graduated from Blackburn College in Carlinville, Ill., and received a master's degree in entomology in 1958 and a doctorate in plant pathology in 1961, both from the University of Illinois. He did postdoctoral work in entomology at the University of California at Berkeley for five years. He moved to the Washington, D.C., area in 1966 to work at Beltsville, where he remained for the next 30 years.

He was an original member of the International Organization for Mycoplasmatology in 1974 and taught one of its methods courses in Bordeaux, France, in 1984. He received the group's highest honor, the Kleiberger-Nobel award, in 1994. He published more than 300 scientific papers and in 1979 was one of four editors of a new series of scientific reference books, *The Mycoplasmas*. (by Patricia Sullivan, *Washington Post*, Jan. 6, 2008)

Stanley Shoso Miyake. Nov. 11, 2003. Stanley Shoso Miyake, 76, of Kaneohe, a retired U.S. Department of Agriculture PPQ-APHIS regional director, died in Castle Medical Center. He was born in Waialua. He is survived by sons Warren K., Stuart, Cliff and Alan; sisters Eleanor and Evelyn; and six grandchildren. (*Honolulu Star Bulletin*, Nov. 18, 2003)

Glenn E. Printy. Age 86, of Riverside, CA, passed away on March 22, 2007. Glenn was born 10/10/1920 in Springfield, IL. He worked for UC Riverside, Entomology Dept. from 1953, retiring in 1980. He was a Docent at Riverside Metropolitan Museum and second career was rebuilding and tuning pianos. Glenn is survived by his wife of 61 years, Wilma; daughter, Debby Monson (Mike); grandchildren, Tyler and Shelby. In lieu of flowers, the family suggests memorial contributions to Riverside Co. Philharmonic; Riverside Metropolitan Museum, LIFE Society, UCR Extension. (*The Press Enterprise*, March 25, 2007)

Garland Riegel

CHARLESTON - Garland Tavner Riegel, 93, of Charleston, retired zoology Professor, died Monday, November 12, 2007, at Heartland Christian Village in Neoga. A memorial service celebrating his life was held at the First Presbyterian Church in Charleston

on Wednesday, November 21, 2007, at 2 p.m. Friends, colleagues and former students are invited to come and share the reminiscences. Memorial gifts in his honor may be made to the First Presbyterian Church Restoration Fund.

Dr. Riegel was born in Bowling Green, MO to Roy William and Nellie Byrd Griffith Riegel on August 26, 1914, the second of 11 children. He graduated from Palmyra High School in 1932 and from Hannibal-LaGrange College in 1934. After transferring to the University of Illinois in January 1935, he majored in entomology with minors in botany and zoology. Riegel finished a BS with highest honors in entomology in 1937 and an MS in entomology in 1940. Riegel received the PhD in entomology from the University of Illinois in 1947, spent a year on a postdoctorate fellowship, and, in the fall of 1948, he was employed by the Zoology Department at Eastern Illinois University, Charleston. He taught there for 30 years, serving as department head for 13 years. He was the author of a book on parasitic wasps and numerous articles and book chapters. Riegel was recognized as an authority on certain braconid wasps and on the order Zoraptera. He served for 18 years as entomologist on the State of Illinois Tree Expert Examining Board.) (*Champaign-Urbana News-Gazette*)

Dr. Willis Nels Bruce

CHAMPAIGN - Dr. Willis Nels Bruce, a longtime resident of Champaign and retired Professor of Entomology at the University of Illinois, died here shortly before his 92nd birthday. He received his Ph.D. in entomology in the 1950s from the University of Illinois. Dr. Bruce went to work as entomologist for the State Natural History Survey in 1944, years before the survey became incorporated into the university. He was recognized for several contributions to his field. The new insecticide that he developed in 1953 was superior to DDT, and it was proclaimed on Dec. 24 in newspapers across the country as a Christmas gift for the human race. Perhaps Dr. Bruce's most significant contribution to human welfare was his invention of a gas chromatography device for detecting pesticides in food. For his various efforts in getting DDT and other dangerous pesticides banned from the food supply, he received a letter from President Jimmy Carter, thanking him for his efforts. After he retired, he consulted with Del Monte and other businesses around the country on related issues.

Dr. Bruce was born on Sept. 6, 1916, in the community of Wahoo, Neb., the son of Clara (Gustafson) and Seth Bruce, of Swedish immigrant families. Dr. Bruce died quietly at his home in Champaign on Aug. 26,

2008. He was married for over 50 years to his wife, Louise, now deceased. They had three children, Heather (deceased), Bonnie, who now lives in Poway, Calif., and Claire, who lives locally. He is also survived by his grandson, Adam Nunez, and a number of nieces and nephews, who knew him as Uncle Bill. He is survived by several grand-nieces and -nephews as well.

Dr. Bruce and his wife, Louise, were active in the Champaign community for many years. They were avid antique collectors and members of an antique study group. They donated art glass and antiques to the Krannert Museum and other collections. They attended Holy Cross Church in Champaign. To the end of his life, Dr. Bruce retained a curiosity about the world, a sense of humor and a loving spirit. He will be missed by many friends and family. (*Champaign-Urbana News-Gazette*)

Births

Claire Rutledge (MS 1994, PhD 1998): Katherine Rutledge Booth (Kate or Katie), born May 17, 2007 at 11:15am. 20.5", 8lb-9.5oz, at the Yale New Haven Children's Hospital.

Matt Ginzel (MS 1999; PhD 2003): Anna Marie Ginzel, born June 8, 2008.

Amy Toth (postdoc Robinson lab): Felix Fernando Miguez, born January 7, 2008 at 10:54pm. 21", 8lb-.5oz.

Kim Walden (MS 1996): Samantha Grace, born April 22, 2008 at 5:25pm. 19", 6lb-4oz.

Amro Zayed (postdoc C. Whitfield lab): Jason Alexander, born June 28, 2008. 7lb-13oz.

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Births/Donors

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Mail your news to Department of Entomology, University of Illinois, 320 Morrill Hall, 505 S. Goodwin Ave., Urbana, IL 61801; or fax to (217) 244-3499; or email to entowork@life.uiuc.edu

We look forward to hearing from you.

Department of Entomology
University of Illinois at Urbana-Champaign
320 Morrill Hall, 505 South Goodwin Avenue
Urbana, Illinois 61801 USA
Ph: (217) 333-2910 Fax: (217) 244-3499
www.life.uiuc.edu/entomology/