



# Department of Entomology Newsletter

*Events from 2015*

## Smith New Medical Entomology Faculty Hire

**Dr. Ryan Smith** joined the Department of Entomology in August of 2015 as an Assistant Professor focusing in medical entomology. Ryan's research aims to understand how pathogens are transmitted by mosquitoes, with particular interests in how the mosquito innate immune system shapes vector competence. To address these questions, his research has focused on the African malaria mosquito, *Anopheles gambiae*, to examine malaria parasite development and identify mosquito components that influence malaria transmission.

Ryan comes to ISU following his appointment as a post-doctoral fellow in the lab of Dr. Marcelo Jacobs-Lorena at the Johns Hopkins Bloomberg School of Public Health. His research uncovered a novel transcription factor that regulates mosquito immunity through immune cell differentiation and identified that this is an important determinant of malaria parasite survival. These studies will serve as the foundation of Ryan's research program at ISU as he continues to investigate the roles of mosquito immune cells

*Continued on page 25*



*Ryan Smith*

## Consortium for Monarch Conservation

The Iowa Monarch Consortium was formally created in 2015 by farmer and conservation organizations, state agencies, agriculture industry and ISU. The ISU research and extension team consists of faculty and staff from Entomology, Ecology Evolution and Organismal Biology, Agronomy, and USDA-ARS. This group has been successful in bringing in over \$1.5 million in grants and gifts to address critical research issues in monarch habitat and population biology and to provide extension and outreach in the state and region.

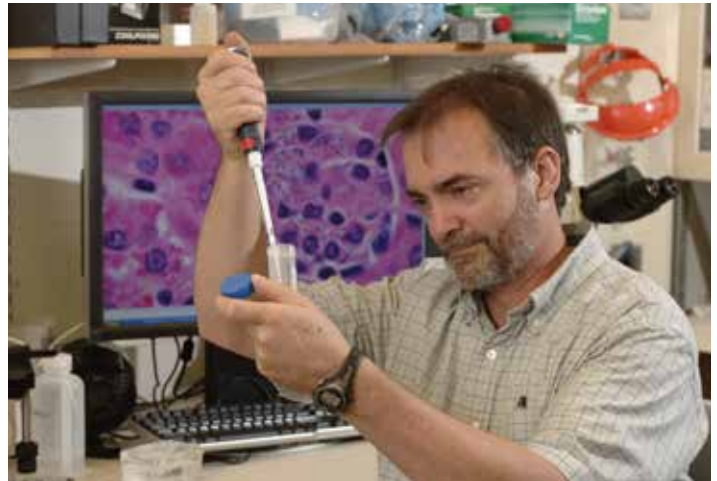
ISU recently received two USDA Natural Resources Conservation Service grants, as well as grants from the Iowa Soybean Association and the Iowa Pork Producers Association to develop and accelerate the adoption of innovative approaches to monarch butterfly conservation in underutilized spots in agriculturally intensive corn and soybean production areas and swine production facilities. Butterfly

*Continued on page 10*



## Beetham Retires from Vet Pathology

**Dr. Jeff Beetham**, Associate Professor Emeritus with a joint appointment between the Departments of Veterinary Pathology and Entomology, retired in June 2015. During his 17 years at ISU, Jeff established and led the interdepartmental undergraduate program in Emerging Global Disease, taught ENT/VPth 478/478 Global Protozoology, and GEN 349 The Genome Perspective in Biology. He oversaw NIH-funded research on adaptation of the sand fly-vectored parasite, *Leishmania chagasi*, to its mammalian host. In recent years, he expanded his research focus to collaborate with Dr. Richard Martin in the Department of Biomedical Sciences on drug resistance in nematodes of veterinary importance.



Jeff Beetham

## Pedigo and Rice Book Continues #1 Ranking

The book, *Entomology and Pest Management* by **Drs. Larry Pedigo** (University Professor Emeritus) and **Marlin Rice** (Collaborator Professor), has recently been reprinted and marketed by Waveland Press of Long Grove, IL. The book, previously copyrighted by Prentice Hall, has progressed from 646 pages in edition one to 784 pages in edition six. Both basic entomology and applied pest management topics are covered in the book, and important supplements through the editions



include color plates of insects, development of insect-resistant transgenic plants, and the introduction of new biopesticides. The first edition was published in 1989, and was designed to be used in undergraduate entomology courses but has also found some application in graduate courses. Thousands of copies have been sold throughout the world, and the work currently ranks as number one among books on pest management marked by the online website Amazon.

## Pollinator Fest Hosted by ISU

On June 20, Pollinator Fest was hosted at Reiman Gardens in Ames, IA to celebrate National Pollinator Week. Members from the ISU Pollinator Working Group, Insect Zoo, Plant and Insect Diagnostic Lab, and students from Entomology and Evolutionary Biology and Ecology organized the outdoor event for families. Planned activities included insect displays and crafts, and a honey bee hive with beekeeping equipment, plus more hands-on stations. Classes were also offered to gain a better understanding of pollinator habitat conservation. Participants were also treated with a no-bake cookie demonstration from the 2015 American Honey Queen, Gabrielle Hemesath. She is an ISU student from Clermont, IA.



American Honey Queen, Gabrielle Hemesath



## Entomology Year in Review

*Dr. Sue Blodgett writes:* I've learned that if nothing else, we can rely on change; at times it comes fast and furiously. The "Military Garage" is a small storage building north of the Insectary, and has outlived its usefulness. It is scheduled to be demolished by the year's end (see photo below). Our neighbor to the east, the Industrial Education II building, has undergone abatement and salvage crews have been through. Demolition will be nearly completed by the time you read this to make way for the new Advanced Teaching and Research Building (ATRB). Entomology faculty have been active participants in planning the new building, five labs will be moving in, scheduled to be completed in spring 2018. Space will be made in Science II for some programs with a space audit planned for 2016.

This year we welcomed **Dr. Ryan Smith** (see cover page) as a medical entomologist and **Dr. Steve Bradbury** (see page 6) is a toxicologist in Natural Resource Ecology and Management with a partial appointment in Entomology.

The department has enthusiastically embraced the ISU Library Digital Repository as we approach 1,000 total papers available through the system ([www.ent.iastate.edu/publications](http://www.ent.iastate.edu/publications)). This program makes Entomology Department faculty, students and staff publications available to a global audience while respecting publication restrictions of various journals. The site documents nearly 100 entomology publication downloads per day!



*Sue Blodgett*

The Entomology faculty, staff and students continue to provide institutional and professional society leadership and service, upholding the Department's long-standing tradition of excellence.

### ***Keep in Touch and Stay Connected!***

We have more departmental news to share with our alumni and friends! Visit the ISU Entomology website, [www.ent.iastate.edu](http://www.ent.iastate.edu), to see our seminar schedule and social events. Also, hear about fun entomological news by "liking" us on Facebook, [www.facebook.com/ISU.Entomology](http://www.facebook.com/ISU.Entomology). You can see the progress of the new ATRB building construction via a webcam: [www.fpm.iastate.edu/webcam/atrb/](http://www.fpm.iastate.edu/webcam/atrb/).

The ISU Department of Entomology Newsletter is for alumni and friends, and is produced by ISU Entomology faculty, staff, and students. This newsletter and previous issues are available at [www.ent.iastate.edu/alumni](http://www.ent.iastate.edu/alumni).

Please let us know if you have information to share, including job changes, honors and awards, and personal notes. Kindly direct information to Erin Hodgson, Iowa State University, Department of Entomology, 339 Science II, Ames, IA 50011-3140 or via email: [ewh@iastate.edu](mailto:ewh@iastate.edu).



## DeWitt Named NCR-SARE Hero

**Dr. Jerry DeWitt**, Professor Emeritus, was recently recognized as the 2015 “NCR-SARE Hero” for leadership, vision, contributions, and impact made in the field of sustainable agriculture. This award is coordinated by the North Central Region-Sustainable Agriculture Research Education (SARE) Alumni Organization. The NCR-SARE Hero Award recognizes individuals who 1) have provided service to NCR-SARE, sustainability, and/or national SARE, 2) have shown leadership in sustainable agriculture locally and regionally, and 3) have made lasting impacts to sustainability in the region.

During Jerry’s 38-year tenure with ISU, he served as an Associate Dean, Assistant Extension Director and Director of the Leopold Center for Sustainable Agriculture. He has served as Interim National Program Leader for the SARE Program three times, as well as serving as the project coordinator/state coordinator for SARE’s Professional Development Program within Iowa for 15 years. He currently resides in North Carolina and is involved in local and organic agriculture with the Carolina Farm Stewardship Association where he serves as Board President. He also is involved with Slow Money NC, which sup-



*Jerry DeWitt*

ports local North Carolina entrepreneurs with targeted low-interest loans. DeWitt is an avid photographer of local, sustainable and organic agriculture nationwide.

## O’Neal New Sustainable Ag Chair

During the summer of 2015, **Dr. Matt O’Neal** was elected to a two-year term as Chair of the Graduate Program for Sustainable Agriculture (GPSA). This continues a tradition of entomology participating in this first in the nation graduate program that trains both M.S. and Ph.D. students in sustainable agriculture topics. The GPSA program was initiated in October 2000, taught its first class in August 2001 and first graduate class in 2003. Previous ISU Entomology department member, **Dr. John Obryicki**, taught SUSAG 530 (Ecologically Based Pest Management), along with Drs. Matt Liebman and Mark Gleason, to this first co-hort of students. Since 2003, several entomology faculty have participated in the GPSA, with **Drs. Gassmann, Hodgson and O’Neal** as current members of this interdepartmental program. They join 74 other ISU faculty who are members of the GPSA, helping to train 49 currently enrolled graduate students who hope to join the 127 graduates of the program. Although the program features many faculty and students



*Matt O’Neal’s Lab, 2015*

in the College of Agriculture and Life Sciences, faculty and students come from three other colleges and 14 departments. Hopefully the GPSA will attract future students to study within our department, like recent alumni **Rebekah Ritson** and **Joe Wheelock**.



## Faculty Recognized in 2015

**Dr. Wendy Wintersteen** (Ph.D. 1988) received the CAST (Council for Agricultural Science and Technology) President's Award in October, at the World Food Prize Hall of Laureates. The event was part of CAST's Fall Board Meeting, and it featured a speech by Ambassador Kenneth Quinn, President of the World Food Prize. The President's Award is a CAST honor that recognizes those individuals who have personally contributed to the advancement of CAST and who have furthered the cause of agriculture, science, and technology in a world so dependent on all three disciplines. Wendy is the Endowed Dean of the College of Agriculture and Life Sciences at ISU and Director of the Iowa Agriculture and Home Economics Experiment Station.

**Dr. Bryony Bonning**, Professor, was presented the 2015 Rossmann Manatt Faculty Development Award. She accepted the award at the ISU College of Agriculture and Life Sciences awards ceremony (see page 18). This award, which alternates between CALS and the College of Human Sciences, recognizes a tenured faculty member who has demonstrated an exceptional level of creativity and productivity in scholarship, teaching and service and who shows great promise continuing such achievement. This award provided \$8,000 in seed funding for virus discovery research with the goal of developing new tools for management of invertebrate pests.



*Bryony Bonning's Lab, 2015 (L to R): Puru Lomate, Jan Seibel, Bryony Bonning, Ben Deist, Sijun Liu, Mariah Kemmerer, Teresa Fernandez-Luna, and Biviana Flores-Escobar. Photo taken by Yuting Chen.*

**Dr. Amy Toth**, Assistant Professor, received the Early Achievement Research Award at the ISU College of Agriculture and Life Sciences awards ceremony. This award recognizes exemplary research performance or scholarship accomplishments unusually early in a faculty member's career, as documented by clients and peers.



*Amy Toth's Lab, 2015*

**Dr. Joel Coats**, Charles F. Curtiss Distinguished Professor of Entomology and Toxicology, was the recipient of the 2015 Margaret Ellen White Graduate Faculty Award. The White Award was established by a long-time staff member of the Graduate College. The award recognizes superior performance by a member of the graduate faculty in enriching the student-professor relationship and enabling students to finish their work in a timely and scholarly manner.



*Joel Coats and ISU President Steven Leath*

## More Faculty Awards and News

**Dr. Steve Bradbury**, Professor, was hired as a toxicologist in the Natural Resource Ecology and Management Department with a partial appointment in Entomology. Steve was a Visiting Professor at ISU in 2014, and had a 30-year career with the Environmental Protection Agency before starting this new role. Steve has a three-way appointment including research, teaching and extension.



Steve Bradbury

**Dr. Tom Sappington** (M.S. 1982) was promoted to Collaborator Professor in Entomology in 2015. He is a USDA-ARS Research Entomologist in the Corn Insects and Crop Genetics Research Unit in Ames. Tom also served as Program Co-Chair with **Dr. Larry Von Kaster** (M.S. 1980, Ph.D. 1983), a Project Manager with Syngenta in Slater, IA. Tom and Von were both mentored by **Dr. William Showers**, Affiliate Professor Emeritus.



*Phil Mulder (Ph.D. 1984) presenting Tom Sappington with a plaque of appreciation for his role as Program Chair for the 2015 ESA Meeting.*

**Dr. Marlin Rice**, Collaborator Professor, is a senior research manager with DuPont Pioneer in Johnston, IA. He served ESA for 26 consecutive years, and was recognized as an Honorary Member in 2015. Marlin volunteered on numerous committees, boards, and publications. For nine years, he served on the ESA Governing Board and was elected by the membership as Representative (Section E), Secretary-Treasurer, and Pres-

ident. Along with **Dr. Kevin Steffey** (Ph.D. 1979) of Dow AgroSciences, he was a Co-Founder and is currently Co-Editor-in-Chief for ESA's *Journal of Integrated Pest Management*. In 2011, Rice was elected an ESA Fellow, primarily for his contributions to extension entomology.

**Drs. Erin Hodgson**, and **Aaron Gassmann** were co-recipients of the 2015 NCB-ESA Educational Project Award for a webinar titled "Corn rootworm management in the transgenic era." Other collaborators on the project included Drs. Robert Wright and Lance Meinke, University of Nebraska-Lincoln; Joe Spencer and Mike Gray, University of Illinois Urbana-Champaign; and Ken Ostlie, University of Minnesota (Ph.D. 1984).



Erin Hodgson

**Dr. Russ Jurenka** is now the Serial Editor for *Advances in Insect Physiology*. The series publishes in-depth reviews on various topics concerning insect biology. The first volume in 2016 will be on bark beetle biology. Check it out at: [www.sciencedirect.com/science/bookseries/00652806](http://www.sciencedirect.com/science/bookseries/00652806).

**Dr. Richard (Rick) Hellmich**, USDA-ARS Research Entomologist and Assistant Professor of entomology at ISU, was recently inducted into his high school Hall of Fame. Rick graduated from Greensburg Community High School in Greensburg, IN in 1973.



Rick Hellmich and niece, Emma



## Gray Retires from University of Illinois

Dr. Michael E. Gray is a native of southwestern Iowa. He graduated from the University of Northern Iowa in 1977 with a B.A. in biology, and M.S. and Ph.D. degrees in entomology from ISU in 1982 and 1986, respectively. Following the completion of his Ph.D., he served as a post-doctoral research associate at South Dakota State University, Brookings, SD.

In March of 1988, he began his entomology career at the University of Illinois at Urbana-Champaign (UIUC). His research and extension interests have revolved around the management of the western corn rootworm, especially its adaptation to crop rotation.

Mike served as a Professor in the Department of Crop Sciences and as Assistant Dean for the Agriculture and Natural Resources Extension Program, College of ACES, UIUC. During that time, Mike received the Young (1994) and Senior (2002) Faculty Award for Excellence in Extension, UIUC. In 2007, Mike was the recipient of the Paul A. Funk Recognition Award for outstanding achievement and major contributions to the betterment of agriculture, natural resources, and



Mike Gray

human systems, UIUC. From 2008 through 2013, Mike also served as a program leader in the Energy and BioSciences Institute (EBI) at the UIUC. His EBI team focused on discovering pests that could influence the biomass production of perennial grasses such as switchgrass and *Miscanthus* used as feedstocks for biofuels.

Mike was an active member of ESA, regularly participating in ESA and NCB\_ESA meetings. In 2008, it was Mike's great honor to serve as President of the ESA. In 2011, he received the ESA Distinguished Achievement Award in Extension, and the ESA-NCB

honored Gray with the C.V. Riley Achievement Award in 2013. In 2013, Mike was recognized as an ESA Fellow and in 2015, he was elected as an ESA Honorary Member.

Mike retired from the UIUC on October 31, 2015 and currently serves as a professor emeritus. Mike is frequently invited to discuss integrated pest management issues on national and regional levels related to corn and soybean insect management. He and his wife, Ellen, enjoy living in rural, eastcentral Illinois, and spending time with their daughters and grandchildren.

## Gray Gives 2015 Staniforth Lecture

Dr. Mike Gray presented the 26th annual David W. Staniforth Memorial Lecture hosted by the Agronomy Department at ISU on April 14, 2015. His seminar title was "Managing pests in the transgenic era: is the integration in IPM an all but forgotten consideration?" His seminar attracted a wide variety of scientists, including entomologists, plant pathologists and agronomists.

Dr. David W. Staniforth (1919-1984) was a weed science biologist and his efforts helped to shape weed control programs. His primary area of research was in weed biology and ecology. He foresaw problems with the long-term use of herbicides, including weed resistance. David got his Ph.D. at ISU in 1949 and spent his entire career on the agronomy faculty.



Larry Pedigo, Mike Gray, and Joel Coats enjoying a coffee break with the department during Mike's visit.

## Featured Alum: Laura Weiser Erlandson

**Dr. Laura Weiser Erlandson** (Ph.D. 2001) is now working for Texas A&M University as the Biology Program Director.

*Laura writes:* The experiences I had at ISU prepared me well for my career. I was a doctoral student with **Dr. John Obrycki** in the biological control lab from 1997–2001. During that time, I worked with insect predators and got valuable experience designing and teaching my own course. I received the ISU Teaching Excellence Award in 2000. After graduation, I joined the Heimpel lab at the University of Minnesota as a post-doc and conducted parasitoid research.

In 2003, I accepted an Assistant Professor position at State University of New York Institute of Technology and worked there for 11 years. There, my research combined my love of teaching and community service. With local high school students, I monitored the introduction and establishment of *Galerucella* beetles into the Utica Marsh to manage invasive purple loosestrife. In addition to facilitating bug-eating events and cockroach races, I also brought insects to classrooms and scout troops. My leadership experiences included Girl Scout leader, committee chairships, president of the Utica Marsh council, and the development of the new B.S. Biology degree; I also served as coordinator of the program.

Most recently, I decided to continue my career at Texas A&M University – Central Texas (TAMUCT), the newest A&M campus. As found-



Laura Weiser Erlandson

ing biologist at TAMUCT, I developed the B.S. Biology degree and designed the new teaching laboratories. As Biology Program Director, I am currently recruiting and teaching the first students in this program, and pursuing a new research program in Central Texas agriculture.

I am excited for the new challenges I have ahead of me and am so grateful for the unique opportunities in teaching, research, and leadership I received at ISU which gave me the experience and confidence I needed to pursue my career goals.

## Bailey Retires from Mizzou

**Dr. Wayne Bailey** (B.S. 1971, M.S. 1981, Ph.D. 1985) was an Associate Professor in the Division of Plant Sciences at the University of Missouri. Wayne grew up on a grain-livestock farm in west-central IL. His B.S. was in fisheries and wildlife biology. Wayne spent three years in Germany with the Army and three years teaching high school science before starting graduate school. His M.S. degree was in parasitology and his Ph.D. was in entomology.

Wayne arrived in Columbia, MO in 1985 and has served as the state Extension Specialist for forage and field crops with a 70% extension appointment. He also coordinated the IPM and Pesticide Applicator Training programs for the Division of Plant Sciences.

In addition, Wayne co-instructed a biological control course and had an insecticide efficacy evaluation program. His 30% research appointment included developing effective chemical and non-chemical control tactics in forage and field crops. He worked in several crop systems, like alfalfa, corn, sorghum, soybean and wheat.



Wayne Bailey



## Featured Alum: Jeff Bradshaw

**Dr. Jeff Bradshaw** (Ph.D. 2007) is an Associate Professor and Extension Specialist at the University of Nebraska-Lincoln.



*Jeff Bradshaw's Lab, 2015*

*Jeff writes:* It's been a fun and fruitful time out in the Nebraska Panhandle. I've been here since 2010, and have mentored five graduate students and four undergraduate students. These students from around the country and from abroad were pivotal in my being awarded tenure and promotion in 2014. Thanks to my students and my two technicians, I have an active research and extension program in various aspects of host plant resistance and applied ecology. I work with a diverse array of crops (e.g., sugar beet, sunflowers, wheat, potato, edible dry beans, etc.) and have started dabbling in rangeland ecology. In these crops and systems, we have been studying both pests and beneficial insects. The most recent work in preparation from a recent Ph.D. student in my program has shown a role for ground beetles in weed suppression

in sugar beets. Other exciting work includes the interactions of various cattle grazing practices and manure decomposition by dung beetles in the Nebraska Sandhills region – a gorgeous landscape in which to work.

Katie and I celebrated our 18th wedding anniversary this year, and we continue to help each other to not become over-consumed by work. One of Katie's blogs, Wyobraska Tandem, documents our tandem road-bike tours, one of the hobbies we picked up since moving to western NE (<https://wyobraskatandem.wordpress.com/>). We have taken a roughly 400 mile or so trip somewhere in the Greater Yellowstone Ecosystem for the past four years. Riding a bicycle through some of the highest mountain passes in North America is exhilarating! We are really enjoying being just a couple hours from the mountains and the entomological explorations seem full of possibility.



*Katie and Jeff Bradshaw with their tandem bike.*

## Shapiro-Ilan Presents Nematode Seminar

**Dr. David Shapiro-Ilan** (Ph.D. 1994) is research entomologist with the Fruit and Nut Research Lab, USDA-ARS in Byron, GA. David visited campus on June 4, 2015 with his family and presented a seminar on the use of entomopathogenic nematodes in biocontrol. He covered a broad range of aspects including approaches for improvement of nematodes, genetics and application in addition to nematode-associated bacteria as a source of novel compounds including antibiotics. Even after 20 years, David felt quite at home in the Genetics Lab conference room having completed his Ph.D. under **Dr. Les Lewis**.



*David Shapiro-Ilan and family Laura, Amitai, and Teva.*

## Blazek Has Career with Iowa National Guard

*Melinda (Thede) Blazek writes:* When I graduated with a B.S. in 2007 from ISU, I never thought that I would end up working full time for the Iowa National Guard. It certainly wasn't part of my plan for life after college. I did want to work for the U.S.



*Melinda Blazek*

Army, but as an entomologist. But fate had other plans and I ended up staying in Iowa. This led me to eventually serving in a unit out of Camp Dodge in Johnston, IA.

The unit received an alert notice for possible deployment in late 2011, and we went on federal orders at Fort Hood, TX in August 2012. When we were certified by 1st Army at Fort Hood, we loaded a plane for a base called Manas, near Bishkek, Kyrgyzstan. After a short stay, we landed near Mazar-i-Sharif, Afghanistan. We were a command and control unit, with units underneath us. One of the units was a signal company out of Fort Riley, KS. The company commander made it to our base about once a week, and I met him a few times. After being there for a few months, my first sergeant made the remark that the captain had graduated from ISU with an entomology degree. I hadn't put two and two together before that, but the light clicked on when he told me that. The commander's name? **Oliver Highley** (B.S. 2004). What were the chances that two entomology graduates at ISU would end up in the same place, at the same time, half a world away? Pretty slim! We talked briefly about our common history, and eventually CPT Highley returned to the U.S. when his time was up in Afghanistan. I finished out my tour and returned to my family and career here in Iowa.

Another aspect of deployment that those in the entomology community would appreciate is the fact that you get to see insects from another part of the world, as opposed to seeing a preserved specimen or reading about them in a textbook. It was no secret to my unit that I have a degree in entomology. My fellow soldiers eventually grew to enjoy bringing me all sorts of insects they had caught or killed for me to identify. I wish I could remember all of the species I got to see

firsthand, but sadly too much time has passed and Army knowledge has taken its place. One species I do remember vividly. I always enjoyed hearing about dung beetles in my studies, but I was upset that I would never get to see a live one. Little did I know that I would get to see more than one while serving my country. You see, there is no such thing as indoor plumbing on a temporary base. All sewage goes into holding tanks, which are then cleaned out by pumper trucks. One of these tanks near our tents ended up cracked, and it had to be replaced. In the process of rolling it to the road, some waste spilled on the ground.

There were dung beetles there in a matter of hours. I was working when that happened, but my comrades knew I would be delighted to hear about it. I actually got to see a dung beetle roll a dung ball across the rocks. It was pretty cool. I have a video of it. Imagine a soldier, with her camera, standing in a ditch, taking a video of an insect rolling poop. Yep, it was exactly how you pictured it.



*Dung beetle in action.*

It's moments like this that make me sad that my degree is simply a piece of paper anymore, and I don't get to study what I love. But at the same time, I know that I am working for a greater purpose in my line of work. And that makes it ok with me.

*Continued front page*

habitat might also fit in with some of the nutrient reduction strategies (e.g., nitrates), such as bio-reactors or saturated buffer zones, which usually are planted in brome grass.

The team is identifying ISU Research and Demonstration Farms around the state to examine critical habitat needs for monarch butterfly. Studies will determine the best growing conditions for monarchs and acquaint producers and the public with the different milkweed species. Collaborations with Luther College, Central College, and Marshalltown and Grundy Center High Schools have established demonstration plots on those campuses.



## Featured Post Doc: Adam Dolezal

**Dr. Adam Dolezal** has been a Postdoc working on honey bee health in the **Dr. Amy Toth's** lab since 2012. During this time, he has been able to take advantage of the collaborative atmosphere at ISU to also work with multiple other faculty, including **Drs. Bryony Bonning** and **Matt O'Neal** from Entomology. His main research interests are studying how different types of stress interact to affect the health of honey and native bees. After completing a B.S. in Integrative Biology at the University of Illinois Urbana-Champaign, Adam studied how changes in hormone and reproductive physiology regulated behavioral changes in harvester ants for his doctoral research at Arizona State University with Gro Amdam. Everyone else in the Amdam lab, however, worked on bees, which gave him ample opportunity to collaborate on projects studying honey bee development, physiology, and behavior.

Since joining the Toth lab at ISU, he has investigated how honey bee health is affected by stress from nutrition, virus infection, and pesticide exposure. During this time, Adam has been co-PI on several successful grants from the North American Pollinator Protection Campaign, the Center for Global and Regional Environmental Research, the Leopold Center for Sustainable Agriculture, and the United Soybean Board. Through these opportunities, he has been able to work on a diverse group of projects studying honey bee stress at multiple levels – from the individual to the landscape. Among other findings, his work has shown how poor nutrition, in



*Adam Dolezal*

the form of reduced pollen diversity, can influence honey bee virus susceptibility.

In the future, Adam hopes to continue studying how honey bees respond to stress from their environment, particularly studying how the landscape bees live in affects their health. In addition to research, he enjoys cooking, hiking, road trips, and spending time with his wife, Kelly, and their daughter, Helen.

## Poston Retires from Michigan State

**Dr. Fred Poston** (M.S. 1973, Ph.D. 1975) retired from Michigan State University and most recently served as Dean of the College of Agriculture and Natural Resources (CANR). Fred had research, teaching and outreach programs at MSU and worked collaboratively with AgBioResearch and MSU Extension. He served as Vice President for finance and operations at MSU from 1999 to his appointment as Dean in 2013 where he guided the Revitalization of Michigan Animal Agriculture Initiative and Project GREEN (Generating Research and Extension to meet Economic and Environmental Needs). Before his appointment as VP, Poston served as CANR Dean for eight years. He was Director of Washington State Universi-

ty's Cooperative Extension Service and Associate Dean of agriculture and home economics, and on the entomology faculty at Kansas Cooperative Extension Service before arriving at MSU. He is a native of Florida and received his B.S. from West Texas State University. Fred received both graduate degrees with **Dr. Larry Pedigo**.



*Fred Poston*

## Mullin Gives Dahm Lecture for 2015



*Joel Coats and Chris Mullin*

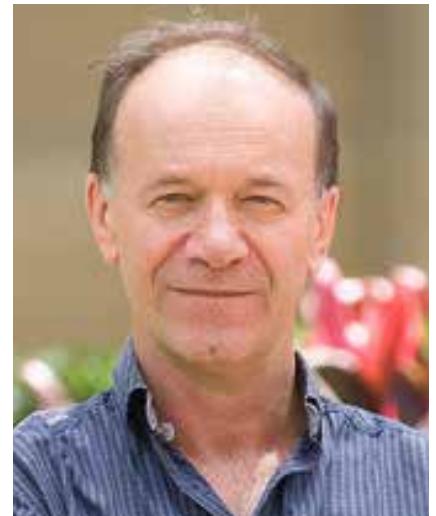
The 24th Annual Dr. Paul A. Dahm Memorial Lecture (see page 22) was given by Dr. Chris Mullin on April 20, 2015. The title of his very enlightening lecture was “The Formulation Makes the Poison.” Dr. Mullin is Professor of Entomology and Director of the Center for Chemical Ecology at Pennsylvania State University. He earned his B.S. from Lehigh University and his Ph.D. from Cornell University. His research interests extend from chemical ecology and ecological applications to pollinator biology, health and ecology. His current research is centered on the role of pesticides and other agrochemicals in honey bee Colony Collapse Disorder and overall pollinator decline. He has published some high-profile articles, including the definitive one on the pesticide residues in bee hives (DOI: 10.1371/journal.pone.0009754). He is currently leading a project on pesticide formulation adjuvants in hives and their potential impact on the bees.

## Zalucki Talks about Monarch Extinction

Dr. Myron Zalucki, Professor, School of Biological Sciences at The University of Queensland, visited ISU campus and gave a seminar on November 9, 2015. His presentation was titled, “Will Monarchs go extinct? - the view from down under.” He talked about the steady decline of monarchs in North America over the last 20 years. The likely threatening processes are deterioration of overwintering sites, climate effects on spring-summer breeding success and landscape level changes in core breeding range; the latter overlaps with corn-soybean production areas in North America.

The evidence for climate change effects on spring-summer breeding success are at best weak and overwintering site deterioration has been arrested if not reversed. Changes in the agricultural landscapes have been dramatic, due to widespread adoption of genetically modified corn and soybean that are resistant to herbicides and has resulted in the decimation of milkweed hosts over large areas. The decline in milkweed resources can have a dramatic effect on monarch egg laying. Myron’s Lab developed various models to describe host-seeking behavior over the lifetime of a monarch butterfly, which utilizes hosts both aggregated in patches and scattered across the wider landscape as a substrate for lay-

ing eggs. Essentially the extirpation of milkweed has potentially reduced egg laying by up to 30% in monarchs. Although the North American monarch population has been seriously, Zalucki emphasized that monarch butterflies will not go extinct.



*Myron Zalucki*

### ***Did you know?***

Some of our departmental seminars are recorded and posted online on our departmental YouTube Channel. Anyone can watch the videos free of charge from a computer or tablet. Visit the ISU Entomology seminar website [www.youtube.com/user/iowastateentomology](http://www.youtube.com/user/iowastateentomology), to see the topics and speakers.



## Reisig Presents 2015 Gunderson Lecture



*Dominic Reisig*

The 2015 Dr. Harold Gunderson Memorial Lecture was presented by Dr. Dominic Reisig on September 21, 2015. His title was "Field crop insect pest management resulting from the widespread use of Bt." Dominic received his B.S. in Biology from Point Loma Nazarene University in San Diego, CA (2002); and M.S. in Integrated Pest Management (2005) and Ph.D. in Entomology (2009) from the University of California, Davis. He is an Associate Professor and Extension Specialist in the Department of Entomology at North Carolina State University with statewide extension responsibilities in field crops (i.e., soybean, corn, cotton and small grains). His extension program is focused on training stakeholders with traditional in-person delivery and newer electronic methods, such as social media. His research program centers on Bt and the ecology of *Helicoverpa* pests. Learn more about Dr. Reisig's extension and research efforts, including publications and blog posts, at his NCSU departmental website ([www.cals.ncsu.edu/entomology/reisig](http://www.cals.ncsu.edu/entomology/reisig)) or via twitter (@DominicDReisig).

## Gammon Speaks on Insect Viruses

Dr. Don Gammon, RNA Therapeutics Institute at University of Massachusetts Medical School, presented a seminar on October 19 on "Abortive infections provide new approaches to exploring virus-host interactions." Don also gave a guest presentation in Dr. Bryony Bonning's Virus-Insect Interactions class during his visit to ISU. Don is a postdoctoral researcher in Dr. Craig C. Mello's lab, who along with Andrew Fire received the Nobel Prize in Physiology or Medicine for 2006, for their discovery of RNA interference. RNA interference is a mechanism by which the translation of messenger RNA can be regulated. So what is Don who is interested in viruses doing in an RNA interference lab? Don is looking at mechanisms by which viruses suppress the host immune system, including the RNA interference pathway which also functions to degrade the foreign double-stranded RNA produced by viruses. Don's project, which includes the use of gypsy moth viruses and cell lines, has combined his interest in curbing the spread of invasive species in North American ecosystems with his passion for virology. Don's research is providing new insights into the mechanisms by which lepidop-



*Don Gammon*

terans combat virus infection with the hope of developing more effective, virus-based strategies for the management of gypsy moth populations in North American hardwood forests.

### EGSO Sponsors Spencer Seminar

As a part of the entomology department's seminar series for 2014-2015, the Entomology Graduate Student Organization (EGSO) invited Dr. Joseph Spencer from the Illinois Natural History Survey. EGSO president Eric Clifton had the honor of introducing Dr. Spencer's seminar and chaperoning his campus visit. Joseph completed his B.S., M.S. and Ph.D. degrees at Michigan State University. Since moving to Illinois in 1996, Dr. Spencer has spent a great deal of time observing corn rootworm behavior in both corn fields and soybean fields. The seminar included results from studies on rotation resistance and movement of rootworm beetles throughout Bt corn fields.

Aside from his enjoyable seminar talk, Dr. Spencer met with graduate students and faculty to share his stories of graduate school and present work. Joseph kindly gifted a few of his infamous rootworm t-shirts to the graduate students before driving back to Champaign!



*Joe Spencer*

### EGSO Lose to Faculty (Yet Again)

The Entomology Graduate Student Organization (EGSO) has a new crop of officers for the 2015-2016 school year. President **Kenneth Masloski**, Vice President **Coy St. Clair III**, Treasurer **Edmund Norris**, Secretary **Shunji Li**, and Graduate and Professional Student Senate representative **Shelby Pritchard** hope to make this year exciting and beneficial to the development of our graduate students.

Reiman Gardens hosted the EGSO's annual Insect Film Festival/Movie Night on October 15, 2015. Graduate students served as docents for the Christina Reiman Butterfly Wing, allowing visitors to experience and observe the hundreds of living butterflies on display. The craft table was as popular as ever, allowing children young and old alike to get creative with insect-themed crafts. ISU's Insect Zoo was also represented, with several displays of living and preserved arthropod specimens available for viewing. Viewings of the movies "A Bug's Life" and "Tarantula" were held; showing insect-related movies is becoming a tradition that attracts more attention to this wonderful event.

February marked an important annual event for the EGSO: the students vs. faculty bowling competition at the Memorial Union. The faculty



*EGSO display at the Film Festival.*

won again in 2015, and hopefully the students can claim victory next year. EGSO is also beginning to train for the Linnaean Games, to be held at the ESA North Central Branch Meeting in Cleveland, OH in June 2016.



## Graduations

Two undergraduate students completed B.S. Insect Science degrees in 2015: **Kristin Bernhardt** and **Drake Falcon**.

**Benjamin Deist** received his M.S. in Microbiology with Dr. Bryony Bonning in the spring of 2015. His dissertation was titled "Engineering Cry4Aa for toxicity against the soybean aphid, *Aphis glycines* Matsumura." Ben is an Applications Scientist with Advanced Analytical in Ankeny, IA.

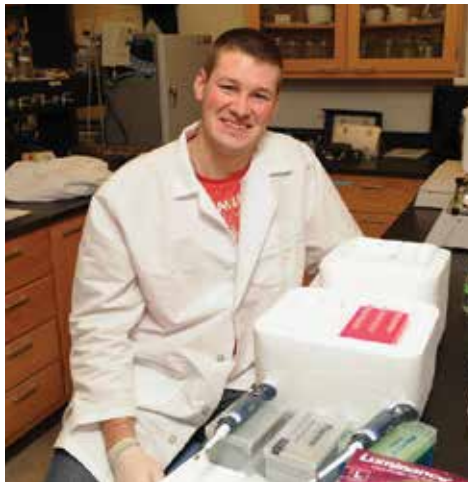
**Adam Varenhorst** received his Ph.D. in Entomology with Dr. Matt O'Neal in the spring of 2015. His dissertation was titled "Beyond biotypes: *Aphis glycines* (Hemiptera: Aphididae)

biology and the durability of aphid-resistant soybean." Adam is currently an Extension Entomology Specialist at South Dakota State University in Brookings, SD.

**Vurtice (Vic) Albright III** received his Ph.D. in Toxicology and minor in Entomology with Dr. Joel Coats in the summer of 2015. Vic's dissertation was titled "Biological validation of ELISA results for the detection of Cry proteins." Vic is currently a Lead Environmental Chemistry Specialist with the Toxicology and Environmental Research and Consulting group with Dow Chemical Company in Midland, MI.



Adam Varenhorst



Benjamin Deist



Rick Hellmich, Vic Albright, and Joel Coats

## Undergrad Club Busy in 2015

The ISU Entomology Undergraduate Club participated in several social and learning activities this year. The club visited with **Nathan Brockman** (B.S. 2000), Curator of the Christina Reiman Butterfly Wing at Reiman Gardens to see the mass production of butterflies. They are also involved with the Engineers for a Sustainable World Club, and plan to host a public event on February 27-28, 2016 at the Memorial Union where participants can make their own "hotels" for solitary bees. The students in the Club are taking initiative to establish recycling bins in Horticulture Hall so that students and staff are able to recycle different items.

Current officers for the Club include President **Ja'Von Latimore**, Vice President and Secretary **Taylor Best**, and Treasurer **Caitlyn Clemmer**.



Nathan Brockman and the Club at Reiman Gardens.

## ISU Student Awards Announced at Holiday Party

In December at the Holiday Party, the following student scholarships and grants were presented by the Awards Committee:

The Entomology Alumni Scholarship for undergraduates or graduates in entomology was presented to **Mike Dunbar**. This \$1,500 scholarship was awarded based on promise for a career in entomology. Mike is co-advised by Drs. Aaron Gassmann and Matt O'Neal. Read more about Mike on page 18.



*Jim Olesen and Eric Clifton*

The Henry and Sylvia Richardson Research Incentive Grant was awarded to **Mariah Kemmerer** for her research proposal, "Identification of surface receptors for proteins that transcytose across the fall armyworm gut epithelium." This grant provides \$2,500 towards a research experience beyond those available in the student's degree program. Mariah is supervised by Dr. Bryony Bonning.



*Bryony Bonning presenting student awards.*

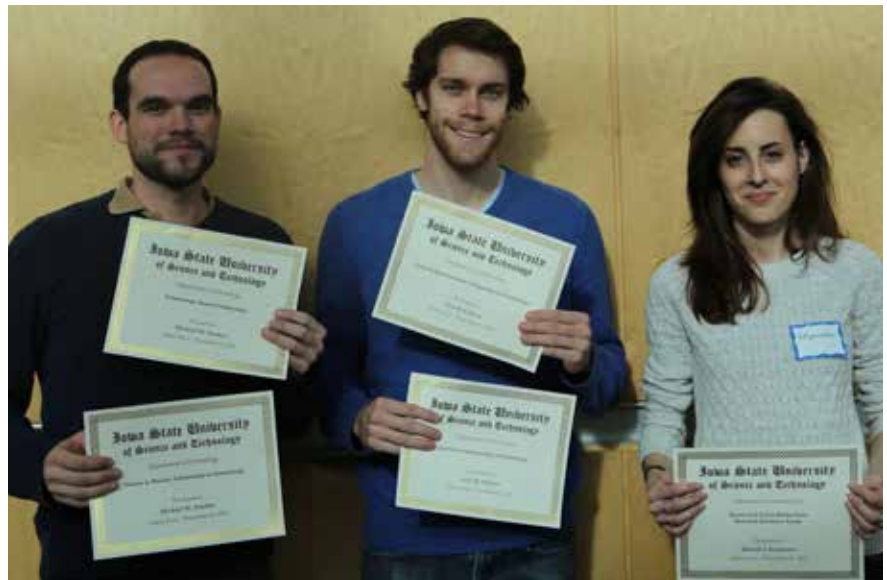
The Jean L. Laffoon Memorial Scholarship was presented to **R. Isaí Madriz-Villanueva**. This scholarship was established in 2012 in memory of Dr. Laffoon, who was a systematist and faculty member in entomology from 1946–1973. Isai is mentored by Greg Courtney (see page 19).

The Larry Pedigo Graduate Scholarship in Entomology was awarded to **Eric Clifton**. This scholarship, established to honor the many contributions of Larry Pedigo to the department and college, recognizes scholarly performance. Eric is co-advised by Drs. Aaron Gassmann and Erin Hodgson.

The Wayne A. Rowley Scholarship in Entomology was awarded to **Mike Dunbar**. This scholarship acknowledges students with preference given to applicants concentrating on medical entomology.

The Jim Olesen Scholarship in Entomology, which recognizes students who demonstrate academic promise and initiative, was awarded to **Eric Clifton**.

Two graduate students won ISU Teaching Excellence Awards in 2015. **Adam Varenhorst**, advised by Dr. Matt O'Neal, and **R. Isai Madriz-Villanueva**, advised by Dr. Greg Courtney. The purpose of this award is to recognize and encourage outstanding achievement by graduate students in teaching. The intent is to recognize the top 10 percent of the graduate students involved in teaching each year.



*Mike Dunbar, Eric Clifton, and Mariah Kemmerer*



## Student Presentation Awards

At the 2015 ESA North Central Branch meeting in June (Manhattan, KS), many ISU students participated in the paper and poster competition, including the following winning presentations:

**Mike Dunbar**, third place for a P-IE Session Ph.D. paper "The effects of crop rotation and Bt corn on root injury and adult abundance of western corn rootworm." Mike is co-advised by Aaron Gassmann and Matt O'Neal.

**Vurtice (Vic) Albright III**, third place for PBT Session Ph.D. paper "Biological validation of enzyme-linked immunosorbent assays for detection of Cry proteins in the environment." Vic is advised by Joel Coats.

**Eric Clifton**, first place for P-IE Session Ph.D. poster "Managing two soybean pests to optimize yield." Eric is co-advised by Aaron Gassmann and Erin Hodgson.



*Ashley St. Clair and daughter, Eva*

**Mike Dunbar** received first place for his presentation, "Increased risk of insect injury to corn with rye cover" at the 2015 Corn Cropping Systems Coordinated Agricultural Project in Nebraska City, NE. Mike also won the "People's Choice" award in the 3-minute thesis section of the 2nd Annual Graduate and Professional Research Conference at ISU. His presentation was "Effect of crop management on root injury and adult abundance of western corn rootworm."



*Sue Blodgett welcoming the department to the 2015 Holiday Party and student award ceremony.*

At the 2015 National ESA meeting (Minneapolis, MN) in November, three ISU students received paper competition prizes:

**Teresa Blader**, first place for P-IE poster Session "Does density of host plant (*Asclepias syriaca*) influence monarch butterfly (*Danaus plexippus*) oviposition?" Teresa is co-advised by Drs. Steve Bradbury and Sue Blodgett.

**Mike Dunbar**, second place for P-IE paper Session "The effects of crop rotation on western corn rootworm adult abundance, root injury, and Bt resistance. "



*Ariel Blackman and Donald Lewis*



*Sijun Liu*

## Featured Graduate Student: Mike Dunbar

Mike Dunbar grew up on the eastern shore of Maryland, where he spent most of his time canoeing, sailing and crabbing. Mike attended the University of Maryland, Baltimore County where he studied aquatic ecology and music and in 2006 earned a B.S. in environmental science. While at UMBC, he worked with Christopher Swan to study the interaction between Bt corn leaf litter and invertebrate communities in head-water streams. After graduation, Mike worked as a geologist for the Maryland Geological Survey in Baltimore and interned as a range specialist for the Bureau of Land Management in northern California.

In 2008, Mike joined ISU and Dr. Aaron Gassmann's lab. He studied rotation-resistant western and northern corn rootworm and completed an M.S. in ecology and evolutionary biology. Mike began his Ph.D. in 2011 with Drs. Matthew O'Neal and Aaron Gassmann studying how two farming practices, the addition of a rye cover crop and the use of extended rotations, interact with key pest and beneficial arthropods.

Mike's future career interests are to continue applied research focusing on how Integrated Pest Management and Insect Resistant Management tactics can be combined to mitigate insect injury that impacts human health and agriculture.



Mike Dunbar

Outside of work, Mike's primary interest is Taco Bell, which comprises 72.4% ( $\pm 8.3\%$ ) of his daily caloric intake. In ten years' time, Mike hopes to be both alive and in relatively easy commuting distance to both an ocean and a Taco Bell, and yes, also still working with insects.

## Nan-Yao Su Award Recipients meet at ESA



Drs. Walter S. Leal and Anthony A. James organized a program symposium, titled "How Synergy in Science Led to Innovation," at the 2015 Annual ESA meeting in Minneapolis, MN to honor Dr. Nan-Yao Su. Dr. Su established an endowment for the Nan-Yao Su Award for Innovation and Creativity. Shown in the photo (L to R) are recipients who presented in the symposium: Walter Leal, UC Davis (2011); Zeyaur Khan, ICIPE (2010); Nan-Yao Su, University of Florida; Anthony James, UC Irvine (2009); **Bryony Bonning** (2013); and Bruce Tabashnik, University of Arizona (2015).



## Madriz Uses Richardson Grant in Chile

R. Isaí Madriz-Villanueva received the Henry and Sylvia Richardson Research Incentive Grant in 2014. He collaborated with adviser **Dr. Greg Courtney** and Anna Astorga to develop a research project called “Southern Chilean streams in old growth temperate forests as a reference for watershed management: relative importance for maintaining biodiversity, ecosystem function and ecosystem services.”

Madriz and the group will evaluate aquatic biodiversity, functional diversity and ecosystem function of streams in old growth forested catchments, compared to nearby systems with significant land use in the Aysén Region of southern Chile. This includes describing the structure of biodiversity of streams in old-growth forests with species richness, species composition, evenness, functional diversity, and occupancy-frequency distributions. Madriz will lead the Diptera collection and identification of this project.

The major funding source for this three-year project includes the government of Chile: Fondo Nacional de Desarrollo Científico y Tecnológico (FONDECYT). In addition to ISU, other collaborative institutions are: Institute of Ecology and Biodiversity, University of Vermont, Centro de Investigación de Ecosistemas de la Patagonia, and participants of the project SAFER (Sensing the Americas’ Freshwater Ecosystem Risk) from Climate Change.



*Isaí Madriz-Villanueva*



*Isaí Madriz-Villanueva collecting in Chile.*



*Isaí Madriz-Villanueva sampling Chilean streams.*

## Opportunities to Contribute to Entomology

The Department of Entomology at Iowa State University is increasingly dependent upon the generosity of alumni and friends. To support the department, please fill out this section and return it with your check or money order (made out to The ISU Foundation) to the Department of Entomology, Iowa State University, 124 Science II, 2310 Pammel Drive, Ames, IA 50011-1013. Alternatively, donations can be made online at [www.foundation.iastate.edu](http://www.foundation.iastate.edu).

My support this year is in the amount of \_\_\_\_\_

Please designate my gift to the area(s) in the amount(s) shown below:

- \_\_\_\_\_ Biosystematics Travel Fund for travel costs associated with biosystematics research
- \_\_\_\_\_ Bug Guide: an online resource for insect identification
- \_\_\_\_\_ Entomology Alumni Scholarship for scholarships
- \_\_\_\_\_ Entomology General Account
- \_\_\_\_\_ Entomology Memorial Fund for various expenses, including graduate student travel
- \_\_\_\_\_ Iowa State University Insect Zoo
- \_\_\_\_\_ Fred Clute Memorial Entomology Fund for general support for the Department of Entomology, including The Entomology Student Scholarship for Student Excellence
- \_\_\_\_\_ Jean L. Laffoon Memorial Scholarship for graduate students in Entomology
- \_\_\_\_\_ Jim Oleson Scholarship in Entomology for students who demonstrate academic promise
- \_\_\_\_\_ Larry Pedigo Graduate Scholarship in Entomology for scholarly performance
- \_\_\_\_\_ Henry and Sylvia Richardson Research Incentive Grant provides funding for graduate research experiences beyond their degree program
- \_\_\_\_\_ Wayne A. Rowley Scholarship in Entomology for graduate and undergraduate scholarships, with preference given to those with an interest in medical entomology

For more information about these funds, please contact us at the departmental address above or call 515.294.7400. For more information about other gift designations, please contact Ray Klein via phone: 515.294.3303 or e-mail: [rklein@iastate.edu](mailto:rklein@iastate.edu).





## Insect Zoo Continues to Reach Iowans

*Ginny Mitchell writes:* Didn't I just write one of these? Time has flown by this past year. But hey, like I always say, time flies when you are playing with bugs! The Insect Zoo started off the year with our annual appearance in Keokuk for Bald Eagle Appreciation Days. We spent three days showing off our arthropods to the area schools and community. The Insect Zoo students did a fantastic job in my absence (I was on maternity leave). We can't wait to return in 2016!

In March, we visited north Tama Elementary for their STEM expert day. We got to meet Lieutenant Governor Kim Reynolds and even convinced her that it was a good idea to touch Rosie, our Chilean rose hair tarantula. We love being apart of such a great program at North Tama.



*One of the 800 kids to visit the Bug Village in July.*

The end of July brought with it the Insect Zoo's annual trip to the Invertebrates in Education and Conservation Conference in Arizona. Three of the Insect Zoo students and myself tromped around the desert and attended many workshops and husbandry sessions and came back with lots of new knowledge!

I could go on and on about the doings of the Insect Zoo including some of our new animals, honey pot ants and giant leaf insects to name a few. I could also brag about our outreach numbers for 2015 of over 16,000 in the classroom and displays (add an additional 16,000 for what we saw at the Iowa State Fair) and an estimated 800 people at our first annual Bug Village in July.

I also need to thank the wonderful Insect Zoo students, Micaela Zagar, Josh Byrne, Ashley Reed, Jay Walsh, Kayla Cox, and Bo Rus. Micaela, Jay, and Kayla graduated and will be missed.



*Lt. Gov. Reynolds and Ginny Mitchell at North Tama Elementary.*

In August, we represented the Entomology Department at the Camp Cy exhibition for two days. I couldn't convince the Camp Cy organizers to allow us to serve chocolate covered bacon wrapped crickets on a stick...maybe next year.



*Ginny Mitchell showing off the honey bee observatory in Science II at the Bug Village.*



*Rosie the tarantula attracted a lot of attention at the Bug Village!*

## 2015 Arrivals and Departures

Dr. Bryony Bonning's Lab has three new members. **Sehiza Grosic** is a Research Associate working with Bt toxins for use against insect pests. She has a degree in Biology and Pre-Medical Illustration and previously worked for Dr. John Hill in Plant Pathology and Microbiology. **Dr. Sheng Yang** is a Postdoc who received his degree from University of Durham, UK. Sheng is working on Bt toxin modification for enhanced insecticidal activity. **Shunji Li** is a Ph.D. student working on viruses of honey bees. Shunji completed her MS degree at Hunan Agricultural University, PRC on the effect of *Heliothis virescens ascovirus 3h* on host development.

Dr. Aaron Gassmann's Lab has two new members: **Chris Blume** is a new Ph.D. student and **Josh Parsons** is a new M.S. student. He also had three members leave. **Sean Bradley** was a technician and now works as a veterinary technician near Iowa City, IA. **Dr. John Doudna** was a Postdoc and moved to Kalamazoo, MI with his family. **Dr. Siva Jakka** was a Postdoc and is now a Research Scientist with Valent in Leland, MS.

Dr. Matt O'Neal has two new graduate students in the lab. **Shelby Pritchard** is an M.S. student working on soybean aphid and **Ge Zhang** is a Ph.D. student studying bees in soybean.

**Dr. Ryan Smith** arrived in August (see cover page). He hired a Postdoc, **Dr. Hyeog Sun Kwon**, and a Ph.D. student, **Rebekah Reynolds**. **Teresa Blader** is a new M.S. student working with Drs.

Steve Bradbury and Sue Blodgett. **Dr. Raymond Moranz** was a Postdoc working for Sue Blodgett and worked for the summer of 2015. **Xiaoyi Dou** is a new Ph.D. student in the Jurenka Lab and will work on pheromone biosynthesis in moths. **Colin Wong** is a new student Ph.D. with Joel Coats. **Dr. Thelma Heidel-Baker** was a Postdoc in the Hodgson Lab, and is now working for the Xerces Society as an IPM Specialist.



*Dr. Paul A. Dahm at an insect day camp in 1952.*

## In Memoriam: Mary E. Cochran

*From the Ames Tribune website:* Mary E. Cochran, 91, of Fairfield, IA, passed away on September 3, 2015. She was born on March 8, 1924 in Omaha, NE to William and Rhoda Henry Nash. Mary was adopted at age 5 by Roscoe and Audrey McCleary. She grew up in Jefferson County and graduated from Fairfield High School in 1940 and attended Parsons College. In 1946, she married Harold Cochran in Fairfield, IA.

Mary and Harold farmed from 1946-1956. They moved to Fairfield in 1956 where she was an office employee at Iowa Malleable Iron Company, Jefferson County Hospital, and Parson College. Mary taught Sunday School and held offices with the PTA and American Legion before they moved to Ames in 1967. Mary worked at ISU from 1967-1998 in the offices of entomology, biology and

animal science. She was a member of the Collegiate United Methodist Church and a volunteer with American Red Cross.

Family includes a son, Randy Cochran, of Galesburg, IL; a daughter-in-law, Kathie Cochran, of Ft. Madison; and six grandchildren and five great grandchildren. She was preceded in death by her parents; husband; son, Alan Cochran; and a sister and brother.



*Mary Cochran*



## Dunphy Enters Popular Publishing

**Brendan Dunphy**, research associate, is now publishing not only in the primary literature but also in the popular realm. Brendan started hosting insect television shows for Discovery Communications in 2012, and, as their insect consultant, is now releasing educational animal books for children.

His first book, *Bugopedia*, was a follow-up to Discovery's encyclopedia series that included *Sharkopedia*, *Snakeopedia*, and *Dinopedia*. This book is a crash course on arthropod diversity with a focus on insects. The book was released in April, and Brendan attended a Barnes & Noble book signing in August in West Des Moines, IA.

Brendan acted as the consultant for all things invertebrate in *Animals: A Visual Encyclopedia*, which was released by Animal Planet in September. It has been rated 1 of Amazon's 20 Best

Books of 2015 in children's nonfiction. He is currently consulting on a third book.

Brendan's work in TV and publishing inspired the first-ever keynote speech, Blending Entomology and Entertainment, at March's Day of Insects (DOI), an annual insect natural history event held at Reiman Gardens. He will be returning to DOI in 2016 to share his adventures in creating natural history books tailored to children.



## Butin Promotes Forensics at ISU

**Beth Butin** (B.S. Entomology and IPM 1998) received an invitation from ISU Entomology to develop and teach an introductory forensic science course and a forensic entomology course. Beth began teaching the two courses at ISU during the fall of 2015 during her sabbatical leave. She will teach the two courses fully online for ISU beginning the spring of 2016.

After graduation, Beth moved down to Orlando, FL and completed an Advanced Internship with Walt Disney World where she was the entomology intern at The Land in Epcot. Beth met her future husband, Steve, while working for WDW. Steve grew up in New England and invited Beth to move up north with him. She wasn't ready to return to Iowa and knew Florida was not for her.

When they moved to MA, she completed her M.S. in Entomology at UMass, Amherst in 2003. As a graduate student, Beth began teaching courses at UMass and Holyoke Community College (HCC). These experiences were so rich and rewarding, that Beth knew she wanted to teach.

After a stint as an adjunct faculty member at HCC, Beth was hired as the COPS Grant Manager at HCC. As the grant manager, she developed the Forensic Science Program curriculum and courses, and later became the lone faculty member and department chair of the program at HCC. The first two courses Beth developed and taught were Introduction to Forensic Science



*Beth Butin*

and Forensic DNA Analysis. However, she was aching to get back to her entomology roots, so she eventually developed the Insects and Forensics course. After Beth became tenured at HCC, she was eligible for sabbatical leave.

## Selected Publications from 2015

- Andow, DA, SG Pueppke, AW Schaafsma, AJ Gassmann, TW Sappington, LJ Meinke, PD Mitchell, TM Hurley, RL Hellmich, and RP Porter. 2015. Forum: Early detection and mitigation of resistance to Bt maize by western corn rootworm (Coleoptera: Chrysomelidae). *Journal of Economic Entomology* DOI: 10.1093/jee/tov238.
- Berens, AJ, JH Hunt, and AL Toth. 2015. Comparative transcriptomics of convergent evolution: different genes but conserved pathways underlie caste phenotypes across lineages of eusocial insects. *Molecular Biology and Evolution*. 32: 690-703.
- Chen, Y, S Liu, and BC Bonning. 2015. Genome sequence of a novel iflavirus from the leafhopper, *Graminella nigrifons*. *Genome Announcements* 3: e00323-15.
- Clifton, EC, ST Jaronski, EW Hodgson, and AG Gassmann. 2015. Abundance of soil-borne entomopathogenic fungi in organic and conventional fields in the Midwestern USA with an emphasis on the effect of herbicides and fungicides on fungal persistence. *PLOS ONE* DOI: 10.1371/journal.pone.0133613.
- Coates, BS. 2015. Horizontal transfer of a non-autonomous Helitron among insect and viral genomes. *BMC Genomics* 16: 137.
- Coates, BS, and BD Siegfried. 2015. Linkage of an ABC transporter to a single QTL that controls *Ostrinia nubilalis* larval resistance to the *Bacillus thuringiensis* Cry1Fa toxin. *Insect Biochemistry and Molecular Biology* 63: 86-96.
- Courtney, GW. 2015. A new genus and species of net-winged midge from Madagascar (Diptera: Blephariceridae). *Zootaxa* 4052: 107-116.
- Courtney, GW, and PS Cranston. 2015. Section VI: Phylum Arthropoda. Chapter 40: Order Diptera, pp. 1043-1058. *In* JH Thorp and DC Rogers (eds.), Thorp and Covich's Freshwater Invertebrates, Vol. I: Ecology and General Biology. Academic Press, London, UK.
- Gill, KA, and ME O'Neal. 2015. Survey of soybean insect pollinators: community identification and sampling method analysis. *Environmental Entomology* DOI: org/10.1093/ee/nvv001.
- Gross, AD, KB Temeyer, TA Day, AA Perez de Leon, MJ Kimber, and JR Coats. 2015. Pharmacological characterization of a tyramine receptor from the southern cattle tick, *Rhipicephalus (Boophilus) microplus*. *Insect Biochemistry and Molecular Biology* 63: 47-53.
- Hoffmann, AM, BW French, RL Hellmich, N Lauter, and AJ Gassmann. 2015. Fitness costs of resistance to Cry3Bb1 maize by western corn rootworm. *Journal of Applied Entomology* 139: 403-415.
- Ingber, DA, and AJ Gassmann. 2015. Inheritance and fitness costs of resistance to Cry3Bb1 corn by western corn rootworm (Coleoptera: Chrysomelidae). *Journal of Economic Entomology* 108: 2421-2432.
- Jurenka, R. 2015. The PRXamide neuropeptide signalling system: conserved in animals. *Advances in Insect Physiology* 49: 123-170.
- Linz, LB, S Liu, NP Chougule, and BC Bonning. 2015. *In vitro* evidence supports membrane alanine aminopeptidase N as a receptor for a plant virus in the pea aphid vector. *Journal of Virology* DOI: 10.1128/JVI.01479-15.
- Marshall, SA, and GW Courtney. 2015. Diptera, pp. 210-227. *In* C. Griffiths (ed.), Field guide to freshwater life in Southern Africa. Penguin Random House / Struik (Field Guide Series), Cape Town, South Africa.
- Norris, EJ, AD Gross, BM Dunphy, S Bessette, LC Bartholomay, and JR Coats. 2015. Comparison of the insecticidal characteristics of commercially available plant essential oils against *Aedes aegypti* and *Anopheles gambiae* (Diptera: Culicidae). *Journal of Medical Entomology* DOI: 10.1093/jme/tjv090.



Rehan, SM, and AL Toth. 2015. Climbing the social ladder: the molecular evolution of sociality. *Trends in Ecology and Evolution* 30: 426-433.

Smith RC, C Barillas-Mury, and M Jacobs-Lorena. 2015. Hemocyte differentiation mediates the late-phase immune response against *Plasmodium* in *Anopheles gambiae*. *Proceedings of the National Academy of Sciences USA* DOI: 10.1073/pnas.1420078112.

Steele, LD, BS Coates, CV Quiros, W Sun, KM Seong, B Muir, JM Clark, and BR Pittendrigh. 2015. Selective sweep analysis in the genomes of the 91-R and 91-C *Drosophila melanogaster* strains reveals few of the 'usual suspects' in Dichlorodiphenyltrichloroethane (DDT) resistance. *PLOS ONE* DOI: 10.1371/journal.pone.0123066

Varenhorst, AJ, MT McCarville, and ME O'Neal. 2015. Reduced fitness of virulent *Aphis glycines* (Hemiptera: Aphididae) biotypes may influence the longevity of resistance genes in soybean. *PLOS ONE* DOI: 10.1371/journal.pone.0138252.

Worthington, AM, RA Jurenka, and CD Kelly. 2015. Mating for male-derived prostaglandin: a functional explanation for the increased fecundity of mated female crickets. *Journal of Experimental Biology* 218: 2720-2727.

*Continued front page*

and their respective functions as determinants of malaria transmission.

Prior to these experiences in mosquito immunity, Ryan's interests in mosquito biology first started in graduate school at the University of California, Riverside where he earned his Ph.D. in Cell, Molecular, and Developmental Biology. His dissertation focused on the applications of mosquito transgenesis using transposable elements for the purposes of mosquito control strategies. Mosquito genetics will continue to be a major component of Ryan's research program.

Beginning in the Spring semester, Ryan will be teaching "Insects and Our Health" and the graduate level medical entomology course. He is excited to share his passion for vector biology and is looking forward to engaging with students in the classroom. In addition, Ryan is taking over supervision of the long-running mosquito sur-



Adam Varenhorst's picture of a honey bee made the cover of *Environmental Entomology* for June 2015.



*Anopheles gambiae*. Photo by James Gathany, CDC. surveillance program at ISU in collaboration with the Iowa Department of Public Health and local county health departments.

## What Was Your Entomology Inspiration?

*Dr. Mark Shour writes:* My entomology inspiration started with bugs at Boy Scout camp in high school, was re-inspired by an elective biology class during undergraduate program, and cemented while working on a master's degree...

During high school, I served as a counselor for Nature merit badges at a Boy Scout camp in southern Missouri. Although my assignments involved teaching Nature, Geology, and Astronomy merit badge classes, I was interested in the Insect Life merit badge and learned a great deal from its counselor, **Marlin Rice**.

After graduation, I chose to attend Central Missouri State University, Warrensburg, MO, and enrolled in the Pre-Medical program. The biology major and chemistry minor classes for premed students were intense, and I spent most of my 'life' in the books, in lectures, or preparing for tests. During my Junior year, I decided to take a biology elective class in entomology. The instructor [Bill Peck, Arachnologist] wanted students to get outside and make an insect collection, in addition to the traditional classwork. What a difference one class made – I became fascinated with these little micro-machines and marveled at the diversity of structures, colors, and role in ecosystems. To think – I was 'in class' while looking for bugs outside! And, I should mention that another biology student was being mentored by Dr. Peck, named Marlin Rice...

I took a Field Natural History Class with Dr. Peck during my senior year and THE entomology 'bug' bit me. I couldn't get enough of learning about insects. Yes, I finished my undergraduate program and was accepted into med school in Missouri, but I decided I'd had enough of intense studying and the rigors of premed students. How could I continue to follow that path for another 6-8 years?? Instead, I applied to graduate school at the University of Arizona in the Department of Entomology.

While studying under Dr. Larry Crowder (Insect Physiologist, Insecticide Toxicologist), I finished my master's project on the effect of pyrethroid insecticides on the green lacewing. Insect taxonomy (Floyd Werner) and insect morphology (Bill Nutting) were my favorite two courses at U of AZ. It was in AZ that I learned how to black-light for insects, and I spent many a weekend at a church cabin marveling at the sound of scarabs flying into the glowing white sheet. The insect



*Mark Shour*

collection I started as an undergraduate greatly expanded while in Arizona. And some of the new specimens came from Marlin Rice (at University of Missouri) as we swapped pinned insects via US mail.

The pursuit of Entomology then took me to Louisiana State University, working for Dr. Thomas Sparks, who conducted insect hormone research on *Manduca sexta*, and insecticide assays on a variety of lepidopteran pests. Dr. Abe Oliver at LSU taught an Insect Pests of Horticultural Crops course, which I took and this course helped further define the area of Entomology to pursue. Then to Purdue University to work on a doctorate under Dr. Donald Schuder with emphases on Insects of Ornamentals and Household/Structural pests. To Boston, Massachusetts, to manage a Landscape Integrated Pest Management program for a tree company, and eventually (with a couple of non-entomological job stops in between) to Iowa State University to work in Pesticide Safety Education in the Entomology Department.

Amazing how a few, well taught courses can change your career goals!



## Photos From the 2015 ISU Mixer at ESA



*Steve Bradbury, Larry Von Kaster, Phil Mulder, and Barb Ogg*



*Laura Weiser Erlandson looking at the poster of graduates .*



*Jon Oliver and Russ Jurenka*



*Katie and Jeff Bradshaw, Clint Pilcher, and Marlin Rice*



*Scott Hutchins and Mike Grey*



*Phil Mulder and Bill Showers*



*Rick Hellmich, Bill Showers, John Westbrook, and Alton Sparks*



*Susan Moser, Rayda Krell and Yong-Lak Park*



## Photos From the 2015 ISU Mixer at ESA



*Barb Ogg and Bill Showers*



*Allan Felsot and Kevin Steffey*



*Laura Jesse, Rachel Binning, and Rayda Krell*



*Donald Lewis and Tom Turpin*



*Keri Carstens, Paula Davis, and Sue Blodgett*



*Mike Grey, Carla Tollefson, Ken Ostlie, and Jon Tollefson*



*Jon Oliver, John VanDyk, and Laura Jesse*



*Stu Weiss, Diane Debinski, Audrey McCombs, Karin Jokela, and Amy Toth*