

Bugged

FROM
MSU DEPARTMENT
OF ENTOMOLOGY

Fall 2013



Photo: Dave Cappaert, Bugwood.org

FROM THE CHAIR

Fall is in full swing on the MSU campus! The students are back, the leaves are turning, Michigan is harvesting a record apple crop, and the Spartan football team has a winning record. What more could one ask for? There is also a sense of positive energy in the Department of Entomology as we welcome new students, staff and faculty, and bid farewell to recent graduates and retirees.

After nearly 40 years at MSU, **Dr. Rich Merritt** retired as aquatic entomologist in August to pursue his other passions: fishing and spending time with Pam. In September, over 170 former students, colleagues and friends gathered at the MSU University Club to celebrate Rich's career

and contributions to his discipline. Having literally written THE book on "Aquatic Entomology" and served as primary adviser to more than 40 graduate students now in positions across the country and around the world, Rich's legacy is assured.

We are also pleased to announce the hiring of our new aquatic ecosystems entomologist **Dr. Eric Benbow**. Eric comes to us from the University of Dayton, but is no stranger, having previously served as a post-doc in Rich's lab and held a position as visiting assistant professor of entomology at MSU. Eric will be arriving in January and is already staffing his lab with post-docs and students.

We are also excited about some impending physical changes to

the Department's facilities. As you may know, our seminar room (Natural Science 244) is one of the most heavily used spaces in our department, but over the years the outdated furnishings and inadequate technology have limited our ability to provide the quality of service that our growing programs deserve. Due to a significant lead gift, the Department has an **opportunity to honor Dr. Gordon Guyer** - former department chairperson and president of MSU - by remodeling and naming the Department's seminar room in his honor. As part of this effort, the room will be fully modernized and decorated to display memorabilia from Dr. Guyer's long and distinguished career. Stay tuned for how you can participate in this project as well.

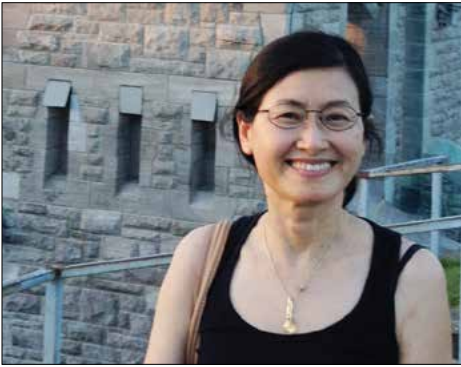
Enjoy being "Bugged," and as always, thanks to all of you who support the Department in myriad ways! - **Doug Landis, professor and interim chair.**



Spanning the decades of aquatic entomology at MSU: Ken Cummins, Gordon Guyer, Rich Merritt and Eric Benbow.

RESEARCH & PROJECTS

Ke Dong is part of a team of scientists whose work on insecticide resistance in disease-carrying mosquitoes was published in the July 2, 2013, issue of the *Proceedings of the National Academy of Sciences*. Scientists



Ke Dong

have long believed that a single molecular door was the key target for insecticide. The team of researchers led by MSU has discovered a second gateway that could turn the tide against the mosquitoes' growing advantage with insecticide resistance. Receptors on sodium channels act as doorways. Pyrethroids work by propping open the sodium channel. Mosquitoes don't die from the toxin; rather they die from sodium overdose. At the molecular level, resistance appears as mutations in the primary receptor in the sodium channel that allow mosquitoes to survive exposure to the insecticide. The discovery of the second receptor in the sodium channel, however, opens up more avenues to increase pyrethroids' effectiveness. Read more about the team's findings at *MSU Today* (msutoday.msu.edu).

In a study published in *Ecology Letters*, researchers from Rutgers and Cornell along with **MSU research associate Jason Gibbs examined long-term datasets to determine if pollina-**

tor biodiversity could buffer plant-pollinator interactions against climate change. A 46-year time-series data set on apple bloom phenology in New York State and an independent data set of wild bee species were used. Specimen-level databasing of historical bee specimens and recent surveys of bee visitations to apples were performed by Gibbs and collaborators at Cornell. The study found apple bloom and its primary pollinator community of 26 key bee species have shifted their phenologies at similar rates over a 46-year period of climate warming. The variable rates of phenological change observed among the pollinator species likely act to prevent asynchrony in plant-pollinator phenology. A simulation analysis supports the buffering capacity of pollinator diversity by showing that high levels of bee diversity increases and stabilizes phenological synchrony of apples and its pollinators through time. Gibbs is currently working with Rufus Isaacs on the USDA-SCRI funded Integrated Crop Pollination Project.

Several Entomology Department faculty collaborated in developing Mexico's National Forum on Agricultural Biotechnology, which was held Aug. 18 - 24, 2013, in Mexico City. David Mota-Sanchez and Karim Maredia coordinated with the Mexican Secretary of Agriculture and USDA Foreign Agriculture Service to develop the forum. Invited speakers from MSU included Chris DiFonzo and Robert Hollingworth from



Entomological delight

International work brings opportunities to step outside of normal patterns. Bob Hollingworth and David Mota-Sanchez tried a couple of these lovely, gourmet, arthropod-based dishes while in Mexico.

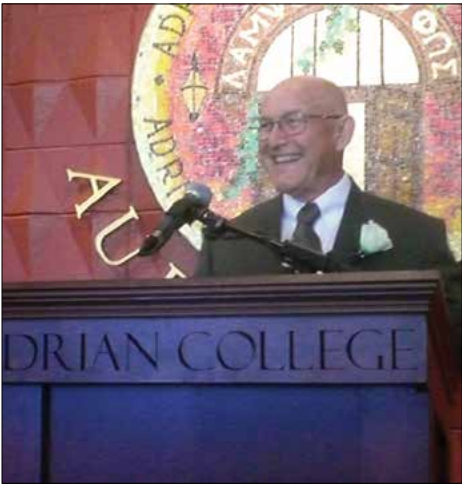
the Department of Entomology, Rebecca Grumet (Horticulture Department) and Frederic Erbish. Richard Kaitany from the Michigan Department of Agriculture and Rural Development also participated. The objective of the forum was to introduce attendees to international regulation on the biosecurity of genetically modified organisms, the relationship between plant breeding and biotechnology, the use of crops, intellectual property, insecticide resistance, food safety and provide an overview on the current regulatory framework and its implementation in the U.S., Brazil, European Community and Mexico. About 70 participants from Mexican federal agencies, scientists, farmers and industry attended the forum.



Spotted slugging it out on the golf course

Turfgrass entomologist Dave Smitley received this image from a northern Michigan golf course superintendent who found the "slug" on a green early in the morning. Although it was moving very slowly, he knew it had moved half-way across the green because of the track it left in the heavy dew. The slug consists of hundreds of fungus gnat larvae (*Sciaridae*) sliding over the top of each other while moving together in the same direction.

AWARD-WINNING DEPARTMENT



Larry Olsen has been awarded the 2013 Alumni Humanitarian Award by Adrian College. The award recognizes Olsen's work in an agricultural development project in the central highlands of Peru where people live a subsistence life depending on potato production. Olsen's project demonstrates newer, improved varieties of potatoes that increase yield and have social acceptance. The objective is to establish demonstration plots throughout the high plains where local farmers can view the growth characteristics of the new varieties, which require fewer pesticides and increase profit through higher yields. The ultimate goal is to raise the economic status of the community. Olsen has been successful in enabling two Peace Corps volunteers in the community and a master's student assists with the project. He received his award on Sept. 21 on the Adrian College campus.

Jeremy Jubenville, a new graduate student in Zsofia Szendrei's lab, received the Rhodes (Gene) Thompson Memorial Fellowship this fall. The fellowship is awarded each year to a new graduate student in the Department.



Landis receiving award from Dean Richard Linton.

Doug Landis was honored by North Carolina State University's College of Agriculture and Life Sciences with an Outstanding Alumni award. The award

recognizes alumni who have applied their talent to excel in their chosen field. Recipients have shown a record of service to their community, industry or organization. Landis' research focuses on the interactions of insects with landscape structure and the application of that knowledge to ecologically based pest management. His work is motivated by a desire to create agricultural landscapes that support biodiversity as well as high agricultural productivity.

Rob Morrison, a student of Zsofia Szendrei, received the Monsanto Student Travel Award to attend the annual meeting of the Entomological Society of America in Austin, Texas, in November 2013.

"LIKE" THE BUG HOUSE

Our MSU Bug House has an active Facebook page for keeping up with the latest events and to view pictures. To find the page, just go to Facebook's website and in Facebook's search box, type Michigan State University Bug House. Give us a "like!"

There are two remaining Fall Open Houses: Nov. 11 and Dec. 9 from 5-7:30 p.m.

The Bug House is becoming a fun stop for holiday events. On October 27, **over 140 children and adults dropped in for a Halloween-themed visit** with our insects, treats and crafts. A similar program drew about 100 visitors last year, so interest is growing.

Those looking for something fun to do with children over the year-end holidays are invited to the **Holiday Open House on Saturday, Dec. 28**, from 1-4 p.m.



Above, a child in Halloween costume enjoys treats and insects at the Bug House. Our thanks to staff and student volunteers who host these events and care for the insects.



ALUMNI NEWS

Ann MacGuidwin, former doctoral student of George Bird, has earned the Society of Nematologists 2013 Fellow Award. This is one of the highest awards in nematology. MacGuidwin is currently a professor in the Department of Plant Pathology at the University of Wisconsin-Madison.

Emily Pochubay (MS Grieshop lab 2012) is a new MSU Extension educator based at the Northwest Michigan Horticultural Research Center. Her focus is to develop and provide educational programs about fruit horticulture and pest management to growers in nine counties of northwest Michigan. She will also work with teams to provide statewide outreach activities for Michigan's fruit industry and develop an applied research program to address key issues of fruit production.

Annie Kirk (PhD Isaacs lab 2013) was recently hired as a post-doctoral research associate at the University of Minnesota. She will be coordinating monitoring, research and extension related to spotted wing *Drosophila*, a new invasive pest to Minnesota.

Megan Woltz (PhD Landis lab 2013) has accepted a post-doctoral position at Oregon State University's Department of Horticulture working on biological control of spotted wing *Drosophila*. Megan will be working with Dr. Jana Lee, another Landis lab alumna and research entomologist with the USDAARS Horticultural Crops Research Unit at Corvallis, Oregon.



PEOPLE

Professor emeritus and former chairperson Mark Scriber returned for a departmental seminar in September. A packed conference room heard about "Reflections on academic careers in entomology: generalists and specialists."



Scriber and assistant professor Zsafia Szendrei at the post-seminar social.

Do you know GUESS? Students graduate and move on, but before they do, many are encouraging the next wave of students to remain active in GUESS, the Department's **Graduate and Undergraduate Entomology Student Society**. GUESS supports worthy entomology-related projects and issues and plans events that bring the Department together. They coordinate the Simmons Memorial Lecture and host the spring picnic. Below are photos from their 2013 fall camping trip.

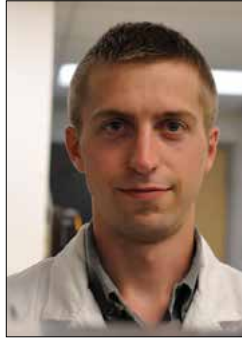


If you missed Rich Merritt's retirement celebration, see photos below and at the Department website in the News section.



FEATURED UNDERGRADUATE STUDENT

Name: Stephen Curtiss Ireland
Hometown: Detroit, MI
Future plans: I'm hoping to join a Master's program for the fall 2014 semester, and after that make a quick transition from academia into private industry while maintaining involvement in community IPM activities.



Why study entomology? There are lots of good reasons. I particularly like the notion of developing efficacious molecular pest solutions that also minimize harmful environmental externalities, so the results are good for us and good for the environment. Also, as an entomologist, our research subjects are highly usable model organisms. Finally, there are a number of compounds still unknown in insects that could potentially have applications in many areas of technology.

Who inspired your interest in entomology? My list of heroes is long, but Richard Feynman, Barbara McClintock and Niel deGrasse Tyson are a few standouts. All share an unmistakable veneration for the world as it is, and I think it's in that spirit that I am inspired to pursue my own inclination: entomology.

What has been your best experience with entomology? A toss-up between a study abroad in Gainseville, FL and a summer Research Experience for Undergraduates (REU) spent in up-state New York. The Florida trip was part of the MSU Forensic Entomology (ENT 401) directed study and took place at the University of Florida's Department of Entomology. It was a great first step into insect study and was a chance to meet some pretty amazing people and tour the entomology department. The REU was a Summer Research Scholars program at the Cornell Agricultural Experiment Station in Geneva, NY. This was a chance to see what others are doing in agricultural research and meet many new people.

FEATURED GRADUATE STUDENT

Name: Bernice Bacon DeMarco
Hometown: Lakewood, OH
Major Professor: Anthony Cognato
What are you researching? I am using DNA and morphology to elucidate the possible evolutionary history of the ant genus *Aphaenogaster* and to provide identification keys to species in this genus.

Future career plans: I would like to determine the relationships between currently described species worldwide and create a comprehensive key to identify them. I would also like to continue my involvement in the Bug House to promote children's interest in insects.



What or who inspired your interest in entomology? I

began college at Purdue University as a general biology major, with no specific career goal in mind. I always liked insects, and when nothing else fit my sophomore schedule, I took an introductory entomology course taught by Dr. RC Dobson. He was enthusiastic about the subject and gave me a number of suggestions about what I could do with a B.S. in entomology. By the end of that semester, I had changed majors.

What has been your best experience in entomology? I landed my dream job right out of college at the Smithsonian Institution. I was chosen out of 100 applicants because I was the only one with museum experience. After working there for six months, an opportunity came up to travel to the Amazon with Dr. Terry Erwin and two other curatorial assistants to Manaus. We were in the Amazon for six weeks fogging trees with pyrethrum in forested areas that were scheduled to be demolished. We collected in three very different habitats and brought back 200,000 insects to be curated and added to the collection at the Smithsonian. The story doesn't end there. After I started graduate school at MSU, Sarah Smith, a recent MSU entomology graduate, visited the Smithsonian to look at bark beetles in their Coleoptera collection. She discovered two new species of beetle from the material I had collected in the Amazon over 20 years ago, *Camptocerus igniculus* and *coccoformus*.

MICHIGAN STATE UNIVERSITY | Department of Entomology

food SCIENTIFIC AMERICAN Integrated Crop Pollination (ICP) Project in Scientific American | read more

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The Michigan State University Department of Entomology excels in research, extension and teaching to address the issues that confront the people of Michigan, our nation and the world. MSU's entomologists look for systemic solutions across disciplines to address critical issues. We offer B.S., M.S. and Ph.D. degrees in entomology and consider graduate student education and postdoctoral experience to be one of our highest priorities. Many of our undergraduates further enrich their studies through working in research labs, volunteering in the Bug House and taking entomology or related

Social Media

EVENTS

Stay current with the Department at our website:

www.ent.msu.edu

MSU Department of Entomology

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East Lansing MI 48824



OUR AQUATIC ENTOMOLOGY LEGACY

The Department of Entomology, along with family and friends, celebrated the career and success of **Distinguished Professor Rich Merritt** on Sept. 21, 2013, at the University Club. As evidence of Merritt's impact on the field of aquatic entomology, 25 of his former graduate students returned to join in honoring him (that's Rich with the yellow shirt and Spartan tie, of course).

