

# Bugged

FROM  
MSU DEPARTMENT  
OF ENTOMOLOGY

Fall 2014



Photo: Kurt Stepnitz, MSU Photography

## FROM THE CHAIR

It's been quite a journey for Sue and me after leaving MSU in 1980. We spent 17 great years at Virginia Tech in the heart of the Blue Ridge Mountains and 16 years at "The" Ohio State University where I served as professor of Entomology and associate director of the Ohio Agricultural Research and Development Center. I had many stimulating experiences there, including surviving a 130-mph tornado in 2010. So, 34 years later we couldn't be happier to be back at MSU! Many things have changed. The average age of a freshman must have decreased by several years, the Spartans regularly let our colleagues in Ann Arbor know that it's our turn, and technology plays an overwhelming roll in the laboratory, classroom and network with Entomology's clientele throughout Michigan and the world.

At the university level, after several years of fiscal distress, the university, college and department are healthier with many exciting new initiatives beginning to happen. For example, MSU Provost Youatt and Vice President Hsu recently released the \$15 million Academic Competitiveness Fund (ACF) that will facilitate attracting the best and brightest scientists and educators

to East Lansing, Michigan and, hopefully, some new positions to Entomology. Positions will be focused on "grand challenges" in the areas of energy, human health, and the environment. From an entomological point of view, this translates to themes such as pollination management and ecology, disease vectors, integrated pest management, invasive species, "big data" associated with insect issues and many more. A detailed description of the ACF can be found at:

<http://bit.ly/AcaComp>

The [College of Agriculture and Natural Resources \(CANR\)](#) has regained stability under the watchful eye of Dean Fred Poston - an entomologist - who will step down for a second time somewhere around the end of 2015. Hence, CANR has begun the process of assembling a search committee, solidifying a process and seeking candidates. As you



know, entomologists make great deans, so don't be shy about nominating a colleague; at this writing I have several in mind, expect a call.

[MSU Extension](#) is rapidly changing with Director Tom Coon going to Oklahoma State University as vice president, dean, and director of Agriculture and Natural Resources. Dr. Margaret "Maggie" Bethel will fill the MSU Extension director role until the end of this year with Dr. Ray Hammerschmidt of plant pathology fame becoming director January 2015. The CANR administration, research and instructional programs continue to be led under the very capable hands of Drs. Suzanne Lang, Doug Buhler and Kelly Millenbaugh.

From the Department perspective, we greatly appreciate Doug Landis' service as interim chair, and his good work has made my early days (almost 90 days now) as chair much easier than I could have imagined. The Gordon Guyer Conference room is now complete and the dedication ceremony will be held Nov. 2, 2014. Gordon and Mary anticipate a packed house.

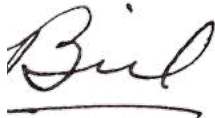
It's been quite a while (1988) since the Department had a full-scale review and strategic planning activity. So, between now and March 2015, Entomology will

undergo an Academic Program Review that will include an in-depth review of our teaching, research, and extension programs; assessment of our strengths, weaknesses, opportunities and threats; and a look at how we compare to the other 20-plus entomology departments across the country. My experience with working through numerous departmental and college reviews is that they are challenging and time-consuming, but ultimately rewarding.

We look forward to drawing the departmental roadmap for the next five to 10 years. We will certainly have much to brag about with \$8-10 million in annual research expenditures resulting in many products and impacts presented throughout this *Bugged* newsletter. We teach thousands of students about the importance of insects in everyone's daily lives., and I am continually reminded of the impact that our extension and outreach programs have on the state, nation and world. In addition, please note a new *Bugged* feature called "Alumni Profiles," where we will highlight students, faculty and staff who have gone on to do great things around the world. This month's featured alumnus is Mark "Shep" Sheperdigian (1982).

I'm extremely excited to be back with MSU to live and work with so many great students, faculty and staff and to reconnect with the Department's alumni. Please enjoy being *Bugged*!

All the best,




Bill Ravlin, chairperson



The IPM Central Asia team reviews a research plot in Tajikistan.

## RESEARCH & PROJECTS

### Several MSU entomologists led by Karim Maredia recently concluded a 10-year project advancing IPM in Central Asia.

The primary countries were Kyrgyzstan, Tajikistan and Uzbekistan. Collaborators from those countries, several US states and the international research organization ICARDA worked together toward the following impacts. The project has broken isolation and reconnected the IPM community in Central Asia with the U.S. and global IPM community. More than 25 IPM specialists and three graduate students from Central Asia have been trained in ecologically and biologically-based IPM in the key food security crops of wheat, potatoes and tomatoes. The project has helped develop IPM packages for the three crops by establishing research and demonstration sites in various parts of Central Asia. More than 1,500 local farmers (men and women) have been trained through farmer field schools. Others from MSU Entomology who worked on the project included George Bird, Doug Landis, Walt Pett and Joy Landis. See the project website for details: [http://www.ipm.msu.edu/international/central\\_asia\\_ipm](http://www.ipm.msu.edu/international/central_asia_ipm)

### Rufus Isaacs is the lead of a \$6.9 million project

funded through the USDA NIFA's Specialty Crop Research Initiative. The goal is to develop and deliver context-specific [integrated crop pollination](#) recommendations on how to effectively harness the potential of bees for crop pollination. "This next stage of funding is essential for continuing the work of the team of more than 50 people across the nation who are all dedicated to the goals of our project," Isaacs said. "We have established and measured bees and crop yields in over 100 fields at farms from California to Pennsylvania, some pollinated with honey bees, some with wildflower habitat added for pollinators, and some augmented with other types of managed bees. We will continue to monitor these fields and compare the performance, economics and social aspects of these tactics, while we also continue development of educational and decision-support information for specialty crop pollination."

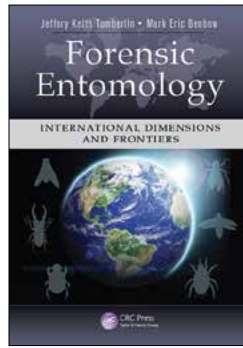
**Jim Miller has been leading a team** that is publishing a book and secured a grant for





additional research toward better pest monitoring. A roadblock to making optimal decisions about whether or not to apply pesticides has been the absence of quick and inexpensive methods to estimate the actual number of pest individuals present per acre. Without such information, pest management decisions are based only on relative pest density using experience-based indices – often more of an art than a science. Over the past three years, Miller assembled a team of entomologists (Miller and associates, particularly graduate student Chris Adams), a mathematician (Jeffrey Schenker, MSU Mathematics), and a computer scientist (Paul Weston, Charles Sturt University, Australia) that has successfully cracked this long-standing problem. These findings, likely to elevate insect pest management to a new level of precision and efficiency, have been assembled into a book titled “Trapping of Small Organisms Moving Randomly – Principles and Applications to Pest Monitoring and Management” accepted and under production by Springer Publishers. This team recently received a quarter-million dollar, three-year National Science Foundation grant from the Mathematical-Biology section for further development and expanded field-demonstrations of these novel methodologies.

**Eric Benbow has partnered with Jeffrey Tomberlin as editors of “Forensic Entomology: International Dimensions and Frontiers.”** This forensic entomology reference takes a global approach with case studies and contributions from leading authors representing six continents. Most of the research to date has been concentrated in Europe or North America. Traditional forensic entomology books have focused specifically on entomology as a field with little mention of the other disciplines that influence forensic outcomes from an



entomological prospective. This book bridges multiple disciplines including microbiology, chemistry, genetics, and systematics with forensic

entomology. Largely ignored sources of previously unrelated new information are now together in one useful publication from CRC Press. (See <http://www.crcpress.com/product/isbn/9781466572409>)

## PEOPLE

**Bob Hollingworth** retired and stepped down as director of IR-4’s North Central Region in June 2014. He plans to continue involvement with IR-4 through next June. Along with serving as regional IR-4 director, Bob oversaw the operations and upgrade of a modern IR-4 residue analytical laboratory at MSU. **John Wise** is the new regional director and will continue his role as coordinator of the [MSU Trevor Nichols Research Center](#).



**Welcome to the new graduate students** who joined the Department this spring and fall:

- **Md Wahiduzzaman Akon** (PhD, J. Wise)
- **Elizabeth Bandason** (PhD, K. Dong)
- **Elizabeth Davidson-Lowe** (MS, J. Ali)
- **Kristin Deroshia** (MS, M. Grieshop)
- **Adam Ingrao** (PhD, Z. Szendrei)
- **Courtney Larson** (PhD, E. Benbow)

- **Jason Matlock** (PhD, M. Grieshop)
- **Steven Nichols** (MS, A. Cognato)
- **Gerald “Scooter” Nowak** (MS, E. Benbow)
- **Rachel Osborn** (PhD, A. Cognato)
- **Marissa Schuh** (MS, D. Landis)
- **Fred Springborn** (MS, C. DiFonzo)
- **Anthony VanWoerkom** (PhD, J. Wise)

**Congratulations to these summer 2014 graduates: Peter McGhee** (PhD, L. Gut) and **Shahlo Safarzoda** (MS, D. Landis).

We are very pleased to acknowledge another significant contribution by **Roger and Barbara Hoopingarner** to their endowed graduate fellowship in entomology at MSU. The fund generates a fellowship for a student enrolled in apiculture or honey bee science.

## AWARD-WINNING DEPARTMENT



The University of Minnesota honored MSU forest entomologist **Deb McCullough** with its 2014 Hodson Alumni Award. Her research at MSU focuses on the ecology, impacts and management of invasive forest insects, including emerald ash borer and beech bark disease. Deb presented a lecture and received her award May 22 in Minneapolis.

**Gerald “Scooter” Nowak** is the first recipient of the Gordon E. Guyer Fellowship in Aquatic

*Continues on page 5*

## FEATURED GRADUATE STUDENT

**Name:** Shahlo Safarzoda  
**Hometown:** Ishkashim, Tajikistan near the Afghanistan border.

**Major professor:** Doug Landis

### What did you research?

Before receiving my master's degree in summer 2014, I was a graduate student with the Central Asia IPM Project studying biological control (natural enemies) of cereal aphids in wheat. We found that the natural enemy community was very effective in suppressing cereal aphid populations. The ground-dwelling predators in the early season were more effective than predators that typically forage in the canopy.

**What or who inspired your studies?** My dad was an agriculturalist and a veterinarian, and he was my first inspiration. Secondly, in Tajikistan they use a lot of chemicals and don't have information to use them safely. They are expensive and unlabeled. Biological control is cheaper and safer for farmers. Dr. Karim Maredia inspired my interest in biological control. I met him while helping with a meeting and translating for a field visit. He told me about MSU and the work in the Landis lab.

**What is your favorite activity outside of entomology?** I like dancing. I do the Tajik national dance and I like to bowl, which I learned here.

**Most exciting part of your studies?** Counting aphids!

**Future plans?** I will return to Tajikistan and help students at the Institute of Farming. I'll be assisting a professor with field studies about natural enemies and biological control. I look forward to continuing a network with those who have been a part of the IPM CRSP Central Asia project.

**What would you like Americans to know about Tajikistan?** I would like them to know its beautiful nature, including the rocky Pamir Mountains, the highest mountains in Central Asia, where I grew up.

**What would you like Tajiks to know about Americans?** People are very friendly and willing to help. I especially enjoy celebrating Thanksgiving and would like them to experience that. I would like to thank all of the IPM CRSP project team for supporting me and making me feel like MSU is my home.



## FEATURED UNDERGRADUATE STUDENT

**Name:** Kelsey Kruschinska  
**Hometown:** Lake City, MI

**Future study plans:** I would like to get my master's in entomology and possibly a doctorate.

**Why entomology?** Insects are awesome! There are so many of them and they are very different and have different purposes in the world.

**Who inspired your interest in entomology?** Grad student Casey Rowley and Dr. Walter Pett

**Best experience with entomology:** In Dr. Pett's class, we were able to put honey bees in the Children's 4-H Garden located on campus.

**What do you wish other people understood about entomology?** Not all insects are gross and out to get you.

**If you could be an insect, which insect would you be and why?** I would be a monarch butterfly because, like a monarch, I was raised in Michigan, and after graduation I intend to head south and then return to the Midwest to settle down.

**Was there ever a time when you didn't like insects?** The only insects that I have ever disapproved of are ones that can inflict pain upon me.

**Although you work with insects, is there any particular insect or arthropod you do not like and why?** I do not like wasps because they will sting you more than once. I also don't care for mosquitoes because they can give you many different diseases.

**What is your opinion on entomophagy (eating insects) as practiced in other world cultures?** I think that eating insects is a very practical thing to do. There are so many of them and they are free to catch. I would definitely try insect cuisine!

**What is your favorite way to spend your time outside of Entomology?** I enjoy curling up on the couch with a movie and a bowl of ice cream.



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Entomology. This fellowship was established by Guyer, a former faculty member and chairperson of the Department of Entomology, as well as a former president of Michigan State University. Scooter is a master's student in Eric Benbow's lab.

**Nicole Quinn**, a master's graduate student working with Zsofia Szendrei, received a North Central Region Sustainable Agriculture Research and Education (SARE) Graduate Student Grant in support of her research on enhancing pollinators with flowers in cucurbits. The roughly \$10,000 provides undergraduate support in the field season, supplies and travel.

**Dale Mutch** was selected by the North Central Region Sustainable Agriculture Research and Education (NCR-SARE) to be a 2014 NCR-SARE Hero. This recognition honors the leadership, vision, contributions and impact made in the field of sustainable agriculture by those who have made lasting impacts to sustainability in the North Central Region and beyond. Recently retired, Mutch was a member of the MSU Integrated Pest Management (IPM) Program where he served as field crops specialist with emphasis on the benefits of cover crops.

The Association for Communication Excellence (ACE) presented a silver award for a marketing communications campaign to a team including Entomology's **Joy Landis**, **Mallory Fournier** and **Dave Smitley**, who collaborated with the Smart Gardening Initiative. The project promotes environmentally friendly gardening (see [migarden.msu.edu](http://migarden.msu.edu)).

The 2014-15 Hutson Research Proposal Awards have been announced. Congratulations to:

- **Casey Rowley** (MS, J. Miller)

- **Joseph Tourtois** (MS, M. Grieshop)
- **Knute Gundersen** (PhD, R. Isaacs)
- **Amanda Lorenz** (PhD, G. Ording)
- **Keith Mason** (PhD, R. Isaacs)

The Entomology Department held its annual spring picnic hosted by the Graduate and Undergraduate Entomology Student Society (GUESS). Congratulations to the following people:

- **Christopher Adams** (J. Miller) Eugenia McDaniel Award to an outstanding MS graduate student for teaching.
- **Alexandria Bryant** (Z. Szendrei) Paul Wooley Award to an outstanding MS graduate student.
- **W. Robert Morrison** (Z. Szendrei) Robert Driesbach Award to an outstanding PhD graduate student.
- **Laura Lamb** (Trevor Nichols Research Center) James Bath Award - for a staff employee with outstanding accomplishment and morale.

In addition, other 2013-14 Department awards that were recognized at the picnic were:

- Gene Rhodes Thompson Fellowship Recipient, **Jeremy Jubenville** (Z. Szendrei)
- Hutson Research Proposal Awards - **Julie Adams** (L. Gut), **Brendan Carson** (D. Landis), **Rebeca Gutierrez** (M. Whalon), **Emily May** (R. Isaacs), **W. Robert Morrison** (Z. Szendrei)
- Scriber Scholar Award, **Elizabeth Stelzner** (PhD student in Plant Biology/EEBB)
- Bughouse Volunteer of the Year, **W. Robert Morrison** (Z. Szendrei)



What's an Entomology picnic without Chocolate Chirpy Cookies?

has been the chairperson of the Natural and Physical Sciences Department for four years. The Livingston Award is presented to an Olivet faculty member and only four have been bestowed in the last 15 years.

**Ashley Bennett** (Postdoc 2012-14, R. Isaacs) is a research and development scientist in the Biological Analytics division at Syngenta based in Greensboro, NC. Her research at MSU on landscape level effects on pollinators has been published in "Agriculture, Ecosystems and Environment" and she has a paper in press at PLoS ONE. Ashley is maintaining contact with the department through two active research and extension projects.

**Craig Roubos** (Postdoc 2011-13, R. Isaacs) is now a data analyst at Emergent Biosolutions in Lansing. Before leaving MSU he published an invited review for a special edition of Biological Control, titled "Mitigating the effects of insecticides on arthropod biological control at field and landscape scales."

Mary Gardiner (PhD 2008, D. Landis) was recently promoted to associate professor with tenure at The Ohio State University, Department of Entomology. Mary and her students work on a range of issues focusing on biodiversity and ecosystem services in urban ecosystems.

## ALUMNI NEWS

**John Wilterding** was the recipient of the prestigious Livingston Teaching Award from Olivet College, where he is a professor of biology and chemistry and



## ALUMNI PROFILES: Mark Sheperdigian

**Mark “Shep” Sheperdigian** recently agreed to represent the Department of Entomology on the MSU College of Agriculture and Natural Resources’ Alumni Board. We spoke with Shep on the phone recently to thank him and learn about his experiences with a degree in entomology.

**When did you graduate from MSU?** I earned a bachelor’s of science in Entomology in 1982.

**Why choose entomology?** I took Roland Fisher’s introductory entomology course along with Fred Stehr’s systematics class, and became convinced entomology was the major for me. I worked in Ed Grafius’ lab and Roger Hoopingarner was my advisor, so they were certainly guiding influences. In reality, I had no idea what an entomologist does. After graduation, I moved to Georgia thinking I might go to graduate school, but the economy did not improve, and instead, I applied for a job with a small urban pest management firm. I didn’t know the field of urban pest management existed before moving to Georgia and it combines two of my favorite things: insects and people! Eventually, I applied to work at larger companies with more mobility and, by 1987, I joined Rose Pest Solutions where I am now Vice President of Technical Services. We are a regional company with offices in Michigan, Ohio, and northern Indiana. We do a bit of work in Kentucky, West Virginia and Pennsylvania.



### How does your work impact people’s lives?

In urban pest management, we have daily exposure to the public. We are in factories where everything is made as well as in the wealthiest homes and the poorest neighborhoods. It is an amazing journey through humanity to see everything that happens. One of the problems is that so few people know much of anything about insects. They know they are bigger than the insects, but they don’t know how to control them. You can talk to these CEOs who handle millions and millions of dollars but can’t handle a thousand cluster flies. It’s a very powerful feeling.

**Any advice for current students?** Along with the fundamentals of entomology or another field, the most important skills you need to learn are communication skills. If you can’t get your point across -- I don’t care how smart you are -- you must learn to communicate. If you shy away from the limelight, you’ll really cut back on the opportunities open to you.

### How have you used communication skills in your work?

Many ways. I do a lot of training, mostly adult education, like how to be a good client in a pest management program. I’m also speaking to groups about bed bugs. There is a tremendous knowledge gap related to bed bugs and we are hurrying to bring people up to speed as the populations explode. The resurgence of bed bugs is the most amazing development I’ve seen in my career. I, and others at Rose Pest Solutions, do programming with kids. The general populace has little understanding of science. We need to teach kids to think with a science mind or we’ll be blown to and fro as change occurs in our world. Rose promotes science education from elementary school on up. We help with bug rodeos for summer camps where kids catch insects out in the field and then pin and identify them. Science education is vital to the well-being of the country.

**Brendan Carson** (MS 2013, D. Landis) is a research associate in the “Invasives to Energy Project” in the Institute of Environmental Sustainability at Loyola University Chicago. Brendan spends his summers doing research for the project at the University of Michigan Biological Station at Pellston, MI.

**Emily Pastula** (MS 2012, R. Merritt) teaches seventh grade life science to 180 students at American Canyon Middle School in the Napa Valley Unified School District, California. The school’s focus is project-based learning (PBL), which allows students to collaborate on relevant, meaningful projects that require critical thinking, creativity, and

communication in order to answer challenging questions or solve complex problems.

### Ready to read *Bugged* in digital pdf?

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## TRIBUTE: Barb Stinnett, our outreach star and friend

*Barb Stinnett passed away, July 6, 2014. A cherished member of the Department, we asked Gary Parsons to describe how Barb made a difference through her work with MSU Entomology, which is shared below.*

**You can donate to the Bug House in Barb's honor.** Send your check made payable to Michigan State University to the Entomology Business Office, Attention: Kayley Grubaugh, Natural Science Building, 288 Farm Lane Room 243, East Lansing, MI 48824. Please include a note that it's for the Bug House in Barb's memory and we will make sure the family receives acknowledgement.



Barb was assigned to work on Department outreach. In 1998, the [Bug House](#), the Butterfly House, Bug Camps and Bug College were initiated. We had a very active group of faculty, staff and students who were making all these things happen. I arrived in 1999 and was aware of the activity, but was busy with the insect collections. It was apparent to me that even with no formal entomology training, Barb was the go-to person, whether it was scheduling, ordering supplies or organizing.

As I interacted more with Barb, it was obvious the entomology students saw her as the Mother Hen of outreach. They came to her with issues, outreach-related or not, and even though she may not have had the "entomological" answers, she was always there to listen, offer encouragement and advice.

After about five years, retirements, graduations and budget cuts began to have an impact on outreach activities and personnel. By then Barb had made the Bug House and Bug Camps her babies, and she wasn't about to see them go away. We reorganized the Bug House facilities to make it easier and more efficient to run, as well as spruced things up. She did the organizing, scheduling and guide recruiting while I oversaw the care of the live animals and facilities.

In a way, all the kids that came to visit the Bug House were Barb's kids. She did everything she could to make their experience as fun and exciting as it could be. When guides could not make scheduled tours, Barb found last minute replacements, or even filled in for them.

While the Bug House took up most of our efforts, Barb was most proud of

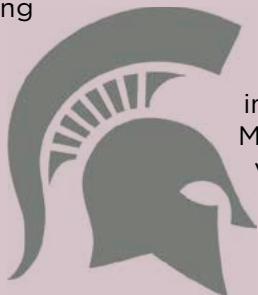
Bug Camp. Bug Camp started out as half-day, fun activities for younger kids, but Barb wanted to offer something to the older kids that were really into bugs. There were few opportunities other than 4-H Entomology, so she came up with a residential four-day camp on campus.

The idea was to give kids a fun and educational entomology experience with the goal of setting them onto a path for eventually coming to MSU and becoming entomology students.

Bug Camp became a big hit. Many of the campers were repeat enrollees. Soon, Barb came up with a junior counselor program. Kids who had been in the program before could now get an extra, two-day collecting and training experience, and then serve as assistant counselors. Again, this became so popular that we didn't have enough space for all. Next, Barb created a Senior Bug Camp program where the oldest campers visited labs and programs, learned about opportunities and what an entomology career was about. By now some kids had been in the program for almost eight years, and they really had become Barb's surrogate children – and this didn't pertain to just the campers. The student counselors were part of that family, too. They had as much fun and continued coming back just like the kids. The program eventually bore fruit. Several Bug Campers did come to MSU as undergraduates and at least one graduated from the Entomology Department. Whether they went on to become entomologists or not, Barb really had an impact on their lives. They loved her and she loved them.

Barb's creative programming was during a time of economic downturn. While camp was relatively cheap, some parents struggled to afford it. Barb started a scholarship program, soliciting donations from faculty and staff and contributing a good deal of her own money. When budget cuts finally cancelled Bug Camp, the parents and students were shocked and saddened as was Barb. It was finally time to retire.

Barb will really be missed. She had an impact on so many in the Department and at MSU. School children, parents and others who visited the Bug House and came away a little less fearful and more excited about insects owe her a debt of gratitude for what she accomplished.



## MSU Department of Entomology

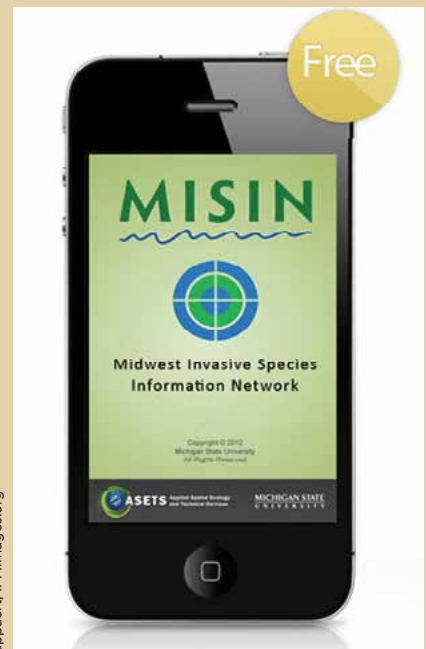
Michigan State University  
Natural Sciences Building  
288 Farm Lane Room 243  
East Lansing, MI 48824

### CITIZEN SCIENCE: Tracking invasive species with an app

**Amos Ziegler and team** have built a smartphone app that lets users identify and track invasive species in the Midwest as part of MISIN, the Midwest Invasive Species Information Network.

The idea is to recruit citizen scientists to record and report where they are seeing over 250 non-indigenous species. The data collection via the app will help provide insight into how these species are spreading and hopefully, means to stop their movement.

Join the effort by downloading either the iPhone or Android app. Learn more at: <http://www.misin.msu.edu/>



Chinese mystery snail



Garlic mustard

