



Bugged

MSU DEPARTMENT OF ENTOMOLOGY

Emerald ash borer by Bill Ravlin, MSU Entomology

FROM THE CHAIR

During a recent bike ride, I was treated to a small gypsy moth infestation near Beaumont Tower. During the '80s and '90s, I spent considerable time working with gypsy moth pheromone traps and as a result, I apparently absorbed synthetic pheromone. This, I learned, turned my body into a giant Disparlure "wick," which has persisted for decades! As usual, the male moths at Beaumont swarmed around my legs doing their typical zigzag movements, hence generating the common French name of *Le Zigzag*.

Aside from being amused by this now familiar phenomenon, I was impressed thinking about the decades of research that produced the very successful

invasive species program *Slow the Spread*, a gypsy moth system now in place for over 25 years (Guess it needs more time at Beaumont Tower.).

Invasive species have been a staple for MSU entomologists since the Department was formed in 1906 and today is no exception. Spotted wing *Drosophila* is terrorizing the Michigan cherry and blueberry industries. Current faculty with programs addressing some aspect of this pest include Ke Dong, Henry Chung, Matt Grieshop, Larry Gut, Rufus Isaacs, Julianna Wilson and John Wise. Emerald ash borer continues to create problems in urban and forested areas being addressed by the labs of Leah Bauer, Deb McCullough, Therese Poland, Bill Ravlin and Jim Smith.

Brown marmorated stink bug is a problem across multiple crops and seems to prefer homes as overwintering sites, generating a call from the MSU provost last winter. Some of our scientists on this one include teams led by Matt Grieshop, Larry Gut, Julianna Wilson and Amos Ziegler.

On the weedy plant side, swallowworts are outcompeting many plant species in wooded areas. Marianna Szűcs and Amos Ziegler are rising to this challenge. In queue is the spotted lanternfly (great looking insect!), currently infesting eastern Pennsylvania with real potential to move as far west as it wants.

There's no shortage of research and extension challenges for entomologists. Invasive species have potential to generate lots of attention, high costs, ecological disruption and opportunities in the form of decade's worth of research, extension and implementation efforts. Careers have been and will be built on invasive species. Your department is fully engaged.



Derrick Turner, MSU Photography

Holly Hooper, a master's student in Matt Grieshop's lab, is researching mechanical burial of post-harvest crops as a management strategy for the invasive species spotted wing *Drosophila*.



Bill Ravlin, Chairperson

RESEARCH & PROJECTS

Jen Pechal and Eric Benbow's studies into the postmortem microbiome are proving useful for public health as well as criminal investigations. Their work, published in a recent issue of [Nature Scientific Reports](#), shows that populations of microorganisms that move in after

death can provide crucial insights into public health. Regardless of many factors – sex, ethnicity or even type of death – the microbiome is consistent and distinct, depending on the number of days after death. Read about their collaborative work with the Wayne County Medical Examiner's Office at MSU Today: "[Bugs, microbes and death can inform the living.](#)"

Research by Entomology PhD student Danielle Kirkpatrick (Gut and Miller advisors) was [published in the Journal of Economic Entomology](#), as the first attempt in an orchard study to show the catch in a single monitoring trap can be used to estimate spotted wing Drosophila's (SWD) density among cherries. These estimates are important because pest

BOLD SOLUTIONS USING PLANT DIVERSITY AS A NATURAL DEFENSE

Assistant Professor **William Wetzel's** lab is trying to find new ways to combat insect pests by taking advantage of one of nature's built-in defenses – diversity. Long before farmers were protecting crops from pests, the ancestors of those crops were protecting themselves with a suite of natural defenses, including leaf hairs that entangle insects, toxins like caffeine or sticky substances that make feeding difficult. Different varieties of the same crop exhibit different types of natural defenses. When planted in conventional monocultures on farms, however, only one combination of plant defenses is found throughout the field. This makes it easier for pests not challenged by those particular defenses to infest the field.

A long-standing, but largely unexplored, observation among entomologists contends that fields with a greater diversity of natural defenses will see reduced pest pressure, increasing yields and decreasing both the cost of insect control and the likelihood of resistance to conventional insecticides developing among pest species. Wetzel and MSU postdoctoral researcher **Moria Robinson** are attempting to explore the mechanism behind this phenomenon.

Through a nearly \$500,000 grant from the USDA National Institute of Food and Agriculture (NIFA),

Wetzel's lab is conducting a four-year study of natural defenses in tomato plants. Plant breeders have developed numerous tomato cultivars that each emphasize a different plant defense, leading to the organism's designation as a model system for studying plant defenses. Wetzel's team will study the crop in traditional monocultures and experimental polycultures to determine which mixtures of defenses produce the greatest impact on pest damage.

If successful, Wetzel's work will give farmers a powerful new tool against insect pests without increasing the complexity of their farm operations. "This won't make farming more difficult," Wetzel



William "Will" Wetzel



Moria Robinson

said. "From a growing perspective, every tomato plant in the field will be identical, requiring the same resources and agronomic practices. The only difference will be the diversity of plant defenses."

Through an approximately \$155,000 grant from NIFA, Robinson will compare 30 cultivars of alfalfa, which has one of the longest domestication histories in agriculture, with its nearest wild relatives from the Middle East to determine the impact crop breeding may have on the variation of natural defenses within a plant.

In the course of her two-year project, Robinson will examine two defensive traits present in alfalfa – trichomes, small hairs that impede insect pests and saponin, a natural insecticide. She'll also examine a pair of nutritive traits – leaf water and nitrogen levels – to see if millennia of plant breeding has reduced the diversity of defensive traits in favor of increased nutritional value.

Since insects often target areas of crops that are not harvested for human consumption, Robinson sees increasing defense diversity as a way of improving a plant's ability to fend off invaders without altering its nutritional value. Read the full story, "[Researchers Explore Diversity As New Weapon Against Crop Pests](#)," with video in MSUToday.

management decisions depend on a pest's density within the area to be treated. Her research will help growers figure out how to effectively position monitoring traps and place enough out without overlapping. The study can also be used as a model for controlling SWD in a variety of crops.

The Bug House continues to draw crowds, welcoming over 700 visitors for the Be A Tourist In Your Own Town event. Greater Lansing's annual day-long event featured 80 different local attractions. At the Bug House, visitors enjoyed observing our beehive, specimen displays and live insects and tarantulas! A big thank-you goes out to our guides: Alison Zahorec, Margie Lund, Colin O'Neil, Gabriela Quinlan, Lidia Komondy, Amanda Lorenz-Reaves, Gary Parsons and Zoe Ziegler. Volunteering at the Bug House is a significant activity for many of our students including this issue's featured graduate student Nicole Wonderlin (see her interview). If you'd like to make a contribution to support education at the Bug House, please visit bit.ly/BugHGift.

POLLINATOR CHAMPIONS

The Department's Michigan Pollinator Initiative team has created an online course for those who want to be Pollinator Champions. The self-paced and free online course provides a broad research-based view of issues around pollinators and their health. Read more about this effort to answer the public's questions about pollinators and their challenges: bit.ly/PollinatorChamps

The Department celebrated National Pollinator Week with activities for all ages. Children and families were welcomed at the Bug House and also to the sixth annual Bee Palooza in the MSU Horticultural Gardens. Students also organized a Beez & Brewz version of Biology on Tap at The Loft in downtown Lansing. Three entomologists talked about honey bees, wild bees and monarch butterflies.

Sara Hermann (Landis lab) received one of 50 National Institute of Food and Agriculture (NIFA) fellowships intended to prepare the next generation of scientists. Her research studies predator cues, which could create new alternative pest management tools for farmers. She has been awarded \$94,900 for a two-year project to examine how an important crop pest of various fruit and vegetables, the green peach aphid (*Myzus persicae*), might detect and respond to risk of predation by the multi-colored Asian lady beetle (*Harmonia axyridis*).

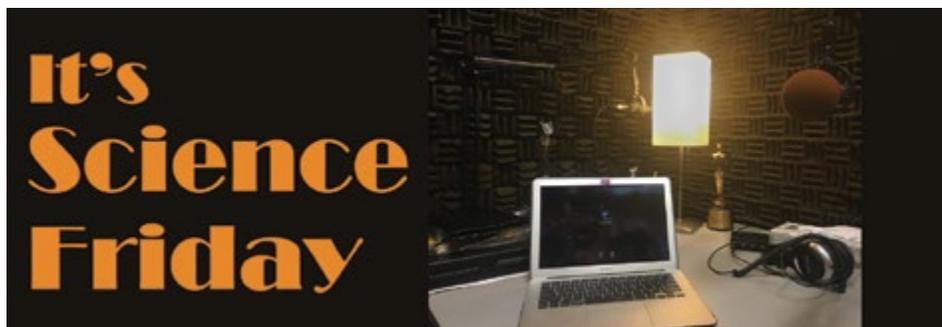


Kurt Stepnitz, MSU Photography

Sara Hermann

Kelsey Graham is a postdoc working with [Rufus Isaacs](#) who provides oversight for a [USDA NIFA project aimed at improving Great Lakes landscapes to support healthy pollinators](#). Based on this project and her years as a student, Graham observed that the general public loves the concept of helping bees. However, most are unaware that native bees are significant pollinators and, like honey bees, face serious challenges. Graham wrote a column about the efficiency of native pollinators, threats to their existence and her team's efforts to understand how Michigan's landscapes affect them and could be changed to improve pollination.

The column was published by [The Conversation](#), an independent news and commentary collaboration. *Continues on page 6.*



What's it like to be on Public Radio International's Science Friday? It all started with an email for assistant professor **Jen Pechal** from the producer of [Science Friday](#) who was researching a segment on the necrobiome and its use in forensics.

"It was exciting because I regularly listen to the show, and I always like to learn from the experts they interview," said Pechal. "Also, it's not very often that work on decomposition and forensics, especially insects and microbes, is discussed in a positive light on a national scale. I was happy to share the results to a wide audience from our collaborative project." Read about her experience and listen to the segment at: bit.ly/JenOnSciFri

SPARTAN PRIDE DONORS AND AWARD RECIPIENTS CELEBRATE SUCCESS

The Department gathered on April 26 to celebrate hard work, persistence and vision with our awards honoring outstanding students and staff. These awards are funded by donors who have experienced the impact such funds can have on a career. Our annual recognition reception – where presented awards equal a value of around \$40,000 – connects recipients, friends and colleagues with donors. We also honor faculty who have received special recognition during the past year. Thank you and congratulations to all!

Fellowships and awards

- **Joe Receveur** (Benbow lab), Gordon E. Guyer Endowed Fellowship in Aquatic Entomology.
- **Nicholas Babcock** (Benbow lab,) Merritt Endowed Fellowship in Entomology.
- **Gabriela Quinlan** (Isaacs lab), Roger and Barbara Hoopingarner Endowed Graduate Fellowship in Entomology; J.E. and Jean M. McPherson Graduate Student Travel Award; and the Hutson Entomology Research Award—PhD.
- **Sara Hermann** (Landis lab), Robert R. Dreisbach Endowed PhD Fellowship.
- **Margie Lund** (Szendrei lab), Robert R. Dreisbach Endowed PhD Fellowship.
- **Erica Fischer** (Cognato lab), Scriber Scholars in Butterfly Biology and Conservation Award.
- **Nicole Wonderlin** (White lab) Hutson Entomology Research Award—PhD.
- **Holly Hooper** (Grieshop lab), Hutson Entomology Research Award—MS.
- **Lidia Komondy** (undergraduate), Department of Entomology Undergraduate Award.
- **Danielle Kirkpatrick** (Gut lab), Robert Dreisbach Award and the Gordon Guyer Award.
- **Jacquelyn Albert** (Wilson lab), Paul Wooley Award (outstanding MS program).

- **Courtney Larson** (Benbow lab), Eugenia McDaniel Award (outstanding teaching).
- **Julia Perrone** (Landis lab), James Bath Award (outstanding staff).
- **Katie Demeuse** (Kaufman lab), **Margie Lund** (Szendrei lab), **Joseph Lonchar** (undergraduate) and **Rachel Osborn** (Cognato lab): Bug House Fellows.

Honors

- Kenneth Vaughn, Assistant Director of Development for the College of Agriculture and Natural Resources, presented an MSU Snyder Society Recognition award to **J.E. and Jean McPherson**.
- **Ernest Bernard** received the Department's Distinguished Alumnus Award for outstanding achievement in the field of entomology. See an interview with Bernard in this issue.

Special thanks to our donors

- Gordon and Mary Guyer
- Roger and Barbara Hoopingarner
- Ray and Bernice Hutson
- J.E. and Jean M. McPherson
- Richard and Pamela Merritt
- Larry and Beverly Olsen
- Mark and Kathleen Scriber



Photography: Rod Sanford for MSU Entomology

FEATURED STUDENTS

Hometown: Norton Shores, Michigan
Future study or career plans: Graduate school to research biological control of pest and invasive species.



CONNOR STURR
UNDERGRAD STUDENT



NICOLE WONDERLIN
GRADUATE STUDENT

Hometown: Mahomet, Illinois
Previous education: BS Integrative Biology, University of Illinois
Major professor: Peter White

Tell us about your experiences working with Professor Chris DiFonzo. We are doing joint research with Ohio State University studying the rise of Asiatic garden beetle populations in southern Michigan and Ohio. This kind of work is really helping me get experience with not only extension work, but also being able to search for and identify different larval species in the fields.

What is the best selling point about an entomology major? Since there aren't many who call this their major, it is a really tight knit group of people and it feels like you're listened to more by advisers.

What has been your best experience with entomology? My freshmen year of college I was cycling through ideas of different majors when I thought of my childhood love for entomology, and decided to meet with Chris DiFonzo, a student adviser at that time. She showed me around the Department and I was instantly hooked. Starting out with the Fundamentals of Entomology class only confirmed that I knew I was in the right spot.

What is your favorite activity outside of your studies? I'm in the Spartan Marching Band playing baritone. It really is a crazy, fun experience to march in Spartan Stadium every Saturday. Music is my second love behind entomology, and it pretty much takes up almost all my time in the fall when I prepare every week to come out of that tunnel and play my heart out.

What is your favorite thing about MSU? It's like its own little city. There's so much to do right on campus and you don't have to go anywhere else to have fun.

Do you have advice for anyone interested in an entomology major? If you're even the slightest bit interested, don't be afraid to check it out or talk to someone; our adviser, [Amanda Lorenz-Reaves](#), is the nicest person and can answer any questions. I was uncertain about entomology when I first thought of it, but I am unbelievably glad now that I chose to look further into it.

What are you researching? I am studying how moths contribute to pollination networks in urban environments.

Tell us a little about your teaching experiences. My teaching assistantship is through Lyman Briggs College (LBC). LBC heavily emphasizes the importance of inclusivity and diverse representation in science, Technology, engineering and math fields, which is very important to me. Also, I love working with students who have a genuine interest in science and are motivated to learn as much as possible during their time at MSU. As a naturally shy person, standing up in front of students each week has forced me out of my comfort zone and taught me to deal with stage fright!

What is your favorite activity as part of your graduate studies? Volunteering with the MSU Bug House is so rewarding. I love seeing visitors young and old conquering their fears of cockroaches and spiders while learning about the fascinating world of insects.

What is your favorite thing about MSU? Seeing students, faculty and staff join together during this past year to take a stand against sexual violence on college campuses has been so inspiring. I look forward to the next few years seeing how MSU as a community comes together to make our school a place for students to thrive.

What is your favorite insect? I have always loved carpenter bees (*Xylocopa* spp.). They come in so many unique colors and patterns and their body size makes them easy to spot even from a distance. I especially love the Eastern carpenter bee because its hairs make it look like it's wearing a little yellow vest.

What is your favorite way to spend your time outside of your studies? When I'm not working on research, I like to spend time outdoors, travel, read and spend time with friends and family.

Continued from page 3.

ration between editors and academics for the general public. Read her column: "[Beyond honey bees: Wild bees are also key pollinators, and some species are disappearing.](#)"

AWARD-WINNING

Faculty members, academic advisers and club advisers nominated 10 seniors for the 2018 College of Agriculture and Natural Resources (CANR) Outstanding Student Leader Award. **Lidia Komondy** was selected to represent Entomology. "Don't settle for things you think you should be doing. You've got to really enjoy it. It's a gut feeling. I knew the minute I was in entomology it was right, right for my career," said Komondy. Watch a video clip where she describes how working in several entomology labs helped her determine her career path: bit.ly/LidiaKomondy

MSU Information Technology holds an annual awards program to recognize and encourage best practices in the use of technology to enhance teaching and learning. **Peter White** won the award for the Best Blended Classroom. What's a blended classroom? Read about it and see White in action at: bit.ly/PeterWhiteClass

MSU Entomology Chairperson **Bill Ravlin** takes insect images around the world, but this backyard beauty was chosen for a publication cover. You don't have to travel far or discover exotic insects to achieve publication-quality pictures of insects, as demonstrated by this cover of "American Entomologist." Ravlin was struck by the detail and color of a common eastern bumble bee nectaring on lantana in Okemos, Michigan. "Thirty-seven photos and an hour later, I knew I had a keeper" said Ravlin.



GLOBAL IMPACT MBABAZI EMERGING LEADER



Ruth Mbabazi has been honored with MSU's International Studies and Programs Emerging Leader Award for her international agricultural advocacy. Her scholarship crosses disciplines and has global impact. She has assisted in diversifying soybean varieties in Uganda and cotton varieties in Ethiopia, Sudan and Swaziland. Her interactions with the Bill & Melinda Gates Foundation and the NEPAD/ABNE Project have produced

collaborative research in 14 countries, touching a variety of fields, from biotechnology and regulation to malaria mosquito control. She is beginning to see countries build on her past collaborative work.

"Through our project, NEPAD/ABNE, we worked with the government of Ethiopia on their biotechnology regulatory system. They had proclamations (laws) in place that had strict provisions on using modern biotechnology tools. Revisions made on their law resulted in a framework that attracted a private company from India to do confined field trials on biotech cotton. The Indian company has conducted multi-location trials and we hope this technology will become commercialized in Ethiopia soon to support the cotton ginnery industry in Ethiopia," said Mbabazi.

ALUMNI NEWS

Knute Gundersen (PhD 2018, Rufus Isaacs) was hired as a senior scientist for Lifescale Analytics, a life sciences consulting firm in the Research Triangle Park, and is on contract working for Bayer U.S. in their product development division. Gundersen says job-searching grads looking to transition to industry are welcome to contact him. "I'd be happy to help them in their job search!"

Adam Ingrao (PhD 2018, Zsafia Szendrei) has been hired for a new position with Michigan State University Extension. This summer he began work as MSUE's veterans liaison and agricultural entomologist. He has offices on campus and in the Upper Peninsula.



Surprise meet-up of past department chairperson **Jim Bath** and alum **Tom Dudek** at Jim's wife's booth, Venice Farmers Market in Florida.

ALUMNI PROFILES: ERNEST BERNARD

Ernie Bernard is the 2018 recipient of our department's Distinguished Alumni Award.

Why did you choose entomology and why MSU? I earned my bachelor's and master's at MSU, both in entomology. Like many children, growing up I collected insects. By high school, I was weighing several career choices, but ultimately chose entomology and was accepted at MSU. My senior year of high school, 1968, I competed in the Detroit Metropolitan Science Fair with a springtail project and was one of two grand award winners, which meant I got to go to the international science fair also in Detroit. Entomology Chairperson Gordon Guyer was a judge and he was very impressive, always smiling. He walked up to me, looked at my project and asked where I was going to school. When I said MSU in entomology, Dr. Guyer asked if I wanted a summer job! The job was in Dr. James Butcher's soil insect lab working with then-graduate-student Dick Snider, who became my mentor. I was already aware of Dick because in high school, I was intrigued with springtails and learned there was a guy working on springtails at MSU—that guy was Snider. I asked my science teacher if Snider could come give a seminar, and he did. He was the first real scientist I ever met.

It's striking to me that I interacted with a lot of positive people at MSU. They were helpful people who wanted their students and peers to succeed. James Bath became department chair after Dr. Guyer and he was a very positive guy. One time I was fooling around extracting nematodes and extracted a tardigrade, some of which feed on nematodes. I gathered literature and realized this particular tardigrade had never been described before, so

I wanted to publish the information. At that time, you had to pay page charges to publish and as a graduate student, I couldn't afford it. I talked to Dr. Bath and he said anything with the Department's name on it, the Department could pay for. I'll never forget that affirmation from him.

Where did you study after MSU? I earned my PhD at the University of Georgia and was hired upon completion by the University of Tennessee, where I am today. I've got a 90 percent research, 10 percent teaching assignment. I love that I have complete freedom to pursue what I want. I'm a nematologist but have maintained my interest in entomology, especially springtails and proturans, and I have significant insect taxonomy expertise.

Tell us about your research. A major project now is studying the nematode diversity that inhabits millipede intestines. Millipedes are very important in breaking down leaf litter and rotted wood, which contributes to nutrient cycling. A lot of exotic millipedes have been introduced into the USA, especially in the South. These exotics have different nematodes in their intestines from the domestic ones, and some of the domestic millipedes die when exposed to the new nematodes. As invasive millipedes move north due to climate change, this could have a significant impact on our native fauna. We are determining which nematodes are present in millipedes and monitoring them so we can identify when and where change is taking place.

In another project, my lab is partnering with another lab to look at nematodes as postmortem indicators for forensic use. The University of Tennessee has a facility—the Anthropological



Bill Ravlin congratulates Ernie Bernard, 2018 recipient of the Department's distinguished alumnus award.

Research Facility, better known as The Body Farm—that is a primary space for studying the decomposition of humans. Insects come almost immediately to a corpse, but we're looking at how nematodes respond to dead vertebrates and are examining the succession of nematode species on, under and in the vicinity of a corpse.

Any thoughts for current students? I tell my students if you want to stand out from your colleagues, do more than what is required. Also, if you have other interests, pursue those, as universities and likely other employers are looking for people who can shift to different fields.

What keeps you engaged in your work? I have the huge advantage of having been at a university for a long time. Nobody gets older—the students are always the same age and that helps to keep a young perspective. Students keep me adjusting to new approaches and they bring new needs for me to respond to. I also love the unending process of discovery. I describe a lot of new species and there is always something new to learn.

MAKING A DIFFERENCE VANWOERKOM JOINS NORTH CENTRAL IR-4



The Department of Entomology and North Central Region IR-4 welcome Entomology alumnus **Anthony VanWoerkom** as the new regional field coordinator for the North Central Region IR-4. VanWoerkom earned his bachelor, master and doctoral degrees at MSU studying fruit entomology and insecticide

toxicology. He worked as a research technician at the Trevor Nichols Research Center and as an IR-4 field research director.

“I am very excited to continue my career as a Spartan Entomologist!” said VanWoerkom. “Working with the interregional research project #4 (IR-4) has been a great experience for me and I am thrilled

to make a positive impact as the regional field coordinator.”

The national IR-4 project serves as the primary avenue for new reduced-risk pesticides and biopesticides to be registered with the Environmental Protection Agency (EPA) for minor-use crops and ornamentals. The IR-4 project contributes to over 95,000 U.S. jobs throughout the agricultural production value chain, generating some \$5,632 million in annual labor income and contributing \$9,436 billion to annual gross domestic product, according to a new study by the MSU Center for Economic Analysis. The North Central Region IR-4 regional field coordinator is the primary point of contact for specialty crop growers in the north-central region, assuring their pest management needs are included in the annual prioritization process. The North Central Region includes 12 states in the general Midwest.

#SpartanInsects Summer

P.S. Wish you were here.



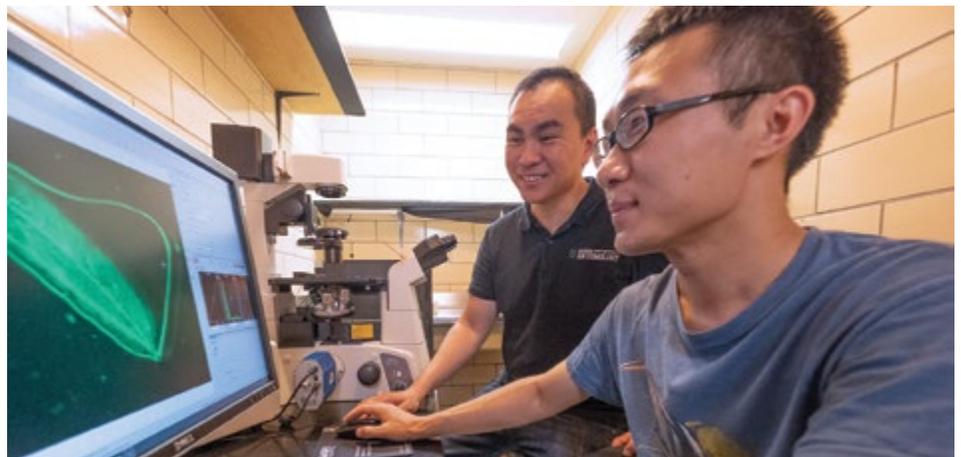
David Mota-Sanchez is monitoring monarchs from Michigan to Mexico.



Marianna Szűcs' lab begins developing rearing methods for a biological control agent of the invasive weed swallow-wort.

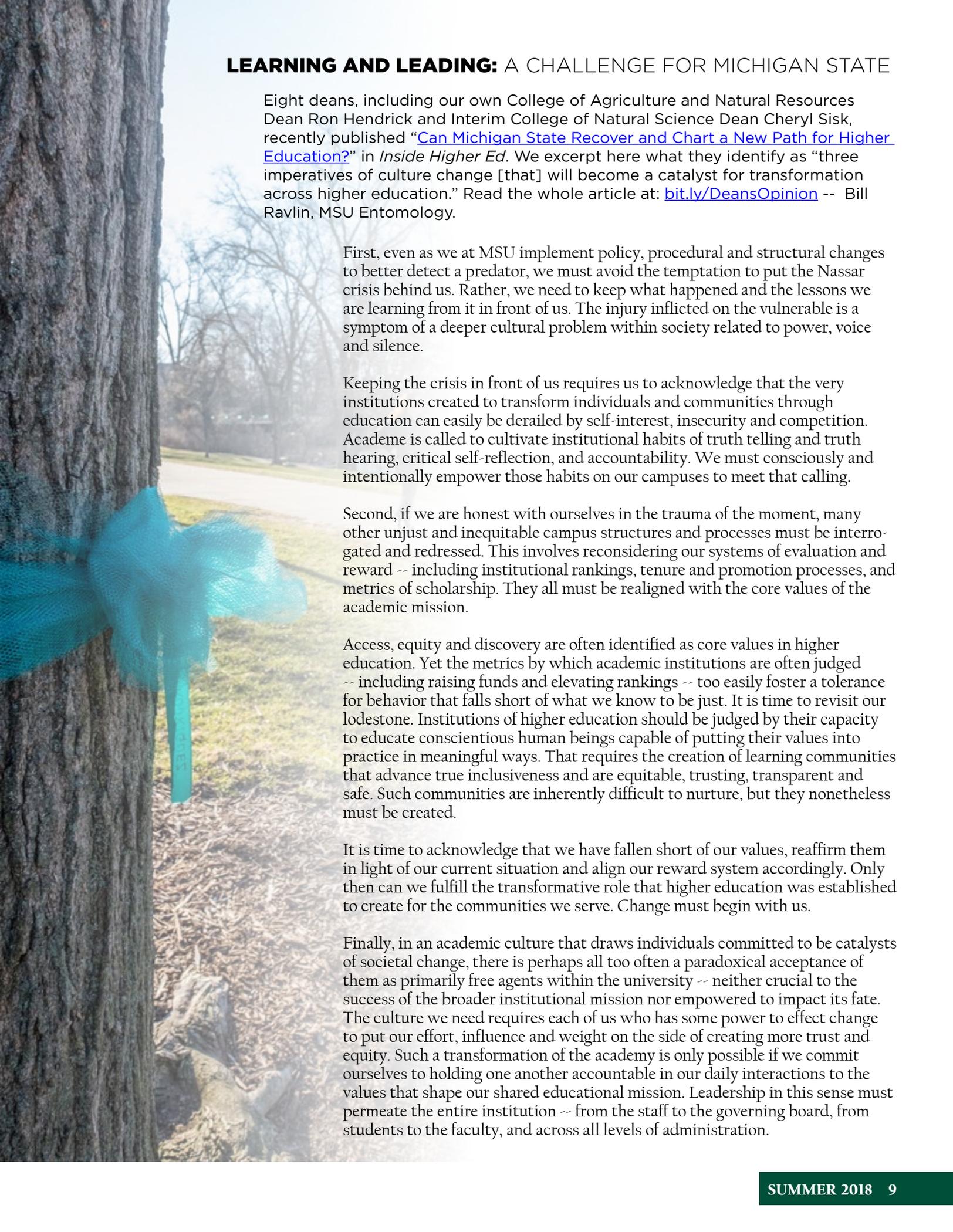


David Smitley's team collects data on which plants attract the most pollinators.



Henry Chung's lab researches molecular and physiological mechanisms of how insects adapt to different environments and to chemicals such as insecticides and pheromones.

Photos: Derrick Turner, MSU Photography



LEARNING AND LEADING: A CHALLENGE FOR MICHIGAN STATE

Eight deans, including our own College of Agriculture and Natural Resources Dean Ron Hendrick and Interim College of Natural Science Dean Cheryl Sisk, recently published "[Can Michigan State Recover and Chart a New Path for Higher Education?](#)" in *Inside Higher Ed*. We excerpt here what they identify as "three imperatives of culture change [that] will become a catalyst for transformation across higher education." Read the whole article at: bit.ly/DeansOpinion -- Bill Ravlin, MSU Entomology.

First, even as we at MSU implement policy, procedural and structural changes to better detect a predator, we must avoid the temptation to put the Nassar crisis behind us. Rather, we need to keep what happened and the lessons we are learning from it in front of us. The injury inflicted on the vulnerable is a symptom of a deeper cultural problem within society related to power, voice and silence.

Keeping the crisis in front of us requires us to acknowledge that the very institutions created to transform individuals and communities through education can easily be derailed by self-interest, insecurity and competition. Academe is called to cultivate institutional habits of truth telling and truth hearing, critical self-reflection, and accountability. We must consciously and intentionally empower those habits on our campuses to meet that calling.

Second, if we are honest with ourselves in the trauma of the moment, many other unjust and inequitable campus structures and processes must be interrogated and redressed. This involves reconsidering our systems of evaluation and reward -- including institutional rankings, tenure and promotion processes, and metrics of scholarship. They all must be realigned with the core values of the academic mission.

Access, equity and discovery are often identified as core values in higher education. Yet the metrics by which academic institutions are often judged -- including raising funds and elevating rankings -- too easily foster a tolerance for behavior that falls short of what we know to be just. It is time to revisit our lodestone. Institutions of higher education should be judged by their capacity to educate conscientious human beings capable of putting their values into practice in meaningful ways. That requires the creation of learning communities that advance true inclusiveness and are equitable, trusting, transparent and safe. Such communities are inherently difficult to nurture, but they nonetheless must be created.

It is time to acknowledge that we have fallen short of our values, reaffirm them in light of our current situation and align our reward system accordingly. Only then can we fulfill the transformative role that higher education was established to create for the communities we serve. Change must begin with us.

Finally, in an academic culture that draws individuals committed to be catalysts of societal change, there is perhaps all too often a paradoxical acceptance of them as primarily free agents within the university -- neither crucial to the success of the broader institutional mission nor empowered to impact its fate. The culture we need requires each of us who has some power to effect change to put our effort, influence and weight on the side of creating more trust and equity. Such a transformation of the academy is only possible if we commit ourselves to holding one another accountable in our daily interactions to the values that shape our shared educational mission. Leadership in this sense must permeate the entire institution -- from the staff to the governing board, from students to the faculty, and across all levels of administration.



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www.ent.msu.edu

CONGRATULATIONS OUR NEW GRADUATES



Zsofia Szendrei, MSU Entomology



Courtesy of Amanda Lorenz-Reaves, MSU Entomology



Courtesy of Danielle Kirkpatrick

Undergraduates

Entomology majors: Lidia Komondy, Steven Murtonen and Caitlin Peffers.

Entomology minors: Rachel Burdt, Kalvin Canfield, Bret Foster, Brenna Kizer, Grace Nagle and Rachel Polus.

Graduate students

Jacquelyn Albert (MS) – Major professor, Julianna Wilson
Danielle Kirkpatrick (PhD) – Major professor, Larry Gut
Adam Ingrao (PhD) – Major professor, Zsofia Szendrei
Keith Mason (PhD) – Major professor, Rufus Isaacs



Courtesy of Danielle Kirkpatrick