FROM THE CHAIR

Welcome back to MSU Entomology for Fall 2023! It has been a busy summer of fieldwork, travel, and collaboration for members of the department, and the 2023-2024 academic year has lots of exciting events in store.

Welcoming new students. We were thrilled to welcome our new cohort of undergraduate and graduate students to the department at the end of August! Starting in Fall of 2023 and for the next five years, each incoming student cohort will be matched with an insect theme as a way to build community and relationships between these students during their time in the department. This year's cohort is ***Team Honey Bee***, and our theme for the year is *"Teamwork and Collaboration"*. Over the next four years, we'll get to meet Team *Sesia spartini* (Embracing Diversity), Team Emerald Ash Borer (Tackling Difficult Challenges), Team *Hexagenia limbata* (Conservation), and Team Spotted-wing Drosophila (Engaging Partners).

Teamwork, collaboration, and history. This fall, our collaborative exhibit with MSU Libraries, ***Building a Buzz: A History of Beekeeping in the United States***, opened on September 8th. This exhibit draws on the libraries special collection and recent donations from the estate of MSU Entomology emeritus faculty member, Roger Hoopingarner, to tell the story of beekeeping in the United States. We're excited to have this exhibit at the heart of the campus and will be hosting a reception in conjunction with the exhibit on October 14th.

Expanding our team. We are also recruiting new faculty into the department, beginning this Fall. We just opened a search for an Assistant Professor focused on Medical Entomology and will be posting a teaching position with an applied entomology focus later this fall. Be on the lookout for these postings and please share widely!

Sharing our excellence. Looking ahead, we will be hosting the inaugural ***Excellence in Insect Science Symposium*** on May 16 & 17, 2024. This event draws on the support of the Tatter Family Endowment for Excellence in Entomology and will bring innovative scientists, educators, and practitioners from throughout the US and globally to MSU to develop new ideas and collaborations using entomology to address the global grand challenges of *One Health, Climate Resilience, and STEM Education.* Learn more about our goals, program, and register here: https://www.canr.msu.edu/ent/events/EIS-Symposium/index.

I'm so excited to be part of the big things happening at MSU Entomology, and I look forward to welcoming many of you to these and other events over the next year!

Hannah Burrack, Ph.D.
Chairperson

Faculty Promotions

Zsofia Szendrei, Ph. D.
Full Professor

Henry Chung, Ph. D.
Associate Professor

DIVERSITY, EQUITY, & INCLUSION GOLD AWARD 2022-23

The Department of Entomology was awarded the DEI Gold Award for 2022-23. This designation was recognized by the CANR DEI Digital Badge Project, which was developed to highlight the DEI efforts of each department and unit in the college.

During 2022, the Department of Entomology was focused on the following key DEI activities:

- Identifying sustainable support for grassroots efforts
- Improving department culture
- Broadening knowledge of training and educational resources

The department has also undertaken difficult conversations about DEI goals and perspectives among faculty, at department meetings, and with students.

Every year, CANR DEI efforts in the College of Agriculture and Natural Resources and MSU Extension are gathered and shared with the CANR Office of Diversity, Equity and Inclusion and CANR DEI Committee members. These efforts are then scored and grouped into three categories: Platinum, Gold and Green, with Platinum being the highest.

Hauri Lands Award at ICSE Conference

Kayleigh Hauri, Ph.D., a member of the Szendrei Lab, won the Best Student Presentation Award at the Annual Meeting of the International Chemical Ecology Society in Bangalore India.

Isaacs and Walker Named University Distinguished Professor

Rufus Isaacs, Ph.D.

Edward Walker, Ph.D.

Entomology faculty members Rufus Isaacs, Ph.D., and Ned Walker, Ph.D. have been named University Distinguished Professor in recognition of their outstanding achievements in teaching, research and public service. Isaacs and Walker are among the 10 faculty to be recognized university wide this year.

The designations were recommended by Interim Provost Thomas D. Jeitschko, Ph.D., and Interim President Teresa K. Woodruff, Ph.D., and approved by the MSU Board of Trustees at its June 16 meeting. Designations were effective immediately.

The recognition is among the highest honors that can be bestowed on a faculty member by the university. Those selected for the title have been recognized nationally and internationally for their exceptional teaching, outstanding record of public service, and scholarly and creative achievements.

Individuals holding the professorship will receive, in addition to their salary, a stipend of $5,000 per year for five years to support professional activities.

A reception to honor the newly designated University Distinguished Professors will be held on Nov. 16.

Lenartson-Kluge Receives 2023 Jack Breslin Distinguished Staff Award

Heather Lenartson-Kluge, Graduate Program Assistant and Assistant to the Entomology Department Chair, has been awarded the 2023 Jack Breslin Distinguished Staff Award.

This university award honors six MSU support staff members annually. Colleagues submit nominations of individuals who demonstrate the qualities of Jack Breslin, who served MSU as a student leader, honored athlete, top administrator and steadfast advocate, personifying "Spartan Spirit." Awardees display overall excellence in job performance, supportive attitude, and contributions.

Lenartson-Kluge received her award on Monday, May 15, 2023 at the awards celebration held at the Kellogg Center.

Heather Lenartson-Kluge

FEATURED UNDERGRAD
COOPER KRUEGER

Hometown: Bonner Springs, KS
Studies: Entomology major, Fisheries and Wildlife major-concentration in conservation

What inspired your interest in entomology?
A camp councilor I worked with was pursuing a degree in entomology when we worked together one summer. They gave me the chance to help teach a pond studies class where we showed children how to catch and identify aquatic arthropods. Before this, I did not know that entomology was something you could study. I was instantly hooked.

What has been your most significant experience with Entomology outside of your classwork?
Bug Club MSU has been an amazing experience! I have learned so many skills, met so many like-minded people, and I am now the events coordinator. I am also the undegrad rep for GUESS (Graduate and Undergraduate Entomological Student Society).

What is your favorite activity/way to spend your time outside of your studies?
I often spend my free time playing card and board games with my friends. Currently, our favorite game is Five Crowns.

What is your favorite thing about MSU?
I love being on campus. There are so many beautiful natural areas to explore, and it is enjoyable to walk around and enjoy the architecture and green spaces.

Anything else you'd like to tell us that is interesting about your experience becoming a student of entomology?
I am currently conducting research with the Christensen Lab for Wildlife Population Health. With Dr. Christensen, I am working on a research project on Culicoides midges as a vector for the Bluetongue virus in Michigan. This project has allowed me to study insects in a different way than I am used to.

What are your future study or career plans?
I would love to work in tallgrass prairie conservation.

FEATURED GRAD STUDENT
JORDY HERNANDEZ

Hometown: Kansas City, MO
Previous education: BS in Biology/BA in Chemistry, University of Missouri-Kansas City

What or who inspired your interest in entomology?
When I was thirteen years old, I went for a run and accidentally swallowed something that would change the rest of my life - a fly. I feared all insects after that day. Then I took a required undergraduate organismal biology course. Learning about the intricacies of insect anatomy, phylogenetics, and behavior surprised me in that these complex organisms have established themselves as an important player in global ecosystems. Instead of fretting about insects, I now looked at an insect with compassion. I dominated my fear of these organisms and replaced with it an undying curiosity.

What is your favorite activity as part of your graduate studies?
Juggling the responsibilities of being an instructor, researcher, and student is what makes graduate school entertaining. Never is there a time that I do the same thing over and over. Lecturing one day, performing lab work the next - the variety is refreshing.

What are you researching?
I am researching the phylogenetic relationships of a North American genus of dragonflies Somatochlora, commonly known as the striped emeralds. The objective of my research is to investigate the incomplete barriers to heterospecific mating among Somatochlora species using mitochondrial and nuclear DNA. This study will also result in the first multi-gene phylogenetic tree of Somatochlora species.

What is your favorite thing about MSU?
My favorite thing about MSU is the people. Compared to my previous institution, MSU feels much more communal despite being such a large school. The people seem genuinely invested in their studies while also caring for others.

What is most interesting about your experience becoming a student of entomology?
Becoming a graduate student has made me realize how little I know. I think this is especially true for entomologists, because our subject of study (insects) is the most diverse class of animals. It's a fountain of exploration and discovery.

Isaacs Receives ESA Distinguished Achievement Award in Extension

The Entomological Society of America awarded Rufus Isaacs, Ph.D., the Distinguished Achievement Award in Extension. This annual award recognizes outstanding contributions to extension entomology. ESA Awards & Honors recognize scientists, educators, and students who have distinguished themselves through their contributions to entomology. Award honorees will be showcased during Entomology 2023, November 5-8, in National Harbor, Maryland.

Dr. Rufus Isaacs is a professor and extension specialist in the Department of Entomology at Michigan State University (MSU). He holds a Ph.D. from Imperial College, University of London, and has been on the faculty at MSU for 24 years. His program develops management tools for economically important insects in berry crops, with a focus on blueberries and grapes in Michigan. Currently, this includes research on spotted wing Drosophila and its natural enemies, using phenology prediction to improve control of grape berry moth, and optimizing pollination of highbush blueberries.

His team's pollinator research has recently been exploring the interactions of pest management intensity and landscape composition for exposure and risk of agrochemicals to bees in blueberry farms. In collaboration with farmers, extension educators, and colleagues across the United States, his group is also developing educational resources to help land owners make informed decisions about their management of pests and pollinators. Isaacs currently teaches two graduate seminar classes, one on IPM and the other on pollinator ecology and management.

Rufus Isaacs, Ph.D.

Smith Awarded ESA SysEB Thomas Say Award

Sarah Smith, Ph.D.

Sarah Smith, Ph.D., will receive the prestigious 2023 SysEB Thomas Say Award from the Systematic and Evolutionary Biology section of the Entomological Society of America. This award acknowledges significant and outstanding work in the fields of insect systematics, morphology, or evolution "Insect" is defined here to include insect allies.

Smith's work is titled "A monograph of the Xyleborini (Coleoptera, Curculionidae, Scolytinae) of the Indochinese Peninsula (except Malaysia) and China". She is interested in the taxonomy and systematics of tropical bark and ambrosia beetles. Her current research focuses on the taxonomy of Xyleborini ambrosia beetles and the creation of diagnostic resources to facilitate their identification.

Smith will present her research and be recognized at the SysEB Section Meeting during the ESA Annual Meeting, November 5-8, 2023, in National Harbor, MD.

MSU Nematology Receives Society of Nematology Awards

Certis Travel Award
Luisa Parrado

Cobb Bowl Competition, *Second Place*
"Team NemaFolks"
Luisa Parrado,
Elisabeth Darling,
Rambika Thapa,
Abigail Palmisano

Syngenta Crop Protection Advances in Agriculture Award
Marisol Quintanilla, Ph.D.

EXCELLENCE *in*
INSECT
SCIENCE
SYMPOSIUM

Department of Entomology
MICHIGAN STATE UNIVERSITY

Advances and innovations in insect science can transform how we address the global grand challenges of Climate Resilience, One Health, and STEM Education.

As a leader in insect science, MSU Department of Entomology strives to connect researchers, industry leaders and policymakers to address these challenges through the Excellence in Insect Science initiative.

MAY 16-17, 2024
Kellogg Conference Center
East Lansing, Michigan
Registration Open Now!

Climate Resilience EIS@MSU Be Excellent

One Health EIS@MSU Be Excellent

STEM Education EIS@MSU Be Excellent

Building a Buzz
A History of Beekeeping in the United States

Featuring the Roger Hoopingarner Book Collection

Opening Reception
October 14, 2023
6:00 - 8:00 PM

MSU Library
First Floor Exhibit Space

Sponsored by
the Department of Entomology

RSVP required for reception. Please contact Hannah Burrack (burrackh@msu.edu) for more information.

Research Shows Emerald Ash Borer Threatening Tree Species

New research details how the emerald ash borer (EAB), an invasive forest pest native to Asia, is jeopardizing the entire U.S. and Canadian native range of black ash trees. The finding is particularly troubling because the trees are of cultural importance to Indigenous and First Nations groups.

Research results were published in the journal Frontiers in Ecology and the Environment. The effort was co-led by Deborah McCullough, professor in the MSU departments of Entomology and Forestry and Nathan Siegert, forest entomologist with the U.S. Department of Agriculture (USDA) Forest Service. The USDA Forest Service provided funding for the project.

Additional authors include:

- Thomas Luther, GIS analyst with the USDA Forest Service.
- Susan Crocker, research forester with the USDA Forest Service.
- Les Benedict, assistant director of the Environment Division with the St. Regis Mohawk Tribe.
- Kelly Church, fifth-generation black ash basket maker with the Match-E-Be-Nash-She-Wish Tribe.
- John Banks, retired director of natural resources with the Penobscot Nation.

EAB was first discovered in southeast Michigan and southern Ontario in 2002. Since then, researchers say it has become the most devastating forest insect to invade North America.

McCullough is one of the world's foremost experts on the pest and has studied its effects on ash forests for more than two decades.

"Adult beetles nibble on ash leaves but cause little damage. Larval feeding beneath the bark, however, is the real problem," she said. "This invader pest has already killed hundreds of millions of ash trees in the U.S. and Canada, which is a problem ecologically and economically, of course. But black ash is

Deborah McCullough, Ph.D.

unique. It usually grows in swampy or boggy forests, where few other trees can survive. It is also a highly valued cultural resource for many Indigenous tribes in the eastern U.S. and Canada that have used black ash trees for generations for basket making and other purposes."

Female EAB beetles lay eggs on the bark of ash trees during the summer. Eggs hatch within two weeks and the larvae — the immature grub-like stage — burrow through the bark. Larvae feed in tunnels called galleries on the inner bark, damaging the ability of the tree to transport nutrients and water. Large limbs, and eventually the entire tree, die.

Black ash is more vulnerable to EAB than any other ash species in North America or Asia. Studies at MSU have shown beetles strongly prefer to feed and lay eggs on black ash compared with other ash species, and black ash trees die at lower larval densities than other ash trees of the same size.

Scientists have found that dead or dying black ash trees rarely produce viable stump or root sprouts, and endemic EAB populations and competition from other trees renders the survival potential of black ash saplings and seedlings in the region questionable.

For this project, researchers used EAB distribution and spread in the U.S. and Canada from 2002 to 2020 to predict future expansion. Two different scenarios were modeled: one that assumed EAB would continue to spread at the same rate observed from 2002 to 2020, and another factoring in management that would reduce annual spread by half.

As of 2020, EAB had invaded nearly 60% of the native range of black ash, spreading at roughly 50 kilometers (about 31 miles) per year. Based on projected expansion, McCullough and her colleagues estimate that more than 75% of black ash basal area — used by scientists to describe the density and size of trees in a given area — will be lost across 87% of the species' range by 2035 under both scenarios. By 2040, EAB will likely have killed all or nearly all overstory black ash across its native range.

For the Indigenous groups that use black ash for traditional basket making, tremendous urgency is needed to address the problem.
To gain a greater understanding of the possible cultural effects,

Public outreach efforts have led to fewer people transporting firewood, McCullough said, but EAB will continue to spread due to mature female beetles who can fly substantial distances.

Biological control releases — native parasitoids from Asia distributed in areas of North America — have occurred in numerous locations, but the acceptance of this practice varies across cultures and the efficacy has been tenuous.

Indigenous groups are employing a strategy to protect harvested black ash logs from EAB, other insects and decay by submerging them in water. The characteristics required for basket making are retained with this practice.

Department of Entomology
MICHIGAN STATE UNIVERSITY

Michigan State University
Natural Science Building
288 Farm Lane Room 243
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Semster Kick-off

Welcome to Team Honey Bee

Entomology's newest cohort of graduate and undergraduate students for the 2023/2024 academic year, known as "Team Honey Bee", got acquainted at a meet and greet on August 25, 2023. The group feasted on Mexican food while getting to know faculty, staff and the other students. The theme for the year, "Teamwork and Collaboration", is off to a great start!

Go Team Honey Bee!! Go Green!!