

79th Annual Meeting of the Entomological Society of America North Central Branch

24-27 March 2024
Fort Collins, Colorado



“Integrative Entomology for Community Collaboration”

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2024 Meeting-at-a-Glance

| Saturday, 23 March 2024 | |
|---------------------------------------|--|
| Workshops and Social Functions | |
| 5:00-7:00PM | Craft Brewery and Distillery Tour, registration required; <i>depart Atrium at 4:30PM or meet near the fountain at 19 Old Town Square at 4:50PM</i> |

| Sunday, 24 March 2024 | |
|--|---|
| Workshops, Business, and Social Functions | |
| 8:00-11:00AM | METAmorphosis workshop, registration required; <i>Green and Gold Room</i> |
| 8:00AM-12:00PM | Arthur's Hike, registration required; <i>meet in Atrium at 8:00AM</i> |
| 11:00AM-12:00PM | Executive Committee Meeting; <i>Aggie</i> |
| 5:00-7:00PM | Entomology Games – preliminary rounds; <i>Salon 1&5</i> |
| 7:00-10:00PM | Welcome Reception and Keynote Address (8:00PM); <i>Canvas Stadium, CSU</i> |
| Scientific Program | |
| 1:00-4:45PM | Comprehensive Approach to IPM in Minor Crops Symposium; <i>Legends Room</i> |
| 1:00-3:40PM | Effective Scientific Engagement Symposium; <i>Green and Gold Room</i> |
| 1:00-5:00PM | Stand and Deliver Symposium; <i>Salon 1&5</i> |

| Monday, 25 March 2024 | |
|---------------------------|--|
| Social Functions | |
| 9:30-10:00AM | Coffee break; <i>Atrium</i> |
| 2:45-3:15PM | Coffee break; <i>Atrium</i> |
| 6:00-8:00PM | Entomology Games – final rounds; <i>Salon 1&5</i> |
| 6:00-9:00PM | ECP social; <i>Prost Brewing Co.</i> |
| 8:00-10:00PM | Student social; <i>Avogadro's Number</i> |
| Scientific Program | |
| 7:40-9:30AM | M.S. Session I TMP Competition; <i>Legends Room</i> |
| 8:00AM-6:00PM | Student competition posters; <i>Atrium</i> Authors present: odd #s 9:30-10:00AM and even #s 2:45-3:15PM |
| 8:00-9:30AM | B.S. Session TMP Competition; <i>Salon 1&5</i> |
| 8:00-11:50AM | Climate Change Adaptation Symposium; <i>Green and Gold Room</i> |
| 10:00AM-12:05PM | M.S. Session II TMP Competition; <i>Salon 1&5</i> |
| 10:00AM-12:05PM | M.S. Session III TMP Competition; <i>Legends Room</i> |
| 1:00-2:45PM | Collaborations Across the Great Plains Symposium; <i>Green and Gold Room</i> |
| 1:00-2:50PM | Ph.D. Session I TMP Competition; <i>Salon 2&3</i> |
| 1:12-2:50PM | Ph.D. Session II TMP Competition; <i>Salon 1&5</i> |
| 3:15-5:05PM | Ph.D. Session III TMP Competition; <i>Salon 2&3</i> |
| 3:15-5:05PM | Ph.D. Session IV TMP Competition; <i>Salon 1&5</i> |

2024 Meeting-at-a-Glance

| Tuesday, 26 March 2024 | |
|---------------------------------------|--|
| Workshops and Social Functions | |
| 10:00-10:30AM | Coffee break; <i>Atrium</i> |
| 11:00AM-12:00PM | Photo Salon; <i>Legends Room</i> |
| 12:15-1:45PM | Awards Luncheon; <i>Salon 2&3</i> |
| 5:00-7:00PM | Sunset Hike, registration required; <i>meet in Atrium at 5:00PM</i> |
| 5:00-8:00PM | Industry Networking Workshop, registration required; <i>Salon 2&3</i> |
| Scientific Program | |
| 8:00AM-5:00PM | Regular submitted posters; <i>Atrium</i> Authors present: 10:00-10:30AM |
| 8:00-10:00AM | Digital Entomology Symposium; <i>Legends Room</i> |
| 8:00-10:00AM | Teaching Outside of the Box Symposium; <i>Salon 1&5</i> |
| 8:00-11:50AM | Regular Submitted TMP Session I; <i>Green and Gold Room</i> |
| 2:00-5:20PM | Intersecting Realms Symposium; <i>Legends Room</i> |
| 2:00-5:00PM | Regular Submitted TMP Session II; <i>Green and Gold Room</i> |
| 3:30-5:00PM | Collaborations with Colorado Wheat Growers Symposium; <i>Salon 1&5</i> |

| Wednesday, 27 March 2024 | |
|--------------------------------------|--|
| Business and Social Functions | |
| 7:15-8:30AM | Coffee break; <i>Atrium</i> |
| 7:30-8:30AM | Final Membership Debrief Meeting; <i>Salon 1&5</i> |
| Scientific Program | |
| 8:30-11:30AM | Community Collaborations in Agriculture Symposium; <i>Salon 1&5</i> |
| 8:30-11:50AM | Highlights of IPM in the High Plains Symposium; <i>Legends Room</i> |
| 8:30-11:30AM | Non-Academic Careers in Entomology Symposium; <i>Green and Gold Room</i> |



| General "good to know" items for the meeting | |
|--|---|
| Registration | 11-5 (Sunday); 7:30-4 (Monday and Tuesday); 7:30-9 (Wednesday); <i>Atrium</i> |
| Presentation Upload Room | 11-5 (Sunday); 7:30-5 (Monday and Tuesday); 7:30-noon (Wednesday); <i>Rams Room</i> |
| Poster setup and removal | Students (7-8am Monday and 6-7pm Monday); <i>Atrium</i> Regular (7-8am Tuesday and 6-7pm Tuesday); <i>Atrium</i> |
| Wifi Internet | SSID: Hilton Honors Meeting and Password: VIP123 |

Thank you to our 2024 meeting sponsors!



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More about our national society

The Entomological Society of America (ESA) is the largest organization in the world serving the professional and scientific needs of entomologists and related disciplines. Founded in 1889, ESA has nearly 7,000 members affiliated with educational institutions, health agencies, private industry, and government. Members are researchers, teachers, extension service personnel, administrators, marketing representatives, research technicians, consultants, students, pest management professionals, and hobbyists. ESA is a 501(c)3 not-for-profit professional society governed by a board comprised of members. The headquarters office is located in Annapolis, Maryland.



**ENTOMOLOGICAL
SOCIETY OF AMERICA**
SYSTEMATICS, EVOLUTION, AND BIODIVERSITY

ESA publishes eight internationally acclaimed **JOURNALS** that provide unsurpassed coverage of the broad science of entomology, as well as *American Entomologist*, a colorful, quarterly magazine. Additionally, ESA offers **EMPLOYMENT OPPORTUNITIES** on our website from a wide range of institutions and companies employing entomologists and individuals in related fields.

The premier event of the society is its **ANNUAL MEETING**. Each year approximately 3,500 entomologists and other scientists gather to exchange scientific information. A program of symposia, conferences, submitted papers, and continuing education seminars provides attendees the opportunity to hear and present research results. The meeting also provides a chance to interact informally with peers and prospective employers.



Plan to attend the 2024 annual meeting!

Entomology 2024 will take place 10-13 November in Phoenix, Arizona. Join the thousands of insect science professionals in person as they meet, share ideas and advance scientific and technical knowledge. Forge new friendships and create lasting memories with fellow entomologists who share your passion for insects and their vital role in our ecosystem. This event will be an exclusively in-person event, with no virtual or pre-recorded presentations. Learn more here: <http://www.entsoc.org/events/annual-meeting>.

The theme for Entomology 2024 is **“Empowering Tomorrow with Insect Science.”** We especially encourage submissions formats that feature innovative dialogue and approaches that include topics which focus on challenges to the future of entomology and opportunities to meet those challenges with new ideas, techniques, technologies, and collaborations with scientists both within entomology and outside of entomology. Regular paper and poster submissions are due 31 May. Experience the stunning beauty of Phoenix, with its vibrant desert landscapes, breathtaking sunsets, and warm hospitality. Take advantage of the conference location to explore the unique insect fauna of the region. Phoenix is known for its beautiful natural scenery, including Camelback Mountain and the Sonoran Desert.

2024
ENTOMOLOGY
November 10-13 | Phoenix, AZ



More about the Sections in our society

ESA membership is organized by five subject matter-oriented Sections which offer members opportunities to network and interact with others sharing their specific interests. ESA membership automatically includes membership to one or more Sections that fit your needs. Look for these “wing symbols” throughout the scientific program to help you navigate Section topics!



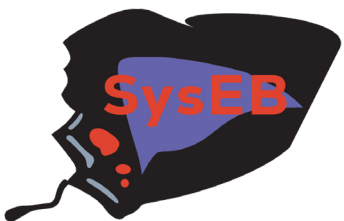
The **MUVE** (Medical, Urban, and Veterinary Entomology) Section is for people with an interest in how insects affect humans, domestic and wild animals, and our urban environment. Topics include medical entomology, urban entomology, veterinary entomology, forensic entomology, epidemiology, integrated disease management, human and veterinary parasitology, public health pest management, mosquito control, management of structural pests (e.g., termites, ants), and others.



The **PBT** (Physiology, Biochemistry, and Toxicology) Section represents academic, industry, government, non-profit, and citizen-science sectors. Members use physiological, biochemical, toxicological, genetic, genomic, molecular, proteomic, metabolomic, lipidomic, bioinformatic, and engineering approaches to study different organizational levels of arthropods and evolution, including cell division and regulation, hormonal production and regulation, homeostasis, immunity, olfaction, locomotion, and behavior, development and metamorphosis, pesticide modes of action and resistance mechanisms, and new approaches for arthropod pest management.



The **P-IE** (Plant-Insect Ecosystems) Section deals with insect interactions with plants. Topics include behavioral, ecological, and evolutionary relationships in natural landscapes, as well as integrated pest management (IPM) in agriculture, horticulture, forests, and lawn and garden. Aspects of crop protection, host-plant response, plant pathology/vectors, pollination, biological control, microbial control, and others are relevant.



The **SysEB** (Systematics, Evolution, and Biodiversity) Section is for people who study insect anatomy, classification, and history. As the name implies, the Section focuses on systematics, evolution, and biodiversity, but it also includes morphology, ecology, population dynamics, genetics, phylogeny, nomenclature, biogeography, zoology, and other specialties.



The **FIT** (Formal and Informal Teaching) Pilot Section is for people who teach entomology, either formally in classrooms (K-12, university, and college) or informally through extension, outreach, and science communication. This Section is also for researchers who focus on pedagogical methods that integrate entomology. Members are dedicated to broadening inclusive excellence for all learners and educators and facilitating collaborations across ESA and beyond to promote entomological education. Join us as we share entomological expertise and knowledge, instructional techniques, educational research, and networking opportunities.

More about our branch society

The North Central Branch of the Entomological Society of America (NCB-ESA) encompasses a large geographic area of 14 U.S. states (Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin) and three Canadian provinces (Manitoba, Nunavut, and Ontario (west of 80° longitude)). This geographic region, shown in blue on the map, represents approximately 1.5 billion acres or 600 million hectares. The land includes a diversity of crops, environments, and cultures that pose a range of entomological challenges and opportunities.



Each year, the NCB-ESA holds an annual meeting featuring research updates through submitted symposia, papers, and posters; member networking; recognition of undergraduate and graduate student achievements; and opportunities for early career professionals to meet and develop collaborations. Students may compete in paper and poster presentations, a number of recognition awards, and the Entomology Games.

We encourage you to use the meeting [website](#) and the detailed online schedule for all current information to navigate the meeting. Stay connected with colleagues on social media X (Twitter): [@NCBESA](#), [@EntSocAmerica](#), [@ECP_EntSoc](#), [@PIE_EntSoc](#), [@SysEB_EntSoc](#), [@MUVE_ESA](#), and [@ESAPBT](#).



Plan to attend the 2025 branch meeting!

President-elect, Boris A. Castro, has announced plans for the 2025 NCB-ESA meeting. Our branch will meet from **12-16 April at the Embassy Suites in Lincoln, Nebraska**. Anh Tran is the Program Chair, and Local Arrangements will be led by Jeff Bradshaw (Chair) and committee John Ruberson, Susan Weller, Matheus Ribeiro, and Clay Simpson. The hotel offers great amenities, including newly-renovated rooms and meeting spaces, and a complimentary cook-to-order breakfast. In addition, the location is adjacent to many restaurants and attractions. Lincoln is a vibrant city of 285,000 people, growing in every direction, and home of the University of Nebraska-Lincoln. The city is filled with unique opportunities for indoor, outdoor, and underground experiences. The University of Nebraska State Museum is located at a short walking distance from the hotel and its Division of Entomology cares for over 2 million insect specimens! Make plans to attend the 2025 NCB-ESA meeting and get ready to network with talented entomologists while promoting our science and propelling your professional development. We have a great venue and program for learning and networking. We cannot wait to see you all, April 12-16, 2025 in Lincoln!

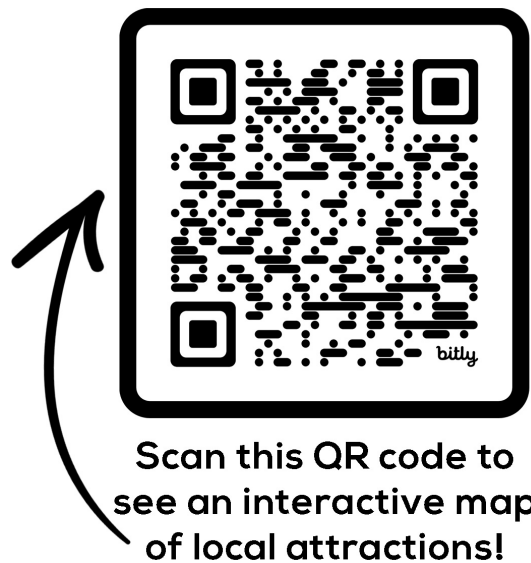
More about our host university



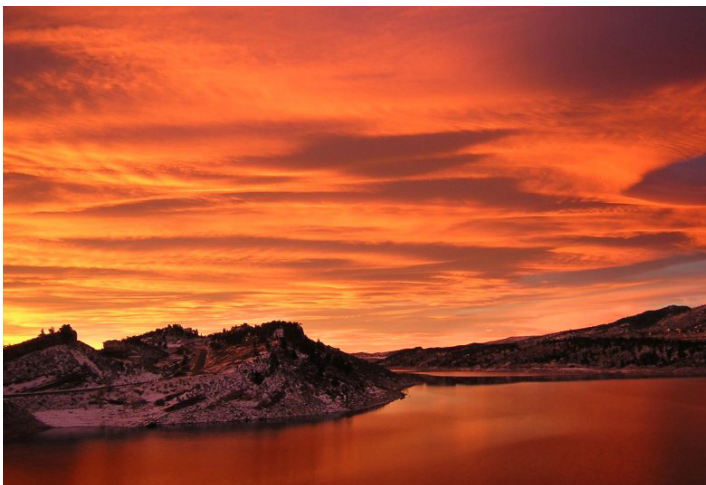
Colorado State University's flagship institution is located in the heart of Fort Collins. It is the state's only land-grant institution and has been serving Colorado since 1870. CSU-Fort Collins stretches throughout the city, state, and continent, with facilities and campuses in the foothills of Fort Collins, the Rocky Mountains, Denver, and even in Mexico. In the past decade, CSU has produced record enrollment. In 2022, about 26,062 undergraduate students and 7,299 graduate students studied full- and part-time at CSU. The student to faculty ratio for undergraduate students is 17 to 1.

More about our host city

Colorado State University couldn't be CSU without Fort Collins. You'll find an eclectic mix of artists, tech-savvy entrepreneurs, outdoor explorers, foodies, animal lovers and more together, enjoying endless days of sunshine and a spirit of adventure. It's the perfect mix of city life and mountain accessibility, thanks to the proximity to the Rocky Mountains and a thriving year-round entertainment scene. Fort Collins is walking and bike friendly, with many E-bikes and scooters available through mobile apps such as SPIN. We know your stay may be short, but hopefully you can find some time to enjoy the surrounding foothills, gourmet dining, and local breweries.



Scan this QR code to see an interactive map of local attractions!



Horsetooth Reservoir



Odell Brewing Company

Venue Amenities

The host hotel of the 2024 NCB-ESA meeting is the Hilton Fort Collins, located at 425 W Prospect Road. The hotel features a fitness center, indoor pool, and business center.

Parking: Parking is available at the hotel for \$15/day with in-and-out privileges.

Food and Beverage: Dine in at Spring Creek Grill, an atrium-style restaurant. They serve breakfast from 6:30-10:00 AM, and dinner from 4:00-10:00 PM. In-room dining is also available at the same time. There is a Starbucks cafe that opens daily at 6:00AM. Finally, the Spring Creek Lounge serves desserts and drinks from 4:00-10:00 PM.

Internet: Complimentary internet access is available in the hotel meeting space. Password login is required. Connect to the SSID network, open a browser, and enter the associated password.

SSID: Hilton Honors Meeting

Password: VIP123



Hilton meeting room floorplan



2024 NCB-ESA Meeting Information

Meeting Logistics

Registration

All participants, including guests, must register for the meeting; and badges are required for admission to all functions and sessions. The meeting registration desk is located in the *Atrium* of the Hilton Fort Collins, and will be open for pre-registered attendees and on-site registration at the following times:

Sunday, 24 March..... 11:00AM–5:00PM
Monday, 25 March 7:30AM–4:00PM
Tuesday, 26 March 7:30AM–4:00PM
Wednesday, 27 March7:30AM–9:00AM

Statement on Diversity, Equity, and Inclusion

ESA is an organization dedicated to furthering the science and awareness of entomology through the advancement and professional development of all its members. ESA acknowledges and values all dimensions of diversity. Therefore, we welcome into our Society and encourage the participation of all individuals who are interested in entomology regardless of age, gender, gender identity, race, cultural background, religion, physical ability, sexual orientation, professional status, geographic location, and all other characteristics that make our members unique. ESA actively promotes inclusion, recruitment, and retention in every aspect of the Society – including but not limited to membership, leadership, committees, and staff. We strive to cultivate a scientific society of excellence built on mentorship, encouragement, tolerance, and mutual respect. ESA is committed to proactively rejecting and denouncing prejudice and stereotyping whenever it is encountered in the Society or the profession.

Code of Conduct

By attending the 2024 NCB-ESA Annual Meeting, you agree voluntarily to abide by our ethics policy. The full policy may be found online at entsoc.org/conduct. If you need to file a complaint, contact Stacie East, ESA’s Director of Diversity, Equity, and Inclusion at 301.731.4535 x 3030 or seast@entsoc.org.

Recording Policy

NCB-ESA requests that attendees not take videos during sessions because they are disruptive to the presenters. If the speaker has granted permission by adding the “*Photograph OK*” logo, you are welcome to take photos, otherwise, please refrain from taking photos during presentations. If you wish to take photographs of a poster, please check for the “*Photograph OK*” logo on the poster or contact the author(s) for permission. NCB-ESA reserves the right to use photographs and videos taken during the meeting for informational and promotional purposes. Thank you for your cooperation.



Social Functions and Refreshments

- Saturday:**
- Craft Brewery and Distillery Tour from 5:00-7:00PM; advanced registration required; *depart at the Atrium at 4:30 OR meet near the fountain at 19 Old Town Square at 4:50.*
- Sunday:**
- Arthur's Hike from 8:00-11:00AM; advanced registration required; meet in *Atrium*
 - Welcome Reception from 7:00-10:00PM; *Canvas Stadium, CSU campus* [appetizers provided with cash bar]
- Monday:**
- Coffee break from 9:30-10:00AM; *Atrium**
 - Coffee break from 2:45-3:15PM; *Atrium**
 - ECP Social from 6:00-9:00PM; *Prost Brewing Co. (1510 S College Ave.);* sponsored by Corteva Agriscience
 - Student Social from 8:00-10:00PM; *Avogadro's Number (605 S Mason St.)* [appetizers provided with cash bar]
- Tuesday:**
- Coffee break from 10:00-10:30 AM; *Atrium**
 - Awards Luncheon from 12:15-1:45PM; *Salon 2&3* [plated lunch provided]
 - Sunset Hike at 5:00-7:00PM; advanced registration required; meet in *Atrium*
- Wednesday:**
- Coffee break from 10:00-10:30AM; *Atrium*



*ESA president Jennifer Henke is available for open discussion during coffee breaks on Monday and Tuesday. Stop by and chat with her in the Atrium!



There are several student and early-career professionals organizational displays in the *Atrium*. Check them out and support them!

- Monday:**
- Entomology Club ([Instagram](#)) and Zoo ([website](#)), Colorado State University
 - Popenoe Entomology Club, Kansas State University ([website](#))
 - Early-Career Professionals
- Tuesday:**
- Bruner Club, University of Nebraska-Lincoln ([website](#))
 - H. Garman Entomology Club, University of Kentucky ([website](#))
 - Early-Career Professionals

Guidelines for Poster Presenters

Posters must be contained within the 46 x 46 inches (117 x 117 cm) of space provided. The poster must NOT exceed the size limit due to overlap with neighboring displays. Posters should be hung in their assigned space according to the poster number in the meeting program. Bring your own Velcro strips or tacks to secure your display to the poster boards. All posters will be displayed in the *Atrium*.

Poster Schedule for Monday, 25 March (student competition):

Setup: 7:00-8:00AM; Take down: 6:00-7:00PM

Q/A for odd-numbered posters: 9:30-10:00AM

Q/A for even-numbered posters: 2:45-3:15PM

Poster Schedule for Tuesday, 26 March (regular submissions):

Setup: 7:00-8:00AM; Take down: 6:00-7:00PM

Q/A for all posters: 10:00-10:30AM

Guidelines for Paper Presenters

Speakers will follow standard procedures and practices for ESA meetings. Please be courteous to others by starting and stopping your presentation according to the schedule. Moderators will enforce the schedule with reminders. Time allocated for questions will be determined by the moderators.

File Setup: Presentations should be created in PowerPoint (.pptx) or compatible software and formatted in a widescreen (16:9) aspect ratio. All meeting room computers for submitted ten-minute paper (TMP) sessions and student competitions are PCs, so presenters who create a presentation using a Mac should test the file on a PC prior to the meeting. Your presentation should be named with your presentation number, last name, and first name (e.g., 201_Pilcher_Clint).

File Uploads: Speakers in submitted ten-minute paper sessions and the student competition are expected to upload their presentation files no less than two hours prior to their scheduled session. Please upload your file in the appropriate session folder. Presenters who fail to upload more than two hours prior to their session may upload in the session room as long as it does not impact the timing of the session. Speakers in symposia should coordinate file uploads with the respective organizer. The Presentation Preview and Upload Room (*Rams Room*) will have computers for presenters to upload and preview files (we discourage practicing your talk here due to lack of spare computers) during the following times:

Sunday, 24 March..... 11:00AM–5:00PM

Monday, 25 March 7:30AM–5:00PM

Tuesday, 26 March 7:30AM–5:00PM

Wednesday, 27 March 7:30AM–12:00PM

Room Setup: All meeting rooms will be equipped with an LCD projector, projector screen, PC laptop, slide advancer/laser pointer, and a microphone.

Guidelines for Moderators

All moderators are requested to arrive in their session room 10-15 minutes prior to the start of the session to get acclimated. A laptop and projector will be provided in each session room (even for symposia). Presenters have been instructed to upload their presentations in *The Rams Room* at least two hours prior to the start of their session. A member of the Local Arrangements Committee will bring the uploaded presentations to your session room approximately 15 minutes prior to the start of the session.

Moderators are responsible for introducing speakers and keeping the program on schedule. Timing reminders flashcards will be available in every room to encourage speakers to end on time. If time allows after a presentation, solicit questions from the audience. Prior to your session, you are encouraged to review the online program (<https://esa.confex.com/esa/2024ncb/meetingapp.cgi>) for the most updated schedule. If a paper has been withdrawn before 18 March, it will say "Withdrawn" in the online program. Moderators are expected to hold the time slot where that speaker should have presented and not to advance to the next speaker until the designated time.



Guidelines for Student Competition Judges

Assignments and instructions for the student competition will be delivered to judges before the meeting. Please get your scores and constructive feedback completed as soon as possible. Student Competition Chair, Nick Teets, will be available for "open office hours" to answer your questions about judging paper and poster competition sessions. Please find Nick in the *Atrium* on Sunday from 1:00-2:00 PM or send him an email (n.teets@uky.edu).



Program Changes, Message Board, and Lost Items

Please notify 2024 NCB-ESA Program Chair, Erin Hodgson (ewh@iastate.edu), about any program changes. Cancellations of papers and poster presentations as of 18 March will be noted in the online meeting program (<https://esa.confex.com/esa/2024ncb/meetingapp.cgi>). Last-minute cancellations will not appear in the online or pdf program.

Check out the message board in the *Atrium* for posting announcements, local maps, and employment opportunities. We encourage you to use QR codes for more information (or provide copies).

If you found something that might be important, drop it off at the Registration Desk in the *Atrium*. If you lost something important, hopefully it was dropped off at the Registration Desk.

2024 NCB-ESA Committees

Executive Committee

PRESIDENT Clint Pilcher, Corteva Agriscience
PRESIDENT-ELECT Boris Castro, Corteva Agriscience
PAST PRESIDENT Jeff Bradshaw, University of Nebraska-Lincoln
SECRETARY-TREASURER Laura Campbell, Corteva Agriscience
NCB REPRESENTATIVE TO GOVERNING BOARD Mary Gardiner, The Ohio State University
MEMBER-AT-LARGE Rob Morrison, USDA-ARS
MEMBER-AT-LARGE Joanna Gress, Emporia State University
MEMBER-AT-LARGE Anh Tran, ISK Biosciences
STUDENT REPRESENTATIVE Emily Althoff, University of Minnesota

Local Arrangements Committee

Co-CHAIR Punya Nachappa, Colorado State University
Co-CHAIR Ada Szczepaniec Colorado State University
MEMBERS Jacob MacWilliams, Henrique Vieira, Paige Olson, Lara Amiri-Kazaz, and Neha Panwar
STUDENT REPRESENTATIVE Max Schmidtbauer, Colorado State University

Program Committee

CHAIR Erin Hodgson, Iowa State University

Nominations Committee

CHAIR Marlin Rice
MEMBERS Ashley Leach, The Ohio State University; and Brian McCornack, Kansas State University

Professional and Honorary Awards Committee

CHAIR Kayla Perry, The Ohio State University
MEMBERS Janet Knodel, North Dakota State University; Ashley Stewart, Bayer Crop Science; Ashley Dean, Iowa State University; Morgan Christman, The Ohio State University; Anitha Chirumamilla, North Dakota State University; and Henry Chung, Michigan State University
STUDENT REPRESENTATIVE Caroline Kane, University of Kentucky

Student Awards and Competition Committee

CHAIR Nick Teets, University of Kentucky
MEMBERS Tamra Reall, University of Missouri; Laramy Enders, Purdue University; Debora Montezano, Corteva Agriscience; and Ryan Smith, Iowa State University
STUDENT REPRESENTATIVE Andrea Rilakovic, University of Nebraska-Lincoln

Early Career Professionals Committee

CHAIR Anh Tran, ISK Biosciences

CHAIR-ELECT Adrian Pekarcik, USDA-ARS

RECORDS KEEPER Nick Anderson, University of Illinois Urbana-Champaign

MEMBERS Sean Lewis, Eurofins; Sarah Elzay, Fort Hayes State University; and Heena Puri, Impetus Agriculture

Entomology Games Committee

CHAIR Ellen Klinger, The Ohio State University

GAMESMASTER Elizabeth Long, Purdue University

MEMBERS Ric Bessin, University of Kentucky; and Wayne Ohnesorg, University of Nebraska

STUDENT REPRESENTATIVE Andrea Rilakovic, University of Nebraska-Lincoln

Students Affairs Committee

CHAIR Emily Althoff, University of Minnesota

CHAIR-ELECT Bethany Robertson, North Dakota State University

SECRETARY-TREASURER Oluwaseun Ajayi, University of Cincinnati

STATE/PROVINCE REPRESENTATIVES

CANADA Alek Dolezal, University of Guelph; and Casandra Madden, University of Manitoba

COLORADO Max Schmidtbauer, Colorado State University

ILLINOIS Siti Fauziyah, University of Illinois Urbana-Champaign

INDIANA Leslie Aviles, Purdue University

IOWA Guerin Brown, University of Iowa; and Elliott Smith, Iowa State University

KANSAS David Claridge, Emporia State University; and Sabita Ranabhat, Kansas State University

KENTUCKY Caroline Kane, University of Kentucky

MICHIGAN Sasha Bishop, University of Michigan; and Bill Smith, Michigan State University

MINNESOTA Sabrina Celis, University of Minnesota

MISSOURI Leah Gastonguay, University of Missouri

NEBRASKA Andrea Rilakovic, University of Nebraska-Lincoln

NORTH DAKOTA Bethany Robertson, North Dakota State University

OHIO Grace Sward, The Ohio State University; and Oluwaseun Ajayi, University of Cincinnati

WISCONSIN Jade Kochanski, University of Wisconsin-Madison

ESA Committee Representatives

Awards and Honors: Jennifer White, University of Kentucky

Diversity, Equity, and Inclusion: Sajjan Grover, Bayer Crop Science

Early Career Professionals: Anastasia Cooper, Kansas State University

Entomology Games: Derek Dillard, Clarke

Education and Outreach: Joseph Raczkowski, The Ohio State University

Student Affairs: Jacqueline Maille, Kansas State University (chair) and Sabita Ranabhat, University of Nebraska-Lincoln (NCB Representative)

Science Policy: Madison Sankovitz, University of Colorado-Boulder

2024 NCB-ESA Awards

Legacy Contribution Award



Dr. Bill Hutchison is a Professor and Extension Entomologist in the Department of Entomology, University of Minnesota. He is internationally recognized for his work in areawide IPM, including the early detection of invasive species, and economic benefits of genetically engineered (GE) technology, particularly benefits to non-GE crops. He received his B.S. degree in agronomy at the University of Arizona, M.S. in entomology at Mississippi State University, and Ph.D. in entomology from the University of Wisconsin-Madison (1984). Following graduation, he was a Research Entomologist with USDA-ARS, in Phoenix, AZ. In 1989, he accepted an offer as assistant professor at the University of Minnesota and was promoted to professor in 2000. He served as department head from 2010 to 2015, and as coordinator of the Minnesota Extension IPM Program from 2015 to 2020.

Throughout his career, Hutchison focused on applied ecology as a foundation for developing sustainable IPM strategies.

With the advent of Bt corn (1996), and through the NC-246 multistate research group, he co-lead discussions among researchers, extension, and industry to develop a consensus-based, High-Dose-Refuge IRM strategy for European corn borer (ECB) and Bt corn (1997). These collaborations subsequently led to a landmark paper assessing the economic benefits of Bt corn (five states), published in *Science* (2010). The study documented a cumulative biotechnology benefit of \$6.9 billion (1996-2009), with 62 percent of the revenue accruing to non-Bt corn (refuge) growers—an economic incentive for IRM. The benefit to non-Bt growers was due to the areawide suppression effect on ECB, the absence of field-evolved Bt resistance in the Corn Belt, and the lack of technology fees for non-Bt seed. In 2000, he was also instrumental in developing the “in-field screen” (also known as sentinel plots, via field or sweet corn), now used in >24 states to monitor for Bt resistance in lepidopteran pests.

Beyond Bt, Hutchison and colleagues published several papers on the early detection, ecology, and development of IPM programs for invasive insect pests in the Midwestern U.S., including: the multicolored Asian lady beetle (20), spotted wing drosophila (11), brown marmorated stink bug (10), Japanese beetle (5), and western bean cutworm (5). His research has benefited from numerous collaborations with colleagues throughout the U.S. and Europe, and the opportunity to mentor over 30 graduate students and post-doctoral associates. He has published >190 journal articles, 22 book chapters, the VegEdge and FruitEdge web sites, and numerous extension publications. His work has been featured by the AP, NPR, The LA Times, and The Guardian (UK). Previous awards include ESA's Distinguished Extension Award (1997), the Entomological Foundation's IPM Team Award (2011), the P-IE Recognition Award (2018), ESA Award for Excellence in IPM (2020), ESA Fellow (2021) and Fellow of the Royal Entomological Society (2023).

Award of Excellence in Integrated Pest Management



Dr. Deborah G. McCullough, a native of Flagstaff, AZ, holds a B.S. in Biology/Ecology and a M.S. in Forestry from Northern Arizona University, along with a Ph.D. in Entomology from the University of Minnesota. She is a Professor at Michigan State University with a joint appointment in Entomology and Forestry, with research, extension and teaching responsibilities. McCullough's research focuses on the ecology, impacts and management of forest insects, particularly invasive species including emerald ash borer, beech bark disease, and hemlock woolly adelgid. She works with forest managers, regulatory officials, arborists, and landowners to develop sustainable management strategies to protect forest health. McCullough also assists chestnut growers and Christmas tree producers with insect management issues. McCullough teaches a 4-credit course on Forest Insects and Diseases annually to seniors in forestry and arboriculture. She has served as the major advisor for more than 35 graduate students, many of whom work in forest health and related positions. McCullough has authored or co-authored more than 135 papers about forest insect ecology and management, 240 extension bulletins, websites, videos or articles in trade publications and given more than 600 presentations on forest insects.

Distinguished Achievement Award in Teaching



Dr. Krystal Hans is the Director of Forensic Science and an Assistant Professor of Forensic Entomology at Purdue University. She received her BSc in Biology from Hobart and William Smith Colleges in 2006, completed her MSc at Cleveland State University in 2010 and earned her Ph.D. from the University of Windsor in 2016. She previously held positions as the Director of Forensic Biology at Delaware State University (2016-2018) and a lecturer at Purdue (2019-2021). At Purdue, she has instructed more than 2,500 undergraduate students in courses on forensic entomology and forensic science and has a research lab that mentors graduate, and undergraduate students SOTL projects and in experiments on the behavior and development of forensically relevant insects. As a cold case advocate, Dr. Hans partners with non-profit organizations and trains students in cold case investigations; co-hosting the annual Cold Case Symposium to raise awareness for cases across the country. Dr. Hans is a member of numerous organizations, including the Entomological Society of America, the American Academy of Forensic Science and she is currently the president-elect for the North American Forensic Entomology Association. She serves as a forensic consultant for investigations across the US, is a board-certified forensic entomologist and provides training on the collection and analysis of insect evidence for law enforcement, forensic pathologists, death investigators, and forensic professionals.

Distinguished Achievement Award in Extension



Dr. Elaine Evans is a University of Minnesota Extension Educator and Researcher working on pollinator education and research relating to bee conservation. After completing an M.S. and Ph.D. in Entomology at the University of Minnesota, Elaine has worked to connect people and pollinators through public engagement in monitoring, sharing conservation action steps, and researching impacts of conservation actions.

Excellence in Early Career Education and Engagement



Melissa Schreiner joined CSU Extension in January of 2022 as the Extension entomologist. Schreiner's educational background is anchored with a B.S. in Soil and Crop Sciences and an M.S. in Entomology from CSU. Prior work experience includes agricultural production management, research assistant, horticultural entomology laboratory management, and youth education. Mel works as a state entomologist for Colorado State University Extension, focusing in the Tri-River Area of Colorado. She obtains advanced skills in vegetable production, horticultural entomology, insect and spider identification, insect photography and scientific illustration. Her extension and research program helps to solve agricultural, urban, public health, and natural resource issues relating to pest management and entomology in western Colorado. Mel's extension entomology program manages several diverse programs that support community members, master gardeners, producers, extension agents, pest management professionals, with the provision of insect/plant damage diagnostics and insect education. Schreiner is highly engaged within her community, and examples include partnering with the Colorado Department of Agriculture, the CSU Agricultural Experiment Station, Mesa County Government and with local leaders. The discovery of Japanese beetles in Grand Junction as well as the initial response, is a keystone example of Schreiner's dedicated efforts to help stakeholders fight invasive pests. Schreiner has also been tasked with responding to the corn earworm outbreak of 2023, where her applied research is helping to provide needed solutions.



Excellence in Early Career Research

Dr. John Mola is an assistant professor in the Forest and Rangeland Stewardship Department of at Colorado State University. He is an applied ecologist, primarily focused on pollinating insects, especially bumble bees. In close collaboration with university, government, and non-profit partners, his research group works on topics in pollinator conservation, urban ecology, forest ecology, conservation genetics, and more.

John Henry Comstock Award

Dr. Hailey Shanovich is a postdoctoral fellow with the USGS Climate Adaptation Science Centers performing translational science on climate change and its impacts on wildlife and conservation. Hailey graduated from the University of Minnesota's Natural Resource Science and Management doctoral program this past summer with a minor in Entomology. Hailey is currently the Student Representative to the Governing Board for the P-IE Section and a Member-at-Large for the Common Names Committee and Better Common Names Task Force, and served as the previous chair of the North Central Branch's Student Affairs Committee. Hailey cares deeply about the accessibility and inclusivity of science and effective outreach in STEM.



Graduate Student Scholarship

Sabita Ranabhat is a Ph.D. candidate in Entomology at Kansas State University, co-advised by Drs Kun Yan Zhu (KSU) and Rob Morrison (USDA-ARS). Her research focuses on post-harvest management and food security. She's specifically working on how to integrate a novel tactic, namely long-lasting insecticide netting, into integrated pest management programs for food facilities. Sabita is originally from Nepal where she completed a B.S. in Agriculture at Tribhuvan University. She went on to complete M.S. in Entomology at Rutgers University where she studied bed bug IPM. She has maintained a high level of productivity including publishing ten peer-reviewed papers and has given 45 presentations. She is also involved in multiple professional service capacities for her home institutions, including Graduate Student Ambassador at K-State, President at the Society of Overseas Nepalese Entomologists (SONE), ESA-NCB Student Affairs Committee Rep, serving on a judging panel for ESA and as a reviewer. Her long-term career goals are to help alleviate global food insecurity through effective insect pest management while increasing agricultural sustainability.



Certified Entomologists of Mid-America Educational Project Award: Camp Sketchapod

Project Type: Adult Summer Camp

Organizers:

Brian McCornack, Kansas State University
Erin Hodgson, Iowa State University
Crystal Ly, Kansas State University

Instructors:

Jack Whisenant
Hailey Shanovich, US Geological Survey



National need for scientific illustration but declining opportunities. Championing diversity, equity, and inclusion to foster interdisciplinary connections. World-class, one of kind experience: private tours and connecting with conservation and entomological heritage. Accessibility to industry-standard software, hardware and resources. Supported by industry, EntSoc branches and EntSoc sections. We are creating a safe, diverse and fun space for anyone at any skill level (egg, larva, pupa or adult) to come together and learn about the science of Entomology through scientific illustration. Many attendees wished we could do more with this project, and with the right support, more opportunities like this will be available.

Find out more about 2024 Camp Sketchapod here: <https://sketchapod.com>

Certified Entomologists of Mid-America Educational Project Award: MothEd

Project type: Website

Organizers:

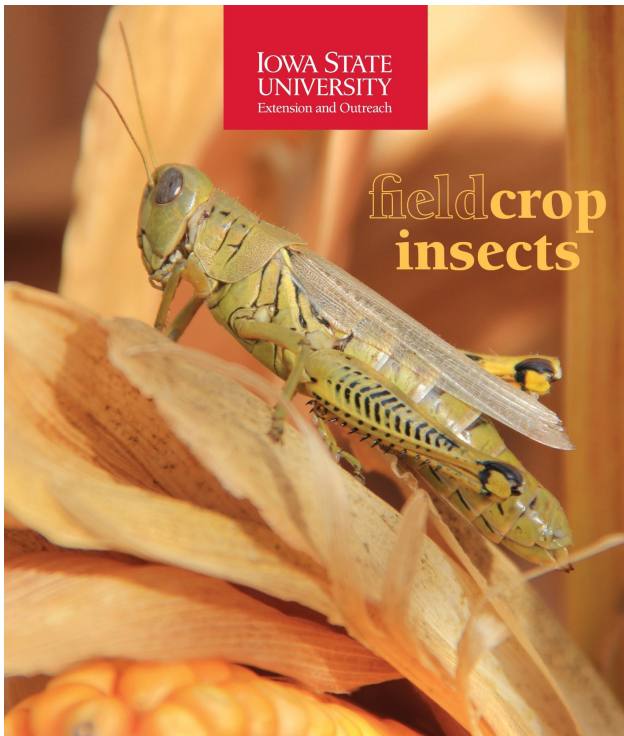
Peter White, Michigan State University
Brian Keas, Michigan State University
Frieda Reichsman, The Concord Consortium
David Stroupe, University of Utah
Chris Brown, Michigan State University
Megan Walser, Michigan State University
Sarah Haavind, The Concord Consortium
Leslie Bondaryk, The Concord Consortium



MothEd is purposefully designed to provide elementary and middle school students the opportunity to shape the scientific practices of their classroom, to survey moth abundance and diversity of their local places, and to inform the ongoing ecological work of entomologists.

Find out more about MothEd here: <https://www.motheducation.org/>

Certified Entomologists of Mid-America Educational Project Award: Field Crop Insects Compendium



Project Type: Publication

Co-authors: Erin Hodgson, Ashley Dean, Marlin Rice, and Adam Sisson; Iowa State University

The second edition of Field Crop Insects Compendium was released at Iowa State University in 2023. This 80-page publication includes descriptions and images of more than 50 pest and beneficial insects. The compendium contains updated research-based recommendations for life cycle, crop injury, and management. There is also information on integrated pest management including scouting, degree days, and a defoliation estimation guide. The purpose of this publication is to help guide farmers, agronomists, extension agents, crop consultants, and others in understanding and mitigating insect pest issues. This publication contains information on essential insect identification, scouting techniques, and basic management strategies, as well as fundamental insect biology and pest impact across the primary crops grown in Iowa and surrounding states. It is a valuable resource for those who regularly scout crops.

Get hard copies and e-copies here:

<https://store.extension.iastate.edu/product/13725>.

Certified Entomologists of Mid-America Educational Project Award: Little Wings



Project Type: Lesson Plans

Organizers:

Doug Golick, University of Nebraska-Lincoln

Sara Paulos, University of Nebraska-Lincoln

This publication is part of the Little Wings - Pollinator Science Explorations series. It contains a series of exploratory lessons covering insect pollinators and their conservation. It is designed for Pre-K through 3rd grades following Nebraska Early Learning Guidelines. These lessons can be adapted for use with a variety of ages.

Get your FREE copy of Little Wings here:

<https://bit.ly/3TbhFFt>

Special Acknowledgments

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Cindy Meyers (Awards)

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Max Schmidtbauer, Awards Luncheon Emcee

Thank you to the symposia organizers, 48 session moderators, and 39 student competition judges for your time!

Ashley Dean, for proofing the pdf program





Symposium: Comprehensive Approach to Integrated Pest Management With A Focus On Oft-Forgotten Minor Crops

1:00 – 4:45 PM

Legends Room

Organizers and Moderators: **Jeffrey Cluever**, USDA-ARS; and **Jarrad Prasifka**, USDA-ARS

- 1:00 Introductory remarks
- 1:15 1 Evaluation of a strategy to conserve bee pollination while reducing red seed weevil damage in sunflower on the High Plains. Luis Ochoa¹, Autumn Smart², Gary Brewer², Jarrad Prasifka³ and **Jeffrey Bradshaw** (jbradshaw2@unl.edu)^{4,5}, ¹New Mexico State Univ., Las Cruces, NM, ²Univ. of Nebraska-Lincoln, Lincoln, NE, ³USDA-ARS, Fargo, ND, ⁴Univ. of Nebraska-Lincoln, Lincoln, NE, ⁵Univ. of Nebraska-Lincoln, Scottsbluff, NE
- 1:35 2 The importance of quality assessment associated with biological control programs in greenhouses. **Raymond Cloyd** (rcloyd@ksu.edu), Kansas State Univ., Manhattan, KS
- 1:55 3 Developing damage thresholds for soil-insect pests in commercial mint. **Elizabeth Long** (long132@purdue.edu), Purdue Univ., West Lafayette, IN
- 2:15 4 Battling bugs in berries: Integrating strategies for managing invasive insects. Rufus Isaacs, **Steven VanTimmeren** (vantimm2@msu.edu) and Lauren Goldstein, Michigan State Univ., East Lansing, MI
- 2:35 5 Investigating integrated pest management practices among coffee, citrus, and sweet potato growers in Brazil. **Alisson Santana** (alisson.0910.silva@gmail.com), Univ. of Nebraska-Lincoln, North Platte, NE
- 2:55 Break
- 3:10 6 Managing a stem borer in quinoa: Challenges of developing IPM for a new pest in a niche crop. **Neha Panwar** (neha.panwar@colostate.edu)¹, Kevin Murphy², Jorge Caballero¹, Jane Stewart¹, Jeff Davidson³ and Adrianna Szczepaniec¹, ¹Colorado State Univ., Ft. Collins, CO, ²Washington State Univ., Pullman, WA, ³Colorado State Univ., Center, CO
- 3:30 7 Managing allium leafminer in allium crops with diversified control practices. **Pin-Chu Lai** (pinchu0414@gmail.com)¹ and Brian Nault², ¹Univ. of Nebraska-Lincoln, Scottsbluff, NE, ²Cornell Univ., Cornell AgriTech, Geneva, NY
- 3:50 8 Updates for Minnesota apple IPM: Grower-led IPM innovation in a state of field crops. **Sally Nelson** (nels9091@umn.edu)¹, John Jacobson² and William Hutchison³, ¹Univ. of Minnesota Extension, St. Paul, MN, ²Pine Tree Apple Orchard, White Bear Lake, MN, ³Univ. of Minnesota, St. Paul, MN
- 4:10 9 From bytes to bugs: Using machine learning to track insects in field crops. **Brian McCornack** (bmccornack@gmail.com) and Iván Grijalva, Kansas State Univ., Manhattan, KS
- 4:30 Concluding remarks



Symposium: Effective Scientific Engagement at the State Level

1:00 – 4:20 PM
Green and Gold Room

Organizers and Moderators: **Matthew Carroll**, Bayer Crop Science;
and **Clinton Pilcher**, Corteva Agriscience

- | | | |
|------|----|--|
| 1:00 | 10 | Why are we here today? The need for improved science communication between investigator and the non-scientist Matthew Carroll (matthew.carroll1@bayer.com), Bayer Crop Science, St. Louis, MO |
| 1:20 | 11 | Taking our entomology advocacy efforts to the State House: To better prepare for demographic changes in higher education and workforce. Marianne Alleyne (vanlaarh@illinois.edu), Univ. of Illinois Urbana-Champaign, Champaign, IL |
| 1:40 | 12 | The nexus of science and policy: Advocacy that promotes practical research to advance sustainable agriculture. Reuben Baris (reuben.baris@corteva.com), Corteva Agriscience, Indianapolis, IN |
| 2:00 | | Break |
| 2:10 | 13 | Experiences at the Center for Disease Control and Prevention in communicating to non-scientists. Ben Beard (cbb0@cdc.gov), Centers for Disease Control and Prevention, Fort Collins, CO |
| 2:30 | 14 | Science policy and engagement training. Judy Wu-Smart (jwu-smart@unl.edu), Univ. of Nebraska-Lincoln, Lincoln, NE |
| 2:50 | | Workshop |



Symposium: Stand and Deliver: Integrating Insects into Diverse Teaching Spaces*

**1:00 – 3:40 PM
Salon 1&5**

Organizers and Moderators: **John Ruberson**, University of Nebraska-Lincoln;
and **Joanna Gress**, Emporia State University

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|------|----|--|
| 1:00 | 15 | Welcome and introduction to the FIT symposium. John Ruberson (jruberson2@unl.edu), Univ. of Nebraska-Lincoln, Lincoln, NE |
| 1:05 | 16 | Busy as bees: conducting high impact research for undergraduates. Joanna Gress (jgress@emporia.edu), Emporia State Univ., Emporia, KS |
| | 17 | Withdrawn |
| 1:25 | 18 | Teaching animal-plant interactions with inquiry experiences. Karen Gomez (karen.gomez@unco.edu), Univ. of Northern Colorado, Greeley, CO |
| 1:45 | 19 | Building community and campus connections: STEM outreach at Emporia State University. Daphne Mayes (dmayes1@emporia.edu), Emporia State Univ., Emporia, KS |
| 2:05 | | Break |
| 2:25 | 20 | I'm not awkward, science is awkward. Jody Green (jgreen17@unl.edu) and Louise Lynch-O'Brien, Univ. of Nebraska, Lincoln, NE |
| 2:45 | 21 | Good bug or bad? Beneficial arthropods STEAM education activities for pre-K - 5th grades. Doug Golick (dgolick2@unl.edu), Judy Wu-Smart and Shelby Kittle, Univ. of Nebraska, Lincoln, NE |
| 3:05 | | Panel Discussion |
| 3:35 | | Concluding Remarks |

**Partial support for this symposium was provided by the Department of Agricultural Biology and the College of Agricultural Sciences at Colorado State University.*



Student Poster Competition*

B.S. Session I

- D1 Digging deep: The effect of biocontrol agents on soil composition and plant fitness. **Reyna Baldwin** (reynacaldwin@gmail.com), Autumn Nicoson, Giovana Matos Franco and Paul Ode, Colorado State Univ., Fort Collins, CO
- D2 Bee alarmed: The impact of neonicotinoids on honey bee (*Apis mellifera*) learning and memory. **Meagan Fernandez** (mfern3@g.emporia.edu), Oliver-Elias Hiszczynskyj, David Claridge, Meghan Cashell, Jacob Spidell, Jae Horn and Joanna Gress, Emporia State Univ., Emporia, KS
- D3 Assessing the protective effects of plant-based antioxidants in neonicotinoid treated *Apis mellifera*. **Oliver-Elias Hiszczynskyj** (hiszczynskyjh@gmail.com), David Claridge, Meghan Cashell, Meagan Fernandez, Jacob Spidell and Joanna Gress, Emporia State Univ., Emporia, KS
- D4 Examining methodologies and barriers to assessing potential impacts of pesticides on wild social bees. **Emma Knezevic** (eknezevic2@huskers.unl.edu), Paige Myers, Autumn Smart and Judy Wu-Smart, Univ. of Nebraska-Lincoln, Lincoln, NE
- D5 Evaluating the influence of prairie strips on ground beetle activity and predation dynamics in Iowa crop fields. **Yojana Leon** (yeleon@iastate.edu), Andres Vargas, Matthew O'Neal and Lisa Schulte Moore, Iowa State Univ., Ames, IA
- D6 Comparing lab toxicity assays using 10 μ l vs 50 μ l to better inform current risk assessment procedures relating to pesticide exposure in wild social bees. **Paige Myers** (PMyers3@unl.edu), Emma Knezevic, Autumn Smart and Judy Wu-Smart, Univ. of Nebraska-Lincoln, Lincoln, NE
- D7 Plant-soil microbial dynamics: Impacts on health, fitness and ecological resilience, with a focus on Russian knapweed, *Rhaponticum repens*. **Autumn Nicoson** (aunicoson@gmail.com), Reyna Baldwin, Giovana Matos Franco and Paul Ode, Colorado State Univ., Fort Collins, CO
- D8 Entomopathogenic nematode movement in response to two *Diabrotica* (Coleoptera: Chrysomelidae) species. **Emma Von Hagel** (Emma.VonHagel@jacks.sdstate.edu)¹, Chad Nielson² and Adrian Pekarcik², ¹South Dakota State Univ., Brookings, SD, ²USDA-ARS, Brookings, SD
- D9 Interaction between *Beauveria bassiana* and entomopathogenic nematodes for corn rootworm management. **Jonah Worden** (jonah.worden@trojans.dsu.edu)¹, Chad Nielson² and Adrian Pekarcik², ¹Dakota State Univ., Madison, SD, ²USDA-ARS, Brookings, SD

*Authors requested to accompany displays according to poster number: odd-numbered posters from 9:30-10:00AM, and even-numbered posters from 2:45-3:15PM.



B.S. Session II

- D10 Impact of soil burial depth on adult emergence of soybean gall midge. **Tyler Babica** (tbabica2@unl.edu), Natasha Umezu and Anthony McMechan, Univ. of Nebraska-Lincoln, Lincoln, NE
- D11 Does intraspecific bee body size vary across urban parks by land cover or affluence? **Nancy Bartholomew** (nancy.bartholomew@colostate.edu) and John Mola, Colorado State Univ., Fort Collins, CO
- D12 The effects of human land use and stream restoration on the benthic invertebrate populations of Juday Creek. **Claire Bass** (clairebass22@gmail.com), Univ. of Notre Dame, Notre Dame, IN
- D13 Diurnal flight response by stored product insects to two automated remote traps baited with a multi-species lure. **Joseph Castaldi** (funnyguy2019@ksu.edu)¹, Jennifer Abshire², Sabita Ranabhat¹, Alison Gerken², Georgina Bingham³ and William Morrison², ¹Kansas State Univ., Manhattan, KS, ²USDA-ARS, Manhattan, KS, ³Univ. of Nebraska-Lincoln, Lincoln, NE
- D14 Larval cereal leaf beetle, *Oulema melanopus*, feeding damage on organic small grain crops. **Rebecca DiScipio** (discipio.4@osu.edu), Kylie Harbert, Stephanie Pflaum, Amy Raudenbush, Ryan Haden and Kelley Tilmon, The Ohio State Univ., Wooster, OH
- D15 Changing diversity and abundance of Macrolepidoptera at high elevation in Colorado. **Audrey Fahland** (afahland@uccs.edu) and Emily Mooney, Univ. Colorado, Colorado Springs, CO
- D16 Carabid beetle communities in corn intercropping systems. **Morgan Morris** (mmorri42@uwyo.edu), Sara Capitán and Randa Jabbour, Univ. of Wyoming, Laramie, WY
- D17 Go long! An extensive trapping season to refine corn rootworm sampling protocols. **Aidan Pierce** (ag.pierce81@gmail.com), Ashley Dean and Erin Hodgson, Iowa State Univ., Ames, IA
- D18 History of *Bathyplectes curculionis*, parasitoid of the alfalfa weevil. **Kai Wilson** (kwilso63@uwyo.edu) and Randa Jabbour, Univ. of Wyoming, Laramie, WY

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M.S. Session I

- D19 Evaluating the vector competence of arthropods for Hop Latent Viroid (HLVd) in hemp (*Cannabis sativa*). **Olivia Carter** (olivegirlie123@gmail.com), Jacob MacWilliams and Punya Nachappa, Colorado State Univ., Fort Collins, CO
- D20 Beyond pollination: Exploring bee-influenced fungal community composition in cranberry blossoms. **Celeste Huff** (huff4@wisc.edu), Univ. of Wisconsin-Madison, Madison, WI
- D21 Impact of location and planting dates on stem solidity expression for wheat stem sawfly resistance in spring wheat (Durum and Bread). **Basanta Khanal** (basanta.khanal.1@ndus.edu), Deirdre Prischmann Voldseth, Karin Anderson and Andrew Green, North Dakota State Univ., Fargo, ND
- D22 Does the surrounding landscape affect pollinator habitat: The case for CP42 in Iowa. **Abigail Miller** (bees@iastate.edu), Matthew O'Neal and Haleigh Summers, Iowa State Univ., Ames, IA
- D23 Target and non-target effects of novel bacterial toxins as potential biopesticides. **Shane Moran** (moran.573@osu.edu)¹, Shaohui Wu¹ and David Shapiro-Ilan², ¹The Ohio State Univ., Columbus, OH, ²USDA-ARS, SE Fruit and Tree Nut Research Unit, Byron, GA
- D24 Surrounding landscape composition effects on wild bee communities in the Northern Great Plains. **Brandon Narum** (brandon.narum@ndus.edu)¹, Haochi Zheng¹, C. K. Pei¹, Jeffrey VanLooy¹ and Torre Hovick², ¹Univ. of North Dakota, Grand Forks, ND, ²North Dakota State Univ., Fargo, ND
- D25 Effects of ambient temperature on response of *Aedes aegypti* TRPA1: Implications for the efficacy of mosquito repellents. **Yeaun Park** (park.3296@osu.edu), The Ohio State Univ., Wooster, OH
- D26 Effects of managed honey bees (*Apis mellifera*) on native bees in tallgrass prairies. **Meghan Cashell** (mcashell@g.emporiam.edu), Oliver-Elias Hiszczynskij, David Claridge, Meagan Fernandez, Jacob Spidell, Jae Horn and Joanna Gress, Emporia State Univ., Emporia, KS

*Authors requested to accompany displays according to poster number: odd-numbered posters from 9:30-10:00AM, and even-numbered posters from 2:45-3:15PM.



M.S. Session II

- D27 Resistance to *Melanaphis sorghi* 1 allele in sorghum impedes sorghum aphid feeding behavior. **Meihua Cui** (meihua.cui@colostate.edu), Carl VanGessel, Geoff Morris and Vamsi Nalam, Colorado State Univ., Fort Collins, CO
- D28 Hop Latent Viroid (HLVd), the most significant pathogen of the Cannabis industry: Biology and impact on crop yield and quality. **Luke Deyle** (ldeyle@colostate.edu), Colorado State Univ., Fort Collins, CO
- D29 Evaluating the impact of an integrated pest management program on thrips control and beneficial insects. **Arnol Gomez** (gomez.428@buckeyemail.osu.edu), The Ohio State Univ., Wooster, OH
- D30 Withdrawn
- D31 Effects of grazing and prescribed fire rotation on abundance of Kansas bumble bees (*Bombus* spp.). **Danielle Holthaus** (dyholthaus@gmail.com), Kansas State Univ., Manhattan, KS
- D32 Effects of stored sorghum grain hardness on the infestation of *Rhyzopertha dominica* (Coleoptera: Bostrichidae). **Tanner Liba** (tliba@ksu.edu)^{1,2}, Deanna Scheff¹, Kun Yan Zhu², Thomas Phillips² and Scott Bean¹, ¹USDA-ARS, Manhattan, KS, ²Kansas State Univ., Manhattan, KS
- D33 Developing an RNAi-based functional genomics tool in beet leafhopper for targeted vector control. **Maria Mejia** (maria.mejia@colostate.edu), Jinlong Han, Vamsi Nalam and Punya Nachappa, Colorado State Univ., Fort Collins, CO
- D34 Investigating the role of phytocannabinoids in enhancing honey bee hive survival. **Jacob Spidell** (jspidell@g.emporia.edu), Oliver-Elias Hyszczynskij, Meghan Cashell, David Claridge and Joanna Gress, Emporia State Univ., Emporia, KS

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Ph.D. Session

- D35 Effects of dsRNA treatment on mRNA cargoes carried in extracellular vesicles isolated from cultured *Diabrotica undecimpunctata howardi* Barber cells. **Edward Bird** (edwardbird@ksu.edu), Kyah Featherston, L. Paulina Maldonado-Ruiz and Kristopher Silver, Kansas State Univ., Manhattan, KS
- D36 Moth conservation depends on the preservation of large habitats. **Lucy Guarnieri** (guarnieri.29@osu.edu) and Mary Gardiner, The Ohio State Univ., Columbus, OH
- D37 Comparing the RNAi efficiency of long double stranded RNA and RNA microspheres in suppressing gene expression in the diamondback moth, *Plutella xylostella*. **Rachel Johnson** (johnsonrl@ksu.edu) and Kun Yan Zhu, Kansas State Univ., Manhattan, KS
- D38 Leveraging ongoing residual contact insecticide use by pairing with insecticide netting to reduce dispersal and damage by insects at food facilities. **Sabita Ranabhat** (sranabhat@ksu.edu)¹, Jennifer Abshire², Brian Barnett¹, Deanna Scheff¹, William Morrison² and Kun Yan Zhu¹, ¹Kansas State Univ., Manhattan, KS, ²USDA-ARS, Manhattan, KS
- D39 Arthropod abundance in a Central Nebraska hopyard. **Andrea Rilaković** (a.rilakovic@gmail.com), Priscila Colombo Da Luz, Milos Zaric and Julie Peterson, Univ. of Nebraska-Lincoln, North Platte, NE
- D40 Examining overlap of honey and native bee presence and floral selection in cattle grazed rangelands. **Bethany Robertson** (bethany.roberton@ndsu.edu)¹, Jason Harmon¹, Torre Hovick¹, Kevin Sedivec^{1,2} and Benjamin Geaumont³, ¹North Dakota State Univ., Fargo, ND, ²Central Grasslands Research Extension Center, Streeter, ND, ³North Dakota State Univ., Hettinger, ND
- D41 Sticky card color affects arthropod attraction and community capture in Nebraska agroecosystems. **Hannah Stowe** (hstowe2@huskers.unl.edu)¹, Araceli Gomez Villegas¹ and Julie Peterson², ¹Univ. of Nebraska-Lincoln, Lincoln, NE, ²Univ. of Nebraska-Lincoln, North Platte, NE
- D42 Endoparasites of bumble bees. **Liam Whiteman** (whiteman.70@osu.edu)¹, Amber Tripodi² and James Strange¹, ¹The Ohio State Univ., Columbus, OH, ²Unaffiliated, Raleigh, NC

*Authors requested to accompany displays according to poster number: odd-numbered posters from 9:30-10:00AM, and even-numbered posters from 2:45-3:15PM.



Student Ten-Minute Paper Competition: M.S. Session I

7:40 – 9:30 AM

Legends Room

Moderators: **Doug Golick**, University of Nebraska-Lincoln, and **Erin Hodgson**, Iowa State University

- 7:40 Introductory Remarks
- 7:42 22 Surveying Cry1F resistance in European corn borer. **Yamikani Ng'ona** (yamikani200@gmail.com)¹, Yasmine Farhan², Jocelyn Smith² and Andrew Michel¹, ¹The Ohio State Univ., Wooster, OH, ²Univ. of Guelph, Ridgetown, ON, Canada
- 7:54 23 Do transposable element regulators impact insect adaptation to plant defenses? **Angel Haller** (haller.161@osu.edu) and Andy Michel, The Ohio State Univ., Wooster, OH
- 8:06 24 Identification compounds in hemp that elicit larvicidal activity in *Aedes aegypti*. **Erick Martinez** (martinezrodriguez.2@buckeyemail.osu.edu), The Ohio State Univ., Wooster, OH
- 8:18 25 Generating degree day models using metabolic rates: Comparing BMSB model predictions across the USA. **Fletcher Robbins** (farobbins@wisc.edu)¹, Lisa Neven² and Emily Bick¹, ¹Univ. of Wisconsin-Madison, Madison, WI, ²USDA-ARS, Wapato, WA
- 8:30 26 Estimating the frequency of mutations associated with Pyrethroid resistance in *Aphis glycines*. **Matthew Pfab** (mrpfab@iastate.edu)¹, Ivair Valmorbidia², Matthew O'Neal¹, Brad Coates³ and Erin Hodgson¹, ¹Iowa State Univ., Ames, IA, ²Univ. of Missouri, Columbia, MO, ³USDA-ARS, Ames, IA
- 8:42 27 Thermal acclimation of metabolic and cognitive performance in the honey bee, *Apis mellifera*. **Elizabeth Rylance** (erylance@colostate.edu) and Dhruba Naug, Colorado State Univ., Fort Collins, CO
- 8:54 28 Thermal preference and fitness shifts induced by cold acclimation in the lesser grain borer, *Rhyzopertha dominica* (F.). **Dawson Christensen** (horuos@ksu.edu)¹, Travis Rusch², Yoonseong Park¹, Erin Scully² and Alison Gerken², ¹Kansas State Univ., Manhattan, KS, ²USDA-ARS, Manhattan, KS
- 9:06 29 Sublethal impacts of imidacloprid and flupyradifurone exposure on individual bumble bee behavior. **Anupreksha Jain** (anupreksha.jain@wisc.edu) and James Crall, Univ. of Wisconsin-Madison, Madison, WI
- 9:18 30 Characterizing Colorado potato beetle (*Leptinotarsa decemlineata*) resistance and cross-resistance to insecticides on WI organic potato farms. **Emma Terris** (eterris@wisc.edu), Univ. of Wisconsin-Madison, Madison, WI



Monday, 25 March 2024



Student Ten-Minute Paper Competition: B.S. Session

8:00 – 9:30 AM
Salon 1&5

Moderators: **Sally Nelson**, University of Minnesota Extension;
and **Hillary Fischer**, Michigan State University

- 8:00 Introductory Remarks
- 8:02 31 Lost and found: The timeline of insecticide resistance loss in a model strain of mosquito. **Claire Klein** (ckdragonfly@outlook.com)¹ and Leslie Rault², ¹Univ. of Nebraska-Lincoln, Los Angeles, CA, ²Univ. of Nebraska-Lincoln, Lincoln, NE
- 8:14 32 Impact of agricultural landscapes on pollinator visitation behavior at sentinel flowers analyzed by time-lapse cameras. **Otavio Silva Xavier** (osilvaxavier2@unl.edu)¹, Araceli Gomez Villegas², Hannah Stowe² and Julie Peterson¹, ¹Univ. of Nebraska-Lincoln, North Platte, NE, ²Univ. of Nebraska-Lincoln, Lincoln, NE
- 8:26 33 Improving survey-site selection for *Bombus affinis* within its current core range using land cover associations. **Lauren Hatch** (lauren@hatch5.com)¹ and Clint Otto², ¹Colorado State Univ., Fort Collins, CO, ²US Geological Survey, Jamestown, ND
- 8:38 34 Does mosquito management harm beneficial insects in cities? **David Narayanan** (narayanan.122@buckeyemail.osu.edu), Hannah Dehus, Ellen Danford, Michelle Pham, Megan Meuti and Mary Gardiner, The Ohio State Univ., Columbus, OH
- 8:50 35 Assessing growth regulating larvicides' toxicity for mosquito control in Nebraska. **Grey Smith** (gsmith63@huskers.unl.edu), Leslie Rault, Ellis Johnson and Troy Anderson, Univ. of Nebraska-Lincoln, Lincoln, NE
- 9:02 36 Computational inference of thermal tolerance across insect taxa. **Sophia Zhou** (szh231@uky.edu)¹, Fernan Perez-Galvez² and Nicholas Teets¹, ¹Univ. of Kentucky, Lexington, KY, ²Univ. of Florida, Gainesville, FL
- 9:14 37 To eat their own: Cyclical selection pressures of praying mantids drive the prevalence of sexual cannibalism. **Archie-Em Walker** (emwalker.texas@gmail.com), Colorado State Univ., Fort Collins, CO



Symposium: We Are All in This Together: Highlighting Incorporation of Climate Change Adaptation into Management of Insects for Resilient Working Lands and Conservation Success

8:00 – 11:50 AM
Green and Gold Room

Organizers and Moderators: **Hailey Shanovich**, US Geological Survey;
and **Zach Smith**, Colorado State Forest Service

- 8:10 Introductory remarks
- 8:15 38 Integrating climate science into pollinator conservation in the Great Lakes region. **Desiree Robertson-Thompson** (drobertson-thompson@usgs.gov)¹, Ralph Grundel², Johanna Nifosi³ and Meri Holm⁴, ¹USGS, Midwest Climate Adaptation Science Center, St. Paul, MN, ²U.S. Geological Survey, Chesterton, IN, ³USGS, Great Lakes Science Center, Ann Arbor, MI, ⁴USFWS, Partners for Fish and Wildlife Program, NA, WI
- 8:40 39 Historical outbreaks of mountain pine beetle in the Colorado Front Range. **Jose Negrón** (jnegrón@fs.fed.us), USDA-Forest Service, Fort Collins, CO
- 9:05 40 Forage quality of wildflowers and shrubs: Diverse rangelands benefit livestock and pollinators. **Steve Armstead** (steve.armstead@xerces.org)¹, Jennifer Hopwood², Rae Powers³ and Sarah Hamilton-Buxton³, ¹Xerces Society for Invertebrate Conservation, Portland, OR, ²Xerces Society for Invertebrate Conservation Omaha, NE, ³Xerces Society for Invertebrate Conservation, Lincoln, NE, ⁴Xerces Society for Invertebrate Conservation, Bismarck, ND
- 9:30 Break
- 10:00 41 Surveying the bark beetles of Colorado. **Zach Smith** (zach.m.smith@colostate.edu), and Dan West, Colorado State Forest Service, Fort Collins, CO
- 10:25 42 Support for declining pollinators in grasslands under climate change. **Brice Hanberry** (brice.hanberry@usda.gov), USDA Forest Service, Rapid City, SD
- 10:50 43 The potential of multi-objective decision analysis for choosing pollinator-friendly plant mixes for future climate scenarios. **John Mola** (john.mola@colostate.edu), Nora Bales and Caroline Havrilla, Colorado State Univ., Fort Collins, CO
- 11:15 Discussion
- 11:45 Concluding remarks



Student Ten-Minute Paper Competition: M.S. Session II

10:00 AM – 12:05 PM
Salon 1&5

Moderators: **Ashley Dean**, Iowa State University; and **Laura Campbell**, Corteva Agriscience

- 10:00 Introductory Remarks
- 10:02 44 Evaluating management strategies for improving comb building in honey bee colonies (*Apis mellifera* L.). **Shelby Kittle** (shelby.kittle@huskers.unl.edu) and Judy Wu-Smart, Univ. of Nebraska-Lincoln, Lincoln, NE
- 10:14 45 Identifying non-crop hosts of *Amauromyza karli* (Diptera: Agromyzidae). **Paige Olson** (paige.olson98@gmail.com)¹ and Adrianna Sczcepaniec², ¹Colorado State Univ., Peyton, CO, ²Colorado State Univ., Fort Collins, CO
- 10:26 46 Are honey bees more productive when given access to prairie strips? **Jarod Perez** (perejar@iastate.edu), John Tyndall, Amy Toth, Randall Cass and Matthew O’Neal, Iowa State Univ., Ames, IA
- 10:38 47 Feeding preference and survival of diamondback moth (Lepidoptera: Plutellidae) larvae on pennycress (Brassicales: Brassicaceae) in choice and no-choice tests. **Ellen Adjeiwaa** (adjei016@umn.edu), Arthur Ribeiro and Robert Koch, Univ. of Minnesota, St. Paul, MN
- 10:50 48 Understanding the effects of alternative fire-grazing management on grassland invertebrate biodiversity. **Zachary Bunch** (zlbunch2@uncg.edu), Sally Koerner and Kimberly Komatsu, UNC Greensboro, Greensboro, NC
- 11:02 49 Snug as a bug in the forest: Using emergence traps to reveal cryptic winter life stages of insects. **Sophia Gulutzo** (sophia.gulutzo@colostate.edu) and John Mola, Colorado State Univ., Fort Collins, CO
- 11:14 50 Presence of disease vector *Bursaphelenchus xylophilus* in *Monochamus* beetles as a function of spatial and temporal distance to fire. **Hailee Nolan** (hailee.nolan@colostate.edu) and Seth Davis, Colorado State Univ., Fort Collins, CO
- 11:26 51 Prairie strips within fields can increase the biodiversity of ground-dwelling insects. **Andres Vargas** (avargas@iastate.edu)¹, Farnaz Kordbacheh², Matthew Liebman¹, Marion Harris³, Matthew O’Neal¹ and Lisa Schulte Moore¹, ¹Iowa State Univ., Ames, IA, ²Univ. of Manitoba, Winnipeg, MB, Canada, ³North Dakota State Univ., Fargo, ND
- 11:38 52 Parks, pollinators and people: Do bees and butterflies prefer higher income parks in Denver, Colorado? **Nicki Bailey** (nicki.bailey@colostate.edu) and John Mola, Colorado State Univ., Fort Collins, CO
- 11:50 53 Children’s tick risk perceptions and protective behaviors. **Ariel Dawdy** (adawdy2@huskers.unl.edu) and Louise Lynch-O’Brien, Univ. of Nebraska-Lincoln, Lincoln, NE



Student Ten-Minute Paper Competition: M.S. Session III

10:00 AM – 12:05 PM
Legends Room

Moderators: **Alisson Santana**, University of Nebraska-Lincoln;
and **Judy Wu-Smart**, University of Nebraska-Lincoln

- 10:00 Introductory Remarks
- 10:02 54 Turds, temperature and reproductive tactics: Unraveling the effects of nutrition and temperature on dung beetle weaponry. **Max Proctor** (max.r.proctor@gmail.com)¹, Mary Liz Jameson¹, Thomas Luhring¹ and Puni Jeysingh², ¹Wichita State Univ., Wichita, KS, ²Oklahoma State Univ., Stillwater, OK
- 10:14 55 Bee communities visiting milkweed (*Asclepias* spp.) in rural and urban sites in Nebraska. **April LeBaron** (jlebaron2@huskers.unl.edu), Autumn Smart and Thomas Weissling, Univ. of Nebraska-Lincoln, Lincoln, NE
- 10:26 56 A survey of insect communities and defoliation in Iowa grown mungbean (*Vigna radiata*). **Evelyn Heidt** (eplatner@iastate.edu), Arti Singh, Daren Mueller and Matthew O'Neal, Iowa State Univ., Ames, IA
- 10:38 57 Susceptibility of soybean to soybean gall midge infestation and injury during the growing season. **Pragya Gupta** (pgupta4@huskers.unl.edu) and Anthony McMechan, Univ. of Nebraska-Lincoln, Lincoln, NE
- 10:50 58 Combining society and science: UW Madison's Bee Campus Initiative. **Victoria Salerno** (vasalerno@wisc.edu), Univ. of Wisconsin-Madison, Madison, WI
- 11:02 59 Management of *Dectes* stem borer in South Dakota soybean. Adam Varenhorst, Philip Rozeboom, Bradley McManus and **Zachary Loomis** (zachary.loomis@jacks.sdstate.edu), South Dakota State Univ., Brookings, SD
- 11:14 60 Assessing the cold tolerance of soybean gall midge. **Pheylian Anderson** (and05170@umn.edu)¹, Robert Venette², Bruce Potter³, Anthony Hanson⁴ and Robert Koch¹, ¹Univ. of Minnesota, St. Paul, MN, ²USDA - Forest Service, St. Paul, MN, ³Univ. of Minnesota, Lamberton, MN, ⁴Univ. of Minnesota, Morris, MN
- 11:26 61 Understanding the spatial and temporal distribution of High Plains wheat mosaic virus in wheat plant. **Sofiya Arora** (sarora3@unl.edu)¹, Gary Hein¹, Satyanarayana Tatineni² and Shaonpius Mondal¹, ¹Univ. of Nebraska-Lincoln, Lincoln, NE, ²USDA-ARS, Lincoln, NE
- 11:38 62 Prairie bee community composition along precipitation and land use gradients in Kansas. **August Brunette** (ajbrunette@ksu.edu), Emily Maynard and Tania N. Kim, Kansas State Univ., Manhattan, KS
- 11:50 63 Validation of a growing degree day model to manage the giant Eucosma moth, *Eucosma giganteana*. **Hazel Scribner** (hazelscribner@ksu.edu)¹, Ebony Murrel², Nervah Cheremond², Kun Yan Zhu¹ and William Morrison³, ¹Kansas State Univ., Manhattan, KS, ²The Land Institute, Salina, KS, ³USDA-ARS, Manhattan, KS



Symposium: Collaborations across the Great Plains: How Interdisciplinary Partnerships Move Us Forward

**1:00 – 2:45 PM
Green and Gold Room**

Organizers and Moderators: **Hannah Quellhorst**, Kansas State University;
and **William Morrison**, USDA-ARS

- 1:00 Welcoming remarks
- 1:05 64 Transcending interdisciplinary boundaries to reach global grand challenges: How effective appropriate communication can accelerate research goals in today's ever changing world. **Georgina Bingham** (gvb@vestergaard.com), Univ. of Nebraska-Lincoln, Lincoln, NE
- 1:20 65 Using museums to inspire the next generation of entomologists. **Susan Weller** (susan.weller@unl.edu), Univ. of Nebraska-Lincoln, Lincoln, NE
- 1:35 66 Harmony in action: Integrating a novel tactic for effective pest management and advancing food security through collaborative efforts. **Sabita Ranabhat** (sranabhat@ksu.edu)¹, Daniel Brabec², Georgina Bingham³, Tanja McKay⁴, Alison Gerken², Deanna Scheff², Kun Yan Zhu¹ and William Morrison², ¹Kansas State Univ., Manhattan, KS, ²USDA-ARS, Manhattan, KS, ³Univ. of Nebraska-Lincoln, Lincoln, NE, ⁴Arkansas State Univ., Jonesboro, AR
- 1:50 Break
- 2:00 67 Uniting around a common enemy: SLF monitoring in Ohio. **Ashley Leach** (leach.379@osu.edu), Daiyanera Kelsey, Jonathan Lee-Rodriguez and Andy Michel, The Ohio State Univ., Wooster, OH
- 2:15 68 Better than DEET repellent compounds discovered from coconut oil and beyond. **Jerry Zhu** (Jerry.Zhu@ARS.USDA.GOV), USDA-ARS, Lincoln, NE
- 2:30 69 Old virus, new host: Ecology and management of beet curly top virus in hemp. **Punya Nachappa** (punya.nachappa@colostate.edu), Colorado State Univ., Fort Collins, CO



Student Ten-Minute Paper Competition: Ph.D. Session I

1:00 – 2:50 PM
Salon 2&3

Moderators: **Jody Green**, University of Nebraska; and **Jonathan Larson**, University of Kentucky

- 1:00 Introductory Remarks
- 1:02 70 ABC transporter modulators for improved LLIN activity to malaria mosquitoes. **Heather Hernandez** (hhernandez3@unl.edu), Leslie Rault and Troy Anderon, Univ. of Nebraska-Lincoln, Lincoln, NE
- 1:14 71 Effect of temperature on the larval development of fall armyworm. **Danna Vera** (dannaveramartinez@hotmail.com), Ohio State Univ., Wooster, OH
- 1:26 72 Exploring the dynamics of metabolic scaling in honey bees (*Apis mellifera*): Impact of group size, resource environment, thermoregulation, and density. **Kord Dicke** (kord.dicke@colostate.edu) and Dhruva Naug, Colorado State Univ., Fort Collins, CO
- 1:38 73 Effects of oral exposure to the combination of neonicotinoid and sterol biosynthesis inhibitor fungicide on honey bees. **Adam Foster** (foster.423@osu.edu), The Ohio State Univ., Columbus, OH
- 1:50 74 Characterization of the primary endosymbionts in the salivary secretion of the lone star tick (*Amblyomma americanum*). **Andres Holguin-Rocha** (aholguin@ksu.edu), L. Paulina Maldonado-Ruiz and Yoonseong Park, Kansas State Univ., Manhattan, KS
- 2:02 75 Impact of mutations in the voltage-gated sodium channel on insecticide resistance phenotypes of the soybean aphid, *Aphis glycines*. **Bruna Wojahn** (brunawj@hotmail.com)^{1,2}, Jonas Arnemann², Brad Coates³ and Matthew O'Neal¹, ¹Iowa State Univ., Ames, IA, ²UFSM-ISU, Ames, IA, ³USDA-ARS, Ames, IA
- 2:14 76 The ring of fire: Horn fly population responses to seasonal prescribed burning in Kansas cattle pastures. **Victoria Pickens** (vlpicken@ksu.edu), Megan McGraw, Andrea Salazar, Herman Griesse and Cassandra Olds, Kansas State Univ., Manhattan, KS
- 2:26 77 Withdrawn
- 2:38 78 Co-transmitted *Wolbachia* exhibit distinct patterns of distribution in Drosophila ovarian tissue. **Megan Jones** (jone3187@umn.edu) and Amelia Lindsey, Univ. of Minnesota, St. Paul, MN



Student Ten-Minute Paper Competition: Ph.D. Session II

1:12 – 2:50 PM

Salon 1&5

Moderators: **Adrian Pekarck**, USDA-ARS; and **Tim Nowatzki**, Corteva Agriscience

- 1:12 Introductory Remarks
- 1:14 80 How microbiomes could be mediating the success of the Russian knapweed biological control program. **Giovana Matos Franco** (g.matos_franco@colostate.edu)¹, Pankaj Trivedi¹, Christine Folks¹, Sonya Daly², Dan Bean² and Paul Ode¹, ¹Colorado State Univ., Fort Collins, CO, ²Colorado Dept. of Agriculture, Palisade, CO
- 1:26 81 Gene expression changes of pea aphid salivary effectors after feeding on mycorrhizal *Medicago* plants. **Lani Irvin** (lani.irvin@unco.edu)¹, Jinlong Han², Vamsi Nalam² and S. Karen Gomez¹, ¹Univ. of Northern Colorado, Greeley, CO, ²Colorado State Univ., Fort Collins, CO
- 1:38 82 Evolution of phenotypic plasticity increases fitness during range expansion of a biocontrol agent. **Eliza Clark** (Eliza.Clark@colostate.edu)¹, Amanda Stahlke², Dan Bean³, Ellyn Bitume⁴, Paul Hohenlohe⁵ and Ruth Hufbauer¹, ¹Colorado State Univ., Fort Collins, CO, ²Colorado Mesa Univ., Grand Junction, CO, ³Colorado Dept. of Agriculture, Palisade, CO, ⁴USDA Forest Service, Hilo, HI, ⁵Univ. of Idaho, Moscow, ID
- 1:50 83 Unveiling the role of wheat curl mite microbiome in wheat streak mosaic virus and Triticum mosaic virus transmission. **Nikhitha Gangavarapu** (ngangavarapu2@huskers.unl.edu)¹, Shaun Cross², Gary Hein¹, Satyanarayana Tatineni³ and Shaonpius Mondal¹, ¹Univ. of Nebraska-Lincoln, Lincoln, NE, ²Univ. of Nebraska Medical Center College of Public Health, Omaha, NE, ³USDA-ARS, Lincoln, NE
- 2:02 84 Assessing the genetic structure and adaptation of a native butterfly to changing elevation. **Lily Durkee** (L.Durkee@colostate.edu), Kristen Ruegg, Paul Opler and Ruth Hufbauer, Colorado State Univ., Fort Collins, CO
- 2:14 85 Withdrawn
- 2:26 86 Genetic mechanisms of resistance by western corn rootworm to corn producing Gpp34/Tpp35Ab1. **Elliott Smith** (esmith5@iastate.edu)¹, Aaron Gassmann¹ and Brad Coates², ¹Iowa State Univ., Ames, IA, ²USDA-ARS, Ames, IA
- 2:38 87 The role of sorghum polyphenolics in mediating tolerance to warehouse beetle, *Trogoderma variabile*, Dermestidae. **Rupinder Singh** (rrpreetsingh08@ksu.edu)¹, Jaymi Peterson¹, Adina Santana¹, Kun Yan Zhu¹, Kaliramesh Siliveru¹, Dmitri Smolensky² and Erin Scully², ¹Kansas State Univ., Manhattan, KS, ²USDA-ARS, Manhattan, KS



Student Ten-Minute Paper Competition: Ph.D. Session III

3:15 – 5:05 PM

Salon 2&3

Moderators: **Brad Coates**, USDA-ARS; and **Elaine Evans**, University of Minnesota

- 3:15 Introductory Remarks
- 3:17 88 Host-stage preference for the hyperparasitoid *Alloxysta brevis* and potential effects of hyperparasitism on soybean aphid biological control by the parasitoid *Aphelinus certus*. **Sabrina Celis** (celis009@umn.edu), James Menger and George Heimpel, Univ. of Minnesota, St. Paul, MN
- 3:29 89 Impact of planting date and seed treatment on soybean gall midge. **Natasha Umezu** (numezu2@huskers.unl.edu) and Anthony McMechan, Univ. of Nebraska-Lincoln, Lincoln, NE
- 3:41 90 Stored product insect detection with electronic nose technology. **Jacqueline Maille** (jmaille@ksu.edu)¹, Dan Brabec², Kun Yan Zhu¹, William Morrison² and Erin Scully², ¹Kansas State Univ., Manhattan, KS, ²USDA-ARS, Manhattan, KS
- 3:53 91 Efficacy and economic feasibility of spotted-wing drosophila (*Drosophila suzukii*) management strategies in day-neutral strawberries. **Matthew Gullickson** (gulli139@umn.edu), Gigi Digiacomo and Mary Rogers, Univ. of Minnesota, St. Paul, MN
- 4:05 92 Can green infrastructure improve bee health in a legacy city? **Dante Centuori** (centuori.1@buckeyemail.osu.edu), Michelle Pham, Mary Gardiner and James Strange, The Ohio State Univ., Columbus, OH
- 4:17 93 Estimating occupancy of the endangered rusty patched bumble bee (*Bombus affinis* Cresson) across an urban to rural gradient in Wisconsin. Mary Powley (powle034@umn.edu)¹, Elaine Evans¹, Clint Otto² and Daniel Cariveau¹, ¹Univ. of Minnesota, St. Paul, MN, ²US Geological Survey, Jamestown, ND
- 4:29 94 How do western corn rootworms perceive an angled sticky trap? **Sagnika Das** (sagnika2@illinois.edu), Joseph Spencer and Nicholas Seiter, Univ. of Illinois, Urbana-Champaign, Champaign, IL
- 4:41 95 Wheat stem sawfly: Infestation rate, impact on wheat seed mass and parasitoid presence. **Vinicius Zuppa** (vandrad2@unl.edu)¹, Jeffrey Bradshaw², Amanda Easterly¹, Katherine Frels³ and Cody Creech⁴, ¹Univ. of Nebraska, Sidney, NE, ²Univ. of Nebraska-Lincoln, Lincoln, NE, ³Univ. of Nebraska, Lincoln, NE, ⁴Univ. of Nebraska, Scottsbluff, NE
- 4:53 96 Phenology model provides insights on wheat stem sawfly population dynamics in Colorado. **Henrique Vieira** (hvieira@umn.edu)¹, Adam Osterholzer¹, Benjamin Bradford², Russell Groves² and Punya Nachappa¹, ¹Colorado State Univ., Fort Collins, CO, ²Univ. of Wisconsin, Madison, WI



Student Ten-Minute Paper Competition: Ph.D. Session IV

3:15 – 5:05 PM

Salon 1&5

Moderators: **Scott O’Neal**, Corteva Agriscience; and **Boris Castro**, Corteva Agriscience

- 3:15 Introductory Remarks
- 3:17 97 Plant-pollinator network response to high severity fire along a gradient of time-since-disturbance. **Ryleigh Gelles** (rygelles@colostate.edu), Seth Davis, Camille Stevens-Rumann, John Mola and Ruth Hufbauer, Colorado State Univ., Fort Collins, CO
- 3:29 98 Don’t panic, it’s organic: Building resilient pest management strategies for organic hemp systems. **Max Schmidtbauer** (Max.Schmidtbauer@colostate.edu), Jessica Prenni, Adrianna Szczepanec, Mark Uchanski and Punya Nachappa, Colorado State Univ., Fort Collins, CO
- 3:41 99 Mycelium as a potential beneficial additive for bumble bee development and reproductive success. **Brooke Donzelli** (brdonz@gmail.com) and James Strange, The Ohio State Univ., Columbus, OH
- 3:53 100 The invasive Japanese beetle, *Popillia japonica* Newman, alters nutrient cycling and water retention in infested soil. **Gordon MacLeod** (gmacleo@purdue.edu)¹, Timothy Filley² and Douglas Richmond¹, ¹Purdue Univ., West Lafayette, IN, ²The Univ. of Oklahoma, Norman, OK
- 4:05 101 Identifying environmental effects of neonicotinoids on restoration prairie plants and beneficial insects in agroecosystems. **Jonathan Tetlie** (jtetlie2@illinois.edu) and Alexandra Harmon-Threatt, Univ. of Illinois, Urbana, IL
- 4:17 102 Parasitism of soybean gall midge by *Synopeas maximum* across the Upper Midwest. **Sarah Lisak** (lisak007@umn.edu)¹, Amelia Lindsey¹, Erin Hodgson², Anthony McMechan³ and Robert Koch¹, ¹Univ. of Minnesota, Saint Paul, MN, ²Iowa State Univ., Ames, IA, ³Univ. of Nebraska, Lincoln, NE
- 4:29 103 Does establishing native wildflowers on vacant land aid wild bee conservation in a legacy city? **Michelle Pham** (pham.457@osu.edu)¹, Katherine Turo², Caralee Shepard¹, Kayla Perry¹, Jena Copley³ and Mary Gardiner¹, ¹The Ohio State Univ., Columbus, OH, ²Rutgers Univ., New Brunswick, NJ, ³City of Spartanburg, NA, SC
- 4:41 104 Impact of surrounding landscape on pest complexes in soybean along a natural/agricultural gradient. **Nicole Kucherov** (nkucherov@ksu.edu) and Tania N. Kim, Kansas State Univ., Manhattan, KS
- 4:53 105 Successful gallery building by spruce beetle (*Dendroctonus rufipennis* Kirby) changes the chemical composition of Engelmann spruce (*Picea engelmannii*) resin exudes. **Ehsan Khedive** (ehsan.khedive@colostate.edu), Alex Rusch and Seth Davis, Colorado State Univ., Fort Collins, CO



Tuesday, 26 March 2024



Regular Poster Display*

- D43 What should undergraduate students learn about applied plant protection? **Randa Jabbour** (rjabbour@uwyo.edu) and Clint Beiermann, Univ. of Wyoming, Laramie, WY
- D44 Outwitting insect damage: Using escape room assessments in IPM classrooms. **Ellen Klinger** (klinger.80@osu.edu), The Ohio State Univ., Columbus, OH
- D45 Fusing experiential learning and cooperative extension in undergraduate insect science education. **Louise Lynch-O'Brien** (llynchobrien@unl.edu) and Jody Green, Univ. of Nebraska-Lincoln, Lincoln, NE
- D46 Using pheromone and smart traps to control *Lymantria dispar* in European countries. **Paraskevi Agrafioti** (agrafiot@uth.gr)¹, Stelios Vasilopoulos¹, Evagelia Lampiri¹, Maria Boukouvala², Anna Skourti², Erifili Nika², Tanja Bohinc³, Stanislav Trdan³, Xavier Pons⁴, Alexandre Levi-Mourao⁴, Matilde Eizaguirre⁴, Carmen Lopez⁴, Elena Domiguez⁵, Enrique Benavent⁵, Anna Roig⁶, Nickolas Kavallieratos² and Christos Athanassiou¹, ¹Univ. of Thessaly, Greece, ²Agricultural Univ. of Athens, Greece, ³Univ. of Ljubljana, Slovenia, ⁴Universitat de Lleida, Spain, ⁵AIMPLAS, Plastics Technology Centre, Spain, ⁶PROBODELT, Spain
- D47 Courtship flash dialogue between male and female can help us to identify the “biological species” of *Photuris* fireflies. **Lawrent Buschman** (lbuschma@ksu.edu), Kansas State Univ., Hesston, KS
- D48 Exploring resident’s perceptions of pollinator-friendly landscaping in Denver parks. **Veronica Champine** (veronica.champine@gmail.com) and John Mola, Colorado State Univ., Fort Collins, CO
- D49 Dynamic threshold validation for sorghum aphids. **Kristopher Giles** (kris.giles@okstate.edu) and Nina Rudin, Oklahoma State Univ., Stillwater, OK
- D50 Range expansion of cereal leaf beetle in Minnesota. **Anthony Hanson** (hans4022@umn.edu)¹, Angie Peltier², Ian MacRae² and Jochum Wiersma², ¹Univ. of Minnesota, Morris, MN, ²Univ. of Minnesota, Crookston, MN
- D51 2023 survey of *Dectes* stem borer in South Dakota soybean. **Zachary Loomis** (zachary.loomis@jacks.sdstate.edu), Bradley McManus, Philip Rozeboom and Adam Varenhorst, South Dakota State Univ., Brookings, SD
- D52 Evaluating arthropod communities in continuous corn using above and below ground pitfall traps. **Abigail Lyons** (alyons6@unl.edu), Raven Myhre, Carlos Martins, Otavio Xavier, Eric Resende, Milan Chauhan, Randy Lloyd and Julie Peterson, Univ. of Nebraska-Lincoln, North Platte, NE
- D53 Withdrawn
- D54 Impact of an interseeded, high diversity cover crop mix on arthropod communities in a Nebraska cornfield. **Carlos Martins** (cdeoliveiramartins2@unl.edu), Nicolas Cafaro La Menza, Abia Katimbo and Julie Peterson, Univ. of Nebraska-Lincoln, North Platte, NE
- D55 Grazing disturbance alters alpha diversity but not beta diversity of bees in tallgrass prairie. **Emily Maynard** (emaynard@ksu.edu), Jessica Butters, Brian Spiesman and Tania N. Kim, Kansas State Univ., Manhattan, KS
- D56 Investigating wild wheat relatives (wheat-*Thinopyrum* amphiploids) as sources of host plant resistance for wheat stem sawfly (*Cephus cinctus*). **Deirdre Prischmann-Voldseth** (deirdre.prischmann@ndsu.edu) and Karin Anderson, North Dakota State Univ., Fargo, ND

*Authors requested to accompany posters from 10:00-10:30AM.



Tuesday, 26 March 2024



- D57 Field survey of *Diabrotica* species in South Dakota maize fields. **Bradley McManus** (bradley.mcmanus@sdstate.edu), Philip Rozeboom and Adam Varenhorst, South Dakota State Univ., Brookings, SD
- D58 Efficacy evaluation for *Hypera postica* in South Dakota alfalfa. **Philip Rozeboom** (philip.rozeboom@sdstate.edu), Bradley McManus and Adam Varenhorst, South Dakota State Univ., Brookings, SD
- D59 Aseasonal, undirected migration by insect pests: It's a thing! (And more common than you think....). **Thomas Sappington** (Tom.Sappington@usda.gov), USDA-ARS, Ames, IA
- D60 Food driven long-term flight patterns of Indian meal moths. **Jaden Reed** (jaden.reed@usda.gov)¹, Jacqueline Maille², Nicholas Sixbury¹, William Rust¹, Daniel Brabec¹, William Morrison¹, Kun Yan Zhu² and Erin Scully¹, ¹USDA-ARS, Manhattan, KS, ²Kansas State Univ., Manhattan, KS
- D61 Withdrawn
- D62 Control of corn earworm in grain and CBD hemp with biologicals and plant-derived compounds. **Raul Villanueva** (raul.villanueva@uky.edu)¹, Zenaida Vilorio² and Armando Falcon-Brindis², ¹Univ. of Kentucky - Research and Education Center, Princeton, KY, ²Univ. of Kentucky, Princeton, KY
- D63 2023 South Dakota wheat stem sawfly survey. **Patrick Wagner** (patrick.wagner@sdstate.edu)¹, Bradley McManus², Philip Rozeboom² and Adam Varenhorst², ¹South Dakota State Univ., Rapid City, SD, ²South Dakota State Univ., Brookings, SD
- D64 Corn rootworm inter-and intra-specific competition: A game of insect biology. **David Wangila** (sindanidavid@gmail.com)¹, Wilfrid Calvin¹, James Bing², Timothy M. Nowatzki², Adrian Pekarcik³ and Fei Yang¹, ¹Univ. of Minnesota, St. Paul, MN, ²Corteva Agriscience, Johnston, IA, ³USDA-ARS, Brookings, SD
- D65 Comparison of handmade and extruded diet for rearing larval emerald ash borer to late instar. **Mary Watson** (mary.watson@richmond.edu)^{1,2}, Erica Martin^{1,2}, Kristine Grayson¹, Mauri Hickin³ and Hannah Nadel³, ¹Univ. of Richmond, VA, ²USDA-APHIS, Brighton, MI, ³USDA-APHIS-PPQ, Buzzards Bay, MA
- D66 Withdrawn
- D67 Field trials to evaluate the effects of foliar insecticides for the control of western bean cutworm in field corn: A report on 9 years of data. **Priscila da Luz** (pcolombodaluz2@unl.edu), Robert King, Randy Lloyd and Julie Peterson, Univ. of Nebraska—Lincoln, North Platte, NE
- D68 Fermented foods, the gut microbiome and health: Utilizing *Blattella germanica* as a tractable model for nutrition research. **Kylene Guse** (kylene.guse@usd.edu), Univ. of South Dakota Sanford School of Medicine, Vermillion, SD
- D69 Automating bumble bee tracking to study sublethal impacts of pesticides on behavior. **Anupreksha Jain** (anupreksha.jain@wisc.edu) and James Crall, Univ. of Wisconsin-Madison, Madison, WI
- D70 Honey bee (*Apis mellifera*) toxicity of pesticides used in United States corn and soybean production, 1998-2020. **Andrew Kniss** (akniss@uwyo.edu)¹, Andrea De Stefano², Clayton Myers³, Claire Paisley-Jones³, Michelle Ranville³, Cameron Douglass³ and Elyssa Arnold³, ¹Univ. of Wyoming, Laramie, WY, ²Louisiana State Univ., Homer, LA, ³USDA Office of Pest Management Policy, Washington, DC
- D71 Demonstrating effective methods for achieving transgenesis in the agricultural pest *Drosophila suzukii*. **Gregory Shobert** (gregory.shobert@novoclade.com), Anna Janzen and Siba Das, NovoClade, Inc., St. Paul, MN

*Authors requested to accompany posters from 10:00-10:30AM.



Symposium: Digital Entomology: Using Automation and Machine Learning to Scale Up Insect Science

8:00 – 10:00 AM
Legends Room

Organizers and Moderators: **Anupreksha Jain**, University of Wisconsin-Madison;
Matthew Smith, University of Wisconsin-Madison; and **Victoria Salerno**, University of Wisconsin-Madison

- 8:00 Introductory remarks
- 8:06 106 Assessing different data sources for improving bee species identification with computer vision. **Brian Spiesman** (bspiesman@ksu.edu)¹, Claudio Gratton², Elena Gratton³ and Heather M. Hines⁴, ¹Kansas State Univ., Manhattan, KS, ²Univ. of Wisconsin, Madison, WI, ³Univ. of Illinois Urbana-Champaign, Urbana, IL, ⁴Pennsylvania State Univ., Univ. Park, PA
- 8:18 107 Autonomous pollinator sampling (Autopolls): A tool for real time monitoring of insect behavior in natural settings. **Matthew Smith** (masmith56@wisc.edu), Olivia Bernauer, Claudio Gratton, James Crall, Grace Melone, Julia Wiessing and Rafael Salas, Univ. of Wisconsin-Madison, Madison, WI
- 8:30 108 Can we eavesdrop on insects to evaluate pest pressure? **Helen Oker** (hmoker@wisc.edu), Dev Mehrotra, Fletcher Robbins and Emily Bick, Univ. of Wisconsin-Madison, Madison, WI
- 8:42 109 Embracing behavioral variability with data driven classification of firefly flash patterns. **Owen Martin** (Owen.martin@colorado.edu), Chantal Nguyen, Raphael Sarfati, Murad Chowdhury, Dieu Nguyen, Michael Iuzzolino, Ryan Layer and Orit Peleg, Univ. of Colorado Boulder, Boulder, CO
- 8:54 110 Insect thermal tolerance scored using DIME, a custom, automated motion detection software. **Sophia Zhou** (szh231@uky.edu)¹, Fernan Perez-Galvez² and Nicholas Teets¹, ¹Univ. of Kentucky, Lexington, KY, ²Univ. of Florida, Gainesville, FL
- 9:06 111 Not too big a stretch: Unsupervised behavior classification in bumblebees using dynamic time warping. **Acacia Tang** (ttang53@wisc.edu), August Easton-Calabria, Madalyn Laskowski and James Crall, Univ. of Wisconsin-Madison, Madison, WI
- 9:18 112 Teaching AI to do whole-drawer insect phenotyping. **Elizabeth Postema** (epostema@fieldmuseum.org) and Bruno de Medeiros, Field Museum, Chicago, IL
- 9:30 Panel discussion

Tuesday, 26 March 2024



Symposium: Teaching Outside the Box: Engaging Entomology for Everyone

**8:00 – 10:00 AM
Salon 1&5**

Organizers and Moderators: **Emily Althoff**, University of Minnesota; **Bethany Robertson**, North Dakota State University; **Elliott Smith**, Iowa State University; and **Max Schmidtbauer**, Colorado State University

- 8:00 Welcoming remarks
- 8:05 113 Collaboration and two-way engagement in extension. **Ashley Dean** (adean@iastate.edu), Iowa State Univ., Ames, IA
- 8:20 114 Magic with mishmash: Weaving teaching, extension, and community science in entomology. **Louise Lynch-O'Brien** (llynchobrien@unl.edu), Univ. of Nebraska-Lincoln, Lincoln, NE
- 8:35 115 Be weird, try new extension tools. **Jonathan Larson** (jonathan.larson@uky.edu), Univ. of Kentucky, Lexington, KY
- 8:50 116 Pollinator Education Toolkits: Creating adaptable content to reach K-12 science classrooms, college students, the general public, and more. **Elaine Evans** (evan0155@umn.edu), Univ. of Minnesota, St. Paul, MN
- 9:05 Break
- 9:20 117 CSU extension in action: Entomology in western Colorado. **Melissa Schreiner** (Melissa.Schreiner@colostate.edu), Colorado State Univ. Extension, Grand Junction, CO
- 9:35 Panel discussion
- 9:55 Concluding remarks



Regular Ten-Minute Papers: Session I

8:00 – 11:50 AM
Green and Gold Room

Moderators: **Andrea Rilaković**, University of Nebraska-Lincoln;
and **Hannah Quellhorst**, Kansas State University

- 8:00 Introductory remarks
- 8:02 118 Honey bees alter pollination networks and reduce foraging breadth of wild bees in Fort Collins natural areas. **Seth Davis** (seth.davis@colostate.edu), John Mola and Nathan Comai, Colorado State Univ., Fort Collins, CO
- 8:14 119 Eco-immunology of trophic interactions. **Enakshi Ghosh** (enakshi.ghosh@colostate.edu) and Paul Ode, Colorado State Univ., Fort Collins, CO
- 8:26 120 Ten years of Bt resistance monitoring in Illinois corn rootworm populations. **Joseph Spencer** (spencer1@illinois.edu), Nicholas Seiter and Sagnika Das, Univ. of Illinois, Urbana-Champaign, IL
- 8:38 121 Assessing the larval survival of *Striacosta albicosta* in Vip3A, non-Bt, and blended refuge scenarios. **Alisson Santana** (alisson.0910.silva@gmail.com)¹, Yasmine Farhan², Jocelyn Smith², Natasha Weppeler² and Julie Peterson¹, ¹Univ. of Nebraska-Lincoln, North Platte, NE, ²Univ. of Guelph, Ridgetown, ON, Canada
- 8:50 122 Comparing pollinator abundance and diversity among Conservation Reserve Program practices. **Maya Vellicolungara** (velli005@umn.edu), Daniel Cariveau and Daniel Larkin, Univ. of Minnesota, St. Paul, MN
- 9:02 123 Predation of snails and slugs by carabid beetles found in row crops. **Raul Villanueva** (raul.villanueva@uky.edu)¹, Zenaida Vilorio² and Armando Falcon-Brindis², ¹Univ. of Kentucky - Research and Education Center, Princeton, KY, ²Univ. of Kentucky, Princeton, KY
- 9:14 124 Pollinator inventory projects in the National Park system: A broad overview of current projects. **Michelle Boone** (boon0086@umn.edu), Lisa Nelson, Erin Borgman, Andrea Valerius, Alison Loar, Parker Martyn and Tracy Valerius, National Park Service, Fort Collins, CO
- 9:26 Break
- 9:36 125 Comparing native and released range distribution of a biocontrol, *Teretrius nigrescens*, and its prey, *Prostephanus truncatus*, with climate change. **Rachel Harman** (rachel_harman@outlook.com), William Morrison and Alison Gerken, USDA-ARS, Manhattan, KS
- 9:48 126 A long-term monitoring plan for rusty patched bumble bee: How you can help. **Ian Pearse** (ipearse@usgs.gov)¹, Tamara Smith², Laura Lukens³ and monitoring Group Rusty Patched BB, ¹US Geological Survey, Fort Collins, CO, ²US Fish and Wildlife Service, Bloomington, MN, ³Colorado State Univ., Fort Collins, CO



Tuesday, 26 March 2024



- 10:00 127 Comparative efficacy of isoxazoline products against larval tick infestations in *Peromyscus leucopus* mice following a single oral dose. **Emily Gisi** (emily.m.gisi@und.edu), Haley Cooper, Lindsey Kallis and Jefferson Vaughan, Univ. of North Dakota, Grand Forks, ND
- 10:12 128 Investigating potential environmental impacts of using isoxazoline-laced baits to control ticks on rodent reservoirs of tick-borne diseases. **Jefferson Vaughan** (jefferson.vaughan@email.und.edu), Haley Cooper and Emily Gisi, Univ. of North Dakota, Grand Forks, ND
- 10:24 129 Systemic spread of RNAi via wxosomes in western corn rootworm (*Diabrotica virgifera virgifera*). **Suresh Varsani** (ssvarsani@gmail.com)¹, Festus Ajibefun², Kristopher Silver² and Ana Velez¹, ¹Univ. of Nebraska-Lincoln, Lincoln, NE, ²Kansas State Univ., Manhattan, KS
- 10:36 130 Variation in larval noctuid performance on artificial diets with incorporated transgenic *Bacillus thuringiensis* (Bt) maize tissues. **Brad Coates** (brad.coates@usda.gov)¹, Craig Abel¹ and Julie Peterson², ¹USDA-ARS, Ames, IA, ²Univ. of Nebraska-Lincoln, North Platte, NE
- 10:48 131 Emerging mite threat to honey bees: Managing the latest pest challenge in Asia. **Madison Sankovitz** (madison.sankovitz@colorado.edu) and Samuel Ramsey, Univ. of Colorado Boulder, Boulder, CO
- 11:00 132 Exploring the metabolome of aphid saliva. **Hillary Fischer** (hillfisch@gmail.com) and Aleksandra Skiryecz, Michigan State Univ., East Lansing, MI
- 11:12 133 Mother Nature's attract and kill: Incorporating indirect plant defense into integrated pest management of an aphid pest. Emily Russavage¹, Anjel Helms¹, Adrianna Szczepaniec², William Rooney¹ and **Micky Eubanks** (micky.eubanks@colostate.edu)², ¹Texas A&M Univ., College Station, TX, ²Colorado State Univ., Fort Collins, CO
- 11:24 134 Using community-based social marketing to encourage protective behaviors and boost passive surveillance citizen science efforts for tick tag go. **Louise Lynch-O'Brien** (llynchobrien@unl.edu), Kaitlin Chapman, Jody Green, Ariel Dawdy, Roberto Cortinas and Elizabeth VanWormer, Univ. of Nebraska-Lincoln, Lincoln, NE
- 11:36 135 Do they know what you think they know: Information literacy is not inherent, but taught. **Joseph Raczkowski** (raczkowski.2@osu.edu), Ellen Klinger and Ben Philip, The Ohio State Univ., Columbus, OH



Symposium: Intersecting Realms: Unveiling the Complex Web of Host-Microbe-Environment Dynamics

2:00 – 5:20 PM
Legends Room

Organizers and Moderators: **Enakshi Ghosh**, Colorado State University;
and **Jinlong Han**, Colorado State University

- 2:00 Introductory remarks
- 2:10 136 Plant defenses and polydnaviruses mediate competition between two parasitoids of *Pieris rapae*. **Paul Ode** (paul.ode@colostate.edu), Colorado State Univ., Fort Collins, CO
- 2:30 137 Exploring the effects of host plant species and arthropod visitation on plant microbiome assembly. **Monica Kersch-Becker** (mfk5843@psu.edu), Pennsylvania State Univ., State College, PA
- 2:50 138 The impact of climate change on host-viral interactions. **Angela Smilanich** (asmilanich@unr.edu), Univ. of Nevada, Reno, NV
- 3:10 139 Plant interactions with microbial friends and invertebrate foes. **S. Karen Gomez** (Susana.gomez@unco.edu), Univ. of Northern Colorado, Greeley, CO
- 3:30 Break
- 4:00 140 Maize domestication alters herbivore-induced volatile signals and rhizosphere microbes. **Esther Ngumbi** (enn@illinois.edu), Univ. of Illinois at Urbana-Champaign, Urbana, IL
- 4:20 141 Avoiding the infected: Tactical host selection behavior in parasitoids. **Enakshi Ghosh** (enakshi.ghosh@colostate.edu), Colorado State Univ., Fort Collins, CO
- 4:40 142 Deciphering diurnal rhythms in aphid feeding behavior and gene expression. **Jinlong Han** (jinlong.han@colostate.edu), Colorado State Univ., Fort Collins, CO
- 5:00 143 The implications of immune priming in assisted gene flow. **Matthew Wallace** (matthew.wallace@colostate.edu), Colorado State Univ., Fort Collins, CO



Regular Ten-Minute Papers: Session II

2:00 – 5:00 PM

Green and Gold Room

Moderators: **Patrick Wagner**, South Dakota State University; and **Ian Pearse**, US Geological Survey

- 2:00 Introductory remarks
- 2:02 144 Chemical differentiation of and behavioral response to two alternate food sources by red-legged ham beetle, *Necrobia rufipes* (Coleoptera: Cleridae). **William Morrison** (william.morrison@usda.gov)¹, Correy Hildebrand², Jacqueline Maille³, Joseph Castaldi³, Jennifer Abshire¹, Danielle Dryer⁴ and Stephen Kells², ¹USDA - ARS, Manhattan, KS, ²Univ. of Minnesota, St. Paul, MN, ³Kansas State Univ., Manhattan, KS, ⁴Cornell Univ., Ithaca, NY
- 2:14 145 Food cues and sex pheromone affect flight capacity and behavior of *Ephestia kuehniella* Zeller (Lepidoptera: Pyralidae) in the laboratory. **Jennifer Abshire** (jennifer.abshire@usda.gov)¹, Rachel Harman¹, Samantha Gillette², Jacqueline Maille², Sabita Ranabhat², Erin Scully¹, Kun Yan Zhu², Alison Gerken¹ and William Morrison¹, ¹USDA-ARS, Manhattan, KS, ²Kansas State Univ., Manhattan, KS
- 2:26 146 Relationship of concentration-time in phosphine fumigation on different species. **Paraskevi Agrafioti** (p.agrafioti@certh.gr)^{1,2}, Dimitrios Kateris¹, Dionysis Bochtis¹ and Christos Athanassiou^{1,2}, ¹Institute of Bio-Economy and Agri-Technology (IBO), Centre for Research and Technology-Hellas (CERTH), Thessaloniki, Greece, ²Univ. of Thessaly, Volos, Greece
- 2:38 147 Towards a more holistic approach for red sunflower seed weevil management. **Jeffrey Cluever** (cluever.jeffrey@huskers.unl.edu) and Jarrad Prasifka, USDA-ARS, Fargo, ND
- 2:50 148 Working towards behaviorally-based management of the native red sunflower seed weevil, a resurging pest of sunflower. **Hannah Quellhorst** (hquellho@ksu.edu)¹, Jarrad Prasifka², Kun Yan Zhu¹ and William Morrison³, ¹Kansas State Univ., Manhattan, KS, ²USDA-ARS, Fargo, ND, ³USDA-ARS, Manhattan, KS
- 3:02 149 2023 efficacy evaluation for red sunflower seed weevil. **Philip Rozeboom** (philip.rozeboom@sdstate.edu)¹, Janet Knodel², Bradley McManus¹, Patrick Wagner³, Patrick Beauzay² and Adam Varenhorst¹, ¹South Dakota State Univ., Brookings, SD, ²North Dakota State Univ., Fargo, ND, ³South Dakota State Univ., Rapid City, SD
- 3:14 Break
- 3:24 150 Does planting date affect *Dectes* stem borer infestations in sunflower? **Patrick Wagner** (patrick.wagner@sdstate.edu)¹, Bradley McManus², Philip Rozeboom², Zachary Loomis² and Adam Varenhorst², ¹South Dakota State Univ., Rapid City, SD, ²South Dakota State Univ., Brookings, SD
- 3:36 151 What do we know about the biology and management of the soybean tentiform leafminer, a new pest of soybean? **Robert Koch** (koch0125@umn.edu), Arthur Ribeiro, James Menger and Fabio Fuhr, Univ. of Minnesota, St. Paul, MN



- 3:48 152 Susceptibility of the soybean gall midge, *Resseliella maxima* (Diptera: Cecidomyiidae), to entomopathogenic nematodes. **Adrian Pekarck** (Adrian.Pekarck@usda.gov)¹, Chad Nielson¹ and David Shapiro Ilan², ¹USDA-ARS, Brookings, SD, ²USDA-ARS, Byron, GA
- 4:00 153 Multi-year summary of foliar insecticide efficacy against soybean gall midge. **Elliot Knoell** (eknoell2@unl.edu) and Anthony McMechan, Univ. of Nebraska, Lincoln, NE
- 4:12 154 Soybean gall midge: Understanding its frequency and severity in soybean and other hosts. **Anthony McMechan** (justin.mcmechan@unl.edu)¹, Molly Darlington¹, Thomas Hunt², Ravneet Kaur¹ and Ana Velez³, ¹Univ. of Nebraska, Lincoln, NE, ²Univ. of Nebraska, Concord, NE, ³Univ. of Nebraska-Lincoln, Lincoln, NE
- 4:24 155 Predation of *Pterostichus melanarius* (Coleoptera: Carabidae) on cocoons of soybean gall midge, *Resseliella maxima* (Diptera: Cecidomyiidae). **Regina Stacke** (stack203@umn.edu), Sarah Lisak, Pheylan Anderson, Amelia Lindsey and Robert Koch, Univ. of Minnesota, St. Paul, MN
- 4:36 156 Withdrawn
- 4:48 180 Beyond the blueprint: behavioral variability in similarly engineered incompatibility agents. **Ratnasri Pothula**¹, Anna Janzen², Adam Sychla¹, Nathan Feltman¹ and Michael Smanski¹, ¹University of Minnesota, St. Paul, MN, ²NovoClade, Inc., Saint Paul, MN



Symposium: Stronger Together: Collaboration and Learning between Colorado Wheat Growers and Colorado State University*

3:30 – 5:00 PM
Salon 1&5

Organizers and Moderators: **Punya Nachappa**, Colorado State University;
and **Brad Erker**, Colorado Wheat

- 3:30 Introductory remarks
- 3:35 157 Benefits of collaboration between Colorado wheat growers and CSU research teams. **Brad Erker** (brad.erker@coloradowheat.org), Colorado Wheat, Fort Collins, CO
- 3:55 158 CoAXium wheat production system: Grower-inspired novel traits for weed management. **Todd Gaines** (Todd.Gaines@colostate.edu), Colorado State Univ., Fort Collins, CO
- 4:15 159 CSU wheat breeding program. **Esten Mason** (esten.mason@colostate.edu), Colorado State Univ., Fort Collins, CO
- 4:35 160 A decade of wheat stem sawfly research: Cultivating solutions with growers. **Erika Peirce** (erika.peirce@usda.gov), USDA-ARS, Fort Collins, CO
- 4:55 Concluding remarks

**Partial support for this symposium was provided by the Department of Agricultural Biology and the College of Agricultural Sciences at Colorado State University.*



Symposium: Examples of Community Collaborations Solving for Challenges in Agriculture

**8:30 – 11:30 AM
Salon 1&5**

Organizer and Moderator: **Clinton Pilcher**, Corteva Agriscience

- 8:30 Introductory remarks
- 8:40 161 Participatory approaches to manage soil health and multiple ecosystem services in the Central Andes of Peru. **Steven Fonte** (stevenfonte@gmail.com), Colorado State Univ., Fort Collins, CO
- 9:05 162 Leveraging private markets for regenerative agriculture: Corteva’s carbon and ecosystem services program. **Courtland Kelly** (courtland.kelly@corteva.com), Corteva Agriscience, LaPorte, CO
- 9:30 163 Realizing sustainability commitments and climate goals through collective action. **Lilly Hancock** (lilly.hancock@genmills.com), General Mills, Denver, CO
- 9:55 Break
- 10:10 164 Considerations on “how” to pursue community collaborations to solve agricultural challenges. **Clinton Pilcher** (clint.pilcher@corteva.com), Corteva Agriscience, Johnston, IA
- 10:35 165 Pioneering partnerships to advance agriculture and combat climate change. **Jillian Lang** (jillian.lang@colostate.edu), Colorado State Univ., Ft. Collins, CO
- 11:00 Panel discussion



Symposium: Highlights of IPM in the High Plains

8:30 – 11:50 AM
Legends Room

Organizers and Moderators: **Jeffrey Bradshaw**, University of Nebraska-Lincoln;
and **Robert Wright**, University of Nebraska-Lincoln

- 8:30 Introductory remarks
- 8:35 166 Alfalfa IPM and human dimensions. **Randa Jabbour** (rjabbour@uwyo.edu), Univ. of Wyoming, Laramie, WY
- 8:55 167 Wheat IPM. **Adam Osterholzer** (Adam.Osterholzer@colostate.edu) and Punya Nachappa, Colorado State Univ., Ft. Collins, CO
- 9:15 168 Efforts to re-establish sunflower IPM in South Dakota. **Jarrad Prasifka** (jarrad.prasifka@ars.usda.gov)¹, Adam Varenhorst², Kristin Simons³ and Sam Ireland⁴, ¹USDA-ARS, Fargo, ND, ²South Dakota State Univ., Brookings, SD, ³North Dakota State Univ., Carrington, ND, ⁴South Dakota State Univ., Pierre, SD
- 9:35 169 Understanding the challenges behind the lack of IPM adoption in the High Plains. **Jeffrey Cluever** (Jeffrey.Clever@usda.gov)¹ and Jeffrey Bradshaw², ¹USDA-ARS, Fargo, ND, ²Univ. of Nebraska Lincoln, Lincoln, NE
- 9:55 Break
- 10:10 170 Army cutworm and continental-scale landscape interactions. **Taylor Kennedy** (taylorkennedy2@montana.edu) and Robert Peterson, Montana State Univ., Bozeman, MT
- 10:30 171 Hemp and quinoa IPM. **Adrianna Szczepaniec** (ada.s@me.com), Colorado State Univ., Fort Collins, CO
- 10:50 172 Using persistent nematodes for management of western corn rootworm. **Julie Peterson** (julie.peterson@unl.edu), Raven Myhre, Abigail Lyons, Carlos Martins, Eric Resende, Milan Chauhan, Priscila Colombo Da Luz and Randy Lloyd, Univ. of Nebraska-Lincoln, North Platte, NE
- 11:10 173 Influence of crop and CRP adjacency and the impact on natural enemies and biological control. **Hannah Stowe** (hstowe2@huskers.unl.edu)¹ and Julie Peterson², ¹Univ. of Nebraska-Lincoln, Lincoln, NE, ²Univ. of Nebraska-Lincoln, North Platte, NE
- 11:30 174 Western bean cutworm pesticide application efficacy and efficiency in corn. **Andrea Rilaković** (a.rilakovic@gmail.com)¹, Milos Zaric¹, Jeffrey Golus¹, Bruno Vieira¹, Bradley Fritz², Greg Kruger³, Turner Dorr¹, Daran Rudnick¹ and Julie Peterson¹, ¹Univ. of Nebraska-Lincoln, North Platte, NE, ²USDA-ARS, College Station, TX, ³BASF Corp., Durham, NC



Symposium: You Can Do That? Non-Academic Careers in Entomology

8:30 – 11:30 AM
Green and Gold Room

Organizers and Moderators: **Anastasia Cooper**, Kansas State University;
Adrian Pekarcik, USDA-ARS; and **Anh Tran**, ISK Biosciences

- 8:30 Welcoming remarks
- 8:35 175 To be an entomologist, is to be like water. **Sean Lewis** (Sean.Lewis@as.eurofinsus.com), Eurofins Agrosience Services, Mebane, NC
- 8:55 176 In the pursuit of happiness: My path to entrepreneurship. **Jennifer Gordon** (jennifer@buglessons.com), Bug Lessons, Denver, CO
- 9:15 177 Entomology careers with the US Department of Agriculture. Marissa Streifel¹ and **Rebecca Stokes**² (rebecca.stokes@usda.gov), ¹USDA, St. Paul, MN, ²US Forest Service - Forest Health Protection
- 9:35 Break
- 9:50 178 I never planned to be an entomologist: My foray into the USDA-ARS. **Adrian Pekarcik** (Adrian.Pekarcik@usda.gov), USDA-ARS, Brookings, SD
- 10:10 179 Planning strategically for a federal career while you are a student. **Michelle Boone** (boon0086@umn.edu), Colorado National Heritage Program, Fort Collins, CO; National Park Service, Fort Collins, CO
- 10:30 Panel discussion

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