

Bringing Focus to the Unseen



94th ESA EASTERN BRANCH MEETING

West Virginia University
Morgantown, WV
March 9–12, 2024

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Thank you to our meeting sponsors!





Dear Colleague Entomologists and Guests,

On behalf of the Entomological Society of America (ESA) Eastern Branch, it is my pleasure to extend a warm welcome to each of you to the 94th Annual Meeting of the ESA Eastern Branch. I am honored to host this exciting gathering at the scenic campus of West Virginia University in Morgantown.

Morgantown, situated at the western edge of our branch, holds special significance for us, and I deeply appreciate the efforts of all participants who have traveled from afar to join us here. As we convene on the campus facilities, the meeting boasts a lineup of unique programs, activities, and events that promise to add an extra layer of excitement to our conference experience, distinguishing it from previous meetings.

Moreover, nestled amidst the picturesque landscapes of West Virginia, I hope you all take the time to savor the beauty of the Mountaineer state. From its rolling hills to its vibrant communities, there is no doubt that West Virginia embodies the essence of "almost heaven."

Once again, welcome to the 2024 ESA Eastern Branch Conference. I am confident that our time together will be both intellectually stimulating and personally rewarding.

Warm regards,

Yong-Lak Park

President

Entomological Society of America Eastern Branch

Code of Conduct

By attending the 2024 Eastern Branch 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, please contact Stacie East, ESA's Director of Equity and Grants, at +1 (301) 731-4535 x3030 or seast@entsoc.org.

WiFi Network

Network: WVU.Guest

Please access this link for detailed instructions regarding WiFi access:

<https://www.statler.wvu.edu/files/d/dffd2cec-3064-46c0-bbbb-816b2e0022ae/guest-wifi-login.pdf>

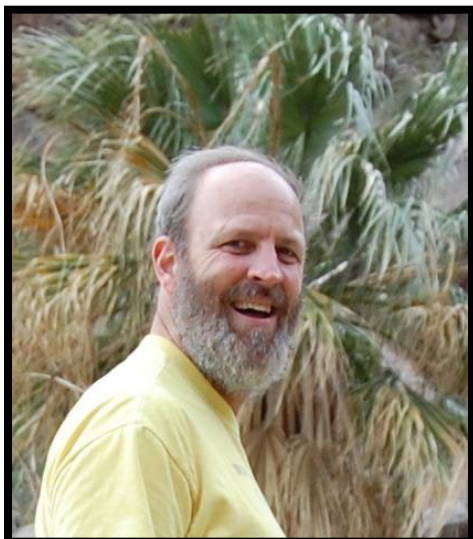
Meeting Refreshments

We are pleased to offer daily beverage service during the meeting. Coffee, tea, and soft drinks will be provided Sunday, March 9 and Monday, March 10 from 9:30 – 10:30 AM and 3:00 – 4:00 PM in the 3rd floor lobby of the Agricultural Science Building.

A complimentary box lunch will be provided on Sunday, March 9 with pick-up starting at 11:45 AM in the 3rd floor lobby of the Agricultural Sciences Building. Choices will include a vegetarian option. Meeting attendees are encouraged to take their lunch to room 1021 of the Agricultural Science Building for the podcast recording event, Sawbones: Most Wanted Bugs!

Additionally, please plan to attend the Meeting Plenary and Awards Lunch on Monday, March 10, included in your meeting registration. The lunch will take place in the Erickson Alumni Center 1st floor ballroom starting at 12:15 PM.

Award Winners



Donald C. Weber

The L.O. Howard Distinguished Achievement Award was established by the Eastern Branch of the Entomological Society of America in 1974 to recognize scientists who have made significant contributions in the field of entomology.

L.O. HOWARD DISTINGUISHED ACHIEVEMENT AWARD

Don Weber grew up in northern Virginia with a knowledge of plants, insects, and birds imparted by Burgundy Wildlife Camp. After obtaining his B.A. in Biology at Williams College, and an M.S. in Entomology at UC Berkeley with research on cole crop pests, Don pursued his interest in fruit and vegetable integrated pest management. Don's Ph.D. work researched the biology and dispersal of the Colorado potato beetle, a notorious pest in North America and Eurasia. After a stint at the Swiss Federal Institute of Technology, Don joined Ocean Spray Cranberries, a grower cooperative in six US states and two Canadian provinces. researching environmentally-friendly strategies for cranberry pest complexes in all growing regions. In 2002, he joined what is now the Invasive Insect Biocontrol & Behavior Laboratory of USDA ARS in Beltsville, Maryland, as Research Entomologist. He is Lead Scientist there for the current 5-year 8-lab project, "Sustainable Insect Pest Management for Urban Agriculture and Landscapes." His lab researches non-pesticidal pest management alternatives such as natural enemies and pheromones for major vegetable pests, especially beetles and true bugs. He has made major contributions to the understanding and management of brown marmorated stink bug, harlequin bug, cucumber beetles, Colorado potato beetle, among others. He has published over 100 peer-reviewed articles including evaluations of semiochemical attraction and cross-attraction, biological control including accidental introductions, trap cropping and attract-and-kill tactics. Don has been active with the ESA, particularly Eastern Branch, as well as the Entomological Society of Washington, Northeast SARE, and IOBC Nearctic Regional Section.



Thomas P. Kuhar

The Herb. T. Streu Meritorious Service Award was established by the Eastern Branch in 1991 to provide timely recognition of Eastern Branch members for outstanding service to the Branch. The award honors the legacy of Herb. T. Streu who was an ESA member for 60 years and served the society in many roles.

HERB T. STREU MERITORIOUS SERVICE AWARD

Dr. Tom Kuhar is a Professor and agricultural IPM Extension Specialist in the Department of Entomology at Virginia Tech where he has been a faculty member since 2001. His research focuses on the ecology and integrated pest management of agricultural insect pests of vegetables, potatoes, row crops, and turf grass. Tom has been an active member of the Eastern Branch of the Entomological Society of America since his first year as a Master's student at Virginia Tech in 1992. He has served the Eastern Branch ESA in many capacities including: chair of the Graduate Student Committee (1997), Registration Committee Chair (2002), judge for the Student Paper Competition numerous times since 2003, Student Paper Competition Chair (2003-04), Annual Meeting Program Committee Chair (2014-15), President of the Eastern Branch ESA (2018-19), Chair of the EB Awards Committee (2019-2020), Member of the EB Awards Committee 2021-2023. In addition to these official positions, Tom has been a symposium organizer several times for the Eastern Branch ESA Meeting, has coached the Virginia Tech Entomology Games Team since 2010, and he and his many graduate students have regularly presented at the Eastern Branch meetings for over 20 years resulting in over 100 Eastern Branch presentations. In fact, Tom has only missed one Eastern Branch Meeting since 1993 and that was due to Covid-19. Most recently, Tom partnered with Bill Lamp in 2021 to create Entoquest, the annual fall outdoor meeting of the Eastern Branch ESA.



Denis Gemellaro

This award recognizes an Eastern Branch member for outstanding contributions in teaching.

EASTERN BRANCH DISTINGUISHED ACHIEVEMENT AWARD IN TEACHING

Dr. Denise Gemmellaro received her Ph.D. in Entomology from Rutgers University, with a dissertation in Medico-Legal Forensic Entomology and is currently an Assistant Professor at the Department of Biological Sciences at Kean University (Union, NJ). She has been involved in the field of forensic entomology for several years, during which she has trained state police, FBI, pathologists, lawyers and other professionals in the field of forensics, as well as undergraduate and graduate students. Dr. Gemmellaro's research is focused on using insects of forensic importance to establish time of colonization, movement of the bodies and potential presence of illegal substances in the body. Dr. Gemmellaro is a diplomate of the American Board of Forensic Entomology, and a member of several forensic societies, among which the American Academy of Forensic Sciences (AAFS), the Entomological Society of America (ESA), the North American Forensic Entomology Association (NAFEA), the European Association for Forensic Entomology (EAFE). Dr. Gemmellaro has mentored several students and has worked with them on several entomology and forensic science research projects; along with her students she has attended and presented at ESA annual meetings and the past two ESA-Eastern Branch Summer Meetings.



Eric Day

This award recognizes an Eastern Branch member for outstanding contributions in extension.

EASTERN BRANCH DISTINGUISHED ACHEIVEMENT AWARD IN EXTENSION

Eric Day received his B.S. from Wilmington College in 1983 and his M.S. from the University of Illinois in 1986. He has been at Virginia Tech since 1986 as Manager of the Insect Identification Laboratory which receives on average 1,100 samples a year from Extension Agents and the general public. His extension programs include Christmas trees, livestock, citizen science detection, and maintaining and updating over 100 fact sheets on insect and mite pests. He has long term projects on detecting invasive species particularly at the Virginia Ports of Entry and conducts pest surveys for new and invasive pests including wood boring beetles, fire ants, and spotted lanternfly.



Lorena Lopez

This award honors an early career professional working in the field of entomology who has demonstrated excellence in extension.

EASTERN BRANCH EXCELLENCE IN EARLY CAREER EXTENSION AWARD

Lorena Lopez, Ph.D., is a distinguished early-career professional in the field of entomology, specializing in integrated pest management (IPM) with a focus on specialty crops like strawberries, squash, and tomatoes. Her career began at the University of Florida, where she held positions as a Postdoctoral Associate and a Graduate Research Assistant in the Entomology and Nematology Department. During her time there, Dr. Lopez developed innovative pest management strategies, including conducting significant research on mite pests in blueberries and cucurbits.

Dr. Lopez's contributions in this field are substantial and diverse. She's known for her practical and innovative approaches to pest management in specialty crops, enhancing the sustainability of agricultural practices. Her leadership in organizing workshops and contributing to critical research in pest management strategies showcases her ability to bridge the gap between research and real-world applications. Her skills extend beyond research; she's a proactive communicator, adept at presenting complex scientific concepts in an accessible manner. This talent has made her a recognized figure in symposia and a valuable contributor to



Pin-Chu Lai

This award honors an early career professional working in the field of entomology who has demonstrated excellence in research.

EASTERN BRANCH EXCELLENCE IN EARLY CAREER RESEARCH AWARD

Dr. Pin-Chu Lai is an assistant professor and extension specialist in the Department of Entomology at the University of Nebraska-Lincoln, Panhandle Research, Extension and Education Center in Scottsbluff, NE. Dr. Lai's research focuses on integrated pest management (IPM) for specialty and row crops in the high plains. Pin-Chu developed her interest in agricultural insect pests, especially vectors of plant pathogens while earning her B.S. degree in Entomology from the National Taiwan University. Dr. Lai received her M.S. and Ph.D. degrees in Entomology from the University of Georgia where she studied the applied ecology and management of tobacco thrips and tomato spotted wilt virus in peanut. After completing her Ph.D., Pin-Chu joined Cornell University as a postdoctoral research associate conducting research on vegetable pests. Pin-Chu led research projects tackling onion thrips and bulb rot in organic onions, allium leafminer in organic leeks, and Colorado potato beetle and wireworm in potatoes. She evaluated an array of pest management tools for IPM including resistant cultivars, trap cropping, reflective mulch, insect exclusion coverings, and entomopathogenic nematodes and fungi. Pin-Chu disseminates her research to stakeholders through peer-reviewed publications, conference presentations, extension outreach, and factsheets. Pin-Chu currently serves as the chair of the Early Career Professional Committee in the Eastern Branch of the Entomological Society of America.



Abbey Hayes

This award honors an early career professional working in the field of entomology who has demonstrated excellence in teaching.

EASTERN BRANCH EXCELLENCE IN EARLY CAREER TEACHING AWARD

Dr. Abigail “Abbey” Hayes has been a member of the Eastern Branch since 2022 and serves as the Early Career Professional (ECP) representative to the Eastern Branch's executive committee. Abbey is currently a postdoctoral research associate in Alan Bergland's lab at the University of Virginia working on seasonal evolution and the traits associated with a chromosomal inversion in *Drosophila*. Abbey's general research interests lie at the intersection of phenotype, genotype, and environment. They join the Bergland lab fresh off of an NSF Postdoctoral Research Fellowship (PRFB) at the University of Connecticut (UConn) working with Dr. Elizabeth Jockusch on the evolution of wings focusing on the non-model system *Leptoglossus zonatus*. During their PRFB they mentored a myriad of undergraduate and graduate students in addition to teaching a four-semester course to a cohort of 16 undergraduates from historically-excluded backgrounds. In addition to their research and teaching during this time, Abbey was the postdoctoral representative on their departmental DEI committee and successfully proposed and received funding to create a "privacy room" for telehealth, prayer and lactation purposes. They were also an active leader in UConn's Queer Science program which brings queer highschoolers interested in STEM to campus. Their PhD work focused on wing polyphenic development in crickets with Dr. Laura Lavine. During graduate school Abbey served as instructor of record several times including converting courses to online formats during the pandemic, and founded and curated a bug zoo for outreach and teaching purposes - to learn more visit their website: <https://abigailhayesphd.wixsite.com/main>



Lidia Komondy

The John Henry Comstock Award is sponsored by the Entomological Society of America and is given to an outstanding graduate student from each branch of the ESA.

JOHN HENRY COMSTOCK GRADUATE STUDENT AWARD

Lidia Komondy is a Ph.D. candidate and a Foundation for Food and Agricultural Research fellow in the Department of Entomology at Cornell University where she is advised by Dr. Brian Nault. She obtained her B.S. in Entomology from Michigan State University in 2018 and went on to obtain her M.S. in Entomology from the University of Florida in 2020. At Cornell, Lidia's research integrates the ecology and management of plant-pathogenic arthropods within vegetable cropping systems to provide the most economically and ecologically sustainable management decisions in both conventional and organic systems. Specifically, her research aims to understand the mechanisms that drive spatial and temporal patterns of pest dispersal, and the epidemiology of viral pathogens in specialty cropping systems using precision agricultural tools. Beyond her research, Lidia is invested in scientific communication through outreach and extension activities, and is committed to serving in roles that "bridge the gap" between scientists and the public.



Jesse Evans

The Eastern Branch of the Entomological Society of America recognizes an outstanding master's level graduate student through the presentation of the Asa Fitch Memorial Award.

ASA FITCH MEMORIAL AWARD

Jesse Evans is currently a Ph.D. student at Washington State University studying disease ecology under Drs. Karen Poh and Pilar Fernandez. He completed his master's at Penn State studying tick-host interactions in prescribed fire landscapes under the guidance of Dr. Erika Machtinger. While at Penn State, Jesse also participated in a project collecting deer keds for pathogen surveillance and contributed to Extension outreach efforts. He is from State College, Pennsylvania and is passionate about ecology, wildlife, parasitism, and human-wildlife interactions. He has an undergraduate background in wildlife science. When he's not crying over an R workspace or avoiding emails, Jesse enjoys playing games with friends, hiking, cooking, camping. and losing at trivia.

Program Overview

SATURDAY, MARCH 9		
Time	Session/Function	Location
1:00 PM – 2:00 PM	Executive Committee Meeting	1010, Agricultural Sciences Building
1:00 PM – 5:00 PM	Registration	Agricultural Sciences Building, 3 rd floor lobby
2:00 PM – 5:00 PM	It's a Bug's World Setup	Agricultural Sciences Building, Ground and 2 nd floors, and greenhouse
2:00 PM – 5:00 PM	Student Poster Setup	4004, Agricultural Sciences Building
2:00 PM – 5:00 PM	SPECIAL EVENT! The Amazing Ento-Race	Agricultural Sciences Building, 3rd Floor Lobby
3:00 PM – 5:00 PM	Student Competition Presentation Preview	3401, Agricultural Sciences Building
5:00 PM – 7:00 PM	Welcome Reception	Erickson Alumni Center, 1st Floor Ballroom
SUNDAY, MARCH 10		
Time	Session/Function	Location
7:00 AM – 8:00 AM	Exhibitor Setup	Agricultural Sciences Building, 3rd Floor Lobby
7:30 AM – 4:00 PM	Registration	Agricultural Sciences Building, 3 rd floor lobby
8:00 AM – 10:25 AM	Undergraduate 10-Minute Papers	G06, Agricultural Sciences Building
8:00 AM – 10:40 AM	Masters 10-Minute Papers	1021, South Agricultural Sciences Building
8:00 AM – 5:00 PM	Exhibitors	Agricultural Sciences Building, 3rd Floor Lobby
8:00 AM – 6:00 PM	Masters Posters	4004, Agricultural Sciences Building
8:00 AM – 6:00 PM	Ph.D. Posters	4004, Agricultural Sciences Building
8:00 AM – 6:00 PM	Undergraduate Posters	4004, Agricultural Sciences Building
9:00 AM – 12:00 PM	Symposium: Updates on Biological Control of Pests and Weeds in the Northeast	2004, Agricultural Sciences Building
9:30 AM – 10:30 AM	Coffee with ESA Eastern Branch Governing Board Representative, Don Weber	3401, Agricultural Sciences Building
9:30 AM – 10:30 AM	Coffee/Refreshment Service	Agricultural Sciences Building, 3rd Floor Lobby
10:00 AM - 4:00 PM	It's a Bug's World Event	Agricultural Sciences Building, Ground and 2 nd floors, greenhouse, and Percival Hall
11:00 AM – 12:00 PM	Q&A with Student Poster Presenters	4004, Agricultural Sciences Building

11:45 AM – 1:00 PM	Lunch Service	Agricultural Sciences Building, 3rd Floor Lobby
12:00 PM – 1:00 PM	SPECIAL EVENT! Podcast Recording: Sawbones: Most Wanted Bugs	1021, South Agricultural Sciences Building
1:00 PM – 5:30 PM	Ph.D. 10-Minute Papers	G06, Agricultural Sciences Building
2:00 PM – 5:00 PM	Symposium: Bringing Focus to Unseen Aspects of Chemical Ecology	2004, Agricultural Sciences Building
3:00 PM – 4:00 PM	Coffee/Refreshment Service	Agricultural Sciences Building, 3rd Floor Lobby
3:00 PM – 4:00 PM	Coffee with ESA President, Jennifer Henke, BCE	3401, Agricultural Sciences Building
4:00 PM – 5:00 PM	It's a Bug's World Breakdown	Agricultural Sciences Building, Ground and 2 nd floors, greenhouse, and Percival Hall
6:00 PM – 7:00 PM	Student Poster Removal	4004, Agricultural Sciences Building
6:00 PM – 10:00 PM	Entomology Games	G06, Agricultural Sciences Building
MONDAY, MARCH 11		
Time	Session/Function	Location
7:00 AM – 8:00 AM	Contributed Poster Setup	4004, Agricultural Sciences Building
7:30 AM – 4:00 PM	Registration	Agricultural Sciences Building, 3 rd floor lobby
8:00 AM – 12:00 PM	Symposium: Insects and Cucurbits: Illuminating the Unseen Pests, Pollinators, and Natural Enemies in a Native Crop	1021, South Agricultural Sciences Building
8:00 AM – 6:00 PM	Entomology Poster Medley: Submitted Posters	4004, Agricultural Sciences Building
9:30 AM – 10:30 AM	Coffee/Refreshment Service	Agricultural Sciences Building, 3rd Floor Lobby
11:00 AM – 12:00 PM	Q&A with Poster Presenters	4004, Agricultural Sciences Building
12:15 PM – 1:45 PM	Plenary and Awards Luncheon: Featured Speaker, Sandy Liebhold	Erickson Alumni Center, 1st Floor Ballroom
2:00 PM – 3:15 PM	Spotted Lanternfly Research in the Eastern Branch: Submitted 10-Minute Papers	2004, Agricultural Sciences Building
2:00 PM – 5:00 PM	Symposium: From Larva to Leader: Bringing Focus to the Unseen through Early Career Professionals' Journeys	1021, South Agricultural Sciences Building
2:00 PM – 5:00 PM	Symposium: Insect Detection, Evaluation, and Prediction (IDEP): The Insidious Spread of Invasive Species in the Eastern U.S.	G06, Agricultural Sciences Building

3:00 PM – 4:00 PM	Coffee/Refreshment Service	Agricultural Sciences Building, 3rd Floor Lobby
3:30 PM – 5:00 PM	Entomology Medley I: Submitted 10-Minute Papers	2004, Agricultural Sciences Building
5:30 PM – 8:00 PM	Early Career Professionals Mixer	1030, South Agricultural Sciences Building
6:00 PM – 7:00 PM	Contributed Poster Removal	4004, Agricultural Sciences Building
6:30 PM – 8:00 PM	Membership Meeting	G06, Agricultural Sciences Building

TUESDAY, MARCH 12		
Time	Session/Function	Location
7:30 AM – 9:00 AM	Registration	Agricultural Sciences Building, 3 rd floor lobby
8:00 AM – 11:00 AM	Entomology Medley II: Submitted 10-Minute Papers	2004, Agricultural Sciences Building
8:00 AM – 12:00 PM	Symposium: Applied Agriculture in the Eastern Branch	1021, South Agricultural Sciences Building
9:00 AM – 11:00 AM	Workshop: Bringing Focus to the Use of Drones and Sensors for Advancement in Entomology	G06, Agricultural Sciences Building

Sunday, March 10, 2024, Morning

Masters 10-Minute Papers

1021 (South Agricultural Sciences Building)

Moderator: Brenna Traver, Pennsylvania State Schuylkill, Schuylkill Haven, PA

8:00 **1** Surviving the chill: Overwintering strategies of *Ganaspis brasiliensis* and augmentorium for enhancing the population survival in Maine's winter. **Shehnaz Munnaf Chowdhury** (shehnaz.chowdhury@maine.edu), Univ. of Maine, Orono, ME

8:12 **2** Tillage intensity affects potential natural control of western bean cutworm in organic maize. **Shea Tillotson** (skt5618@psu.edu), Pennsylvania State Univ., State College, PA

8:24 **3** Insights into biology, phenology, and distribution of Japanese maple scale in nursery settings. **Mollie Wyatt** (molliewy@vt.edu)¹ and Alejandro Del Pozo², ¹Virginia Polytechnic Institute and State Univ., Virginia beach, VA, ²Virginia Tech, Dept. of Entomology, Virginia Beach, VA

8:36 **4** Do dung beetles sink or swim? Exploring dung beetle response to climate change induced precipitation **Lauren Cheshire** (ltcheshire@mix.wvu.edu) and Elizabeth Rowen, West Virginia Univ., Morgantown, WV

8:48 **5** Sequestration and expectoration: Ingested materials as a source of phytohormones in fall armyworm saliva. **Adam Scherr** (ascherr@psu.edu), Kelli Hoover and Gary Felton, Pennsylvania State Univ., Univ. Park, PA

9:00 **6** Novel RNA viruses of the odorous house ant, *Tapinoma sessile* and their interactions with foraging behavior. **Charly Hartle** (hartlect@vt.edu)¹, Chih-Chi Lee², Alexander Blumenfeld³, Nicolas Gustafson¹, Edward Vargo⁴ and Chin-Cheng (Scotty) Yang¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Academia Sinica, Tainan City, Taiwan, ³Yale Univ., New Haven, CT, ⁴Texas A&M Univ., College Station, TX

9:12 **7** Unveiling the role of cover crop mixtures: Implications for maize resistance to pests. **Alison Jennings** (ahj5145@psu.edu) and Jared Ali, The Pennsylvania State Univ., State College, PA

9:24 **8** Ecology and spatial distribution of the Asian longhorned tick (*Haemaphysalis longicornis*) in Virginia pastures. **Matt Sharpe** (matts184@vt.edu)¹, Benjamin L. Aigner², John Currin¹, Gillian Eastwood² and Thomas Kuhar², ¹Virginia Tech, Blacksburg, VA, ²Virginia Polytechnic Institute and State Univ., Blacksburg, VA

9:36 **9** The novel insecticides broflanilide and plinazolin control *Melanotus* spp. wireworms. **Hannah Swarm** (HannahSwarm711@vt.edu)¹ and Thomas Kuhar², ¹Virginia Tech, Blacksburg, VA, ²Virginia Polytechnic Institute and State Univ., Blacksburg, VA

9:48 **10** Spiked supper: Serving antiparasitic drugs to West Virginia *Scarabaeidae*. **Haylie Brown** (hjb00010@mix.wvu.edu), Thomas Basden, Teiya Kijimoto, Joseph Lynch, Kevin Shaffer and Elizabeth Rowen, West Virginia Univ., Morgantown, WV

10:00 **11** The benefits of corn earworm IPM in sweet corn. **Brian Currin** (briancurrin@vt.edu)¹, Thomas Kuhar² and Helene Doughty³, ¹Virginia Tech, Blacksburg, VA, ²Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ³Virginia Polytechnic Institute and State Univ., Painter, VA

10:12 **12** Characterization of hair types of *Osmia cornifrons* (Hymenoptera: Megachilidae): implications for pollination efficiency. **Nellie Heitzman** (nsheitzman@mix.wvu.edu)¹, Kyung San Choi² and Yong-Lak Park¹, ¹West Virginia Univ., Morgantown, WV, ²Rural Development Administration, Jeju, Korea, Republic of (South)

Undergraduate 10-Minute Papers

G06 (Agricultural Sciences Building)

Moderator: Christine Dodge, USDA-APHIS-PPQ-S&T, Buzzards Bay, MA

8:00 **13** Taxonomic revision of the planthopper genus *Melanoliarus* Fennah, 1945 (Hemiptera: Delphacoidea: Cixiidae) north of Mexico. **Solomon Hendrix** (solvhent@udel.edu) and Charles Bartlett, Univ. of Delaware, Newark, DE

8:12 **14** An analysis of jumping mechanics and behavior in cockroaches. **Nicolás Galvez** (njgalvez@ncsu.edu)¹ and Adrian A. Smith², ¹North Carolina State Univ., Durham, NC, ²North Carolina Museum of Natural Sciences & North Carolina State Univ., Raleigh, NC

8:24 **15** Persistent directional bias in the movement of Queensland fruit flies, *Bactrocera tryoni*, tracked using harmonic radar in papaya fields. **Anika Hurst** (anika.hurst@emu.edu)¹, Allison O'Brien², Nicole Miller¹, Allysen Welty Peachey¹, Stefano De Faveri³, James Yoder¹, Matthew Siderhurst¹ and Jodie Cheesman³, ¹Eastern Mennonite Univ., Harrisonburg, VA, ²Bridgewater College, Bridgewater, VA, ³Queensland Government, Mareeba, QLD, Australia

8:36 **16** The influence of juvenile hormone and prothoracicotropic hormone on diapause development of the European corn borer (*Ostrinia nubilalis*). **Elisa Saint-Denis** (elisa.saint_denis@tufts.edu), Jacob Dayton and Erik Dopman, Tufts Univ., Medford, MA

8:48 **17** Assessing the persistence of directional bias in the movement of Queensland fruit flies, *Bactrocera tryoni*, using harmonic radar tracking. **Meredith Lehman** (meredith.lehman@emu.edu)¹, Ethan Moses², Adesola Johnson¹, Allysen Welty Peachey¹, Stefano De Faveri³, Jodie Cheesman³, Matthew Siderhurst¹ and James Yoder¹, ¹Eastern Mennonite Univ., Harrisonburg, VA, ²Bridgewater College, Bridgewater, VA, ³Queensland Government, Mareeba, QLD, Australia

9:00 **18** Effects of cover crop soils on *Aphis nerii* population dynamics in milkweed species. **Faith Mihalick** (fmm5272@psu.edu), Sujay Paranjape, Alison Jennings and Jared Ali, The Pennsylvania State Univ., State College, PA

9:12 **19** Deformed wing virus in ants: Detection and transmission dynamics. **Nicolas Gustafson** (nicgustafson1@vt.edu)¹, Charly Hartle¹, Fang-Ling Liu¹, Aaron Gross¹, T'ai Roulston², James Wilson¹ and Chin-Cheng (Scotty) Yang¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Univ. of Virginia, Boyce, VA

9:24 **20** Characterization of protein-protein interactions in the maize mosaic virus vector system. **Anne Lindbergh** (ajlindbe@ncsu.edu), Hao Wei Teh, William Klobasa, Marcé Lorenzen and Anna Whitfield, North Carolina State Univ., Raleigh, NC

9:36 **21** Should I stay or should I go? The use of biofriendly repellents and their behavioral effects in house crickets, *Acheta domesticus* **Torben Heinbockel** (theinbockel@towson.edu) and Vonnie Shields, Towson Univ., Towson, MD

9:48 **22** A new species of *Pseudoflatoides* Metcalf (Hemiptera: Flatidae) from the British Virgin Islands. **Nathaniel Levia** (nlevia@udel.edu) and Charles Bartlett, Univ. of Delaware, Newark, DE

10:00 **23** Does an invader impact intraguild predation? **Shea III** (sill@terpmail.umd.edu), Maria Cramer and Kelly Hamby, Univ. of Maryland, College Park, MD

10:12 **24** The effect of diet on Madagascar hissing cockroach strength. **Olivia Turley** (oturley@monmouthcollege.edu), Monmouth College, Monmouth, IL

Masters Posters

4004 (Agricultural Sciences Building)

DSP1 Investigating the DNA methylation related genes of the tsetse fly: Cryptic or scars? **Dylan Richmond** (dfr0004@mix.wvu.edu) and Rita Rio, West Virginia Univ., Morgantown, WV

DSP2 Partner fidelity feedback may be maintained by amino acid/vitamin exchange in the tsetse-*Wigglesworthia* symbiosis. **Ryan Phillips** (rp00045@mix.wvu.edu) and Rita Rio, West Virginia Univ., Morgantown, WV

DSP3 Assessing the toxicity and risk of newer conventional and biological pesticides on monarch butterflies (*Danaus plexippus*). **Michael Adu-Brew** (madubrew@umd.edu) and Niranjana Krishnan, Univ. of Maryland, College Park, MD

DSP4 Identifying urban ground covers commonly encountered by burrowing Lepidoptera and their influence on the wandering and pupation site selection of *Heterocampa pulverea* (Notodontidae). **Emma Jonas** (emjonas@udel.edu) and Douglas W. Tallamy, Univ. of Delaware, Newark, DE

DSP5 Evaluation of the attraction of natural enemies to PredaLure in multiple crops across the U.S.. **Jack Collins** (jackcollins2013@outlook.com)¹, Patricia Prade² and Cesar Rodriguez-Saona³, ¹Rutgers Univ., New Brunswick, NJ, ²Penn State Extension, Lebanon, PA, ³Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

PhD Posters

4004 (Agricultural Sciences Building)

DSP6 Developing monitoring tools for bed bugs in poultry facilities. **Valeria Lee** (vfl5063@psu.edu), Hannah Tiffin, Ashley Russo and Erika Machtinger, Pennsylvania State Univ., Univ. Park, PA

DSP7 Characterizing genes encoding neonicotinoid target sites and other cys-loop ligand-gated ion channels in the genome of the Colorado potato beetle, *Leptinotarsa decemlineata*. **Dongxu Chen** (dxchen@umd.edu) and David J. Hawthorne, Univ. of Maryland, College Park, MD

DSP8 Molecular storytelling: Symbiont nutrient dialogue as told by amino acid transporters. **Rachel Morris** (ram0074@mix.wvu.edu) and Rita Rio, West Virginia Univ., Morgantown, WV

DSP9 How the presence of mutualism impacts insect community composition across an urban gradient. **Meredith Willmott** (meredithjwillmott@gmail.com), Rutgers-Camden, Philadelphia, PA

DSP10 Trap efficacy and vertical stratification of forest insect communities in Penn's Woods. **Codey Mathis** (mathiscodey@gmail.com), Nash Turley and Michael Skvarla, Pennsylvania State Univ., Univ. Park, PA

DSP11 Can drones detect southern pine beetle early attack? Aerial and ground-based investigation of Long Island pitch pines **Caroline Kanaskie** (crk1025@unh.edu)¹, Michael Routhier¹, Benjamin Fraser¹, Matthew Ayres² and Jeff Garnas¹, ¹Univ. of New Hampshire, Durham, NH, ²Dartmouth College, Hanover, NH

DSP12 Pollinator interactions with common native and ornamental plants in suburban gardens. **Joshua Chavana** (jchavelite14@gmail.com), Iris Evans, Sarah Anderson and Neelendra Joshi, Univ. of Arkansas, Fayetteville, AR

Undergraduate Posters

4004 (Agricultural Sciences Building)

DSP13 Looking out for the little guy: Species distribution modelling and conservation implications of the elfin skimmer *Nannothemis bella* (Odonata: Libellulidae). **Maia Chandler** (mchandler1@swarthmore.edu)¹, Daniel Davis², Lacie Newton³, Aaron Goodman³ and Jessica Ware³, ¹Swarthmore College, Swarthmore, PA, ²Brigham Young Univ., Provo, UT, ³American Museum of Natural History, New York, NY

DSP14 Postmortem changes to the gut microbiome of the cowpea weevil, *Callosobruchus maculatus*. **Kimber Calvert** (kcalvert@monmouthcollege.edu), Macie Calhoon, Talon Hunter, Alondra Leon, Jaiden Rivera and James Godde, Monmouth College, Monmouth, IL

DSP15 Harmonic radar tracking of tephritid fruit fly natural movement. **Ethan Moses** (emoses@eagles.bridgewater.edu)¹, Allysen Welty Peachey², Stefano De Faveri³, Jodie Cheesman³, Matthew Siderhurst², James Yoder², Adesola Johnson² and Meredith Lehman²,
¹Bridgewater College, Bridgewater, VA, ²Eastern Mennonite Univ., Harrisonburg, VA,
³Queensland Government, Mareeba, QLD, Australia

DSP16 Movements of male and female colony-reared *Bactrocera jarvisi* tracked using harmonic radar in northern Queensland papaya fields. **Adesola Johnson** (adesola.johnson@emu.edu)¹, Allysen Welty-Peachey¹, Ethan Moses², Meredith Lehman¹, James Yoder¹, Matthew Siderhurst¹, Jodie Cheesman³ and Stefano De Faveri³, ¹Eastern Mennonite Univ., Harrisonburg, VA, ²Bridgewater College, Bridgewater, VA, ³Queensland Government, Mareeba, QLD, Australia

DSP17 Survey of parasitoids of native planthoppers in Rhode Island: Is there a potential for future management of spotted lanternfly (*Lycorma delicatula*)? **Nicholas Durinzi** (lisat@uri.edu), Lisa Tewksbury and Alexandra Johnson, Univ. of Rhode Island, Kingston, RI

DSP18 Investigating through larva: Lepidoptera species and parasitism in fall. **Alexandra Thornton** (athornton@keystone.edu), Keystone College, La Plume, PA

Symposium: Updates on Biological Control of Pests and Weeds in the Northeast

2004 (Agricultural Sciences Building)

Moderators and Organizers: Elizabeth Rowen¹ and Elizabeth Tewksbury², ¹West Virginia Univ., Morgantown, WV, ²Univ. of Rhode Island, Kingston, RI

9:00 Welcoming Remarks

9:05 **25** Does manure handling affect biological control in organic field crops? Mellisa Musekwa, Ember Morrissey, James Kotcon, Eugenia Pena-Yewtukhiw, Rakesh Chandran and **Elizabeth Rowen** (elizabeth.rowen@mail.wvu.edu), West Virginia Univ., Morgantown, WV

9:25 **26** Conservation biocontrol in urban vs. rural settings – Lessons learned, questions raised. **Amara Dunn** (arc55@cornell.edu)¹ and Elizabeth Lamb², ¹Cornell Univ., Geneva, NY, ²Cornell Univ., Ithaca, NY

9:45 **27** Exploring the influence of cover-crop termination in annual cropping systems on predator communities and predation. **Jared Adam** (JaredAdam@psu.edu)¹, John Wallace² and John Tooker², ¹The Pennsylvania State Univ., Univ. Park, PA, ²Pennsylvania State Univ., Univ. Park, PA

10:05 **28** Into the Unknown: Unravelling the biology of an undescribed parasitoid and an under-researched moth family to develop a classical biocontrol program for box tree moth. **Angela Hoover** (angela.hoover@usda.gov)¹, Maddie Ryan², M. Lukas Seehausen³, Marc Kenis⁴, Hannah Broadley⁵, Juli Gould⁵ and Christine Dodge⁶, ¹US Geological Survey, Tucson, AZ, ²USDA-APHIS-PPQ-S&T Forests Pests Laboratory, Buzzards Bay, MA, ³CABI, Delémont, JURA, Switzerland, ⁴CABI, Delémont, Switzerland, ⁵USDA APHIS PPQ, Buzzards Bay, MA, ⁶USDA-APHIS-PPQ-S&T, Buzzards Bay, MA

10:25 **29** Research and operational activities for hemlock woolly adelgid biological control program at Virginia Tech. **Olivia Andrews** (okandrews21@vt.edu)¹, Carrie Preston², Aryanna James¹, Carrie Jubb², Ashleigh Hillen² and Scott Salom¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Virginia Tech, Blacksburg, VA

10:45 **30** Release and monitoring of *Hypena opulenta* for biological control of invasive swallow-worts. **Lisa Tewksbury** (lisat@uri.edu) and Alexandra Johnson, Univ. of Rhode Island, Kingston, RI

11:05 **31** Biocontrol aspects of mile-a-minute and Japanese knotweed in Northeastern USA. **Roghayeh Karimzadeh** (roghayeh.karimzadeh@mail.wvu.edu) and Yong-Lak Park, West Virginia Univ., Morgantown, WV

11:25 **32** *Chrysochus asclepiadeus* maintains promising future as swallow-wort biocontrol agent in North America: An international update. **David Harris** (dharris4@esf.edu)¹, René Sforza² and Ghislaine Cortat³, ¹SUNY ESF, Syracuse, NY, ²USDA ARS EBCL, SAINT GELY-DU-FESC, CEDEX, France, ³CABI, Delémont, JURA, Switzerland

Sunday, March 10, 2024, Afternoon

PhD 10-Minute Papers

G06 (Agricultural Sciences Building)

Moderators: Christine Dodge¹ and Brenna Traver², ¹USDA-APHIS-PPQ-S&T, Buzzards Bay, MA, ²Pennsylvania State Schuylkill, Schuylkill Haven, PA

1:00 **33** Assessing release and recovery methods for *Leucotaraxis* spp., predators of hemlock woolly adelgid, in Virginia and Maryland. **Olivia Andrews** (okandrews21@vt.edu)¹, Thomas Kuhar¹, Chin-Cheng (Scotty) Yang¹, Albert Mayfield², Mark Whitmore³ and Scott Salom¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²USDA - Forest Service, Asheville, NC, ³Cornell Univ., Ithaca, NY

1:12 **34** Altered trap capture of select lepidopteran pests with single vs. combination pheromone lures. **Kelly McIntyre** (mcintyrek@vt.edu)¹, Alejandro Del Pozo², Erin Hodgson³, Arash Rashed⁴ and Kevin Rice¹, ¹Virginia Polytechnic Institute and State Univ., Winchester, VA, ²Virginia Tech, Dept. of Entomology, Virginia Beach, VA, ³Iowa State Univ., Ames, IA, ⁴Virginia Polytechnic Institute and State Univ., Blacksburg, VA

1:24 **35** Interactive effects of abiotic stress and salicylate-mediated plant resistance on aphid population dynamics in semi-natural field setting. **Bijay Subedi** (bks5781@psu.edu) and Monica Kersch-Becker, Pennsylvania State Univ., State College, PA

1:36 **36** Land cover influences on the effects of a plant volatile on pollination. **Yahel Ben-Zvi** (y.bz@rutgers.edu) and Cesar Rodriguez-Saona, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

1:48 **37** Transcriptomic analyses reveal differentially expressed herbivory-defense genes in blueberries. **Jae Kerstetter** (jae.kerstetter@rutgers.edu)¹, Cesar Rodriguez-Saona¹, James Polashock² and Chloe Hawkings¹, ¹Rutgers, The State Univ. of New Jersey, New Brunswick, NJ, ²USDA - ARS, Chatsworth, NJ

2:00 **38** The smell of fear: Can slugs detect their carabid beetle predators? **Maria Cramer** (MariaCramer5610@gmail.com) and Kelly Hamby, Univ. of Maryland, College Park, MD

2:12 **39** Do fire ants use organizational defense strategies to combat viral pathogens? **Fang-Ling Liu** (fiveac45@gmail.com), Liam McMillan and Chin-Cheng (Scotty) Yang, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

2:24 **40** Cattle manure management impacts pests in organic grain production. **Mellisa Musekwa** (mm00200@mix.wvu.edu), Elizabeth Rowen, James Kotcon, Rakesh Chandran, Ember Morrissey, Eugenia Pena-Yewtukhiw and Ana Claudia Sant'Anna, West Virginia Univ., Morgantown, WV

2:36 **41** ITS analysis of bee microbiomes when fed a diet of *Cucurbita pepo* pollen. **Courtney Walls** (courw97@vt.edu)¹, Margaret Couvillon¹, Thomas Kuhar¹, T'ai Roulston², Chin-Cheng (Scotty) Yang¹ and James Wilson¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Univ. of Virginia, Boyce, VA

2:48 **42** Seeking alternatives to neonicotinoid insecticides for seedcorn maggot (Diptera: Anthomyiidae) control in large-seeded vegetable crops. **Leonardo Salgado** (lds223@cornell.edu)¹, Christophe Duplais¹, Alan G. Taylor², Russell Groves³, Benjamin Bradford³, David R. Owens⁴ and Brian Nault¹, ¹Cornell Univ., Cornell AgriTech, Geneva, NY, ²Cornell Univ., NYSAES, Geneva, NY, ³Univ. of Wisconsin, Madison, WI, ⁴Univ. of Delaware, Georgetown, DE

3:00 Break

3:15 **43** When and where: Utilizing historical monitoring data to better inform phenology and management practices for ambrosia beetles. **Devin Calpo** (devinc21@vt.edu)¹, Julie Brindley¹, Peter Schultz¹ and Alejandro Del Pozo², ¹Virginia Polytechnic Institute and State Univ., Virginia Beach, VA, ²Virginia Tech, Dept. of Entomology, Virginia Beach, VA

3:27 **44** The use of social media platform for awareness of invasive pest: Study on *Lycorma delicatula* identification and management in West Virginia. **Kushal Naharki** (kushalnaharki@gmail.com), Elizabeth Rowen and Yong-Lak Park, West Virginia Univ., Morgantown, WV

3:39 **45** Determining sequestration efficiency of quassinoids in the spotted lanternfly, *Lycorma delicatula* White. **Brian Ruether** (brianfr@vt.edu) and Dorothea Tholl, Virginia Tech, Blacksburg, VA

3:51 **46** Avian appetite: Bird preference for spotted lanternfly based on prey access to tree of heaven. **Anne Johnson** (aej5228@psu.edu)¹, Allison Cornell² and Kelli Hoover¹, ¹Pennsylvania State Univ., Univ. Park, PA, ²Pennsylvania State Univ., Altoona, PA

4:03 **47** Harnessing semiochemical lures for early season control of cucumber beetles and their impact on non-target insects. **Demian Nunez** (demiann1@vt.edu)¹, Donald C. Weber² and Thomas Kuhar¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²USDA, Beltsville, MD

4:15 **48** *Lycorma delicatula* dispersal on key host plants. **Katarzyna Madalinska** (kasiamadalinska05@gmail.com)¹ and Anne Nielsen², ¹Rutgers Univ., New Brunswick, NJ, ²Rutgers, The State Univ. of New Jersey, Bridgeton, NJ

4:27 **49** Role of minor cannabinoids as defense chemicals in response to insect herbivory in hemp (*Cannabis sativa*). **Bikash Deo** (bkd00002@mix.wvu.edu), West Virginia Univ., Morgantown, WV

4:39 **50** Optimizing early-season control of iris yellow spot virus transmission: A targeted spray program for enhanced efficacy against adult onion thrips. **Lidia Komondy** (lmk275@cornell.edu)¹ and Brian Nault², ¹Cornell Univ., Ithaca, NY, ²Cornell Univ., Cornell AgriTech, Geneva, NY

4:51 **51** An evolutionary conserved miRNA regulation of fatty acyl-CoA Reductase may play a role in the tsetse-*Wigglesworthia* symbiosis. **Mason Lee** (masonhubbardlee@gmail.com)¹ and Rita Rio², ¹West Virginia University, Morgantown, WV, ²West Virginia Univ., Morgantown, WV

5:03 **52** Beta diversity and its contributors can help inform dung beetle conservation in West Virginia pastures. **Sneha Haridas** (sh00087@mix.wvu.edu) and Elizabeth Rowen, West Virginia Univ., Morgantown, WV

Symposium: Bringing Focus to Unseen Aspects of Chemical Ecology

2004 (Agricultural Sciences Building)

Moderators and Organizers: Michael Gutensohn, West Virginia Univ., Morgantown, WV

2:00 Introductory Remarks

2:05 **53** Successional resistance: leveraging soil legacy to manipulate Chemical Ecology and promote plant protection. **Jared Ali** (jga8@psu.edu), The Pennsylvania State Univ., State College, PA

2:30 **54** Type-IV trichomes: A hairy and sticky herbivore defense in the Solanaceae. **Eloisa Vendemiatti** (eloisa.vendemiatti@mail.wvu.edu)¹, Ella Moats¹, Craig Schenck², Lázaro Peres³ and Vagner Benedito¹, ¹West Virginia Univ., Morgantown, WV, ²Univ. of Missouri, Columbia, MO, ³Universidade de São Paulo, Piracicaba, SP, Brazil

2:55 **55** Deciphering terpene semiochemical biosynthesis in insects. **Dorothea Tholl** (tholl@vt.edu)¹, Zarley Rebholz¹, Hailey Larose¹, Jason Lancaster¹, Maria Dorodnitsyna¹, Kerry Gendreau¹, Michael E. Sparks², Ashot Khimian², Donald Weber³, Dawn Gundersen-Rindal², Jinsong Zhu⁴ and Paul O'Maille⁵, ¹Virginia Tech, Blacksburg, VA, ²USDA - ARS, Beltsville, MD,

³USDA Agricultural Research Service, Beltsville, MD, ⁴Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ⁵SRI International, Menlo Park, CA

3:20 **56** Effects of insect herbivory on the specialized metabolite profiles in industrial hemp (*Cannabis sativa*) suggest a role of cannabinoids in plant defense. **Michael Gutensohn** (michael.gutensohn@mail.wvu.edu) and Bikash Deo, West Virginia Univ., Morgantown, WV

3:45 **57** Plant communication and insect herbivore movement. **André Kessler** (ak357@cornell.edu), Alexander Chautá and Michael Mueller, Cornell Univ., Ithaca, NY

4:10 **58** Deciphering the biology and secondary metabolite biosynthesis in *Conoideocrella luteorostrata*, a recently discovered biocontrol fungus for elongate hemlock scale. **Matthew Kasson** (mtkasson@mail.wvu.edu)¹, Brian Lovett², Hana Barrett³, Angie Macias¹, Lindsay Kasson¹, Bo Xue¹, Greg Boyce¹ and Jason Stajich⁴, ¹West Virginia Univ., Morgantown, WV, ²USDA ARS, Ithaca, NY, ³Cornell Univ., Ithaca, NY, ⁴Univ. of California, Riverside, CA

4:35 Discussion

Monday, March 11, 2024, Morning

Symposium: Insects and Cucurbits: Illuminating the Unseen Pests, Pollinators, and Natural Enemies in a Native Crop

1021 (South Agricultural Sciences Building)

Moderators and Organizers: Sean Boyle¹ and Donald Weber², ¹USDA-ARS, Beltsville, MD, ²USDA - ARS, Beltsville, MD

8:00 Welcoming Remarks

8:05 **59** Right pollinators, right time? An in-depth look at who's playing a role in cucurbit fields **Courtney Walls** (courw97@vt.edu)¹, Margaret Couvillon¹, Thomas Kuhar¹, T'ai Roulston², Chin-Cheng (Scotty) Yang¹ and James Wilson¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Univ. of Virginia, Boyce, VA

8:25 **60** Who pollinates my cucurbits: The spatial variation of the pollinator community of pumpkin and squash crops. **Margarita Lopez-Urbe** (mml64@psu.edu)¹, Nicholas Ivers¹, Hannah Gray² and Shalene Jha², ¹Penn State Univ., Univ. Park, PA, ²Univ. of Texas, Austin, TX

8:45 **61** Unexpected visitors: Insect diversity in squash flowers. **Daniel Wilczek** (hwilczek@vt.edu), Donald Weber, Sean Boyle, Megan Herlihy-Adams and Ariela Haber, USDA Agricultural Research Service, Beltsville, MD

9:05 **62** Chemical ecology of cucurbit insect pests. **Donald Weber** (Don.Weber@usda.gov), Sean Boyle and Anna Wallingford, USDA Agricultural Research Service, Beltsville, MD

9:25 **63** Nature's Lures: Harnessing semiochemicals for sustainable cucumber beetle control. **Demian Nunez** (demiann1@vt.edu)¹, Thomas Kuhar¹ and Donald Weber², ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²USDA Agricultural Research Service, Beltsville, MD

9:45 Break

9:55 **64** Getting to the root of cucurbits: Belowground insect herbivory alters aboveground plant defense, herbivore foraging, and neighboring plants. **Morgan Thompson** (mthompson@tamu.edu) and Anjel Helms, Texas A&M Univ., College Station, TX

10:15 **65** Cucumber beetle management challenges and opportunities on Delmarva. **David Owens** (owensd@udel.edu) and Morgan Malone, Univ. of Delaware, Georgetown, DE

10:35 **66** Having your caking and eating it too? IPPM programming to support unsung heroes in cucurbit production **Ashley Leach** (leach.379@osu.edu)¹ and Ian Kaplan², ¹The Ohio State Univ., Wooster, OH, ²Purdue Univ., West Lafayette, IN

10:55 **67** Catch me if you can: Investigating the relationship between striped cucumber beetle, *Acalymma vittatum*, and its elusive parasitoid natural enemy, *Celatoria setosa*. **Matthew Barrett** (mb2657@cornell.edu)¹, Kobe Phillips², Christophe Duplais³ and Jennifer Thaler¹, ¹Cornell Univ., Ithaca, NY, ²Univ. of South Florida, Tampa, FL, ³Cornell Univ., Cornell AgriTech, Geneva, NY

11:15 **68** That ole squash bug-aboo: Is egg parasitoid, *Hadronotus pennsylvanicus*, our long-lost solution for sustainable squash bug management in cucurbit crops. **Sean Boyle** (Sean.boyle@usda.gov) and Donald Weber, USDA Agricultural Research Service, Beltsville, MD

11:35 Concluding Remarks

Entomology Poster Medley: Submitted Posters

4004 (Agricultural Sciences Building)

DSP19 Delaware's tick program 2019 to now: A perspective on emerging public health concerns. **Jacob Walls** (jacob.walls@delaware.gov) and Wil Winter, Delaware Division of Fish and Wildlife, Newark, DE

DSP20 Ticks fighting ticks: can bite-induced acquired tick resistance change host suitability for tick infestation? **Mia Esoldo** (mie5182@psu.edu) and Erika Machtinger, Pennsylvania State Univ., Univ. Park, PA

DSP21 POSTER WITHDRAWN

DSP22 VectorED Network: Leveraging established education networks to delivery vectorborne disease education and training. **Erika Machtinger** (etm10@psu.edu) and Emily Struckhoff, Pennsylvania State Univ., Univ. Park, PA

DSP23 Junior entomologists convey attitudes toward arthropods at Hokie BugFest. **Stephanie Blevins Wycoff** (slblevin@vt.edu) and Daniel Frank, Virginia Tech, Blacksburg, VA

DSP24 IPM practices and challenges: A survey of private pesticide applicators in Virginia. **Daniel Frank** (dlfrank@vt.edu), Virginia Tech, Blacksburg, VA

DSP25 POSTER WITHDRAWN

DSP26 *Poblicia fuliginosa* (Hemiptera: Fulgoridae): A life history investigation. **Tyler Hagerty** (hagertyt@udel.edu), Univ. of Delaware, Newark, DE

DSP27 Survey of parasitoids of native planthoppers in Rhode Island: Is there a potential for future management of spotted lanternfly (*Lycorma delicatula*)?

DSP28 LorsBAN®: Evaluating alternative insecticides for managing cabbage maggot in the post-chlorpyrifos era. **Jared Dyer** (jd852@cornell.edu) and Daniel Gilrein, Cornell Cooperative Extension of Suffolk County, Riverhead, NY

DSP29 Behavioral control of spotted wing drosophila by addition of a phagostimulant to insecticide applications. **Beth Ferguson** (my490@njaes.rutgers.edu)¹, Cesar Rodriguez-Saona² and Rob Holdcraft¹, ¹Rutgers Univ., Chatsworth, NJ, ²Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

DSP30 Do trypsins play a role in *Helicoverpa zea* Cry1Ab resistance? **Cara Lamberty** (clambert@umd.edu), Katherine Taylor, Megan Fritz and Kelly Hamby, Univ. of Maryland, College Park, MD

DSP31 Alternative chemical control tactics for the red-headed flea beetle in ornamentals. Julie Brindley¹, **David Rivera** (darivera31@vt.edu)¹ and Alejandro Del Pozo², ¹Virginia Polytechnic Institute and State Univ., Virginia Beach, VA, ²Virginia Tech, Dept. of Entomology, Virginia Beach, VA

DSP32 The annual bluegrass weevil as an important pest of turfgrass in Virginia. **Alejandro Del Pozo** (adelpozo@vt.edu)¹, Shannon Bradley², Julie Brindley² and Thomas Kuhar³, ¹Virginia Tech, Dept. of Entomology, Virginia Beach, VA, ²Virginia Polytechnic Institute and State Univ., Virginia Beach, VA, ³Virginia Polytechnic Institute and State Univ., Blacksburg, VA

DSP33 Fertilizer-mediated bottom-up effects on plant-disease-herbivore interactions. **Haotian Liu** (haotian.liu94@rutgers.edu) and Cesar Rodriguez-Saona, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

DSP34 When emerald ash borer populations crash, what happens to the released parasitoids? **Elizabeth Clifton** (elizabeth.marie.clifton@gmail.com)¹, Juli Gould² and Jeff Garnas¹, ¹Univ. of New Hampshire, Durham, NH, ²USDA APHIS PPQ, Buzzards Bay, MA

DSP35 Spatial distribution and phenology of slug moths (Lepidoptera: Limacodidae) in West Virginia. **Tucker Cooley** (mothbustertjc@hotmail.com), West Virginia Univ., Morgantown, WV

DSP36 Using isopropanol in funnel traps to collect beetles attracted to decomposition products. **Teresa Justice** (arenivaga@gmail.com) and Michael Justice, Unaffiliated, Lynchburg, VA

Monday, March 11, 2024, Afternoon

Symposium: From Larva to Leader: Bringing Focus to the Unseen through Early Career Professionals' Journeys

1021 (South Agricultural Sciences Building)

Moderators and Organizers: Pin-Chu Lai¹, Niranjana Krishnan², Abigail Hayes³, Manpreet Kohli⁴, Niranjana Krishnan² and Abigail Hayes³, ¹Cornell Univ., Geneva, NY, ²Univ. of Maryland, College Park, MD, ³Univ. of Virginia, Charlottesville, VA, ⁴American Museum of Natural History, New York, NY

2:00 Welcoming Remarks

2:05 **74** How becoming an entomologist helped me discover my identity, form community and advocate for justice. **Abigail Hayes** (abigailhayesphd@gmail.com), Univ. of Virginia, Charlottesville, VA

2:20 **75** The academic quadrathlon: Navigating research, mentorship, extension, and teaching. **Niranjana Krishnan** (nkrish@umd.edu), Univ. of Maryland, College Park, MD

2:35 **76** Creepy crawly conversations: Learning how to be a science communicator through entomology. **Emily Struckhoff** (ejs6628@psu.edu), Pennsylvania State Univ., Univ. Park, PA

2:50 **77** First generation problems: On navigating academia as an outsider. **Heather Kopsco** (hlk2119@columbia.edu), Columbia Univ., New York, NY

3:05 **78** Spinning a communication web: The common thread guiding my path in entomology. **Karly Regan** (kregan@certisbio.com), Certis Biologicals, Smithsburg, MD

3:20 Break

3:30 **79** The making of an entomologist: Personal lessons in my early professional years. **Lorena Lopez** (lorelopezq257@vt.edu), Virginia Tech, Painter, VA

3:45 **80** Becoming a treasure hunter in a state wildlife agency. **Jakob Goldner** (jakob.t.goldner@wv.gov), West Virginia Division of Natural Resources, Elkins, WV

4:00 **81 PRESENTATION WITHDRAWN**

4:15 **82** Turmoil and termites. **Elizabeth Clifton** (elizabeth.marie.clifton@gmail.com), Univ. of New Hampshire, Durham, NH

4:30 Discussion

4:50 Concluding Remarks

Symposium: Insect Detection, Evaluation, and Prediction (IDEP): The Insidious Spread of Invasive Species in the Eastern U.S.

G06 (Agricultural Sciences Building)

Moderators and Organizers: Hannah Broadley¹ and Elizabeth Tewksbury², ¹USDA APHIS PPQ, Buzzards Bay, MA, ²Univ. of Rhode Island, Kingston, RI

2:00 Introductory Remarks

2:05 **83** Hiding in plain sight: A history of tick invasions in the Northeast. **Ashley Kennedy** (achoatekenedy@gmail.com), US Fish and Wildlife Service, Falls Church, VA

2:20 **84** Invasive earthworms in managed landscapes: impact and solutions. **Olga Kostromytska** (okostromytsk@umass.edu), Univ. of Massachusetts Amherst, Amherst, MA

2:35 **85** Hiding on an invasive tree: The elm zigzag sawfly establishes in North America. **Eric R. Day** (idlab@vt.edu)¹ and Kelly Oten², ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²North Carolina State Univ., Raleigh, NC

2:50 **86** Small but mighty: Twenty years of scale insect introductions to the United States. **Scott Schneider** (scott.schneider@ars.usda.gov), USDA - ARS, Beltsville, MD

3:05 Break

3:20 **87** Expansion and recent detections of crapemyrtle bark scale in eastern North America. **Michael Skvarla** (mxs1578@psu.edu), Pennsylvania State Univ., Univ. Park, PA

3:35 **88** Community ecology of the southern pine beetle: No evidence of enemy release in its expanding range. **Caroline Kanaskie** (caroline.kanaskie@unh.edu) and Jeff Garnas, Univ. of New Hampshire, Durham, NH

3:50 **89** The role of terrestrial environmental DNA in the early detection of invasive insects. **Christopher Eddy** (cse31@sebs.rutgers.edu), Anthony Vastano, Michael Allen, Mariel Vandegrift and Julie Lockwood, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

4:05 **90** Box tree moth, a pest on the move: Tracking the invasion and development of IPM tools to control or suppress its establishment. **Gregory Simmons** (gregory.s.simmons@usda.gov), USDA-APHIS-PPQ, Salinas, CA

4:20 **91** An Introduction to SAFARIS: A spatial modeling framework for tracking and predicting invasions. **Yu Takeuchi** (yu.takeuchi@usda.gov)¹ and Amber Tripodi², ¹North Carolina State Univ., Raleigh, NC, ²USDA-APHIS-PPQ-S&T, Raleigh, NC

4:35 Discussion

4:55 Concluding Remarks

Spotted Lanternfly Research in the Eastern Branch: Submitted 10-Minute Papers

2004 (Agricultural Sciences Building)

Moderators: Rayda Krell, Corteva Agriscience, Ridgefield, CT

2:00 **92** Investigating aspects of adult *Lycorma delicatula*

temperature variation. **Elizabeth Deecher** (lizdeecher@gmail.com) and Julie Urban, Pennsylvania State Univ., Univ. Park, PA

2:12 **93** Comparison of spotted lanternfly, *Lycorma delicatula*, female reproductive development in Pennsylvania and North Carolina. **Julie Urban** (jmu2.julieurban@gmail.com), Pennsylvania State Univ., Univ. Park, PA

2:24 **94** An examination of cuticular sensory structures of spotted lanternfly, *Lycorma delicatula* (White). **Douglas Pfeiffer** (dgpfeiff@vt.edu)¹ and Jon Eisenback², ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Virginia Tech, Blacksburg, VA

2:36 **95** Behavioral responses of the egg parasitoid *Anastatus orientalis* towards adult traces of *Lycorma delicatula* and non-target hosts. **Joe Kaser** (joseph.kaser@usda.gov)¹, Tyler Hagerty², Spiro Schramm¹, Cat Williams², Hannah Broadley³, Charles Bartlett² and Xingeng Wang¹, ¹USDA-ARS, Newark, DE, ²Univ. of Delaware, Newark, DE, ³USDA APHIS PPQ, Buzzards Bay, MA

2:48 **96** Foraging behavior of *Dryinus sinicus*, a nymphal parasitoid of *Lycorma delicatula*. **Spiro Schramm** (spiro.schramm@usda.gov)¹, Joe Kaser¹, Hannah Broadley², Steven Sipolski², Juli Gould² and Xingeng Wang¹, ¹USDA-ARS, Newark, DE, ²USDA APHIS PPQ, Buzzards Bay, MA

3:00 **97** Rearing, life history evaluations, and host range testing of *Dryinus sinicus*, a nymphal parasitoid of spotted lanternfly. **Hannah Broadley** (hannah.j.broadley@usda.gov)¹, Steven Sipolski¹, Corrine Losch^{1,2}, Yunke Wu¹ and Juli Gould¹, ¹USDA APHIS PPQ, Buzzards Bay, MA, ²Univ. of Massachusetts Amherst, Amherst, MA

Entomology Medley I: Submitted 10-Minute Papers

2004 (Agricultural Sciences Building)

Moderators: Rayda Krell, Corteva Agriscience, Ridgefield, CT

3:30 **98** Sleeper traits: Applying framework from invasion biology to conceptualize success in urban systems. **Meredith Willmott** (meredithjwillmott@gmail.com)¹ and Emily Kanach², ¹Rutgers-Camden, Philadelphia, PA, ²Rutgers-Camden, Camden, NJ

3:42 **99** Fowl play: Monitoring and control strategies for bed bugs in poultry facilities. **Hannah Tiffin** (htiffin92@gmail.com), Ashley Russo, Valeria Lee and Erika Machtinger, Pennsylvania State Univ., Univ. Park, PA

- 3:54 **100** Using climate model data to forecast future insect pest pressure. **Alan Leslie** (aleslie@umd.edu)¹, Amanda Brucchieri², Jenna Kraemer² and William Lamp², ¹Univ. of Maryland, Ellicott City, MD, ²Univ. of Maryland, College Park, MD
- 4:06 **101** Plant growth-promoting rhizobacteria (PGPR) modulates sweet corn-corn earworm interactions. **Simon Zebelo** (sazebelo@umes.edu), Jocelyn Simmons and Tigist Tolosa, Univ. of Maryland Eastern Shore, Princess Anne, MD
- 4:18 **102** The redheaded flea beetle as an important pest of nursery crops in Virginia. Eleanor Lane¹, Julie Brindley² and **Alejandro Del Pozo** (adelpozo@vt.edu)³, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Virginia Polytechnic Institute and State Univ., Virginia Beach, VA, ³Virginia Tech, Dept. of Entomology, Virginia Beach, VA
- 4:30 **103** Assessment of bean damage caused by *Epilachna varivestis* (Coleoptera: Coccinellidae) using drones, sensors, and Image analysis: Implications for early detection. **Roghayeh Karimzadeh** (karimzadehus@yahoo.com), Kushal Naharki and Yong-Lak Park, West Virginia Univ., Morgantown, WV
- 4:42 **104** A journey into VR with an entomologist and psychologist – finding novel ways to approach the conservation of insects. **Brenna Traver** (bet12@psu.edu)¹, Bart Masters², Patrick Dudas² and Richard Harnish³, ¹Pennsylvania State Schuylkill, Schuylkill Haven, PA, ²Penn State Univ., State College, PA, ³Penn State New Kensington, New Kensington, PA
- 4:54 **105** Delaware's tick program 2019 to now: An overview of tick population and pathogen data. **Wil Winter** (wil.winter@delaware.gov) and Jacob Walls, Delaware Division of Fish and Wildlife, Newark, DE

Tuesday, March 12, 2024, Morning

Symposium: Applied Agriculture in the Eastern Branch

1021 (South Agricultural Sciences Building)

Moderators and Organizers: Kelly McIntyre¹, David Owens², Benjamin L. Aigner³ and Kyle Bekelja³, ¹Virginia Polytechnic Institute and State Univ., Winchester, VA, ²Univ. of Delaware Cooperative Extension, Newark, DE, ³Virginia Polytechnic Institute and State Univ., Blacksburg, VA

8:00 Welcoming Remarks

8:05 **106** Detecting insect eggs, larvae, pupae, and adults using drones and sensors. **Yong-Lak Park** (yopark@mail.wvu.edu), West Virginia Univ., Morgantown, WV

8:25 **107** Mating disruption of diamondback moth in brassicas across Virginia. **Taylor Sydnor** (tsydnor5@vt.edu)¹, Brent Short², Alejandro Del Pozo³ and Thomas Kuhar¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Trécé Inc., Adair, OK, ³Virginia Tech, Dept. of Entomology, Virginia Beach, VA

8:45 **108** Incorporating existing and experimental threshold sprays into mating disruption for management of key lepidopteran pests. **Laura Nixon** (laura.nixon@usda.gov)¹, Lee Carper², Taylor Lucas¹, John Cullum¹ and Tracy Leskey¹, ¹USDA-ARS, Kearneysville, WV, ²USDA - ARS, Kearneysville, WV

9:05 **109** Regional evaluation of the best trap and pheromone lure combination for capturing corn earworm moths in sweet corn. **Brian Nault** (ban6@cornell.edu)¹, Christophe Duplais¹, Brian Currin², Galen Dively³, Helene Doughty⁴, Anders Huseeth⁵, Thomas Kuhar⁶, David Owens⁷ and Kelly Hamby³, ¹Cornell Univ., Cornell AgriTech, Geneva, NY, ²Virginia Tech, Blacksburg, VA, ³Univ. of Maryland, College Park, MD, ⁴Virginia Polytechnic Institute and State Univ., Painter, VA, ⁵North Carolina State Univ., Raleigh, NC, ⁶Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ⁷Univ. of Delaware Cooperative Extension, Newark, DE

9:25 **110** Addressing evolving corn earworm management challenges in sweet corn grown in the Eastern U.S.. **Kelly Hamby** (kahamby@umd.edu)¹, Michael Crossley², Galen Dively¹, Caroline Brock³, Analena Bruce⁴, Christophe Duplais⁵, Jared Dyer⁶, Daniel Gilrein⁶, Deborah Grantham⁷, Anders Huseeth⁸, Chris Jones⁸, Thomas Kuhar⁹, Joseph LaForest¹⁰, James MacDonald¹, Ross Meentemeyer⁸, Brian Nault⁵ and David Owens¹¹, ¹Univ. of Maryland, College Park, MD, ²Univ. of Georgia, Athens, GA, ³Univ. of Missouri, Columbia, MO, ⁴Univ. of New Hampshire, Durham, NH, ⁵Cornell Univ., Cornell AgriTech, Geneva, NY, ⁶Cornell Cooperative Extension of Suffolk County, Riverhead, NY, ⁷Cornell Univ., Ithaca, NY, ⁸North Carolina State Univ., Raleigh, NC, ⁹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ¹⁰Univ. of Georgia, Tifton, GA, ¹¹Univ. of Delaware Cooperative Extension, Newark, DE

9:45 Break

9:55 **111** Invasive pests: Industry's responsibility and response. **John Aigner** (john.aigner@upl-ltd.com), UPL, Boise, ID

10:15 **112** State PFAS legislation: Potential impacts on pesticide availability. **Bradley Mitchell** (bradley.mitchell@syngenta.com), Syngenta, NA, MA

10:35 **113** Integrated pest management for winter-grown high tunnel vegetable crops. **Anna Wallingford** (anna.wallingford@unh.edu)¹, Samantha Willden², Rebecca Sideman³ and Laura Ingwell², ¹USDA Agricultural Research Service, Beltsville, MD, ²Purdue Univ., West Lafayette, IN, ³Univ. of New Hampshire, Durham, NH

10:55 **114** A research update on relevant pests for Virginia nurseries. **Alejandro Del Pozo** (adelpozo@vt.edu)¹, Julie Brindley², David Rivera², Mollie Wyatt³ and Devin Calpo², ¹Virginia Tech, Dept. of Entomology, Virginia Beach, VA, ²Virginia Polytechnic Institute and State Univ., Virginia Beach, VA, ³Virginia Polytechnic Institute and State Univ., Virginia beach, VA

11:15 **115** Invasive species and warming climate alter the stink bug pest complex in Virginia soybeans. **Benjamin L. Aigner** (baigner@vt.edu)¹, Kyle Bekelja¹, Sean Malone², Helene Doughty³, Jim Jenrette⁴, Anders Huseeth⁵, Sujana Panta⁵ and Thomas Kuhar¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Virginia Tech Univ., Painter, VA, ³Virginia Polytechnic Institute and State Univ., Painter, VA, ⁴Virginia Tech, NA, VA, ⁵North Carolina State Univ., Raleigh, NC

Entomology Medley II: Submitted 10-Minute Papers

2004 (Agricultural Sciences Building)

Moderators: Rayda Krell, Corteva Agriscience, Ridgefield, CT

8:00 **116 PRESENTATION WITHDRAWN**

8:12 **117** The microstructure of antennal sensory organs of the house cricket. **Vonnie Shields** (vshields@towson.edu), Towson Univ., Towson, MD

8:24 **118 PRESENTATION WITHDRAWN**

8:36 **119** Evaluating the effect of neonicotinoid insecticides on insect ecdysis movements. **Jillian Stewart** (jmstew98@umd.edu)¹, Niranjana Krishnan¹, Steven Bradbury² and Russell Jurenka², ¹Univ. of Maryland, College Park, MD, ²Iowa State Univ., Ames, IA

8:48 **120** Assessing insecticide effects on soil microbial activity in Asian jumping worm-infested soils. **Jordan Thompson** (Jordant95@vt.edu)¹, Thomas Kuhar², Alejandro Del Pozo³ and Ashley Jernigan⁴, ¹Virginia Tech, Dept. of Entomology, Blacksburg, VA, ²Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ³Virginia Tech, Dept. of Entomology, Virginia Beach, VA, ⁴Virginia Tech, School of Plant and Environmental Sciences, Blacksburg, VA

9:00 **121** Evaluating biopesticides for codling moth management in apple. **Samuel Brandt** (nate5915@vt.edu)¹, Abigail Golden² and Kevin Rice², ¹Virginia Polytechnic Institute and State Univ., Winchester, VA, ²Virginia Tech, Winchester, VA

9:12 **122** Evaluation of lepidopteran lures easily obtainable by consumer stakeholders: How well do they work for monitoring key tree fruit pests? **Tracy Leskey** (tracy.leskey@usda.gov) and Laura Nixon, USDA-ARS, Kearneysville, WV

9:24 **123** Earwigs abound: Increasing grower participation in biological control of Washington state pear and apple pests. **Katlyn Catron** (kcatron@vt.edu)^{1,2} and Robert Orpet¹, ¹Washington State Univ., Wenatchee, WA, ²Virginia Polytechnic Institute and State Univ., Blacksburg, VA

9:36 **124** Effects of pollination delays in managed blueberries. **Beth Ferguson** (my490@njaes.rutgers.edu)¹, Cesar Rodriguez-Saona² and James Shope³, ¹Rutgers Univ., Chatsworth, NJ, ²Rutgers, The State Univ. of New Jersey, New Brunswick, NJ, ³Rutgers Univ., New Brunswick, NJ

9:48 **125** Box tree moth, *Cydalima perspectalis*, phenology in the current U.S. invasive range. **David Rivera** (darivera31@vt.edu)¹, Britaney Hight¹, Elidah Sisk¹, Julie Brindley¹, Alejandro Del Pozo², Ignacio Baez³ and Gregory Simmons⁴, ¹Virginia Polytechnic Institute and State Univ., Virginia Beach, VA, ²Virginia Tech, Dept. of Entomology, Virginia Beach, VA, ³USDA - APHIS, Raleigh, NC, ⁴USDA-APHIS-PPQ, Salinas, CA

10:00 **126** Global profiling of mosquito small RNAs discovers vertically-transmitted mosquito viruses and diverse transposon expression patterns. **Rohit Sharma** (rosharma@bu.edu), Boston Univ., Boston, MA

Workshop: Bringing Focus to the Use of Drones and Sensors for Advancement in Entomology

Moderators and Organizers: Kushal Naharki, Yong-Lak Park, Roghaiyeh Karimzadeh and Kushal Naharki, West Virginia Univ., Morgantown, WV

9:00 Welcoming Remarks

9:05 **127** Field operation of drones equipped with sensors to detect insects or their signs. **Kushal Naharki** (kushalnaharki@gmail.com), West Virginia Univ., Morgantown, WV

9:30 Break

9:35 **128** Image processing, automated detection of insects or their signs and aerial release of natural enemy insects for controlling invasive plants. **Yong-Lak Park** (yopark@mail.wvu.edu) and Roghaiyeh Karimzadeh, West Virginia Univ., Morgantown, WV

10:25 Break

10:30 **129** Drones and deep learning: Advancing aerial image segmentation for identifying invasive weeds and pest-induced tree health decline. **Sruthi Valicharla** (sv0031@mix.wvu.edu) and Xin Li, West Virginia Univ., Morgantown, WV

10:55 Concluding Remarks

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3: South Agricultural Science Bldg.

Symposia, ECP Mixer

4: Greenhouse

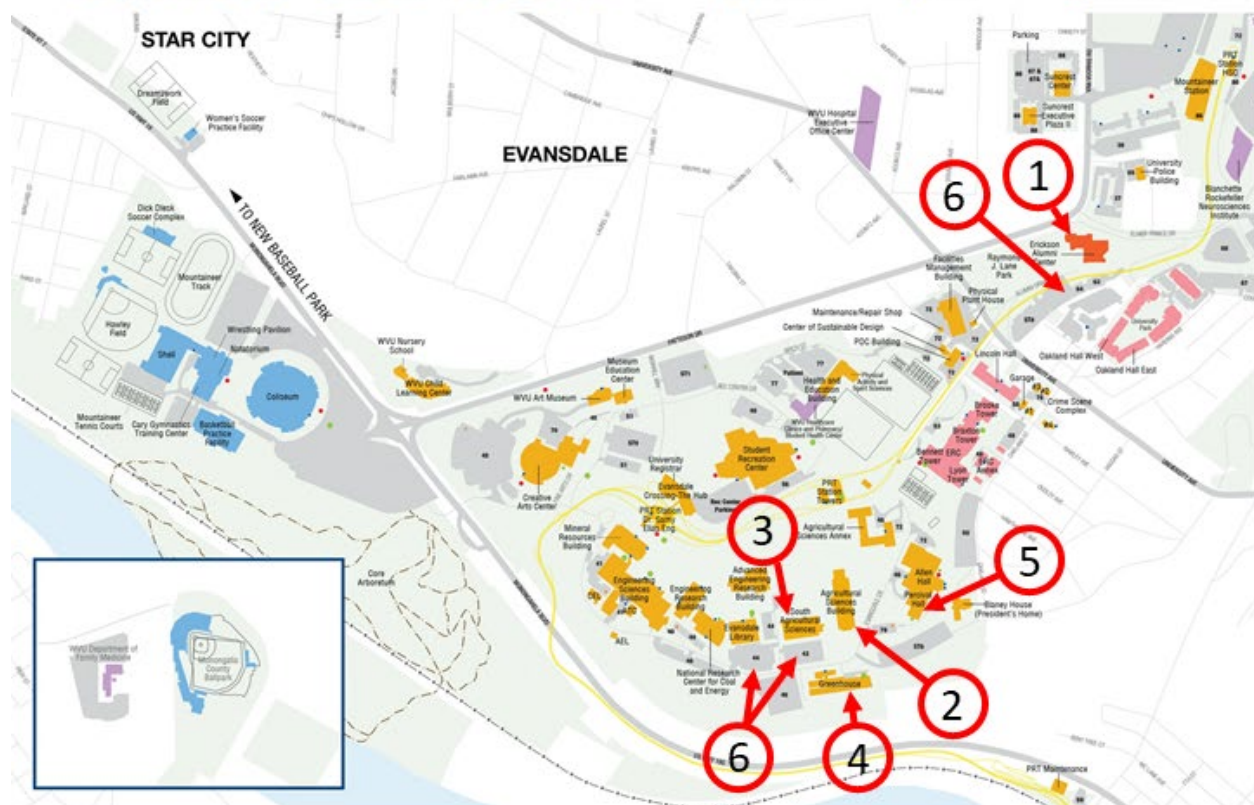
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