Eastern Branch Entomological Society of America 90th Annual Meeting

The Inn at Virginia Tech
Blacksburg, Virginia
9–12 March 2019

Encapsulated Program 2019

Saturday, March 9

Afternoon	*Event*	*Location*
5:00-7:00	President's Reception/Registration	Solitude

Sunday, March 10

Morning	*Event*	*Location*
7:00-8:00	Executive Committee Meeting	1872 Salon
7:30-6:00	Registration	Latham Foyer
8:00-6:00	Silent Auction/Sponsor Exhibits	Latham Foyer
8:00-10:00	Student Poster Setup	Latham DEF
10:00-6:00	Student Competition Posters	Latham DEF
8:00-12:00	PhD Student Oral Competition	Assembly Hall
8:00-12:00	Aquatic Invertebrates in the Environment	Cascades
8:00-12:00	Contributed Ten-Minute Talks	Solitude
Afternoon		
12:00-1:30	**Lunch: ED (Entomological Digest) Talks: Making Science Digestible to the Public**	**Latham ABC**
1:30-5:30	MS Student Oral Competition	Assembly Hall
1:30-5:30	Novel Plant-Insect Associations: Interactions between Exotic and Native Species	Cascades
1:30-5:30	The Digital Future of Entomology	Solitude
4:00-5:00	Regional Biological Control Mtg	Draper's Meadow
Evening		
6:00-8:00	Linnaean Games	Latham AB

Monday, March 11

Morning	*Event*	*Location*
7:30-6:00	Registration	Latham Foyer
8:00-6:00	Silent Auction/Sponsor Exhibits	Latham Foyer
8:00-10:00	Contributed Poster Setup	Latham DEF
8:00-12:00	Insect Pollinators in the Human-Modified Landscape I	Assembly Hall

8:00-12:00	Challenges of Integrated Pest Management (IPM) in High Value Commodities	Cascades
8:00-12:00	Biological Control of Invasive Organisms Impacting the Eastern Branch	Solitude
10:00-5:00	Contributed Posters	Latham DEF
Afternoon		
12:00-1:45	**Lunch: ESA and Student Award Banquet with Presentations from ESA Executive Director and ESA President**	**Latham ABC**
2:00-6:00	Insect Pollinators in the Human-Modified Landscape II	Assembly Hall
2:00-6:00	Applied Agriculture and Ag-Industry Symposium	Cascades
2:00-4:00	Advances in Molecular and Cell Biology of Mosquitoes	Solitude
4:00-6:00	Breaking Ground: Research Highlights from ECPs and non-Academic Track EB Members	Solitude

Tuesday, March 12

Morning	***Event***	***Location***
7:30-10:00	Registration	Latham Foyer
8:00-12:00	Spotted Lanternfly from Detection to Major Pest: Biology, Spread, and Control	Assembly Hall
8:00-12:00	Plant-Insect Chemical Ecology: Multi-Species Interactions and Emerging Applications in Agriculture	Cascades
8:00-12:20	Vectors and Vector-Borne Diseases: Biology, Ecology, and Control	Solitude
8:00-12:00	Workshop: Get Out of the Elevator! Succinct & Compelling Interactions with the Public	Drillfield
12:00-1:00	Final Business Meeting	1872 Salon

Event Room Floor Plans

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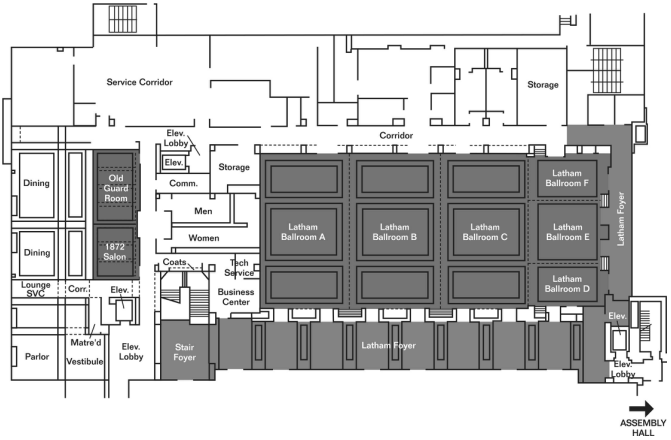
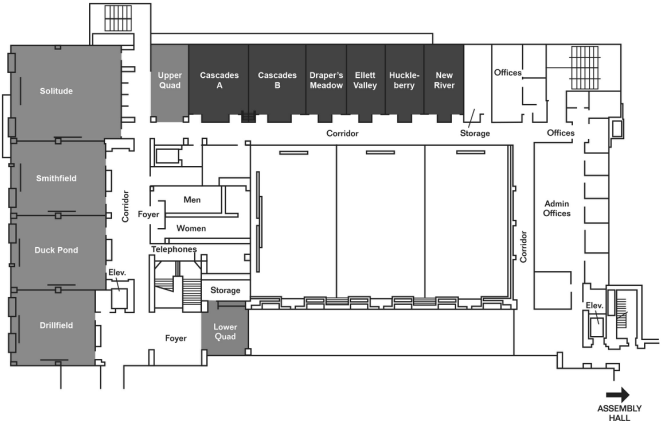


1st Floor



2nd Floor

Code of Conduct

By attending the 2019 Eastern Branch 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, please contact Rosina Romano at rromano@entsoc.org, 703-593-0222.

Advocate Entomology!

ENTOMOLOGY 2019
NOVEMBER 17-20 • ST. LOUIS, MO
America's Center Convention Complex

Share your visionary ideas!

Increase awareness of our science and its importance to Society through your research and other creative work. Plan to share your ideas with more than 3,600 others interested in reshaping and elevating the exciting world of entomology during Entomology 2019.

St. Louis, our host city

Centrally located in America's heartland, St. Louis offers many treasures. Come explore the famous Gateway Arch, Riverfront, Forest Park, river boats on the Mississippi, Botanical Gardens, Science Center, Zoo, museums, and more. Also known for its world-class sports, you can enjoy an abundance of walking paths and biking trails, diverse live music venues and a vibrant food scene in the Gateway City.

Watch eNews and visit
entsoc.org/entomology2019 for details.

QUESTIONS? **meet@entsoc.org**

IMPORTANT DATES/DEADLINES:	
Paper, Posters, 3-min Presentations including Student Competition, and Lunch & Learns submission deadline	MAY 24, 2019
ESA Awards nominations deadline	MAY 31 , 2019
Registration & Housing opens	JUNE 5, 2019
Functions (no fee)	JUNE 14
Virtual Posters	JULY 31

Sharing Insect Science Globally | entsoc.org/entomology2019

Rod Youngman Tribute

This meeting is dedicated in memorial to Dr. Rod Youngman, who sadly passed away on October 21, 2016. Rod spent 25 years as a faculty member and Extension Specialist at Virginia Tech, where this meeting is being held. Rod was a dedicated supporter of the Eastern Branch ESA for his entire career, serving as a moderator numerous times, Chair of the Finance Committee (1993-94), Auditing Committee (1993-94), Secretary of the Eastern Branch from 2001-07 (two terms), and was elected President-elect in 2008, presiding over the Eastern Branch's 80th anniversary annual meeting in 2009. During his time as Secretary, Rod worked with the Executive Committee, Parliamentarian, and Rules Committee to bring about changes to the Eastern Branch Constitution and Bylaws that better reflect the way the Eastern Branch does business. He played a significant role in encouraging ESA to move to electronic communications for Elections and Meeting correspondence, which saved the Branch a significant amount of money at the time. Rod was recipient of the 2011 Herbert T. Streu Award and the 2012 Extension Award for the Eastern Branch. On a personal note, Rod was tremendously instrumental in my career as an entomologist. He was my advisor, taught me how to do research, how to write a scientific paper, and brought me to my first Eastern Branch Meeting as a brand new Master's student in 1993. He never let me miss an ESA national or branch meeting, and experiencing how valuable that was, I have done the same for my students, and always will. I believe that all Society members who have been around since the 1990s would agree that Rod Youngman definitely left his mark on the Eastern Branch ESA. If there were a hall of fame for the Eastern Branch ESA, Rod Youngman would certainly be included as a member.

Sincerely,
Tom Kuhar

2019 Eastern Branch President
Thomas P. Kuhar

Dr. Tom Kuhar received his B.S. degree in biology from Towson, University in 1992 and his Master's (1996) and Ph.D. (2000) degrees in entomology from Virginia Tech. He formerly worked as a postdoctoral research associate at Cornell University and was stationed at the Virginia Tech Eastern Shore AREC from 2001-2009. Tom is a Professor and Vegetable IPM Extension Specialist in the Department of Entomology at Virginia Tech. Dr. Kuhar's research focuses on the ecology and integrated pest management of insect pests of agricultural crops, particularly vegetables, potatoes, row crops, and turf grass. Tom has served the Entomological Society of America in various capacities including Associate Editor of *Arthropod Pest Management* (5 years), Associate Editor of *Journal of Integrated Pest Management* (9 years), Student Paper Competition judge for the national meetings numerous times, Student Paper Competition Chair, Program Chair, Registration Chair, and Symposium organizer several times for the Eastern Branch ESA Meeting. He has also coached the Virginia Tech Linnaean Games Team for several years. For the past 20 years, Tom and his many graduate students regularly present at ESA National and Eastern Branch meetings. Tom is currently President of the Eastern Branch ESA.

Eastern Branch L.O. Howard Distinguished Achievement Award
Christina Grozinger

Christina Grozinger obtained her B.Sc. from McGill University in 1997, with a dual degree in Chemistry and Biology. She was awarded a NSF Predoctoral Fellowship for her studies in the Department of Chemistry and Chemical Biology at Harvard University, obtaining her MA (1999) and Ph.D. (2001). Subsequently, Grozinger was awarded a Beckman Institute Fellowship to join Gene Robinson's group at the University of Illinois, Urbana-Champaign to examine the neurogenomic basis of pheromone-mediated behavior. In 2004, she joined the faculty at North Carolina State University as an assistant professor of insect genomics. In 2008, she joined the Department of Entomology at Penn State as an associate professor, became the Director for the Center for Pollinator Research in 2009, and was named a Distinguished Professor of Entomology in 2015. She was named a Fellow of the Entomological Society of America in 2018.

Grozinger uses a trans-disciplinary approach encompassing genomics, physiology, neurobiology, behavior, chemical ecology, and ecological modeling. Her studies examining the mechanisms mediating cooperation and conflict in insect societies reveal a nuanced communication system that shapes individual and group behavior. Her studies on pollinator health evaluate the impacts of biotic and abiotic stressors at the molecular, physiological and behavioral level to design strategies to mitigate and improve resilience to these stressors. She has published over 100 peer-reviewed articles with over 10,000 citations, and served as the PI/coPI on grants totaling $16.5 million, with $7.5 million directly supporting her program. Grozinger is dedicated to supporting the next generation of scientists, mentoring 45 undergraduates, 15 PhD and 6 MSc graduate students, and 13 postdoctoral scholars, many of whom received prestigious awards from NSF, USDA, US-Israel BARD, Sigma Xi and the Barry Goldwater foundations.

Grozinger is married to a fellow entomologist, Harland Patch. They are the proud parents of an aspiring entomologist, Evelyn Patch.

Eastern Branch Early Career Professionals Award
Heather Grab

Heather Grab is a USDA AFRI Postdoctoral Research Fellow in the lab of Dr. Katja Poveda in the Department of Entomology at Cornell University. Her research in the area of landscape and community ecology integrates large-scale field studies with new molecular techniques in order to develop integrated management strategies that promote synergy between the conservation of ecosystem services and agricultural productivity. Heather is currently exploring the consequences of land use policies and farm management practices on pest and beneficial insect communities. Heather completed her dissertation in Dr. Greg Loeb's lab at Cornell AgriTech on pollination and biological control services provided by wild insects to strawberry production in NY. Heather has been particularly active in advocating for native pollinators and other ecosystem service providers, giving talks based on her research at more than 50 venues including both grower extension services and public science outreach. In her free time, Heather runs a small organic farm with her husband producing vegetables and raising chickens, ducks, pigs and dairy goats.

Eastern Branch Herb T. Streu Meritorious Service Award
Daniel Frank

Daniel L. Frank is an entomology extension specialist and assistant professor with West Virginia University in Morgantown, WV. Daniel received his B.S. in biology from Utah State University, M.S. in entomology from the University of Florida, and Ph.D in entomology from Virginia Tech. Daniel's areas of interest and expertise include integrated pest management and plant-insect interactions. In his current position he conducts applied

research and provides leadership for developing, implementing, and evaluating statewide educational/informational programs in entomology that include pest identification, integrated pest management, pesticide safety and education, and arthropod management and control programs. In addition, he teaches several classes within WVU's Division of Plant and Soil Sciences.

John Henry Comstock PhD Graduate Student Award
Ethan Degner

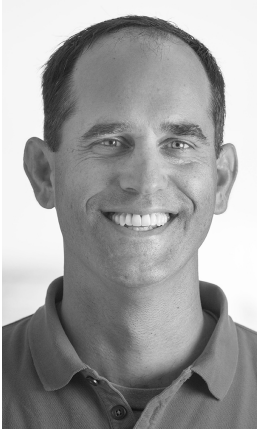
Ethan grew up in St. Peter, MN, and completed his undergraduate work at Gustavus Adolphus College in his hometown. There he studied biology with a focus on natural resource management. While he was always casually interested in insects, his passion for entomology flourished during a research internship in Gamboa, Panamá with the Smithsonian Tropical Research Institute. In Gamboa, he studied leaf-cutter ants and fell in love with the tropical rain forests' diverse and bizarrely beautiful minifauna. He also gained an appreciation for the impact that tropical insects have on human health. Thus, for his doctoral studies, he chose to study medical entomology at Cornell University under the tutelage of Dr. Laura Harrington. There, he has conducted both laboratory and field-based investigations of *Aedes aegypti* reproduction. When he's not dissecting mosquitoes, he enjoys canoeing on Cayuga Lake, practicing his Spanish, and singing karaoke. He will graduate in May 2019.

The Asa Fitch Memorial Award
Maxwell Helmberger

Max Helmberger grew up in the woods outside a small town in northern Minnesota and graduated in a high school class of 22. He got his Bachelor's degree from the University of Minnesota in Duluth, where he conducted research on how abiotic stresses in plants affected behavior and fitness of their insect herbivores. As a Master's student at the New York State Agricultural Experiment

Station of Cornell University, he studied biological control of turfgrass pests with entomopathogenic nematodes and how efficacy was influenced by abiotic and biotic soil properties. He also produced a slew of educational clay animation videos on soil ecology and entomology topics. He is now enrolled in an entomology Ph.D. program at Michigan State University. When he's not dispatching insects in the name of science, Max enjoys hiking, video games, and creative writing.

Eastern Branch Nominee: Entomological Foundation Award for Excellence in IPM
John Tooker



John Tooker is an associate professor of insect ecology and extension specialist in the Department of Entomology at The Pennsylvania State University. He received his Bachelors of Science in Biology from Bates College in Lewiston, Maine, and then his Masters and PhD in Entomology from the University of Illinois at Urbana-Champaign working under the supervision of Larry Hanks. He conducted postdoctoral research with Consuelo De Moraes at Penn State. His research group studies in agricultural and native systems relationships among plants, invertebrate herbivores, and natural enemies to understand factors that regulate populations. The long-term goal of his research is to exploit ecological interactions for sustainable insect and slug pest management. Key to the success of his IPM-based research and extension program has been a group of excellent graduate and undergraduate students and postdoctoral scientists who helped defined factors that help limit herbivore populations. These former lab members include Eric Bohnenblust (EPA), Maggie Douglas (Assistant Professor, Dickinson College), Ian Grettenberger (Assistant Professor, University of California, Davis), Anjel Helms (Assistant Professor, Texas A&M), Kevin Rice (Assistant Professor, University of Missouri), Anthony Vaudo (Fulbright Scholar, South Africa), Anna Busch (Extension Educator, Penn State Extension), and Marion Le Gall (Postdoctoral scientist, Arizona State University). His current group of students are also conducting influential research and have bright futures ahead. Importantly, Tooker's IPM work has been

greatly facilitated and adopted in Pennsylvania and surrounding states by a great group of progressive farmers, particularly members of Pennsylvania No-Till Alliance, who are keen on improving their production systems and profitability while decreasing their reliance on insecticides.

Eastern Branch Nominee: ESA Distinguished Achievement Award in Extension
Andrei Alyokhin

Dr. Andrei Alyokhin received B.S. degree in Education in Biology and Chemistry from Moscow Pedagogical State University in Moscow, Russia. He then completed a Ph.D. in Entomology at the University of Massachusetts in Amherst, advised by Dr. David Ferro. After doing post-doctoral work at the University of Hawaii under the supervision of Dr. Russell Messing, he joined the faculty at the University of Maine in January of 2001 as an Assistant Professor of Applied Entomology. He was promoted to Associate Professor in 2007, and then to Professor in 2013. He also served one term as a Director of the School of Biology and Ecology. Dr. Alyokhin is interested in applied insect ecology, behavior, evolution of insecticide resistance, and integrated pest management. He is working mostly in potato agroecosystems, although recently he also started looking at insect mediated recycling of organic wastes. Dr. Alyokhin has authored or co-authored 153 publications, including 65 peer-reviewed articles in scientific journals. He also taught or co-taught Insect Ecology, Pesticides and the Environment, Biological Invasions, Introductory Applied Entomology, Advanced Insect Pest Ecology and Management, Capstone Experience in Biological Sciences, and Professionalism in Biology. In addition, Dr. Alyokhin maintains an extensive outreach program to a variety of stakeholders, including potato growers, other crop production professionals, natural resource managers, K-12 students, and members of the general public. He is a recipient of several professional awards from National Association of County Agricultural Agents, Aroostook County Extension Association, College of Natural Sciences, Food, and Agriculture at the University of Maine, and the U.S. National Park Service.

Eastern Branch Nominee: ESA Distinguished Achievement Award in Teaching
Frank Drummond

Frank Drummond is a professor of insect ecology and wild blueberry extension at the University of Maine. He also has a 25% teaching appointment in the School of Biology and Ecology. His training is in botany (B.S.), entomology (M.S.), and quantitative ecology (PhD). At the early age of 8 he began collecting insects and learning their taxonomy at a nearby nature reserve in Rhode Island. At the age of 12 he began keeping honey bees (52 yrs ago). He loves teaching young children, undergraduate and graduate students, and growers about insect taxonomy, biology and ecology. His main teaching goal at the University of Maine has been to keep entomology ALIVE for the students. After the demise of the Entomology Department in 1995, this has been of increasing significance. A second goal is to provide students with sets of quantitative tools so that they can critically evaluate research results of others and explore their own data. During his career at the University of Maine he has taught 29 different classes and seminars that highlight insects, plants, modeling, and statistics.

He has many interests and for the last 30 years he and his students have worked in wild blueberry researching least toxic approaches to insect pest management, including biological control; pollination ecology, biology, behavior, and conservation of native bees; colony collapse disorder of honey bees; wild blueberry plant genetics; reproductive biology and cold tolerance of wild blueberry; and food safety microbiology in wild blueberry. Most of the time, he would just as soon spend a spring or summer day in a wild blueberry field chasing insects, than go to the beach...although camping and fishing have no equal. He is the 2018 University of Maine Distinguished Professor, and while at the University of Maine he has secured $26,753,611 in research and teaching funding (with many other colleagues), and published 282 scientific articles (several with his wife, Dr. Ellie Groden, a professor and insect pathologist, also at the University of Maine).

Saturday, March 9, 2019, Evening

5:00 – 7:00 **President's Reception**
Solitude

Sunday, March 10, 2019, Morning

8:00 – 6:00 **Silent Auction/Sponsor Exhibits**
Latham Foyer
8:00 – 10:00 **Student Poster Set-Up**
Latham DEF
10:00 – 6:00 **Student Competition Posters**
Latham DEF

Symposium: Aquatic Invertebrates in the Environment

Cascades

Moderator & Organizer: Sally Entrekin, Virginia Tech, Blacksburg, VA

8:00 Welcoming Remarks

8:00 Making effective use of artificial intelligence, crowd-sourcing and other digital tools in entomology. **William Kuhn** (will@dlia.org), Discover Life in America, Knoxville, TN

8:20 Long-term comparisons of riverine invertebrate communities reveals biomass decline. Kelly Murray-Stoker, Joseph McHugh and **Darold Batzer** (dbatzer@uga.edu), Univ. of Georgia, Athens, GA

8:40 Wetland macroinvertebrate community response to urban development in the White Oak Bayou watershed. **Josh Nilz** (jnilz1@cub.uca.edu)[1] and Sally Entrekin[2], Univ. of Central Arkansas, Conway, AR, [2]Virginia Tech, Blacksburg, VA

9:00 Break

9:15 Does stream size really explain biodiversity patterns in lotic systems? A call for mechanistic explanations. Ross Vander Vorste, **Philip McElmurray** (pmac@vt.edu), Spencer Bell, Kevin Eliason and Bryan L. Brown, Virginia Tech, Blacksburg, VA

9:35 Resources interact with habitat to structure aquatic macroinvertebrate communities. **Danielle Braund** (dbraund1@cub.uca.edu)[1] and Sally Entrekin[2], [1]The Univ. of Central Arkansas, Conway, AR, [2]Virginia Tech, Blacksburg, VA

9:55 Aquatic insects, algae, and leaves: Do green and brown food webs interact in headwater streams? **Rebecca Eckert** (reckert@terpmail.umd.edu) and William Lamp, Univ. of Maryland, College Park, MD

10:15 Sub-lethal ion concentrations impair or enhance shredder functional capacity depending on salt type and exposure pathway. **Anastasia Mogilevski** (amogilevski1@cub.uca.edu)[1], Brooke Howard-Parker[2], Natalie Clay[3], Michelle Evans-White[2] and Sally Entrekin[4], [1]Univ. of Central Arkansas, Gettysburg, AR, [2]Univ. of Arkansas, Fayetteville, AR, [3]Louisiana Tech Univ., Ruston, LA, [4]Virginia Tech, Blacksburg, VA

10:35 Little known contributions of Richard L. Hoffman to VA Ephemeroptera. **M. D. Meyer** (michael.meyer@cnu.edu), Christopher Newport Univ., Newport News, VA

10:55 Salinization reduces the functional diversity of aquatic insects. **Sara Cathey** (catheyse@vt.edu), Virginia Tech, Blacksburg, VA

Contributed Ten-Minute Talks

Solitude

Moderators: Clement Akotsen-Mensah, Rutgers Univ., New Brunswick, NJ, and Laura Nixon, USDA-ARS, Kearneysville, WV

8:00 Control of the common bed bug (*Cimex lectularius* L.) through fumigation with substituted benzoate compounds. **Nicholas Larson** (nicholas.larson@ars.usda.gov), Mark Feldlaufer and Aijun Zhang, USDA - ARS, Beltsville, MD

8:12 Hi-C analysis and physical mapping identify inversions in the *Aedes aegypti* genome. **Atashi Sharma** (atashi04@vt.edu)[1], Varvara Lukyanchikova[1,2], Ilja Brusentsov[3], Igor V. Sharakhov[1] and Maria V. Sharakhova[4], [1]Virginia Tech, Blacksburg, VA, [2]Institute of Cytology and Genetics SB RAS, Novosibirsk, Russian Federation, [3]Laboratory of Cell Cycle Mechanisms, Novosibirsk, Russian Federation, [4]Virginia Tech, Blacksburg, VA

8:24 Powder post beetle families *Lyctidae, Anobiidae, and Bostrichidae* control in art and its relation to the forensic sciences. **Darryl Forest** (d-forest@nga.gov), National Gallery of Art, York, PA

8:36 BrambleBee, the bee-inspired pollinator robot. **Yong-Lak Park** (yopark@mail.wvu.edu), West Virginia Univ., Morgantown, WV

8:48 Onion maggot control in onion: Is it possible to get off the insecticide treadmill? **Riley Harding** (rsh263@cornell.edu) and Brian Nault, Cornell Univ., Geneva, NY

9:00 *Zaprionus indianus* as a pest of undamaged caneberries. **Ian Sandum** (celeborn@vt.edu), Virginia Tech, Blacksburg, VA

9:12 Mathematical relationship between peak and season-long abundances in insects: Derivation and applications. **Alexey Onufriev** (alexey@cs.vt.edu) and Ksenia Onufrieva, Virginia Tech, Blacksburg, VA

9:24 Wavelength-selective high tunnel plastic for controlling Japanese beetle (*Popillia japonica* Newman) in primocane-fruiting red raspberry in the Northeast. **Maria Cramer** (MariaCramer5610@gmail.com)[1], Kathy Demchak[2], Richard Marini[2] and Tracy C. Leskey[3], [1]Univ. of Maryland, College Park, MD, [2]Pennsylvania State Univ., Univ. Park, PA, [3]USDA - ARS, Kearneysville, WV

9:36 Break

9:48 Ovipositional behavior of the egg parasitoid, *Gryon pennsylvanicum*. **Mary Cornelius** (mary.cornelius@ars.usda.gov), USDA - ARS, Beltsville, MD

10:00 Behavioral responses of *Halyomorpha halys* (Stål) (Hemiptera: Pentatomidae) and its egg parasitoid *Trissolcus japonicus* (Ashmead) (Hymenoptera: Scelionidae) to host based plant volatiles. **Clement Akotsen-Mensah** (ca555@scarletmail.Rutgers.edu)[1], Brett Blaauw[2], Cesar Rodriguez-Saona[1] and Anne Nielsen[1], [1]Rutgers Univ., New Brunswick, NJ, [2]Univ. of Georgia, Athens, GA

10:12 Sensory differentiation in dimorphic males of the desert bee, *Centris pallida*. **Meghan Barrett** (mrb397@drexel.edu) and Sean O'Donnell, Drexel Univ., Philadelphia, PA

10:24 Characterizing the nest partitioning, brood sex allocation, and larval provisions of New York's solitary, grass-carrying wasp

(*Isodontia sp.*). **Annette Kang** (annettekang6597@gmail.com), Cheyenne McNair, Meghan Barrett and Sean O'Donnell, Drexel Univ., Philadelphia, PA

10:36 Exploring the subterranean ant (Hymenoptera) and beetle (Coleoptera) fauna of Virginia and West Virginia. **Curt Harden** (c_har@fastmail.com), Liberty Hightower and Kaloyan Ivanov, Virginia Museum of Natural History, Martinsville, VA

10:48 Planthoppers (Hemiptera: Auchenorrhyncha: Fulgoroidea) of Pennsylvania: Relative abundance and novel trapping methods. **Charles Bartlett** (bartlett@udel.edu)[1] and Lawrence Barringer[2], [1]Univ. of Delaware, Newark, DE, [2]Pennsylvania Dept. of Agriculture, Harrisburg, PA

11:00 International rice research in Cambodia: Perspectives from a Virginia Tech graduate student. **Corey Riedel** (coreyr14@vt.edu) and Douglas G. Pfeiffer, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

11:12 BMSB group behavioral responses to conspecific chemical stimuli: Is their stink communicative? **Laura Nixon** (laura.nixon@ars.usda.gov)[1], William Morrison[2], Kevin Rice[3], Tracy C. Leskey[4], Stephen Goldson[5], Eckehard Brockerhoff[6] and Michael Rostas[7], [1]USDA-ARS, Kearneysville, WV, [2]USDA - ARS, Manhattan, KS, [3]University of Missouri, Columbia, MO, [4]USDA - ARS, Kearneysville, WV, [5]AgResearch Ltd., Christchurch, New Zealand, [6]Scion, Christchurch, New Zealand, [7]Georg-August-Universität, Göttingen, Germany

11:24 Do Western honey bees (*Apis mellifera* L.) compete with Asian honey bees (*Apis cerana* F.)? **Chet Bhatta**[1] and Deborah Smith[2], [1]Jefferson College of Health Sciences, Roanoke, VA, [2]The University of Kansas, Lawrence, KS

PhD Student Paper Competition

Assembly Hall

Moderators: Brenna Traver, Pennsylvania State Univ., Schuylkill Haven, PA, and David Owens, Univ. of Delaware, Georgetown, DE

8:05 Host plant utilization by *Chauliognathus* spp. (Coleoptera: Cantharidae) in the Eastern United States. **Katlyn Catron** (kcatron@vt.edu) and Thomas Kuhar, Virginia Tech, Blacksburg, VA

8:17 Do insects affect grain yield of industrial hemp in Virginia? **Kadie Britt** (kadieb@vt.edu) and Thomas Kuhar, Virginia Tech, Blacksburg, VA

8:29 The differential activity of an insect effector between *Trichoplusia ni* and *Pieris rapae* on collards. **Anne Jones** (acj152@psu.edu), Irmgard Seidl-Adams and James Tumlinson, Pennsylvania State Univ., Univ. Park, PA

8:41 Interactions between spotted-wing drosophila and fruit rot fungi in fall red raspberries. **Margaret Lewis** (mtlewis@umd.edu) and Kelly Hamby, Univ. of Maryland, College Park, MD

8:53 Effects of landscape composition and climatic factors on tarnished plant bug (*Lygus lineolaris*) abundance in Mid-Atlantic cotton. **Seth Dorman** (sjdorman@vt.edu)[1], Roger Schurch[2], Anders Huseth[3] and Sally Taylor[1], [1]Virginia Tech Tidewater AREC, Suffolk, VA, [2]Virginia Tech, Blacksburg, VA, [3]North Carolina State Univ., Raleigh, NC

9:05 Break

9:17 Do neonicotinoid seed treatments affect arthropod communities in grain crops? **Aditi Dubey** (aditid26@gmail.com), Galen Dively, Margaret Lewis and Kelly Hamby, Univ. of Maryland, College Park, MD

9:29 Monitoring and controlling bed bugs in an office setting. **Shannon Sked** (ShannonSkedBCE@gmail.com)[1], Changlu Wang[1], Michael Levy[2] and Kathryn Hacker[2], [1]Rutgers Univ., New Brunswick, NJ, [2]Univ. of Pennsylvania, Philadelphia, PA

9:41 Premeiotic and meiotic failures lead to the hybrid male sterility in the *Anopheles gambiae* complex. **Jiangtao Liang** (jtliang@vt.edu) and Igor V. Sharakhov, Virginia Tech, Blacksburg, VA

9:53 First molecular phylogeny of the swift pink millipedes *Pseudopolydesmus* Attems, 1898 (Diplopoda: Polydesmida: Polydesmidae). **Derek Hennen** (derhennen@gmail.com) and Paul Marek, Virginia Tech, Blacksburg, VA

10:05 Population genomics and cytogenetic analysis suggest a long history of evolutionary separation between *Culex pipiens pipiens* and *Culex pipiens molestus*. **Reem A. Masri** (reemm7@vt.edu)[1], Andrey A. Yurchenko[2], Jeremy Janrette[1], Natalia V. Khrabrova[3], Anuarbek K. Sibataev[3], Megan L. Fritz[4] and Maria V. Sharakhova[1,3], [1]Virginia Tech, Blacksburg, VA, [2]Gustave Roussy Cancer Center, Paris, France,

[3]Laboratory of Ecology, Genetics and Environment Protection, Tomsk State Univ., Tomsk, Russian Federation, [4]Univ. of Maryland, College Park, MD

10:17 Does the presence of a cultivated crop affect captures of *Halyomorpha halys*? **Whitney Hadden** (wthadden@vt.edu)[1], Tracy C. Leskey[2] and Chris Bergh[1], [1]Virginia Tech, Winchester, VA, [2]USDA - ARS, Kearneysville, WV

Sunday, March 10, 2019, Afternoon

12:00 – 1:30	**Lunch** **Welcome Address: Tom Kuhar** **ED (Entomological Digest) Talks: Making Science Digestible to the Public – Latham ABC**
8:00 – 6:00	**Silent Auction/Sponsor Exhibits Latham Foyer**
10:00 – 6:00	**Student Competition Posters Latham DEF**
7:00 – 9:00	**Linnaean Games – Latham AB**

Symposium: Novel Plant-Insect Associations: Interactions between Exotic and Native Species

Cascades

Moderators & Organizers: Alina Avanesyan and William Lamp, Univ. of Maryland, College Park, MD

1:30 Introductory Remarks

1:40 Phylogenetic isolation of non-native tree species shapes the pattern of novel plant-insect associations. **Karin Burghardt** (kburghar@umd.edu)[1] and Douglas W. Tallamy[2], [1]Univ. of Maryland, College Park, MD, [2]Univ. of Delaware, Newark, DE

2:00 Insect exploitation of novel resources through circumventing and altering plant defensive traits. **Charles Mason** (cjm360@psu.edu) and Kelli Hoover, Pennsylvania State Univ., Univ. Park, PA

2:20 Invasive swallow-worts, monarch butterflies and biocontrol. **Elizabeth Tewksbury** (lisat@uri.edu) and Alana Russell, Univ. of Rhode Island, Kingston, RI

2:40 Feeding preferences of native acridid grasshoppers for novel host plants: a case study of biotic resistance. **Alina Avanesyan** (alina@umd.edu) and William Lamp, Univ. of Maryland, College Park, MD

3:00 Break

3:20 Phylogeographic history of the Colorado potato beetle: Geography and host plants. **David J. Hawthorne** (djh@umd.edu)[1], Yolanda Chen[2] and Victor Izzo[2], [1]Univ. of Maryland, College Park, MD, [2]Univ. of Vermont, Burlington, VT

3:40 Genome resequencing of Colorado potato beetle reveals historic processes structuring pest populations. **Yolanda Chen** (yolanda.chen@uvm.edu)[1], Kristian Brevik[1], Benjamin Pelissie[2], David J. Hawthorne[3] and Sean Schoville[2], [1]Univ. of Vermont, Burlington, VT, [2]Univ. of Wisconsin, Madison, WI, [3]Univ. of Maryland, College Park, MD

4:00 Competitive interactions involving invasive species in fruit cropping systems. Douglas G. Pfeiffer[1], **Meredith Shrader** (mcassell@vt.edu)[1], Brittany Willbrand[1] and Sanjay Basnet[2], [1]Virginia Tech, Blacksburg, VA, [2]Univ. of Nebraska, Lincoln, NE

4:20 Maximizing the impact of *Trissolcus japonicus* against the invasive brown marmorated stink bug in orchard agroecosystems. **Dalton Ludwick** (Dalton.Ludwick@ars.usda.gov)[1] and Tracy C. Leskey[2], [1]Virginia Tech, Kearneysville, WV, [2]USDA - ARS, Kearneysville, WV

4:40 Concluding Remarks

Symposium: The Digital Future of Entomology

Solitude

Moderators & Organizers: Manpreet Kohli, Rutgers Univ., Newark, NJ; William Kuhn, Discover Life in America, Knoxville, TN and Megan M. Wilson, Rutgers Univ., Newark, NJ

1:30 Welcoming Remarks

1:35 Digitizing the Frost Entomological Museum: Lessons learned and given. **Andrew Deans** (adeans@psu.edu) and Emily Sandall, Pennsylvania State Univ., Univ. Park, PA

1:55 Using specimens from the past to understand the living world through digitization. **Jessica Ware** (jware42@newark.rutgers.edu)[1], William Kuhn[2] and John C. Abbott[3], [1]Rutgers Univ., Newark, NJ, [2]Discover Life in America, Knoxville, TN, [3]Univ. of Alabama, Tuscaloosa, AL

2:15 Challenges and logistics of integrated digitized biological collections. **Deborah Paul** (dpaul@fsu.edu), Integrated Digitized Biological Collections - iDigBio, Tallahassee, FL

2:35 Making ants accessible: How digital specimen collections in AntWeb improves research at all levels. **Christine Sosiak** (ces43@njit.edu), New Jersey Institute of Technology, Newark, NJ

2:55 Break

3:05 Carrying the historic Academy of Natural Sciences of Drexel University entomology collection through the ages. **Isa Betancourt** (isb24@drexel.edu)[1], Jon K. Gelhaus[2], Jason Weintraub[1], Greg Cowper[1], Stephen Mason[2] and Daniel Otte[1], [1]The Academy of Natural Sciences of Drexel Univ., Philadelphia, PA, [2]Drexel Univ., Philadelphia, PA,

3:25 Digitization improves dissemination, discovery, and long-term preservation in fossil amber collections. **Phillip Barden** (pbarden@amnh.org), New Jersey Institute of Technology, Newark, NJ

3:45 Digitization perspectives from a mid-sized entomology collection. **Nicole Gunter** (ngunter@cmnh.org), Cleveland Museum of Natural History, Cleveland, OH

4:05 Rapid development of a deep learning auto-ID system for bee species using wing images. Gareth Russell[1], Shaobo Liu[1], **Kimberly Russell** (russell@sebs.rutgers.edu)[2], Hai Phan[1] and Frank Shih[1], [1]New Jersey Institute of Technology, Newark, NJ, [2]Rutgers Univ., New Brunswick, NJ

4:25 Break

4:30 Panel Discussion

Undergraduate/MS Paper Competition

Assembly Hall

Moderators: Brenna Traver, Pennsylvania State Univ., Schuylkill Haven, PA, and David Owens, Univ. of Delaware, Georgetown, DE

1:35 Investigation into host range testing targets for spotted lanternfly (Hemiptera: Fulgoridae) biocontrol. **Tyler Hagerty** (hagertyt@udel.edu) and Charles Bartlett, Univ. of Delaware, Newark, DE

1:47 Genetic ancestry and host preference in behaviorally divergent North American *Culex pipiens* populations. **Anna Noreuil** (anna.noreuil@gmail.com), Univ. of Maryland, College Park, MD

1:59 *Culex pipiens* (Diptera: Culicidae) egg production depends upon vertebrate blood host species. **Mervin Keith Cuadera** (mcuadera@terpmail.umd.edu) and Megan Fritz, Univ. of Maryland, College Park, MD

2:11 Effects of predation by *Toxorhynchites rutilus* on the fecundity and fertility of *Aedes aegypti*. Shawna Bellamy, **Andrew Paige** (andrew.paige15@ncf.edu) and Barry Alto, Univ. of Florida, Vero Beach, FL

2:23 Insect pollinators of black cherry (*Prunus serotina*) flowers in the Allegheny National Forest. **Craig Larcenaire** (clarcena@mix.wvu.edu)[1], Richard M. Turcotte[2], William Oldland[2] and Yong-Lak Park[1], [1]West Virginia Univ., Morgantown, WV, [2]USDA - Forest Service, Morgantown, WV

2:35 Repairing refuges for rootworms - Are neonicotinoid seed treatments playing a role in rootworm resistance to Bt? **Kyle Bekelja** (kbekelja@vt.edu)[1], Thomas Kuhar[1], Christian Krupke[2] and Sally Taylor[3], [1]Virginia Tech, Blacksburg, VA, [2]Purdue Univ., West Lafayette, IN, [3]Virginia Tech Tidewater AREC, Suffolk, VA

2:47 Drainage ditches as sources of beneficial spiders on farms: A closer look at plant-spider community associations. **Dylan Kutz** (dkutz@umd.edu), Alina Avanesyan and William Lamp, Univ. of Maryland, College Park, MD

2:59 Dancing bees communicate foraging preferences in row crop production systems. **Mary Silliman** (sillimanmr@vt.edu)[1], Sally Taylor[2], Roger Schurch[1] and Margaret Couvillon[1], [1]Virginia Tech, Blacksburg, VA, [2]Virginia Tech Tidewater AREC, Suffolk, VA

3:11 Break

3:21 Is silicon effective at managing the fall armyworm (*Spodoptera frugiperda*) on corn? **Duncan Brown** (dbrow@udel.edu) and Ivan Hiltpold, Univ. of Delaware, Newark, DE

3:33 Establishment of the hemlock woolly adelgid predator, *Laricobius nigrinus,* at release sites in the state of Virginia. **Carrie Jubb** (cjubb@vt.edu), Thomas McAvoy, Kari Stanley and Scott Salom, Virginia Tech, Blacksburg, VA

3:45 Dancing honey bees (*Apis mellifera*) communicate honey bee foraging preferences in an orchard and food crop landscape. **Taylor Steele** (taylorsteele@vt.edu), Roger Schurch and Margaret Couvillon, Virginia Tech, Blacksburg, VA

3:57 A survey of the impact of farm management methods on slug injury and predator populations. **Kirsten Brichler** (kbrichle@vt.edu)[1] and Sally Taylor[2], [1]Virginia Tech, Blacksburg, VA, [2]Virginia Tech Tidewater AREC, Suffolk, VA

4:09 Influence of abiotic factors on onion maggot (*Delia antiqua*) population dynamics and their damage in commercial onion fields. **Erica Moretti** (em763@cornell.edu) and Brian Nault, Cornell Univ., Geneva, NY

4:21 Impact of *Nosema maddoxi* (Microsporidia: Nosematidae) on the brown marmorated stink bug (*Halyomorpha halys*). **Carrie Preston** (cp597@cornell.edu)[1], Arthur Agnello[2] and Ann E. Hajek[1], [1]Cornell Univ., Ithaca, NY, [2]Cornell Univ., Geneva, NY

4:33 Brown stink bug, *Euschistus servus*, seedling maize injury prevention from common seed treatments and in-furrow insecticide applications. **Tim Bryant** (btim2@vt.edu)[1], Roger Schurch[2] and Sally Taylor[3], [1]Virginia Tech, Suffolk, VA, [2]Virginia Tech, Blacksburg, VA, [3]Virginia Tech Tidewater AREC, Suffolk, VA

4:45 The earwig fly, *Merope tuber*, found on Long Island (New York). **Jenny Gan** (ganj@farmingdale.edu), Mick Mitchell and Carly Tribull, Farmingdale State College, Farmingdale, NY

4:57 Potato leafhopper (*Empoasca fabae)* feeding alters above- and belowground nutrient allocation and nitrogen fixation across alfalfa cultivars. **Morgan Thompson** (mthomps1@terpmail.umd.edu) and William Lamp, Univ. of Maryland, College Park, MD

Sunday, March 10, 2019, Posters

Student Poster Competition / 10:00 AM-6:00 PM

Presenters: Please stand by your poster during 10:30-12:00 Sunday

Latham DEF

DSP1 Diversity of mosquitoes in Delaware. **Abigail Clarke** (abbyc@udel.edu)[1,2] and Charles Bartlett[1], [1]Univ. of Delaware, Newark, DE, [2]Delaware Dept. of Natural Resources and Environmental Control, Dover, DE

DSP2 Vector competence of *Aedes* mosquitoes for Zika and Cache Valley viruses. **Kevin Chan** (kchan90@vt.edu) and Sally Paulson, Virginia Tech, Blacksburg, VA

DSP3 Multi-species mosquito community in belowground structures, Washington DC. **Arielle Arsenault-Benoit** (aarsenau@umd.edu)[1], Albert Greene[2] and Megan Fritz[1], [1]Univ. of Maryland, College Park, MD, [2]General Services Administration, Hyattsville, MD

DSP4 D-mannitol ingestion causes concentration-dependent mortality and developmental delay in *Drosophila melanogaster*. **Devneet Kainth** (dkk36@drexel.edu), Angelina Gomez, Meghan Barrett, Katherine Fiocca, Edward Waddell, Cheyenne McNair, Sean O'Donnell and Daniel Marenda, Drexel Univ., Philadelphia, PA

DSP5 Concentration-dependent, synergistic effects of erythritol and water stress in ants (Hymenoptera: Formicidae). **Cheyenne McNair** (ckm54@drexel.edu), Meghan Barrett, Sean O'Donnell and Daniel Marenda, Drexel Univ., Philadelphia, PA

DSP6 Effects of imidacloprid on non-target soil arthropods in hemlock stands. **Braley Burke** (brburke@mix.wvu.edu), Donald Brown and Yong-Lak Park, West Virginia Univ., Morgantown, WV

DSP7 Sampling *Varroa destructor* and screening for acaricide resistance. **Morgan Roth** (mroth11@vt.edu), James M. Wilson and Aaron Gross, Virginia Tech, Blacksburg, VA

DSP8 Utilizing an extracellular electrophysiology preparation from *Drosophila melanogaster* to study muscarinic acetylcholine

receptors. **Na Xie** (xnana18@vt.edu) and Aaron Gross, Virginia Tech, Blacksburg, VA

DSP9 *Halyomorpha halys* feeding impact on industrial hemp yield and quality. **Mika Pagani** (mika396@vt.edu), Kadie Britt and Thomas Kuhar, Virginia Tech, Blacksburg, VA

DSP10 Effects of marking on *Trissolcus japonicus* behavior. **Nicolas Avila** (nicolasavila1231@gmail.com)[1], Kevin Rice[2] and Anne Nielsen[1], [1]Rutgers Univ., New Brunswick, NJ, [2]Univ. of Missouri, Columbia, MO

DSP11 An attempt to use flowering vegetables to augment rice pest management. **Corey Riedel** (coreyr14@vt.edu)[1], Douglas G. Pfeiffer[1] and Buyung Hadi[2], [1]Virginia Tech, Blacksburg, VA, [2]International Rice Research Institute, Metro Manila, Philippines

DSP12 Effects of four selective insecticides on squash bug, *Anasa tristis* (Hemiptera:Coreidae), and its primary parasitoid, *Gryon pennsylvanicum* (Hymenoptera:Scelionidae). **Sean Boyle** (seanboyle@vt.edu), James M. Wilson and Thomas Kuhar, Virginia Tech, Blacksburg, VA

DSP13 Geographically distinct but non-monophyletic morphs: Reexamining the evolution of color in Florida burying beetles (Coleoptera: Geotrupidae: *Peltotrupes*). **Emily Scott** (scotte14@students.ecu.edu), Trip Lamb and Michael Brewer, East Carolina Univ., Greenville, NC

DSP14 Are *Laricobius* spp. (Coleoptera: Derodontidae) opportunistic fungal feeders? **Jeremiah Foley** (folejr@vt.edu) and Scott Salom, Virginia Tech, Blacksburg, VA

DSP15 Predation of dragonfly larvae by passerines. **Ashley Kennedy** (kennedya@udel.edu) and Douglas W. Tallamy, Univ. of Delaware, Newark, DE

DSP16 Mirroring the honeybees: The first account of a wax gland system in termites. **Megan M. Wilson** (meywilson@yahoo.com)[1], Steve Davis[2], Phillip Barden[3] and Jessica Ware[1], [1]Rutgers Univ., Newark, NJ, [2]American Museum of Natural History, New York, NY, [3]New Jersey Institute of Technology, Newark, NJ

DSP17 An updated checklist of the bees (Hymenoptera: Apoidea: Anthophila) of Pennsylvania, United States of America. **Shelby Kilpatrick** (skk30@psu.edu)[1], Jason Gibbs[2], Martin Mikulas[3], Sven-Erik Spichiger[3], Nancy Ostiguy[1], David Biddinger[4] and Margarita

López-Uribe[1], [1]Pennsylvania State Univ., Univ. Park, PA, [2]Univ. of Manitoba, Winnipeg, MB, Canada, [3]Pennsylvania Dept. of Agriculture, Harrisburg, PA, [4]Pennsylvania State Univ. Fruit Research and Extension Center, Biglerville, PA

Monday, March 11, 2019, Morning

8:00 – 6:00 **Silent Auction/Sponsor Exhibits**
Latham Foyer

8:00 – 10:00 **Contributed Poster Setup**
Latham DEF

Symposium: Biological Control of Invasive Organisms Impacting the Eastern Branch

Solitude

Moderators & Organizers: Dalton Ludwick, Virginia Tech, Kearneysville, WV; Joe Kaser, USDA - ARS, Newark, DE; Ann E. Hajek, Cornell Univ., Ithaca, NY and Lisa Tewksbury, Univ. of Rhode Island, Kingston, RI

8:30 Introductory Remarks

8:40 Domestic and international plans for using *Trissolcus japonicus* as a biological control agent. **Kim Hoelmer** (kim.hoelmer@ars.usda.gov)[1], Elijah Talamas[2] and Marie-Claude Bon[3], [1]USDA - ARS, Newark, DE, [2]Florida Dept. of Agriculture and Consumer Services, Gainesville, FL, [3]USDA - ARS, Montferrier-sur-Lez, France

8:55 Help wanted: Citizen scientists support efforts to determine the distribution and diversity of native and exotic stink bugs egg parasitoids in Maryland. **Rebeccah A. Waterworth** (rwater@umd.edu) and Paula M. Shrewsbury, Univ. of Maryland, College Park, MD

9:10 Improved understanding of egg storage and its impact on monitoring and mass rearing of *T. japonicus*. **Dalton Ludwick** (daltonludwick@gmail.com)[1] and Tracy C. Leskey[2], [1]Virginia Tech, Kearneysville, WV, [2]USDA - ARS, Kearneysville, WV

9:25 The presence and redistribution of samurai wasp, *Trissolcus japonicus*, in New York state. **Peter Jentsch** (pjj5@cornell.edu)[1], Arthur Agnello[2], Lydia Brown[1] and Dana Acimovic[1], [1]Cornell Univ., Highland, NY, [2]Cornell Univ., Geneva, NY

9:40 Redistribution of adventive *Trissolcus japonicus* in Delaware. **Joe Kaser** (joseph.kaser@ars.usda.gov), Kathleen Tatman and Kim Hoelmer, USDA - ARS, Newark, DE

9:55 Foraging ecology of *T. japonicus* across landscapes. **Anne Nielsen** (nielsen@njaes.rutgers.edu)[1] and Kevin Rice[2], [1]Rutgers Univ., New Brunswick, NJ, [2]Univ. of Missouri, Columbia, MO

10:10 Break

10:25 Aspects of the foraging ecology of *Trissolcus japonicus* in Virginia. **Nicole Quinn** (quinni01@vt.edu)[1], Elijah Talamas[2], Tracy C. Leskey[3] and Chris Bergh[1], [1]Virginia Tech, Winchester, VA, [2]Florida Dept. of Agriculture and Consumer Services, Gainesville, FL, [3]USDA - ARS, Kearneysville, WV

10:40 *Trissolcus japonicus* foraging behavior: Implications for host preference and classical biological control. **Robert Malek** (robertnehme.malek@unitn.it)[1], Joe Kaser[2], Kathleen Tatman[2], Sravanthi Guggilapu[3], Gianfranco Anfora[4], Ashot Khrimian[5], Donald Weber[5] and Kim Hoelmer[2], [1]Univ. of Trento, Trento, Italy, [2]USDA - ARS, Newark, DE, [3]USDA-ARS/BARC-West, Beltsville, MD, [4]Fondazione Edmund Mach, San Michele all'Adige, Italy, [5]USDA - ARS, Beltsville, MD

10:55 Considerations for implementation of biological control for hemlock woolly adelgid in northern climates. **Mark Whitmore** (mcw42@cornell.edu), Cornell Univ., Ithaca, NY

11:10 Invasive swallow-worts and projected agent impacts. **Lindsey Milbrath** (lindsey.milbrath@ars.usda.gov), USDA - ARS, Ithaca, NY

11:25 Novel host plant influences on behavior, success, and interspecific competition between two parasitoids of emerald ash borer. **Max Ragozzino** (maxri@vt.edu)[1], Scott Salom[1] and Jian Duan[2], [1]Virginia Tech, Blacksburg, VA, [2]USDA - ARS, Newark, DE

11:40 Discussion

Symposium: Challenges of Integrated Pest Management (IPM) in High Value Commodities

Cascades

Organizers & Moderators: Ashley Leach, Cornell Univ., Geneva, NY and Heather Leach, Pennsylvania State Univ., Univ. Park, PA

8:00 Welcoming Remarks

8:05 A 30 year perspective by entomologists on how IPM programs have changed and have been challenged in eastern tree fruits. **David Biddinger** (djb134@psu.edu)[1], Edwin Rajotte[2] and Heather Leach[2], [1]Pennsylvania State Univ. Fruit Research and Extension Center, Biglerville, PA, [2]Pennsylvania State Univ., Univ. Park, PA

8:35 Integrating IPM tactics for the invasive brown marmorated stink bug into orchard management systems. **Tracy C. Leskey** (tracy.leskey@ars.usda.gov)[1], Danielle Kirkpatrick[1], Dalton Ludwick[2], Anne Nielsen[3], Chris Bergh[4], Greg Krawczyk[5], Thomas Kuhar[6], Angel Acebes-Doria[4], William Morrison[7] and Kevin Rice[8], [1]USDA - ARS, Kearneysville, WV, [2]Virginia Tech, Kearneysville, WV, [3]Rutgers Univ., New Brunswick, NJ, [4]Virginia Tech, Winchester, VA, [5]Pennsylvania State Univ., Biglerville, PA, [6]Virginia Tech, Blacksburg, VA, [7]USDA-ARS, Manhattan, KS, [8]Univ. of Missouri, Columbia, MO

8:57 Challenges imposed to vineyard IPM by successive invasive species. **Douglas G. Pfeiffer** (dgpfeiff@vt.edu), Virginia Tech, Blacksburg, VA

9:19 Disruption of IPM: Examining the impact of invasive species. **Heather Leach** (leachhea@msu.edu)[1], Julie Urban[1] and Rufus Isaacs[2], [1]Pennsylvania State Univ., Univ. Park, PA, [2]Michigan State Univ., East Lansing, MI

9:41 Break

9:56 Experiences in developing and implementing IPM programs for *Drosophila suzukii* in small fruit systems. **Lindsy Iglesias** (lei7@cornell.edu)[1] and Oscar Liburd[2], [1]Cornell Univ., Geneva, NY, [2]Univ. of Florida, Gainesville, FL

10:18 Challenges of implementing IPM in vegetables. **Thomas Kuhar** (tkuhar@vt.edu), Virginia Tech, Blacksburg, VA

10:40 Challenges in implementing IPM for vegetable crops in developing countries. **George Norton** (gnorton@vt.edu)[1], Rangaswamy Muniappan[1] and Edwin Rajotte[2], [1]Virginia Tech, Blacksburg, VA, [2]Pennsylvania State Univ., Univ. Park, PA

11:02 Increasing adoption of insecticide resistance management practices with state-wide extension program. **Ashley Leach** (al2282@cornell.edu)[1], Christy Hoepting[2] and Brian Nault[1], [1]Cornell Univ., Geneva, NY, [2]Cornell Cooperative Extension, Albion, NY

11:24 Discussion

11:49 Concluding Remarks

Symposium: Insect Pollinators in the Human-Modified Landscape I

Assembly Hall

Organizers & Moderators: Margaret Couvillon, Virginia Tech, Blacksburg, VA; Tyler Jones and Shelby Kilpatrick, Pennsylvania State Univ., Univ. Park, PA

8:00 Introductory Remarks

8:05 Patterns of occurrence of invasive and native bees in urban Mid-Atlantic. **Sam Droege** (sdroege@usgs.gov), U.S. Geological Survey, Laurel, MD

8:40 Investigating *Nosema* species levels of honey bee colonies subjected to different management practices. **Kaitlin Alemany** (kba5104@psu.edu)[1], Alyssa Hatter[1], Marla Stoner[1], Robyn Underwood[2], Parry Kietzman[3], Margarita López-Uribe[2] and Brenna Traver[1], [1]Pennsylvania State Univ., Schuylkill Haven, PA, [2]Pennsylvania State Univ., Univ. Park, PA, [3]Appalachian Beekeeping Collective, Lewisburg, WV

9:00 Characterizing the bee community of an abandoned strip mine at the Flight 93 National Memorial. **Andrea Kautz** (kautza@carnegiemnh.org) and John Wenzel, Carnegie Museum of Natural History, Rector, PA

9:20 Nutritional ecology of honey bee (*Apis mellifera*) pollen foragers. **Tyler Jones** (toj2@psu.edu), Kate Anton and Christina M. Grozinger, Pennsylvania State Univ., Univ. Park, PA

9:40 Protein phosphorylation profiling of the mandibular gland of *Apis mellifera* reveals regulation of fatty acid metabolism. **Yue Hao** (hyue2015@163.com)[1], Wenjun Peng[1] and Yanping Chen[2], [1]Institute of Apicultural Research, Beijing, China, [2]Bee Research Laboratory, Beltsville, MD

10:00 Break

10:20 Bioindicators for a sustainable future: Dancing honey bees communicate habitats' ability to feed pollinators. **Bradley Ohlinger** (bdo@vt.edu), Roger Schurch and Margaret Couvillon, Virginia Tech, Blacksburg, VA

10:40 Dismantling Babel: Creation of a universal calibration for honey bee waggle dance decoding. **Roger Schurch** (rschurch@vt.edu), James M. Wilson and Margaret Couvillon, Virginia Tech, Blacksburg, VA

11:00 Evolution of *Cucurbita* pollen morphology and its implications for specialist pollinators. **Shelby Kilpatrick** (skk30@psu.edu), Margarita López-Uribe and Heather M. Hines, Pennsylvania State Univ., Univ. Park, PA

11:20 Chemical communication and improved tools for hygienic selection in the honey bee, *Apis mellifera*. **Kaira Wagoner** (kaira.wagoner@gmail.com)[1], Marla Spivak[2], Jocelyn Millar[3], Coby Schal[4] and Olav Rueppell[5], [1]Univ. of North Carolina, Greensboro, NC, [2]Univ. of Minnesota, St. Paul, MN, [3]Univ. of California, Riverside, CA, [4]North Carolina State Univ., Raleigh, NC, [5]Univ. of North Carolina, Greensboro, NC

11:40 Temporal and spatial dynamics of pollinator communities across NC agroecosystems. **Hannah Levenson** (hklevens@ncsu.edu) and David Tarpy, North Carolina State Univ., Raleigh, NC

Monday, March 11, 2019, Posters

Presenters: Please stand by your poster during 10:30-12:00 Monday

Contributed Posters / 10:00 AM-5:00 PM

Latham DEF

DSP18 Litter breakdown and invertebrate detritivores from a hydrologically restored stream. **Jacob Becraft** (jacob_becraft1@mymail.eku.edu) and Amy Braccia, Eastern Kentucky Univ., Richmond, KY

DSP19 Biological and ecosystem-level changes from the addition of reservoirs to headwater streams. **Brian Staley** (sallye@vt.edu)[1], Danielle Braund[1], Margaret Young[2], Krishna Patel[2], Maureen McClung[2], Matthew D. Moran[2] and Sally Entrekin[3], [1]Univ. of Central Arkansas, Conway, AR, [2]Hendrix College, Conway, AR, [3]Virginia Tech, Blacksburg, VA

DSP20 Impacts of *Metarhizium brunneum* F52 infection on the flight capacity of Asian longhorned beetle. **Eric Clifton** (ehc87@cornell.edu), Jason Cortell, Linqi Ye and Ann E. Hajek, Cornell Univ., Ithaca, NY

DSP21 Will fungal symbionts of Sirex impact nematode parasitism. **David Harris** (dch92@cornell.edu)[1], Angela Shen[1], Fred Stephen[2], Larry Galligan[2] and Ann E. Hajek[1], [1]Cornell Univ., Ithaca, NY, [2]Univ. of Arkansas, Fayetteville, AR

DSP22 Sex-specific profiles of the retrogene expression in the African malaria vector *Anopheles gambiae*. **Duncan Miller** (duncanmiller@vt.edu), Jiangtao Liang and Igor V. Sharakhov, Virginia Tech, Blacksburg, VA

DSP23 Multi-state military surveillance for the Asian longhorned tick (*Haemaphysalis longicornis* Neumann). **Zachary Vincent** (zachary.t.vincent2.ctr@mail.mil)[1], Meagan Marshall[2], Benedict Pagac[2] and Melissa Miller[2], [1]ORISE Internship at Public Health Command - Atlantic, Fort George G. Meade, MD, [2]Public Health Command - Atlantic, Fort George G. Meade, MD

DSP24 Pathogen detection limits in hard-bodied ticks: Real time-qPCR analysis. **Amanda Whitlow** (amwhitlow15@ehc.edu)[1], Kevin Lahmers[2], Stephanie Todd[2] and George Argyros[1], [1]Emory & Henry College, Riner, VA, [2]Virginia Tech, Blacksburg, VA

DSP25 Residual effectiveness of pyriproxyfen treatments against larval *Aedes albopictus*. **Benjamin McMillan** (benm93@vt.edu)[1], Nicola Gallagher[2], Carlyle Brewster[1] and Sally Paulson[1], [1]Virginia Tech, Blacksburg, VA, [2]Syngenta, Columbus, OH

DSP26 Chromatin spatial distribution in the cell nuclei of *Drosophila melanogaster* Lamin mutants. **Semen Bondarenko** (bondarenko@vt.edu) and Igor Sharakhov, Virginia Tech, Blacksburg, VA

DSP27 Shedding light on black fly feeding: Gut fluorescence of *Simulium* larvae. **Keith Price** (keitprice@pa.gov)[1], Rebecca Eckert[2], Douglas Orr[1] and David Hurley[3], [1]PA Dept. of Environmental Protection, Harrisburg, PA, [2]Univ. of Maryland, College Park, MD, [3]PA Dept. of Environmental Protection, Williamsport, PA

DSP28 *Aethina Tumida* trapping to promote honey bee hive overwintering success. **Dakotah Todd** (dakotaht@vt.edu), Morgan Roth, Aaron Gross, Roger Schurch and James M. Wilson, Virginia Tech, Blacksburg, VA

DSP29 Edamame pest research at Virginia Tech. **Kemper Sutton** (klsutton@vt.edu)[1], Thomas Kuhar[1], Steve Rideout[2], Hélène Doughty[2] and Jill Pollock[2], [1]Virginia Tech, Blacksburg, VA, [2]Virginia Tech, Eastern Shore AREC, Painter, VA

DSP30 Monitoring onion thrips (Thysanoptera: Thripidae) susceptibility to spinetoram in New York onion fields. **Erica Moretti** (em763@cornell.edu)[1], Riley Harding[1], Jeff Scott[2] and Brian Nault[1], [1]Cornell Univ., Geneva, NY, [2]Cornell Univ., Ithaca, NY

DSP31 Evaluation of diluted grape juice as an inexpensive attractant for the invasive fruit pest spotted wing Drosophila. **Jaime Piñero** (jpinero@umass.edu) and Nicole Foley, Univ. of Massachusetts, Amherst, MA

DSP32 A smell that makes carabids run: Tritrophic interactions between slugs, soybean and ground beetles. **TJ Federiko** (tfederiko@udel.edu), Brian Kunkel, William Cissel and Ivan Hiltpold, Univ. of Delaware, Newark, DE

DSP33 Oviposition choice versus residency in harlequin bug: Implications for trap crops. **Alexander Bier** (Alexander.Bier@ars.usda.gov)[1], Anna K. Wallingford[2], Megan V. Herlihy[1] and Donald Weber[1], [1]USDA - ARS, Beltsville, MD, [2]Univ. of New Hampshire, Durham, NH

DSP34 Rearing *Laricobius nigrinus* at Virginia Tech to combat the invasive hemlock woolly adelgid. **Rachel Brooks** (rkbrooks@vt.edu) and Carrie Jubb, Virginia Tech, Blacksburg, VA

DSP35 Developing a novel aerial-release system for *Rhinoncomimus latipes* (Coleoptera: Curculionidae), the biological control agent for mile-a-minute weed. **Jaewon Kim** (jk0112@mix.wvu.edu)[1], Richard Reardon[2] and Yong-Lak Park[1], [1]West Virginia Univ., Morgantown, WV, [2]USDA - Forest Service, Morgantown, WV

DSP36 New investigations of *Lycorma delicatula* in Virginia. **Andrew Dechaine** (dechaine@vt.edu)[1], Thomas Kuhar[1], Douglas G. Pfeiffer[1], Scott Salom[1] and Tracy C. Leskey[2], [1]Virginia Tech, Blacksburg, VA, [2]USDA - ARS, Kearneysville, WV

DSP37 Attack of Samurai wasp and native parasitoids on eggs of brown marmorated stink bug and native stink bug sentinel eggs (in different habitats). **Megan V. Herlihy** (megan.herlihy@ars.usda.gov), Donald Weber and Mary Cornelius, USDA - ARS, Beltsville, MD

DSP38 External morphology of the spotted lanternfly, *Lycorma delicatula*, in relation to host plant use: Development of the arolia and mouthparts. **Alina Avanesyan** (alina@umd.edu) and William Lamp, Univ. of Maryland, College Park, MD

DSP39 Monitoring the winter morph populations of *Drosophila suzukii* in Blacksburg, Virginia. **Pragya Chalise** (pragyac9@vt.edu) and Douglas G. Pfeiffer, Virginia Tech, Blacksburg, VA

DSP40 A biogeographical profile of the sand cockroach *Arenivaga floridensis* and its bearing on origin hypotheses for Florida scrub biota. **Trip Lamb** (lamba@ecu.edu) and Michael Brewer, East Carolina Univ., Greenville, NC

DSP41 Mitochondrial DNA variation in the pitcher plant fly *Sarcophaga sarraceniae*: Exploring possible influences of host specificity and geographic structuring. **Joshua Parker** (parkerj15@students.ecu.edu), Trip Lamb and Michael Brewer, East Carolina Univ., Greenville, NC

DSP42 A preliminary molecular phylogeny of the sarcophagid pitcher plant fly genus *Fletcherimyia* supports previous morphological species constructs. **Peter Kann** (kannp19@students.ecu.edu), Trip Lamb and Michael Brewer, East Carolina Univ., Greenville, NC

DSP43 Phylogenetic analyses of protein sequence evolution underlying body color and physiology of extreme desert adapted darkling beetles (Tenebrionidae: Pimellinae: Adesmiini). **Michael Brewer** (brewermi14@ecu.edu)[1], Trip Lamb[1] and Jason Bond[2], [1]East Carolina Univ., Greenville, NC, [2]Univ. of California, Davis, CA

DSP44 Impacts of the Mountain Valley Pipeline: Longitudinal changes in the baseline assessment of Mill Creek, Roanoke County, Virginia. **Sierra Bradley** (sbradley19@radford.edu), Angie Holmes, Makenzie Bennington, Donya Mohamed, Samantha Houck, Kristina Stefaniak and Jamie Lau, Radford Univ., Radford, VA

DSP45 Redistribution of *Trissolcus japonicus* in Maryland and associated native parasitoid activity. **Madeline Potter (**mp2293@gmail.com), Rebeccah A. Waterworth and Paula M. Shrewsbury, Univ. of Maryland, College Park, MD

DSP46 Specialist and generalist natural enemies interact to suppress population outbreaks of the invasive winter moth (*Operophtera brumata*). **Hannah Broadley (**hbroadley@cns.umass.edu), Joseph Elkinton and George Boettner, Univ. of Massachusetts, Amherst, MA

DSP47 An update on the USDA-ARS Areawide Tick Control Project (2016-2021) in Maryland: Baseline tick density and pathogen infection status in ticks and white-footed mice. **Andrew Li (**andrew.li@ars.usda.gov)[1], Erika Machtinger[2], Robyn Nadolny[3], Ellen Stromdahl[4] and Jennifer Murrow[5], [1]USDA - ARS, Beltsville, MD, [2]Pennsylvania State Univ., University Park, PA, [3]Tick-Borne Disease Laboratory, APG Edgewood, MD, [4]Army Institute of Public Health, Aberdeen Proving Ground, MD, [5]Wildlife Ecology and Management, College Park, MD

Monday, March 11, 2019, Afternoon

12:00 – 1:45 ESA and Student Award Banquet with Presentations from ESA Executive Director and ESA President Latham AB

Symposium: Advances in Molecular and Cell Biology of Arthropod Vectors

Solitude

Moderators & Organizers: Maria Sharakhova and Igor Sharakhov, Virginia Tech, Blacksburg, VA

2:00 Single cell RNAseq analysis during embryonic development in *Anopheles stephensi*. **Peiwen Liu** (peiwen18@vt.edu), Yumin Qi and Zhijian Tu, Virginia Tech, Blacksburg, VA

2:20 Juvenile hormone-regulated alternative splicing of the taiman gene primes the ecdysteroid response in adult mosquitoes. **Pengcheng Liu** (pcliu@vt.edu), Xiaonan Fu and Jinsong Zhu, Virginia Tech, Blacksburg, VA

2:40 Molecular, physiological, and behavioral impacts of clock gene knockdowns in *Aedes aegypti* mosquitoes. **Diane Eilerts** (deilerts@vt.edu), Morgen VanderGiessen and Clement Vinauger, Virginia Tech, Blacksburg, VA

3:00 Arthropod exosomes as slingshots for arboviral transmission. **Hameeda Sultana** (hsultana@odu.edu), Center for Molecular Medicine, Old Dominion Univ., Norfolk, VA

3:20 Modulation of arthropod cell signaling by vector-borne pathogens. **Girish Neelakanta** (gneelaka@odu.edu), Old Dominion Univ., Norfolk, VA

3:40 Neuronal G protein-coupled receptors as a target to control mosquitoes. **Aaron Gross** (adgross@vt.edu)[1], Paul R. Carlier[1] and Jeffrey Bloomquist[2], [1]Virginia Tech, Blacksburg, VA, [2]Univ. of Florida, Gainesville, FL

Symposium: Applied Agriculture and Ag-Industry Symposium

Cascades

Moderators & Organizers: Adam Alford, Virginia Tech, Blacksburg, VA and David Owens, Univ. of Delaware, Georgetown, DE

2:00 Introductory Remarks

2:05 Initial steps in managing the new invasive Allium leafminer in Allium crops. **Brian Nault** (ban6@cornell.edu)[1], Shelby J. Fleischer[2], Timothy Elkner[3], Ethan Grundberg[4], Teresa Rusinek[5], Riley Harding[1] and Brandon Lingbeek[2], [1]Cornell Univ., Geneva, NY, [2]Pennsylvania State Univ., Univ. Park, PA, [3]Pennsylvania State Univ., Manheim, PA, [4]Cornell Univ., Middletown, NY, [5]Cornell Cooperative Extension, Highland, NY

2:25 Where we stand today with insecticides for stink bug control. **Adam Alford** (adammalford@gmail.com) and Thomas Kuhar, Virginia Tech, Blacksburg, VA

2:45 Updates from the Cotton Belt: Pests and pesticides coming your way. **Sally Taylor** (svtaylor@vt.edu)[1] and Dominic Reisig[2], [1]Virginia Tech Tidewater AREC, Suffolk, VA, [2]North Carolina State Univ., Plymouth, NC

3:05 Neonicotinoid seed treatments in *Bt* maize: IRM, IPM, and environmental residues. **Kyle Bekelja** (kbekelja@vt.edu)[1], Adam Alford[1], Sally Taylor[3] and Christian Krupke[4], [1]Virginia Tech, Blacksburg, VA, [3]Virginia Tech Tidewater AREC, Suffolk, VA, [4]Purdue Univ., West Lafayette, IN

3:25 Break

3:40 Using GIS to predict pest outbreaks: A Virginia case study. **Seth Dorman** (sjdorman@vt.edu)[1], Adam Formella[2], Roger Schurch[2], Thomas Kuhar[2] and Sally Taylor[1], [1]Virginia Tech Tidewater AREC, Suffolk, VA, [2]Virginia Tech, Blacksburg, VA

4:00 Late season Lepidoptera damage in West Virginia right-of-ways. **Daniel L. Frank** (dlfrank@mail.wvu.edu), West Virginia Univ., Morgantown, WV

4:20 Conservation of *Metarhizium*, a multifuctional beneficial fungus, in agronomic crops. **Mary Barbercheck** (meb34@psu.edu) and Christina Voortman, Pennsylvania State Univ., Univ. Park, PA

4:40 Unintended consequences of pest management on soil ecosystems. **Kirsten Pearsons** (kfp5094@psu.edu)[1], Elizabeth Rowen[1], Kyle Wickings[2], Richard Smith[3] and John Tooker[1], [1]Pennsylvania State Univ., Univ. Park, PA, [2]Cornell Univ., Geneva, NY, [3]Univ. of New Hampshire, Durham, NH

5:00 An update on pyrethroid use on field corn. **Galen Dively** (galen@umd.edu) and Kelly Hamby, Univ. of Maryland, College Park, MD

5:25: Concluding Remarks

5:30 Discussion

Symposium: Insect Pollinators in the Human-Modified Landscape II

Assembly Hall

Moderators & Organizers: Margaret Couvillon, Virginia Tech, Blacksburg, VA; Tyler Jones and Shelby Kilpatrick, Pennsylvania State Univ., Univ. Park, PA

2:00 Queenless is more: Buffering of reproductive workers from stress. Anissa Kennedy[1], **Jacob Herman** (jjherman@uncg.edu)[2] and Olav Rueppell[2], [1]Johannes Gutenberg Universitat, Mainz, Germany, [2]Univ. of North Carolina, Greensboro, NC

2:20 Exploration of novel control tactics for *Aethina tumida*. **Morgan Roth** (mroth11@vt.edu), James M. Wilson, Paul R. Carlier, Haibo Li and Aaron Gross, Virginia Tech, Blacksburg, VA

2:40 Integrating wildflower habitats into pastures for pollinator conservation. **Jennie Wagner** (jenniew@vt.edu), Megan O'Rourke and Benjamin Tracy, Virginia Tech, Blacksburg, VA

3:00 A side-by-side comparison of honey bee health in colonies kept using conventional, organic, and chemical free management systems. Margarita López-Uribe[1], Robyn Underwood[1], Brenna Traver[2] and **Parry Kietzman** (pkietzman@appheadwaters.org)[3], [1]Pennsylvania State Univ., Univ. Park, PA, [2]Pennsylvania State Univ., Schuylkill Haven, PA, [3]North Carolina State Univ., Raleigh, NC

3:20 Within-hive pesticide exposure and the direct and downstream impacts on honey bee (*Apis mellifera*) queens. **Joseph Milone** (jpmilone@ncsu.edu) and David Tarpy, North Carolina State Univ., Raleigh, NC

3:40 Break

4:00 *Deformed wing virus* induced lipodystrophy leads to genetic, posttranslational, and enzymatic malfunction in the honey bee *Apis mellifera*. **Matthew Heerman** (matthew.heerman@ars.usda.gov)[1], Steven Cook[1], Olubukola Banmeke[1], William Girten[2], Cristina Rodriguez-Garcia[1], Samuel Ramsey[1], Daniel Sonenshine[1], Zhiguo Li[1], Jianghong Li[1], Yue Hao[1], Eugene Ryabov[1], Jay Evans[1] and Yanping Chen[1], [1]USDA-ARS, Beltsville, MD, [2]Fort Lewis College, Durango, CO

4:20 Does exposure matter when evaluating the risk of pesticides to pollinators. **Daniel Schmehl** (daniel.schmehl@bayer.com), Bayer, Research Triangle Park, NC

4:40 Bee diversity on electric transmission rights-of-way in Pennsylvania: A continuing study of how vegetation management strategies influence wild pollinators. **Hannah Stout** (e.guttulata@gmail.com)[1], Laura Russo[2], Dana Roberts[3], Bradley Ross[4] and Carolyn Mahan[4], [1]Independent Researcher, State College, PA, [2]Trinity College, Dublin, Ireland, [3]Pennsylvania State Univ., Univ. Park, PA, [4]Pennsylvania State Univ., Altoona, PA

5:00 Effects of pollinator habitats on bee communities in Eastern Virginia and Maryland. **Christopher McCullough** (ctmccull@vt.edu), Gina Angelella and Megan O'Rourke, Virginia Tech, Blacksburg, VA

5:20 Movers and shakers: Microbial dispersal via bee-havior. **Avery Russell** (alr204@pitt.edu)[1], María Rebolleda-Gómez[1], Tierney Shaible[2] and Tia-Lynn Ashman[1], [1]Univ. of Pittsburgh, Pittsburgh, PA, [2]Univ. of Arizona, Tucson, AZ

5:40 Low maize pollen collection and low pesticide risk to honey bees in heterogeneous agricultural landscapes. **Christine Urbanowicz** (cmu22@cornell.edu), Nicolas Baert, Sarah Bluher, Katalin Böröczky, Marcel Ramos and Scott McArt, Cornell Univ., Ithaca, NY

Symposium: Breaking Ground: Research Highlights from ECPs and non-Academic Track Eastern Branch Members

Solitude

Moderators and Organizers: Aditi Dubey, Univ. of Maryland, College Park, MD and Katlyn Catron, Virginia Tech, Blacksburg, VA

4:00 Introductory Remarks

4:05 Teaching and advocating entomology at a non-profit public garden. **Ryan Gott** (ryan.c.gott@gmail.com), Phipps Conservatory and Botanical Gardens, Pittsburgh, PA

4:15 Integrated approaches for managing onion thrips, *Thrips tabaci*, in organic onions. **Lindsy Iglesias** (lei7@cornell.edu) and Brian Nault, Cornell Univ., Geneva, NY

4:25 From the Lab to the Classroom: Teaching at a Liberal Arts College. **Jake E. Bova** (jbova@ehc.edu), Emory & Henry College, Emory, VA

4:35 Outside Academia: My role as a SARE Outreach Technical Review Specialist. **Jermaine Hinds** (jhinds1@umd.edu), Univ. of Maryland, College Park, MD

4:45 Estimating the Aphididae phylogeny: a roadmap to revisionary aphid systematics. **Christopher Owen** (christopher.owen@ars.usda.gov) and Gary L. Miller, USDA - ARS, Beltsville, MD

4:55 I Did it My Way! **Cheryle O'Donnell (**cheryle.a.odonnell@aphis.usda.gov), USDA - APHIS, Beltsville, MD

5:05 Break

5:10 Opportunities and challenges faced by early career professionals in extension. **Heather Leach** (hll50@psu.edu), Pennsylvania State Univ., Univ. Park, PA

5:20 Not just a load of dead insects: the life of a museum entomologist. **Kaloyan Ivanov** (kal.ivanov@vmnh.virginia.gov), Virginia Museum of Natural History, Martinsville, VA

5:30 Use of long lasting insecticidal netting for control of stinkbugs in South Eastern tomatoes and peppers. **Adam Alford**

(adammalford@vt.edu)[1], Thomas Kuhar[1] and Jim Walgenbach[2], [1]Virginia Tech, Blacksburg, VA, [2]North Carolina State Univ., Mills River, NC

5:40 A color atlas of eastern US Xystodesmidae. **Jackson C. Means** (mjacks4@vt.edu), Virginia Tech, Blacksburg, VA

5:50 **Networking Session – Latham F**

Tuesday, March 12, 2019, Morning

Symposium: Plant-Insect Chemical Ecology: Multi-Species Interactions and Emerging Applications in Agriculture

Cascades

Moderators & Organizers: Dorothea Tholl and Susan Whitehead, Virginia Tech, Blacksburg, VA

8:00 The impact of changing environmental conditions on plant defense chemistry and its consequences for plant-insect interactions. **Anna Block** (anna.block@ars.usda.gov), USDA - ARS, Gainesville, FL

8:20 Harnessing plant induced defenses for improved pest management in apples. **Susan Whitehead** (swhitehead@vt.edu)[1,2], Victoria Meakem[3], Ethan Bass[2], Dave Combs[4], Arthur Agnello[4] and Katja Poveda[2], [1]Virginia Tech, Blacksburg, VA, [2]Cornell Univ., Ithaca, NY, [3]Virginia Tech, Blacksburg, VA, [4]Cornell Univ., Geneva, NY

8:40 Fair-weather friends: The context dependent role of mycorrhizae in plant herbivore interactions. **Zoe Getman-Pickering** (zg94@cornell.edu), Danielle Rutkowski and Jennifer Thaler, Cornell Univ., Ithaca, NY

9:00 Honest and deceptive olfactory cues as pollinator attractants to flowers. **Ariela Haber** (ariela.haber@gmail.com)[1], James Sims[2], Mark Mescher[2], Consuelo De Moraes[2] and David Carr[3], [1]Univ. of Virginia, Charlottesville, VA, [2]ETH Zurich, Zurich, Switzerland, [3]Univ. of Virginia, Boyce, VA

9:20 The influence of chemistry on pollinator foraging behavior in cucurbit systems. **Kristen Brochu** (kkb90@psu.edu), Cornell Univ., Ithaca, NY

9:40 Alkaloids and insect-plant interactions. **Kimberly Gwinn** (kgwinn@utk.edu), Chloe Lash, Jamie Albert and Charles Kwit, Univ. of Tennessee, Knoxville, TN

10:00 Break

10:20 Chemical ecology in pest management: A tool across various ecospheres. **Ivan Hiltpold** (hiltpold@udel.edu), Univ. of Delaware, Newark, DE

10:40 Polydnaviruses mediate plant defenses. **Gary Felton** (gwf10@psu.edu), Pennsylvania State Univ., Univ. Park, PA

11:00 Combining insect- and plant-produced attractants for vegetable pest management. **Donald Weber** (don.weber@ars.usda.gov) and Ashot Khrimian, USDA - ARS, Beltsville, MD

11:20 Aggregation pheromone biosynthesis: New genetic tools for pest management? Jason Lancaster[1], Ashot Khrimian[2], Sharon Young[3], Bryan Lehner[1], Anna K. Wallingford[1], Saikat Kumar Ghosh[2], Michael E. Sparks[2], Claus Tittiger[3], Donald Weber[2], Dawn E. Gundersen-Rindal[2], Thomas Kuhar[1] and **Dorothea Tholl** (tholl@vt.edu)[1], [1]Virginia Tech, Blacksburg, VA, [2]USDA - ARS, Beltsville, MD, [3]Univ. of Nevada, Reno, NV

11:40 [Withdrawn]

Symposium: Spotted Lanternfly from Detection to Major Pest: Biology, Spread, and Control

Assembly Hall

Organizer & Moderator: Eric R. Day, Virginia Tech, Blacksburg, VA and Hannah Broadley, Univ. of Massachusetts, Amherst, MA

8:00 Introduction to the Insect Detection Evaluation and Prediction Symposium. **Eric R. Day** (idlab@vt.edu), Virginia Tech, Blacksburg, VA

8:10 Filling in the knowledge gaps: What we know and what we need to know about spotted lanternfly biology. **Julie Urban** (jmu2@psu.edu), Pennsylvania State Univ., Univ. Park, PA

8:30 Biocontrol of spotted lanternfly: Two promising agents discovered in China. **Juli Gould** (juli.r.gould@aphis.usda.gov), USDA - APHIS, Buzzards Bay, MA

8:50 Establishment of spotted lanternfly in Virginia and management response. **Douglas G. Pfeiffer** (dgpfeiff@vt.edu)[1], Eric R. Day[1], Theresa Dellinger[1], Mark Sutphin[2], Tina MacIntyre[3], Scott Salom[1] and Thomas Kuhar[1], [1]Virginia Tech, Blacksburg, VA, [2]Virginia Cooperative Extension, Winchester, VA, [3]Virginia Dept. of Agriculture and Consumer Services, Richmond, VA

9:10 Management of spotted lanternfly in fruit crops. **Heather Leach** (leachhea@msu.edu)[1], David Biddinger[2] and Julie Urban[1], [1]Pennsylvania State Univ., Univ. Park, PA, [2]Pennsylvania State Univ. Fruit Research and Extension Center, Biglerville, PA

9:30 Preliminary trapping study and host range results for spotted lanternfly. **Danielle Kirkpatrick** (danielle.kirkpatrick@ars.usda.gov)[1], Heather Leach[2], Julie Urban[2], William Rodney Cooper[3], Rafael Valentin[4], Anne Nielsen[4], Julie Lockwood[4], Dina Fonseca[4], Douglas G. Pfeiffer[6] and Tracy C. Leskey[1], [1]USDA - ARS, Kearneysville, WV, [2]Pennsylvania State Univ., Univ. Park, PA, [3]USDA - ARS, Wapato, WA, [4]Rutgers Univ., New Brunswick, NJ, [6]Virginia Tech, Blacksburg, VA

9:50 Development of rearing methods for spotted lanternfly. **Hannah Broadley** (hbroadley@cns.umass.edu), Univ. of Massachusetts, Amherst, MA

10:10 Break

10:20 Biological Control of the Tree-of-Heaven (*Ailanthus altissima*). **Rachel Brooks** (rkbrooks@vt.edu), Scott Salom and Anton Baudoin, Virginia Tech, Blacksburg, VA

10:40 How SLF is affecting landscapes and the green industry in SE PA. **Emelie Swackhamer** (exs33@psu.edu), Pennsylvania State Univ., Collegeville, PA

11:00 An epizootic caused by fungal entomopathogens of spotted lanternflies. **Eric Clifton** (eclifton88@gmail.com), David Harris and Ann E. Hajek, Cornell Univ., Ithaca, NY

11:20 New pests impacting the Eastern Branch region discussion. **Daniel Gilrein** (dog1@cornell.edu), Cornell Cooperative Extension, Riverhead, NY

Symposium: Vectors and Vector-Borne Diseases: Biology, Ecology, and Control

Solitude

Organizers & Moderators: Aaron Gross, Clement Vinauger, and Chloé Lahondère, Virginia Tech, Blacksburg, VA

8:00 Introductory Remarks

8:05 Mosquito neuropeptides and odors: Novel strategies for an age-old problem. **Andrew Nuss** (nuss@cabnr.unr.edu), Zachary Speth, Rana Pooraiiouby and Dennis Mathew, Univ. of Nevada, Reno, NV

8:25 Elucidating the mechanism of Pyriproxyfen effect on mortality and sterilization in *Aedes aegypti*. **Tahmina Ahmed** (tahmi88@vt.edu), Thomas (Randy) Ahmed and Jinsong Zhu, Virginia Tech, Blacksburg, VA

8:45 Building and breaking the bacterial cell wall: Implications in the treatment and pathogenesis of Lyme disease. **Brandon Jutras** (bjutras@vt.edu)[1], Robert Lochhead[2], Klemen Strle[3], Allen Steere[3], Waldemar Vollmer[4] and Christine Jacobs-Wagner[5], [1]Virginia Tech, Blacksburg, VA, [2]Medical College of Wisconsin, Milwaukee, WI, [3]Massachusetts General Hospital and Harvard Medical School, Charlestown, MA, [4]Newcastle Univ., Newcastle upon Tyne, United Kingdom, [5]Yale Univ., West Haven, CT

9:05 The circadian clock is necessary for seasonal timekeeping in the Northern house mosquito, *Culex pipiens*. **Megan Meuti** (nicol.114@osu.edu), The Ohio State Univ., Columbus, OH

9:25 Multigene phylogeny supports a single migration of the *Maculipennis* group of malaria mosquitoes from North America to Eurasia. **Maria Sharakhova** (msharakh@vt.edu)[1], Galina Yurchenko[2], Anastasia N. Naumenko[1], Gleb Artemov[3], Alina Kokhanenko[3], Semen Bondarenko[1], Alema Velichevskaya[3] Vladimir Stegniy[3] and Igor Sharakhov[3], [1]Virginia Tech, Blacksburg, VA, [2]Far Eastern Forest Research Institute, Khabarovsk, Russia, [3]Tomsk State Univ., Tomsk, Russian Federation

9:45 The Hi-C approach revealed new principles of 3D genome organization in malaria vectors. **Igor Sharakhov** (igor@vt.edu)[1], Varvara Lukyanchikova[2], Veniamin Fishman[2], Miroslav Nuriddinov[2], Nariman Battulin[2] and Oleg L. Serov[2], [1]Tomsk State Univ., Tomsk,

Russian Federation, [2]Institute of Cytology and Genetics SB RAS, Novosibirsk, Russian Federation

10:05 Break

10:15 Field evaluation of novel trap methodology for monitoring invasive mosquitoes. **Gillian Eastwood** (geastwood@vt.edu)[1], Theodore Andreadis[2] and Andrew Donnellycolt[3], [1]Virginia Tech, Blacksburg, VA, [2]Yale School of Public Health, New Haven, CT, [3]Connecticut Agricultural Experiment Station, New Haven, CT

10:35 Uncovering secrets of mosquito Y chromosomes, starting with *Anopheles albimanus*. **Austin Compton** (austc14@vt.edu)[1], Chunhong Mao[1], Jiangtao Liang[1], Varvara Lukyanchikova[2], Yang Wu[1], Yumin Qi[1], Igor Sharakov[1] and Zhijian Tu[1], [1]Virginia Tech, Blacksburg, VA, [2]Institute of Cytology and Genetics SB RAS, Novosibirsk, Russian Federation

10:55 The effect of La Crosse virus infection on overwintering mortality of *Aedes triseriatus* and *Aedes albopictus* in Southwestern Virginia. **Jake E. Bova** (jbova86@vt.edu)[1], Donald Mullins[2] and Sally Paulson[2], [1]Emory & Henry College, Emory, VA, [2]Virginia Tech, Blacksburg, VA

11:15 Differential gene expression in the above- and below-ground forms of the West Nile virus vector, *Culex pipiens*. **Megan Fritz** (mfritz13@umd.edu), Univ. of Maryland, College Park, MD

11:35 Isolation and characterization of a novel insect-specific flavivirus with robust superinfection exclusion potential. **Jonathan Auguste** (jauguste@vt.edu), Virginia Tech, Blacksburg, VA

11:55 Working to understand Lyme ecology in southwestern Virginia & long-term prescribed fire as a promising tool for reducing Lyme disease risk. **Elizabeth Gleim** (EGleim@hollins.edu)[1], Galina E. Zemtsova[2], Ciera Morris[1], Michael Levin[2], L. Mike Conner[3] and Michael Yabsley[4], [1]Hollins Univ., Roanoke, VA, [2]Centers for Disease Control and Prevention, Atlanta, GA, [3]Joseph W. Jones Ecological Research Center, Newton, GA, [4]Univ. of Georgia, Athens, GA

Workshop: Get Out of the Elevator! Succinct and Compelling Interactions with the Public

Organizer: Christopher McCullough, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

When: Tuesday, March 11, 8:00 AM – 12:00 PM
Where: Drillfield Room, The Inn at Virginia Tech
Presenter: Patricia Raun, Director of Virginia Tech's Center for Communicating Science

*Registration required – attendees can register at ESA Registration Booth

Many science and industry professionals have been told to "develop your elevator pitch." This workshop provides the tools to prepare for brief and compelling interactions that may occur on an elevator, in the soybean field, or anywhere.

Participants in this experiential workshop will use exercises to help them move from "information overload" to authentic inspiration. We will explore the components of clear communication and learn how to develop spontaneity and overcome the "curse of knowledge." Participants will refine their stories into messages that inspire curiosity and engagement.

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Front cover: Price Hall, Virginia Tech **(**Kirsten Brichler, Master's in Life Sciences Student, Department of Entomology, Virginia Tech)

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