103rd Annual Meeting of the Pacific Branch of the Entomological Society of America

March 31 - April 3, 2019
Hyatt Regency Mission Bay Spa & Marina
San Diego, California

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The Officers, Committee Chairs, and Members of the Pacific Branch of the Entomological Society of America wish to thank our sponsors, without whom our annual meeting would not be possible.

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Meeting Information

PBESA 2019 Logistics & Basics

Registration

All PBESA 2019 attendees must register. You can register by credit card through the start of the meeting at https://www.entsoc.org/pacific/registration . Credit card, cash, and checks will be accepted for on-site registration: $230 (members), $260 (non-members), $80 (guests), and $70 (students and honorary/emeritus members). One-day reg-istration is $150. Register in Cabanas on March 31, 1:00 to 4:30 p.m.; the Bayview Foyer on April 1-2, 7:00 a.m. to 4:30 p.m.; April 3, 7:00 to 10:00 a.m.

Meeting Information

Schedule changes and other information of general inter-est will be posted at the PBESA registration desk. Refer to the on-line program at the PBESA 2019 Conference website.

Hotel Information

Hyatt Regency Mission Bay Spa and Marina is located right along the waterfront, guest will enjoy 360° views of the Pacific Ocean, Mission Beach, and the downtown San Di-ego skyline. The Mission Bay hotel offers waterfront dining, a contemporary poolside lounge, full service marina, and eco-friendly spa. Other features include: complimentary Wi-Fi access, waterfront 24-Hour StayFit Gym™ and 24-hour business center.

Hotel Map

The meeting rooms are located main level of the hotel. Maps are provided on the back cover.

Transportation

San Diego International Airport is 5.1 miles / 15 min away from the resort. Public transportation, taxis and other means such as Uber and Lyft are available. More information can be found at: https://www.san.org/

Special Meetings and Events

Plenary Session

We are pleased to present a Plenary Session by David Holway titled "Argentine ant invasions and the loss of native ant diversity" on Sunday, March 31 from 5:00 to 6:00 p.m. in Palm II.

Pacific Branch Executive Committee Meeting

The Executive Committee will meet Sunday, March 31, from 6:00 p.m. to 9:00 p.m. in Palm I.

Student Competition Judges & Moderators Meeting

Those who have volunteered to serve as moderators or as judges for the student poster and paper competitions should attend an organizational meeting on Sunday, March 31 at 6:00-7:00 p.m. in Belmont. All judges should meet in the Office Room (Point Loma) at 5:00 p.m. on Monday April 1 to finalize the student competition evaluations. See Heather Andrews (Heather.Andrews@oregonstate.edu) with any questions.

Business Meetings

The combination opening session/preliminary business meeting will be held from 8:00 a.m. to 12:00 p.m. on Monday, April 1 in the Regatta Pavilion. The final business meeting will be from 7:00 to 8:00 a.m. on Wednesday, April 3 in Belmont.

PBESA Mixer/President's Reception:

PBESA 2019 President Jennifer Henke will host a reception for all registered PBESA 2019 attendees on Monday, April 1, from 6:00 to 8:00 p.m. on the Banyan Court and Lawn.

Texting Competition/Elevator Talks

The seventh annual texting competition will be held Monday, April 1 from 6:30 to 7:00 p.m. in the Belmont. Test your entomological knowledge and texting skills in this fast and fun competition. Participants earn points for accurately and quickly texting insects' Latin names and the answers to insect trivia questions. Participants must supply their own mobile phones and are responsible for texting costs. To register your mobile phone or other texting device, text your name to 509.670.1132. Please contact Josh Milnes (joshua.milnes@wsu.edu) or Brendon Boudinot (boudinotb@gmail.com) for questions.

The fourth annual 'Elevator Opportunity' will happen just after the texting competition from 7:00 to 7:30 p.m. in Belmont. How would you react if you suddenly found yourself on an elevator with the ESA President or other prominent person? Could you explain your research in the time it takes to reach your floor? You will be given 3 minutes to describe your project/research to a prominent person. There will be no slides, but a substitute for a 'cocktail napkin' will be provided for drawing, if necessary.

This open event is limited to the first 20 people. You can register at the meeting. For further information contact Josh Milnes (joshua.milnes@wsu.edu).

Linnaean Games

Linnaean Games will be held on Monday, April 1 from 8:00 to 10:00 p.m. in Palm II. The winning PBESA team and runner-up team both qualify to represent the branch by competing in the National ESA Linnaean Games.

To offset their travel expenses to the national competition in St. Louis, MO, (November 17-20, 2019), the first place winning team will receive $2000 and the second place team will receive $1000.

Awards Luncheon

The PBESA 2018 Awards Luncheon will be held on Tuesday, April 2 from 12:00 to 1:30 p.m. in the Regatta Pavillion. Your full conference registration includes admission to the luncheon.

Social Hour With Poster Presenters

Join us for a social hour with poster presenters on Monday, April 1 from 4:30 to 6:00 p.m. Posters will be displayed in Bayview III.

Employment Opportunities/ PBESA Career Fair 2019

The Pacific Branch will host a Student and Early Career Professional Employment Fair in a symposium format on Tuesday, April 2 in Crown Point from 3:30 to 5:30 p.m. Representatives from industry, academia, and government sectors will be there to answer your questions, provide advice, and highlight some current openings in entomology. Please bring your questions, CV, and business cards. A social will follow from 5:30 to 7:00 p.m. in Crown Point.

Continuing Education Credits

Continuing Education Credits (CEC) have been applied for in AZ, ID, CA, NV, OR, UT, and WA. Look for updates of which sections will count towards continuing education credits at the registration desk. Contact Casey Butler for more information (casey.butler@bayer.com).

Photo Salon

The Photo Salon will be held Monday and Tuesday, June 11 and 12 from 8:00 a.m. to 6:00 p.m. The photos will be on rotation on the monitor in Bayview III. This event is organized by Lisa Brain (brain@agrimgt.com). The Photo Salon features a $50 prize and is for sharing your fascination of shots of insect form, function, and behavior. We highly encourage photos of outreach and extension, and of people interacting with insects. This is a great opportunity to see important or interesting insects, invasive species, native pollinators, natural enemies, and the artistic talents of PBESA entomologists.

Presenter/Moderator Instructions

Powerpoint Slideshow Presentations

Speakers who present submitted papers (Student Competition or General Session) must bring their PowerPoint files on a USB drive to the Operations Committee table in the Office (Point Loma) preferably the day before their scheduled session. Student Competition speakers must have their talks uploaded by 11:00 a.m. on the day of their talk. Uploads on the day of the talk, however, will not be afforded the opportunity to correct any technical issues. Mac users, please make sure your presentation file has a .ppt(x) file extension. Members of the Operations Committee will upload the file, and you will be provided a chance to look over the presentation and ensure that it transferred correctly. There will be no formal area for students to practice. Students are also asked to meet with their respective session moderators 5-10 minutes prior to the start of their session to go over presentation titles and final instructions. Questions about audiovisual needs can be directed to Jacqueline Serrano at jserr005@ucr.edu prior to the conference, or by visiting the Operations Committee table during the conference. In particular, speakers with presentations that link to audio or video files are requested to provide advance notice to the Operations Committee.

Code Of Conduct

By attending the 2019 Pacific 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, 301-731-4535 x3010.

Poster Display Presentations

Student posters will be displayed Monday, April 1 from 1:30 to 5:00 PM in the Bay View III. Students are requested to hang their posters from 10:00 a.m. to 12:00p.m. on Monday. Bring your own Velcro strips or tacks to secure your display to the poster board. Students should be prepared to discuss their poster with judges from 3:30 to 5:00 PM while judging is underway. Students who are not by their posters will not be judged. There is room to have your poster on display for the entire meeting, so posters do not have to be removed until the end of the meeting.

General Posters should be available for viewing on Monday in Bay View III. There is room to have your poster on dis-play for the entire meeting, so please put up your poster as soon as you are able, first thing Monday morning. Bring your own Velcro strips or tacks to secure your display to the poster board. Plan for poster sizes equal to or under 48 inches x 48 inches. Monday poster presenters are encouraged to be present at their posters from 4:30 to 6:00 p.m. during the Social Hour with Poster Presenters. Breaks are also popular times to view posters. All posters should be removed by the end of the meeting.

Moderator Responsibilities

Moderators for symposia are responsible for collecting and bringing symposia presentations on a personal laptop. Pre-sentations for student competitions and general session papers will be collected by the Operations Committee and will be provided on a laptop for use in the session.

Moderators of all symposia and general sessions should attend the moderators training meeting at 6:00 p.m. on Sunday, March 31 in Belmont. If a presentation is complet-ed early or cancelled, the moderator must ensure that the subsequent presentation begins at the scheduled time. Any questions regarding procedures or the roles of mod-erators can be addressed by contacting Jacqueline Serrano *jserr005@ucr.edu* prior to the conference, or the Operations Committee desk during the conference.

2019 Pacific Branch Leadership

Officers and Comittees

Executive Committee Members

President: *Jennifer Henke*

Incoming President: *Elizabeth Beers*

President Elect Nominee: *Mark Wright*

Past President: *Brad Higbee*

Secretary-Treasurer: *Harvey Yoshida*

Members at Large:

2016-2019 – *Rodney Cooper, Ricardo Ramirez*

2017-2020 – *Arash Rashed, Allison Walston*

2018-2021 – *Ayman Mostafa, Laura Lavine*

2019-2022 – *Jhalendra Rijal, Peter McGhee*

Governing Board Representative: *Doug Walsh*

National ESA:

Bob Peterson – ESA President

David Gammel – ESA Executive Director

Planning Committees:

Auditing: *Ted Gantenbein*

Awards Canvassing: *Mary Sorenson*

Awards Selection: *Tim Paine*

Bylaws: *Lisa Neven*

Continuing Education Credits: *Casey Butler*

Linnaean Games: *Mike Bush and Alix Whitener*

Texting Competition: *Josh Milnes, Michael Orr, and Brendon Boudinot*

Elevator Talks: *Kunle Adesanya and Josh Milnes*

Nominations Committee:

Operations: *Jacqueline Serrano*

Program: *Todd Murray, Peter McGhee, and Alix Whitener*

Photo Salon: *Lisa Brain*

Resolutions (pending): *N.A.*

Site Selection (2020 Meeting): *Emily Symmes, Charles Burks*

Site Selection (2021 meeting): *TBD*

Student Employment Fair: *Adrian Marshall*

Student Paper/Poster Competition: *Heather Andrews*

Student Travel Awards: *Amber Vinchesi*

Awards
WOODWORTH & COMSTOCK AWARD WINNER BIOS

2019 C.W. Woodworth Award

Beth Grafton-Cardwell

Department of Entomology at UC Riverside and is also Director of the Lindcove Research and Extension Center in the San Joaquin Valley

Beth Grafton-Cardwell is an IPM Specialist and Research Entomologist with the Department of Entomology at UC Riverside and is also Director of the Lindcove Research and Extension Center in the San Joaquin Valley. Her research interests include all aspects of Integrated Pest Management of citrus pests, including biocontrol, pheromone disruption, pesticide efficacy and selectivity, pesticide resistance management, pest monitoring and economic thresholds. Beth and her collaborators have authored over 60 journal articles and over 270 extension articles on these subjects. She completed her A. B. in Biology in 1977 at the University of California, Berkeley and an M.S. in Entomology at Purdue University in 1980, and her Ph.D. in 1985 at UC Berkeley selecting the common green lacewing for resistance to carbamates. After a postdoc at UC Davis, she accepted the position with UC Riverside in 1990. In her early career, Beth studied organophosphate resistance in California red scale and was instrumental in helping the citrus industry register and adopt the use of insect growth regulators. While adoption of these insecticides improved survival of natural enemies for some pests, they created problems with cottony cushion scale due to disruption of vedalia beetle. Cottony cushion scale outbreaks lessened with time as growers learned from Beth to use the insect growth regulators at a time of year that reduced their impact on vedalia. In the past decade, Beth has spent much of her time responding to invasive pests and disease, the most serious situation being Asian citrus psyllid, the vector of huanglongbing, a deadly bacterial citrus disease. Because of her extensive knowledge of pesticides and IPM, Beth has been instrumental in developing psyllid management programs for the different California citrus growing regions and she has been involved in research and extension projects totaling $18 million during the past 10 years with $1.78 million supporting her program directly. Her extension program on this subject is extensive reaching the citrus industry, Master Gardeners, homeowners, regulatory agencies and the media. Noteworthy is the Asian citrus psyllid distribution and management website for growers and homeowners and the Science for Citrus Health website that provides the lay community with information about new technologies for combatting huanglongbing. Communication of IPM to a variety of audiences has been her passion throughout her career.

John Henry Comstock Graduate Student Award

Brendon E. Boudinot

Ph. D. candidate in the Ward lab of the Department of Entomology and Nematology at the University of California, Davis

Brendon E. Boudinot is a Ph. D. candidate in the Ward lab of the Department of Entomology and Nematology at the University of California, Davis. He received his Bachelor's of Science in Entomology at the Evergreen State College in Olympia, Washington, where he worked as a fellow of the Natural History collections and as a technician sorting ants for Jack Longino's biodiversity surveys of Mesoamerica. Brendon is broadly interested in the origin and evolution of complex phenotypic systems, and specializes in anatomical identity and transformation within the Aculeata and across the Arthropoda. At Davis, Brendon has combined comparative morphology, molecular phylogenetics, paleontology, and alpha taxonomy to provide the first male-based keys to the ant subfamilies of the world, a general theory for the male and female genitalic homologies of the Hexapoda, and the first total-evidence analyses of the Formicidae. As a student member of the ESA, Brendon has been awarded the President's Prize in the Systematics and Evolutionary Biology section three times, and has been a championship member of three Linnaean Games teams. In addition to teaching and mentorship, Brendon enjoys natural history, horticulture, reading, and physical activity.

Pacific Branch Recognition Awards in Entomology

2019 Awards

The Pacific Branch of the Entomological Society of America is pleased to announce the winners of its 2019 awards .

Pacific Branch President Jennifer Henke reported that the Branch received 22 nomination packets for thirteen different awards. Nominees represented 9 different institutions across 5 U.S. states and one other country. Winners were selected by a diverse group of 24 anonymous judges from the Branch.

The awards will be presented at the Pacific Branch meeting in San Diego, CA from March 31 - April 3, 2019.

Pacific Branch Award Winners:

- Pacific Branch C.W. Woodworth Award
  – Elizabeth Grafton-Cardwell. UC Riverside.
- Award for Excellence in Teaching
  – Allan Felsot. Washington State University
- Award for Excellence in Extension
  – Surendra Dara. UC Cooperative Extension
- Award for Excellence in Integrated Pest Management
  – Silvia Rondon. Oregon State University
- Systematics, Evolution, and Biodiversity Award
  – Christiane Weirauch. UC Riverside
- Physiology, Biochemistry and Toxicology Award
  – Joanna Chiu. UC Davis
- Medical, Urban and Veterinary Entomology Award
  – Rebecca Maguire. Washington State University
- Plant-Insect Ecosystems Award
  – Neal Williams. UC Davis
- Distinction in Student Mentoring
  – Gerhard Gries. Simon Frazier University
- Excellence in Early Career
  – Jessica Gillung. UC Davis
- John Henry Comstock Graduate Student Award
  – Brendon Boudinot. UC Davis
- Student Leadership Award
  – Kelsey McCalla. UC Riverside
- Entomology Team Work Award
  – no submissions

President Bios

President, Jennifer A. Henke

Jennifer A. Henke is the Laboratory Manager at the Coachella Valley Mosquito and Vector Control District. She has a Bachelor's of Science in Biology from the University of Alabama and a Master's of Science in Entomology from the University of Georgia. Jennifer began at the District in 2011 as the Environmental Biologist. Since 2015 she has managed the laboratory group which conducts adult mosquito surveillance, tests for arboviruses, examines pesticide product efficacy, and implements novel control products and strategies targeted at mosquitoes and fire ants. Her work includes collaborating with researchers from universities and government agencies to explore novel control strategies for vectors in the desert. Jennifer currently serves on the Linnaean Games Committee and served as the moderator at the 2016 and 2017 annual meetings. She is also active on committees within the Mosquito and Vector Control Association of California and the American Mosquito Control Association. Outside of work, she is likely to be found taking pictures, travelling to new places, or watching live music in southern California.

Incoming President, Dr. Elizabeth (Betsy) Beers

Dr. Elizabeth (Betsy) Beers is a professor of entomology at Washington State University, located at the Tree Fruit Research & Extension Center in Wenatchee, WA. She earned her Ph.D in Entomology at Penn State under the direction of Dr. Larry Hull. Dr. Beers' program has covered various aspects of tree fruit research and extension for the past 33 years at the heart of one of the largest and most innovative tree fruit industries in the nation. Her research and outreach program during this time has adapted to the needs of the industry, and although the target pest has changed over time, the approach has always worked toward a broadly based IPM program.

Early work focused on secondary pests, where the opportunity for partial or complete biological control is the greatest. Pests included aphids, leafhoppers and leafminers, some of which were reduced to non-pest status. A career-long area of interest is conservation biological control of spider mites, a successful program started the 1960s by colleague and mentor Stan Hoyt. This program continues today by examining the nontarget effects of a new suite of pesticides, with recent work on how the phytoseiid complex has responded to those changes. The most recent projects have focused on two invasive species that threaten Washington's tree crops, spotted wing drosophila and brown marmorated stink bug. The ongoing challenge is to find management solutions that are not disruptive to existing IPM programs by implementing alternative control tactics including cultural and biological control.

President Elect Nominee, Dr. Mark G. Wright

Mark G. Wright is a professor and extension entomologist at the University of Hawaii at Manoa. Mark works on IPM of pests of tropical fruit and nut crops, concentrating on biological control. He has also worked on biocontrol of invasive species attaching native plant species. He has published papers addressing biological control, development of pest sampling methods, diversified cropping systems, and even the effect of bee alarm pheromones as deterrents of African elephants. Mark served as president of the Plant-Insect Ecosystems sections of the ESA (2017), and is currently serving on the P-IE governing council as past-president. He has previously served the ESA Pacific Branch, dealing with local arrangements for Hawaii meetings.

Plenary Speaker

David Holway, Ph.D

Argentine ant invasions and the loss of native ant diversity

David Holway received a B.A. in zoology from UC Berkeley and a Ph.D in biology from the University of Utah. He conducted postdoctoral research at UC San Diego, where he is currently Professor and Chair of the Section of Ecology, Behavior, and Evolution in the Division of Biological Sciences. His research focuses on biological invasions and plant-pollinator interactions. Visit the following to learn more: http://biology.ucsd.edu/research/faculty/dholway

NOTES:

Program Schedule

SUNDAY, MARCH 31, 2019		
Program	**Time**	**Location**
Operations	8:00 AM - 11:55 PM	Point Loma
Registration	1:00 PM - 4:30 PM	Cabanas
Opening Plenary	5:00 PM - 6:00 PM	Palm II
Executive Board Meeting	6:00 PM - 9:00 PM	Palm I
Moderator/Judge Meeting	6:00 PM - 7:00 PM	Belmont

MONDAY, APRIL 1, 2019		
Program	**Time**	**Location**
Operations	6:00 AM - 11:55 PM	Point Loma
Registration	7:00 AM - 4:30 PM	Bayview Foyer
Opening Session/Preliminary Business Meeting	8:00 AM - 12:00 PM	Regatta Pavillion
Poster set-up	10:00 AM - 12:00 PM	Bayview III
Morning Break	10:05 AM - 10:25 AM	Bayview Foyer
Photo Salon	10:30 AM - 4:30 PM	Bayview III
Undergraduate Poster Competition	11:30 AM - 5:00 PM	Bayview III
Masters Poster Competition	11:30 AM - 5:00 PM	Bayview III
PhD Poster Competition	11:30 AM - 5:00 PM	Bayview III
PhD TMP Competition	1:00 PM - 5:00 PM	Palm II
Forage Insect Pest Management in a Changing Climate: Prioritizing Future Research	1:30 PM - 3:35 PM	Bayview I
Undergraduate & Masters TMP Competition	1:30 PM - 5:00 PM	Belmont
Big or Small She'll Parasitize Them All: Tales and Applications of Host-Parasitoid Relationships	1:30 PM - 5:00 PM	Bayview II
Innovations in Technology, Information Management, Education and Pest Biology to Build Better Area-Wide Control Programs: Stories Where Our Science Makes a Difference	1:30 PM - 5:05 PM	Palm I
Afternoon Break	3:15 PM - 3:35 PM	Bayview Foyer
What's New in Industry	4:45 PM - 6:05 PM	Bayview I
Social Hour with Poster Presenters	4:30 PM - 6:00 PM	Bayview III
PBESA Mixer	6:00 PM - 8:00 PM	Banyan Court and Lawn
Texting Competition & Elevator Talks	6:30 PM - 7:30 PM	Belmont
Linnaean Games	8:00 PM - 10:00 PM	Palm II

TUESDAY, APRIL 2, 2019		
Program	**Time**	**Location**
Operations	6:00 AM - 11:55 PM	Point Loma
Registration	7:00 AM - 4:30 PM	Bayview Foyer
Photo Salon	7:30 AM - 4:30 PM	Bayview III
Innovative Technologies and Methods in Insect Pest Management: Part 1	8:00 AM - 11:05 AM	Belmont
Communicating Science-Based Pest Management to Urban Audiences	8:00 AM - 12:00 PM	Palm I
Using Advanced Tools to Study the Brain, Sensory Physiology, and Behavior of Insects: Preferred Dates: March 31st or April 1st, 2019 to comply with travel schedule of multiple speakers (who have already committed for meetings overlapping with late dates of PBESA meeting)	8:00 AM - 12:00 PM	Palm II
Recent Trends in Pollinator Health and Management	8:00 AM - 12:05 PM	Bayview I
General Posters	8:00 AM - 6:00 PM	Bayview III
Mighty Spider Mites: This is a pretty accomplished group of folks that have spent a lot of time manageing spider mites in west coast crops.	8:40 AM - 12:00 PM	Bayview II
Morning Break	10:05 AM - 10:25 AM	Bayview Foyer
Innovative Technologies and Methods in Insect Pest Management: Part 2	11:05 AM - 2:35 PM	Belmont
Awards Luncheon	12:00 PM - 1:30 PM	Regatta Pavillion
Communicating Science in a Fake News, Emotional World	1:30 PM - 4:10 PM	Palm I
Climate Change Impacts on Integrated Pest Management	1:30 PM - 5:00 PM	Bayview II
General Paper Session 1	1:30 PM - 5:15 PM	Palm II
Bee Biology, Pollination and Conservation: A Symposium Honoring Robbin W. Thorp	1:30 PM - 5:30 PM	Bayview I
Bridging the Gap Between Molecular Techniques and Ecological Questions	2:40 PM - 5:15 PM	Belmont
Afternoon Break	3:15 PM - 3:35 PM	Bayview Foyer
Student and Early Career Professional Employment Fair	3:30 PM - 5:30 PM	Crown Point
Student and Early Career Professional Employment Fair Social	5:30 PM - 7:00 PM	Crown Point

WEDNESDAY, APRIL 3, 2019		
Program	**Time**	**Location**
Operations	6:00 AM - 11:00 AM	Point Loma
Final Business Meeting	7:00 AM - 8:00 AM	Belmont
Registration	7:00 AM - 10:00 AM	
General Posters	8:00 AM - 12:00 PM	Bayview III
Use of Models in Entomological Research	8:00 AM - 10:25 AM	Palm II
General Paper Session 2	8:00 AM - 12:00 PM	Bayview II
Working out the Bugs: Multidisciplinary Approaches to Unraveling Insect-Microbe Symbioses	8:00 AM - 12:00 PM	Palm I
Agricultural Trade Barrier Pests – Significance, Challenges, and Management	8:00 AM - 12:30 PM	Bayview I
Arthropod Pest Management in Cannabis	8:30 AM - 12:30 PM	Belmont
Morning Break	10:05 AM - 10:25 AM	Bayview Foyer
Afternoon Break	3:15 PM - 3:35 PM	Bayview Foyer

Program Presentations

MONDAY, APRIL 1, 2019, MORNING

Opening Session/Preliminary Business Meeting

Regatta Pavillion (Hyatt Regency Mission Bay Spa)

8:00 **Welcome**
Jennifer Henke

8:10 **National ESA Report**
Bob Peterson, President ESA

8:20 **National ESA Governing Report**
David Gammel, Executive Director ESA

8:30 **The Legacy of C. W. Woodworth**
Brian Holden, Great-grandson of C. W. Woodworth

8:40 **2019 C. W. Woodworth Award presentation**
Elizabeth Grafton-Cardwell, University of California Riverside

9:10 **Introduction of John Henry Comstock Award recipient**
Jennifer Henke

9:15 **2019 John Henry Comstock Award presentation**
Brendon Boudinot, University of California, Davis

9:45 **Break**

10:15 **Preliminary Business Meeting**

10:20 **ESA section reports:**
Medical, Urban, and Veterinary Entomology
Physiology, Biochemistry, and Toxicology
Plant-Insect Ecosystems Systematics, Evolution, and Biodiversity

10:40 **ESA Governing Board Report**
Doug Walsh

10:50 **Reports from ESA Standing Committees**
Awards & Honors
Diversity & Inclusion
Early Career Professionals
Education & Outreach
Student Affairs
Science Policy Capability
Certification Board

11:15 **PBESA Executive Committee**
Jennifer Henke

11:30 **PBESA Secretary/Treasurer Report**
Harvey Yoshida

11:45 **Announcements/New Business**
Jennifer Henke

12:00 **Lunch on your own**

MONDAY, APRIL 1, 2019, POSTERS

Undergraduate Poster Competition / 11:30 AM-5:00 PM

Bayview III (Hyatt Regency Mission Bay Spa)

P1 **Accelerated egg laying behavior in *Bombus impatiens* queens.**
Gina Zhuo *(gzhuo001@ucr.edu), Kaleigh Fisher, Erica Sarro, Alexandra Vanecek, Kristal Watrous and S. Hollis Woodard, Univ. of California, Riverside, CA*

P2 **Quantifying sugar levels in hemolymph to explore bumble bee energetics.**
Alexander Brinkley *(abrin005@ucr.edu), Kristal Watrous and S. Hollis Woodard, Univ. of California, Riverside, CA*

P3 **Attempts at optimizing rearing protocols of the polyphagous shot hole borer (*Euwallacea whitfordiodendrus*).**
Rattanan Chungsawat *(rchun012@ucr.edu), Deena Husein and Richard Stouthamer, Univ. of California, Riverside, CA*

P4 **Pollinator communities of Pacific Northwest canola farms.**
Wyatt Mattingly *(wyatt.mattingly@wsu.edu), Rachel Olsson and David Crowder, Washington State Univ., Pullman, WA*

P5 **Distribution of a territorial bee population on an urban campus and its response to augmented floral resources.**
DeShae Dillard *(ddillard@zagmail.gonzaga.edu), Carter Odean and Gary C. Chang, Gonzaga Univ., Spokane, WA*

P6 **Do the long-term tasks of *Formica francoeuri* workers influence mandibular attrition?**
Kiera Donoghue *(kiera.donoghue@email.ucr.edu), Mari West and Jessica Purcell, Univ. of California, Riverside, CA*

Masters Poster Competition / 11:30 AM-5:00 PM

Bayview III (Hyatt Regency Mission Bay Spa)

P7 **Revisiting the status of the Colorado potato beetle *Leptinotarsa decemlineata* (Say) (Coleoptera: Chrysomelidae) in the Pacific Northwest.**
Pahoua Yang *(pahoua.yang@oregonstate.edu) and Silvia Rondon, Oregon State Univ., Hermiston, OR*

P8 **Wild bee seasonal diversity and abundance in urban gardens planted with native plants.**
Jesus Cepeda *(jcepeda@cpp.edu) and Joan Leong, California State Polytechnic Univ., Pomona, CA*

P9 **Knowledge of California residents on the Asian citrus psyllid and the disease it vectors: Huanglongbing.**
Daniel Munoz *(danielmunoz@cpp.edu), Valerie Mellano and Anna Soper, California State Polytechnic Univ., Pomona, CA*

P10 **Overwintering Conditions of *Melittobia* on *Megachile rotundata*.**
Alan Anderson *(alananderson4182@gmail.com)[1], Theresa Pitts-Singer[2] and Ricardo Ramirez[1], [1]Utah State Univ., Logan, UT, [2]USDA - ARS, Logan, UT*

P11 **The effect of in-furrow application of pyrethroid in rotational crop**

in reducing wireworm damage in subsequent wheat.
Atoosa Nikoukar *(Anikoukar@uidaho.edu)[1], David Crowder[2], Aaron Esser[3], Edwin Lewis[1] and Arash Rashed[1], [1]Univ. of Idaho, Moscow, ID, [2]Washington State Univ., Pullman, WA, [3]Washington State Univ., Ritzville, WA*

P12 Bee diversity and abundance within the California sage scrub of the San Jose hills.
Carmel Tabush *(cppearson@cpp.edu) and Joan Leong, California State Polytechnic Univ., Pomona, CA*

P13 Weathering heights: Comparison of *Apis mellifera* mating behavior utilizing RFID.
Melanie Kirby *(melanie.kirby@wsu.edu), Washington State Univ., Pullman, WA*

PhD Poster Competition / 11:30 AM-5:00 PM

Bayview III (Hyatt Regency Mission Bay Spa)

P14 Investigating the effects of commercially-significant insect growth regulators on honey bee mortality and fat metabolism.
Megan Deeter *(megdeeter@email.arizona.edu)[1] and Vanessa Corby-Harris[2], [1]Univ. of Arizona, Tucson, AZ, [2]USDA - ARS, Tucson, AZ*

P15 Longitudinal ontogenetic allometry of the sand cricket, *Gryllus firmus*..
Abigail Hayes *(abigail.hayes@wsu.edu) and Laura Lavine, Washington State Univ., Pullman, WA*

P16 Identification of an aggregation-sex pheromone for a "living fossil", the false click beetle, *Palaeoxenus dohrni* horn (Coleoptera: Eucnemidae).
Jacqueline Serrano *(jserr005@ucr.edu), J. Steven McElfresh, Yunfan Zou and Jocelyn G. Millar, Univ. of California, Riverside, CA*

P17 Multiple insecticide resistance in onion thrips populations.
Adekunle Adesanya *(adekunle.adesanya@wsu.edu)[1], Timothy Waters[2] and Doug Walsh[3], [1]Washington State Univ., Pullman, WA, [2]Washington State Univ., Pasco, WA, [3]Washington State Univ., Prosser, WA*

P18 Evaluating shade netting for sustainable codling moth management.
Adrian Marshall *(atmarshall@wsu.edu) and Elizabeth Beers, Washington State Univ., Wenatchee, WA*

P19 A plant defense elicitor has species-specific effects on insect-vectored plant viruses.
Jaimie Kenney *(jkenn009@ucr.edu), Ian Wright, Marie-Eve Grandmont and Kerry Mauck, Univ. of California, Riverside, CA*

P20 Temperature influence in mating signals and preference in treehopper species *Enchenopa binotata* (Hemiptera: Membracidae).
Dowen Jocson *(dowen.jocson@wsu.edu)[1,2], Morgan Smeester[2] and Kasey Fowler-Finn[2], [1]Washington State Univ., Pullman, WA, [2]Saint Louis Univ., St. Louis, MO*

P21 Population genetics of the invasive *Euwallacea fornicatus* species complex in Southern California.
Christine Dodge *(cdodg001@ucr.edu) and Richard Stouthamer, Univ. of California, Riverside, CA*

MONDAY, APRIL 1, 2019, AFTERNOON

PhD TMP Competition

Palm II (Hyatt Regency Mission Bay Spa)

Moderator: Rebecca Schmidt-Jeffris, USDA - ARS, Wapato, WA

1:00 PM **1** **Understanding how water stress affects spider mite resistance in maize.**
Gunbharpur Gill *(gunn.gill@usu.edu)[1], Huyen Bui[2], Richard Clark[2] and Ricardo Ramirez[1], [1]Utah State Univ., Logan, UT, [2]Univ. of Utah, Salt Lake City, UT*

1:12 PM **2** **Transcriptional plasticity of a generalist herbivore in adaptation to mite growth inhibitors.**
Adekunle Adesanya *(adekunle.adesanya@wsu.edu)[1], Laura Lavine[1], Fang Zhu[1] and Doug Walsh[2], [1]Washington State Univ., Pullman, WA, [2]Washington State Univ., Prosser, WA*

1:24 PM **3** **Microbial protection against selenate exposure and the effects of toxins on the bumble bee microbiome.**
Jason Rothman *(jason.rothman@email.ucr.edu), Kaleigh Russell, Laura Leger and Quinn McFrederick, Univ. of California, Riverside, CA*

1:36 PM **4** **The Poncho Trap: A novel attract-and-kill BMSB trap design.**
James Hepler *(james.hepler@wsu.edu) and Elizabeth Beers, Washington State Univ., Wenatchee, WA*

1:48 PM **5** **Seasonal spatial distribution of *Drosophila suzukii*.**
Kyoo Park *(parkk@oregonstate.edu)[1], Gabriella Boyer[2], Jeff Yeo[1] and Vaughn Walton[1], [1]Oregon State Univ., Corvallis, OR, [2]Oregon State Univ., Hood River, OR*

2:00 PM **6** **Hitchhiker's guide to the gallery: A closer look at nematodes associated with the polyphagous shot hole borer.**
Deena Husein *(dhuse001@ucr.edu), Paul F. Rugman-Jones and Richard Stouthamer, Univ. of California, Riverside, CA*

2:12 PM **7** **Impact of superparasitism on reproduction in *Ooencyrtus* sp. near *telenomicida* (Hymenoptera: Encyrtidae).**
Nancy Power *(npowe001@ucr.edu), Fatemeh Ganjisaffar and Thomas M. Perring, Univ. of California, Riverside, CA*

2:24 PM **8** **Utility of trap crops to monitor pest abundance and suppress feeding damage in California orchards.**
Robert Straser *(rstra005@ucr.edu)[1], Kent Daane[2] and Houston Wilson[2], [1]Univ. of California, Riverside, CA, [2]Univ. of California, Parlier, CA*

2:36 PM **9** **Mark-recapture experiments to assess foraging behavior of native bees in plant nurseries.**
Jacob Cecala *(jceca001@ucr.edu) and Erin Wilson Rankin, Univ. of California, Riverside, CA*

2:48 PM **10** **Ecology of crop-associated viruses and their insect vectors in a Mediterranean-climate biodiversity hot-spot.**
Tessa Shates *(tshat003@ucr.edu), Oaksoe Aung, Penglin Sun and Kerry Mauck, Univ. of California, Riverside, CA*

3:00 PM **11** **When it rains, it pours! (nectar, that is).**
Rachel Olsson *(rachel.olsson@wsu.edu) and David Crowder, Washington State Univ., Pullman, WA*

Forage Insect Pest Management in a Changing Climate: Prioritizing Future Research

Bayview I (Hyatt Regency Mission Bay Spa)

Organizer: Kevin Wanner, Montana State Univ., Bozeman, MT

1:30 PM **12** **Introductory remarks.**
Kevin Wanner *(kwanner@montana.edu), Montana State Univ., Bozeman, MT*

1:35 PM **13** **Revisiting alfalfa weevil biology and management in Montana: Degree-days, pestweb and genetic races.**
Kevin Wanner *(kwanner@montana.edu), Montana State Univ., Bozeman, MT*

1:55 PM **14** **Management of winter insect pests in irrigated alfalfa hay of the south west low desert.**
Ayman Mostafa *(ayman@cals.arizona.edu), Univ. of Arizona, Phoenix, AZ*

2:15 PM **15** **New and old emerging pests in alfalfa in the lower Columbia basin.**
Silvia Rondon *(silvia.rondon@oregonstate.edu), Oregon State Univ., Hermiston, OR*

2:35 PM **16** **Fitting predator and pest phenology in alfalfa management.**
Ricardo Ramirez *(ricardo.ramirez@usu.edu), Utah State Univ., Logan, UT*

2:55 PM **17** **Integrated pest management (IPM) in alfalfa production in California.**
Rachael Long *(rflong@ucanr.edu), Univ. of California Cooperative Extension, Woodland, CA*

3:15 PM **18** **Clover root curculio (*Sitona hispidulus*) life history in the intermountain west.**
Steven Price *(steven.price@usu.edu), Utah State Univ. Extension, Price, UT*

Undergraduate & Masters TMP Competition

Belmont (Hyatt Regency Mission Bay Spa) Moderator:

Todd Murray, Washington State Univ., Pullman, WA

1:30 PM **20** **Testing compatibility of a biocontrol agent of *Halyomorpha halys* with pest management regimes in Pacific Northwest hazelnuts.**
Tatum Keyes *(heather.andrews@oregonstate.edu), David Lowenstein, Erica Rudolph, Anthony Mugica, Heather Andrews and Nik G. Wiman, Oregon State Univ., Aurora, OR*

1:42 PM **21** **Crowdsourcing video data analysis of *Bombus impatiens* behavior in microcolonies.**
Christie Miranda *(christie@ucr.edu), Erica Sarro, Kaleigh Fisher and S. Hollis Woodard, Univ. of California, Riverside, CA*

1:54 PM **22** **Evaluation of pheromone mating disruption for California red scale in commercial citrus in California.**
Joel Leonard *(joelleonard2@gmail.com)[1], David Headrick[1] and Elizabeth Grafton-Cardwell[2], [1]California State Polytechnic Univ., San Luis Obispo, CA, [2]Univ. of California, Riverside, CA*

2:06 PM **23** **Soil temperature modeling to predict emergence of alkali bees (*Nomia melanderi*) in alfalfa seed fields of Washington State.**
Greta Dupuis *(greta.dupuis@wsu.edu) and Doug Walsh, Washington State Univ., Prosser, WA*

2:18 PM **24** **Evaluating the effects of foliar and systemic aerated aqueous vermicompost applications on pest densities and growth of citrus nursery trees.**
Maxwell Lasiter *(mllasiter@cpp.edu), Anna Soper and Valerie Mellano, California State Polytechnic Univ., Pomona, CA*

2:30 PM **25** **Suitability of groundcherry (*Physalis longifolia*) to the potato psyllid and the zebra chip pathogen..**
Cesar Reyes Corral *(reye8940@vandals.uidaho.edu)[1], William Rodney Cooper[2], David R. Horton[2] and Alexander Karasev[1], [1]Univ. of Idaho, Moscow, ID, [2]USDA - ARS, Wapato, WA*

Big or Small She'll Parasitize Them All: Tales and Applications of Host-Parasitoid Relationships

Bayview II (Hyatt Regency Mission Bay Spa)

Moderators and Organizers: David Lowenstein, Oregon State Univ., Aurora, OR and Joshua Milnes, Washington State Univ., Wenatchee, WA

1:30 PM **Introductory Remarks**

1:35 PM **26** **Minute *Anagrus* parasitoids to control big leafhopper problems in California vineyards.**
Houston Wilson *(houston.wilson@ucr.edu)[1], Lucia Varela[2], Glenn McGourty[3], Serguei Triapitsyn[4] and Kent Daane[1], [1]Univ. of California, Parlier, CA, [2]Univ. of California Cooperative Extension, Santa Rosa, CA, [3]Univ. of California Cooperative Extension, Ukiah, CA, [4]Univ. of California, Riverside, CA*

1:55 PM **27** **Invasive ant management for improved biological control of major citrus pests.**
Kelsey Schall *(kscha008@ucr.edu) and Mark Hoddle, Univ. of California, Riverside, CA*

2:15 PM **28** **Host-parasitoid dynamics, and the success of classical biological program: A case study from California citrus.**
Ivan Milosavljević *(ivanm@ucr.edu) and Mark Hoddle, Univ. of California, Riverside, CA*

2:35 PM **29** **Caught in the act: Documenting parasitoids through visual media.**
Heather Andrews *(heather.andrews@oregonstate.edu)[1], Nik G. Wiman[1], James R. LaBonte[2], Erica Rudolph[1] and Anthony Mugica[1], [1]Oregon State Univ., Aurora, OR, [2]Oregon Dept. of Agriculture, Salem, OR*

2:55 PM **30** **Wa wa wa wasps staying alive: The *Trissolcus japonicus* story.**
David Lowenstein *(david.lowenstein@oregonstate.edu), Heather Andrews and Nik G. Wiman, Oregon State Univ., Aurora, OR*

3:15 PM **Break**

3:35 PM **31** **Nonreproductive effects in parasitoid-host associations.**
Paul Abram *(paul.abram@canada.ca), Agriculture and Agri-Food Canada, Agassiz, BC, Canada*

3:55 PM **32** **Ecology of the Asian egg parasitoid, *Trissolcus japonicas* (Ashmead), in Washington State.**
Joshua Milnes *(joshua.milnes@wsu.edu) and Elizabeth Beers, Washington State Univ., Wenatchee, WA*

Innovations in Technology, Information Management, Education and Pest Biology to Build Better Area-Wide Control Programs: Stories Where Our Science Makes a Difference

Palm I (Hyatt Regency Mission Bay Spa)

Organizers: Gregory Simmons, USDA - APHIS, PPQ, CPHST, Salinas, CA; Chuck Burks, USDA - ARS, Parlier, CA and Houston Wilson, Univ. of California, Parlier, CA

1:30 PM **Introductory Remarks**

1:35 PM **33** **Area-wide control programs need area-wide information management, stories from APHIS and cooperator area-wide program and prospects for innovation.**
Gregory Simmons *(Gregory.S.Simmons@aphis.usda.gov), USDA - APHIS, PPQ, CPHST, Salinas, CA*

1:55 PM **34** **Real-time insect surveillance: breaking down barriers to AW-IPM.**
Nancy Schellhorn *(nancy@rapidaim.io), RapidAIM Automated Insect Monitoring and CSRIO, Brisbane, Australia*

2:15 PM **35** **From LA-Trap to Cal-Trap: Development of app-based technology to manage area-wide information for California pest surveillance programs: A story of changing the system.**
Max Regis *(mregis@acwm.lacounty.gov)[1] and Khoa Lam[2], [1]LA County Agricultural Commissioner/Weights and Measures, Arcadia, CA, [2]LA County Agricultural Commissioner/Weights and Measures, Arcadia, CA*

2:35 PM **36** **Mining the data from large-scale area-wide control and surveillance programs: Using the data to build better pest management and eradication programs.**
Tyler Schartel *(tylersch@ucr.edu) and Matt Daugherty, Univ. of California, Riverside, CA*

2:55 PM **37** **Technology Innovations for Development of Successful Area wide Programs for BMSB.**
Danielle Kirkpatrick *(DKirkpatrick@trece.com), Trece, Inc., Adair, OK*

3:15 PM **Break**

3:35 PM **38** **Area-wide control of codling moth in walnuts with mating disruption: The story of keeping worms out of our nuts.**
Chuck Burks *(Charles.Burks@ARS.USDA.GOV), USDA - ARS, Parlier, CA*

3:55 PM **39** **From apples to almonds, documenting successes in area-wide management.**
Bradley Higbee *(bhigbee@trece.com), Trece, Inc., Bakersfield, CA*

4:15 PM **40** **Area-wide management of codling moth in Michigan apples: A story of where doing more is better.**
Peter McGhee *(mcgheeps@gmail.com), Pacific Biocontrol Corporation, Vancouver, OR*

4:35 PM **Panel Discussion**

4:55 PM **Concluding Remarks**

What's New in Industry

Bayview I (Hyatt Regency Mission Bay Spa)

Moderators and Organizers: Jesse Richardson, Corteva Agriscience, Mesa, AZ and Alix Whitener, FMC, Malaga, WA

4:45 PM **41** **Vestaron product update.**
Tim Ksander *(tksander@vestaron.com), Vestaron Corporation, Kalamazoo, MI*

4:52 PM **42** **Marrone Bio Innovations product update.**
Melissa O'Neal *(moneal@marronebio.com), Marrone Bio Innovations, Inc, Davis, CA*

4:59 PM **43** **Bayer CropScience product update.**
Casey Butler *(casey.butler@bayer.com), Bayer CropScience, Arroyo Grande, CA*

5:06 PM **44** **Corteva Agriscience product update.**
Sunil Tewari *(sunil.tewari@corteva.com), Corteva Agriscience, Indianapolis, IN*

5:13 PM **45** **Syngenta product update.**
Christine May *(Christine.May@syngenta.com), Syngenta Crop Protection, LLC, Greensboro, NC*

5:20 PM **46** **FMC product update.**
Alix Whitener *(alix.whitener@fmc.com), FMC, Malaga, WA*

5:27 PM **47** **Trece product update.**
Bill Lingren *(blingren@trece.com), Trece, Inc., Adair, OK*

5:34 PM **48** **BASF product update.**
Kevin Caffrey *(kevin.caffrey@basf.com), BASF Corporation, Clovis, CA*

5:41 PM **49** **Nichino product update.**
John Aigner *(jaigner@nichino.net), Nichino America, Camas, WA*

5:48 PM **50** **Valent product update.**
Allison Walston *(allison.walston@valent.com), Valent USA, Hood River, OR*

5:55 PM **51** **ADAMA product update.**
Mitchell Stamm *(mitch.stamm@adama.com), ADAMA, Raleigh, NC*

TUESDAY/WEDNESDAY, APRIL 2-3, 2019, POSTERS

General Posters / 8:00 AM-6:00 PM

Bayview III (Hyatt Regency Mission Bay Spa)

P22 Tree mortality and drought: Where do we go from here?
Christopher J. Fettig *(cfettig@fs.fed.us)[1] and Leif Mortenson[2], [1]USDA - Forest Service, Davis, CA, [2]USDA - Forest Service, Placerville, CA*

P23 Integrated pest management of mosquitoes: A case study of West Nile virus in California.
Matthew Baur *(mebaur@ucanr.edu)[1], Amanda Crump[2], Steve Elliott[1] and Jim Farrar[2], [1]Western IPM Center, Davis, CA, [2]Univ. of California, Davis, CA*

P24 Transit temperature effects on export concern pests.
Ping Gu *(pggu@ucanr.edu)[1], Yuling Ouyang[2], Sandipa Gautam[1], Elizabeth Grafton-Cardwell[1] and Spencer Walse[3], [1]Univ. of California, Riverside, CA, [2]Univ. of California, Parlier, CA, [3]USDA - ARS, Parlier, CA*

P25 A synthesis of the economic impact of arthropod biological control.
Steven Naranjo *(steve.naranjo@ars.usda.gov)[1], George Frisvold[2] and Peter Ellsworth[3], [1]USDA - ARS, Maricopa, AZ, [2]Univ. of Arizona, Tucson, AZ, [3]Univ. of Arizona, Maricopa, AZ*

P26 Updated California strawberry pest management strategic plan: Evolving priorities.
Marla Livengood[1], ***Peter Shearer*** *(pwsheare@calpoly.edu)[2], Gerald Holmes[2] and Mercy Olmstead[1], [1]California Strawberry Commission, Watsonville, CA, [2]California State Polytechnic Univ., San Luis Obispo, CA*

P27 Measuring the depth of overwintering pupae of the walnut husk fly, *Rhagoletis completa* (Diptera: Tephritidae) in walnut orchard floor.
Jhalendra Rijal *(jrijal@ucdavis.edu), Adriana Medina, Raquel Gomez and Daniel Rivers, Univ. of California Cooperative Extension, Modesto, CA*

P28 Student research and outreach projects focused on better understanding of the Asian citrus psyllid.
Anna Soper *(alsoper@cpp.edu), Benjamin Lehan and Valerie Mellano, California State Polytechnic Univ., Pomona, CA*

P29 Interruption of Asian citrus psyllid mating behavior and improved trapping methods through the use of vibrational signaling.
Benjamin Lehan *(bjlehan@cpp.edu), California State Polytechnic Univ., Pomona, CA*

P30 Chemical control of sugarcane aphid, *Melanaphis sacchari* (Zehntner), (Hemiptera: Aphididae) in forage sorghum in Arizona.
Ayman Mostafa *(ayman@email.arizona.edu), Kyle Harrington and Worku Burayu, The Univ. of Arizona, Phoenix, AZ*

P31 The relationship between arthropod communities and the presence of lichen in oak woodlands.
Elizabeth Reyes Gallegos *(ereyesgallegos@csumb.edu) and Gerick S. Bergsma, California State Univ., Seaside, CA*

P32 Field releases of a shoot-tip galling Tephritid in California, the first biological control for the coastal invader, cape-ivy.
Scott Portman *(scott.portman@ars.usda.gov), USDA - ARS, Albany, CA*

P33 Interactions between *Lepidium latifolium*, *Bagrada hilaris*, and *Albugo lepidii*.
Nastaran Tofangsazi *(Nastaran.Tofangsazi@ARS.USDA.GOV)[1], Paul Pratt[2] and Brian Hogg[2], [1]Invasive Species and Pollinator Health Research Unit, Albany, CA, [2]USDA - ARS, Albany, CA*

P34 Effect of adoption of macro propagation technology on plantain and banana farmers' livelihood in southwest Nigeria.
Ololade Abdulrahman *(latifaht22@yahoo.com)[1], Israel Ogunlade[2], Funmilayo Omotesho[2] and Ismaila Aderolu[1], [1]Kwara State Univ., Ilorin, Nigeria, [2]Univ. of Ilorin, Ilorin, Nigeria*

P35 Screenhouse systems in the tropics: Organic integrated pest management.
Jari Sugano *(suganoj@ctahr.hawaii.edu)[1], Koon-Hui Wang[2], Jensen Uyeda[1], Joshua Silva[3], Theodore Radovich[2] and Gerardo Spinelli[2], [1]Univ. of Hawai'i at Manoa, Wahiawa, HI, [2]Univ. of Hawai'i at Manoa, Honolulu, HI, [3]Univ. of Hawai'i at Manoa, Pearl City, HI*

P36 Promoting conservational biocontrol by using insectary plants in organic lettuce.
Alejandro Del Pozo *(adelpozo@ucanr.edu)[1] and Gina Colfer[2], [1]Univ. of California Cooperative Extension, Salinas, CA, [2]Wilbur-Ellis Company, Salinas, CA*

P37 Do pollinator wildflower plantings increase pest incidence on almond crops?
Colin Fagan *(colinmfagan53@gmail.com), Tina Harrison, Kimiora Ward and Neal Williams, Univ. of California, Davis, CA*

P38 CoFFHI (https://coffhi.cphst.org/): A USDA primary reference in establishing fruit fly regulated host plants.
Nicanor Liquido *(Nicanor.J.Liquido@aphis.usda.gov), USDA - APHIS - PPQ-S&T, Honolulu, HI*

P39 DDRP: Modeling degree-days, risk of establishment, and phenological event maps.
Leonard Coop *(coopl@science.oregonstate.edu), Brittany Barker, Tyson Wepprich and Fritzi Grevstad, Oregon State Univ., Corvallis, OR*

P40 Identification of new sources of resistance to Hessian fly in geographically diverse spring wheat germplasm.
Steven Odubiyi *(stevenodubiyi@uidaho.edu)[1], Alexis Morgan[1], Vincent Oliveras[1], Jianli Chen[2], Michael Pumphrey[3], Arash Rashed[1] and Nilsa A. Bosque-Pérez[1], [1]Univ. of Idaho, Moscow, ID, [2]Univ. of Idaho, Aberdeen, ID, [3]Washington State Univ., Pullman, WA*

P41 Pesticide use trends in California nurseries: Mining the pesticide use reports from CDFA.
H. Alejandro Merchan *(hamercha@ncsu.edu)[1] and Gregory Simmons[2], [1]North Carolina State Univ., Raleigh, NC, [2]USDA - APHIS, PPQ, CPHST, Salinas, CA*

P42 Beyond pesticides: How exclusion affects spotted-wing drosophila (*Drosophila suzukii*: Drosophilidae) damage and yield in blackberry.
Anna Howell *(adhowell@ucanr.edu)[1], Oleg Daugovish[1], Heidi McMahan[2] and Gina Ferrari[3], [1]Univ. of California, Ventura, CA, [2]Ventura College, Ventura, CA, [3]Univ. of California Cooperative Extension, Ventura, CA*

P43 High density genetic linkage map of *Vespula consobrina* wasps.
Alyssa Canova *(acano007@ucr.edu)[1], Kevin Loope[2] and Jessica Purcell[1], [1]Univ. of California, Riverside, CA, [2]Georgia Southern Univ., Statesboro, GA*

P44 Investigating the genetic basis of split sex ratio in *Formica podzolica*.
German Lagunas-Robles *(german.lagunasrobles@email.ucr.edu), Jessica Purcell and Alan Brelsford, Univ. of California, Riverside, CA*

P45 Bees at large: Identifying exotic bees in the United States.
Skyler Burrows *(skyler.burrows@gmail.com)[1], Lori Spears[1], Allan Smith-Pardo[2], Terry Griswold[3], Amanda Redford[4] and Ricardo Ramirez[1], [1]Utah State Univ., Logan, UT, [2]USDA - APHIS, San Francisco, CA, [3]USDA - ARS, Logan, UT, [4]USDA - APHIS, Fort Collins, CO*

P46 Associative learning ability in ants is associated with head size.
Jeneane Hamideh *(jhami006@ucr.edu), Jessica Purcell and Mari West, Univ. of California, Riverside, CA*

TUESDAY, APRIL 2, 2019, MORNING

Innovative Technologies and Methods in Insect Pest Management: Part 1

Belmont (Hyatt Regency Mission Bay Spa)

Organizer: Joanna Bloese, Univ. of California, Davis, CA

8:00 AM **Introductory Remarks**

8:05 AM **52** **The use of non-pesticide management tactics: Evidence and challenges.**
Daniel Klittich *(danny.klittich@redoxchem.com), Redox Chemicals, LLC, Burley, ID*

8:25 AM **53** **Using SADIE analysis and red-blue plots to visualize spatial distribution of *Spissistilus festinus* in a Californian vineyard.**
Cindy Preto *(crpreto@ucdavis.edu), USDA - ARS, Parlier, CA*

8:45 AM **54** **Evaluation of tannic acid effects on alfalfa weevil (Hypera postica) larvae mortality and feeding behavior.**
Jasmin Bonilla *(jramirezbonilla@ucanr.edu), Univ. of California, Sacramento, CA*

9:05 AM **55** **The modern push-pull strategy: A case study in strawberries.**
Emily Bick *(enbick@ucdavis.edu), Univ. of California, Davis, CA*

9:25 AM **56** **Adapting SIR from eradication to IPM: Issues to consider.**
Tobin Northfield *(tnorthfield@wsu.edu)[1], Elizabeth Beers[2], Jay Brunner[2], David Crowder[3] and Vincent Jones[2], [1]James Cook Univ., Cairns, Australia, [2]Washington State Univ., Wenatchee, WA, [3]Washington State Univ., Pullman, WA*

9:45 AM **57** **Lessons from next generation sequencing techniques for gut content analysis in organic cucurbit production.**
Kacie Athey *(kacie.johansen@uky.edu), Eric G. Chapman and Jennifer White, Univ. of Kentucky, Lexington, KY*

10:05 AM **Break**

10:25 AM **58** **The process of discovering a biological control for tadpole shrimp (*Triops longicaudatus*) in California rice.**
Joanna Bloese *(jbbloese@ucdavis.edu), Kevin Goding and Larry Godfrey, Univ. of California, Davis, CA*

10:45 AM **59** **An ecoinformatics approach to pest management in California citrus.**
Bodil Cass *(bncass@ucdavis.edu) and Jay Rosenheim, Univ. of California, Davis, CA*

Communicating Science-Based Pest Management to Urban Audiences

Palm I (Hyatt Regency Mission Bay Spa)

Moderator and Organizer: Karey Windbiel-Rojas, Univ. of California, Davis, CA

8:00 AM **Introductory Remarks**

8:05 AM **60** **Working with multiple stakeholders to drive demand for and adoption of IPM programs in multi-unit housing environments.**
Andrew Sutherland *(amsutherland@ucanr.edu)[1] and Casey Hubble-Wirgler[2], [1]Univ. of California Cooperative Extension, Hayward, CA, [2]Univ. of California Cooperative Extension, Concord, CA*

8:25 AM **61** **Data, perception, and reception: DPR School and Child Care IPM Program's positive approach to stakeholder outreach.**
Michelle Andreetta *(michelle.andreetta@cdpr.ca.gov), California Dept. of Pesticide Regulation, Sacramento, CA*

8:45 AM **62** **Biocontrol of invasive pests in urban areas: How best to communicate research and extension efforts?**
Mark Hoddle *(mark.hoddle@ucr.edu), Univ. of California, Riverside, CA*

9:05 AM **63** **Reaching professional landscapers and home gardeners with IPM strategies for insect pest problems.**
Carrie Foss *(cfoss@wsu.edu), Washington State Univ., Puyallup, WA*

9:25 AM **64** **Communicating mosquito-borne disease risk and control to residents of Orange County, CA.**
Laura Krueger Prelesnik *(lkrueger@ocvector.org), Mary-Joy Coburn, Amber Semrow and Robert Cummings, Orange County Mosquito and Vector Control District, Garden Grove, CA*

9:45 AM **65** **A more successful approach to the Associate Certified Entomologist exam prep.**
Sylvia Kenmuir *(Myrmaid40@gmail.com), BASF Corporation, La Miranda, CA*

10:05 AM **Break**

10:25 AM **66** **Keeping the audience awake and focused: Balancing fun and science.**
Siavash Taravati *(staravati@ucanr.edu), Univ. of California, Alhambra, CA*

10:45 AM **67** **Communicating relevant science-based information to structural pest management professionals.**
Dong-Hwan Choe *(dchoe003@ucr.edu), Univ. of California, Riverside, CA*

11:05 AM **68** **Educating retail nurseries, master gardeners, and the general public about pesticides.**
Karey Windbiel-Rojas *(kwindbiel@ucanr.edu), Univ. of California Cooperative Extension, Davis, CA*

11:25 AM **Panel Discussion**

11:45 AM **Concluding Remarks**

Using Advanced Tools to Study the Brain, Sensory Physiology, and Behavior of Insects

Palm II (Hyatt Regency Mission Bay Spa)

Organizers: Majid Ghaninia, Arizona State Univ., Tempe, AZ and Walter Leal, Univ. of California, Davis, CA

8:00 AM **Introductory Remarks**

8:05 AM **69** **Functional imaging of odor-evoked activity and neuromodulation in the mosquito antennal lobe.**
Gabriella Wolff *(gabwolff@uw.edu) and Jeff Riffell, Univ. of Washington, Seattle, WA*

8:25 AM **70** **Reception and perception of DEET.**
Walter Leal *(wsleal@ucdavis.edu), Univ. of California, Davis, CA*

8:45 AM **71** **Plasticity of cuticular hydrocarbon detection in ants.**
Majid Ghaninia *(Majid.Ghaninia@asu.edu), Arizona State Univ., Tempe, AZ*

9:05 AM **72** **Tuning a sensory system to fast-changing important patterns: Plasticity in early olfactory processing.**
Brian Smith *(brianhsmith@asu.edu), Arizona State Univ., Tempe, AZ*

9:25 AM **Break**

9:45 AM **73** **Translating laboratory-based learning behaviors into ecological hypotheses.**
Chelsea Cook *(cncook1@asu.edu)[1], Jürgen Gadau[1], Hong Lei[1], Cahit Ozturk[1], Colin Brent[2], Noa Pinter-Wollman[3] and Brian Smith[1], [1]Arizona State Univ., Tempe, AZ, [2]USDA - ARS, Maricopa, AZ, [3]Univ. of California, Los Angeles, CA*

10:05 AM **74** **Differential encoding of familiarity and novelty in the early stage of olfactory processing in honeybees.**
Hong Lei *(hlei7@asu.edu), Arizona State Univ., Tempe, AZ*

10:25 AM **75** **Computational neurobiology.**
Tatyana Sharpee *(sharpee@salk.edu), Univ. of California, San Diego, CA*

10:45 AM **76** **Using microfabricated surfaces to study the biomechanics of locomotion.**
Catherine Loudon *(cloudon@uci.edu), Univ. of California, Irvine, CA*

11:05 AM **Concluding Remarks**

Recent Trends in Pollinator Health and Management

Bayview I (Hyatt Regency Mission Bay Spa)

Organizers: Priyadarshini Chakrabarti, Oregon State Univ., Corvallis, OR and Ramesh Sagili, Oregon State Univ., Corvallis, OR

8:00 AM **Introductory Remarks**

8:05 AM **77** **The impact of viruses on honey bees at the colony, individual, and cellular levels.**
Michelle Flenniken *(michelle.flenniken@montana.edu), Alexander McMenamin, Fenali Parekh and Katie Daughenbaugh, Montana State Univ., Bozeman, MT*

8:25 AM **78** **Longitudinal evaluation of honey bee colonies with access to supplemental forage in almond orchards.**
Elina Niño *(elnino@ucdavis.edu), Univ. of California, Davis, CA*

8:45 AM **79** **Challenges and sustainability of commercial beekeeping and pollination in the United States.**
Ramesh Sagili *(ramesh.sagili@oregonstate.edu), Carolyn Breece, Priyadarshini Chakrabarti and Hannah Lucas, Oregon State Univ., Corvallis, OR*

9:05 AM **80** **Lethal and sublethal synergistic effects of a new systemic pesticide, flupyradifurone (Sivanto®) on honey bees.**
James Nieh *(jnieh@ucsd.edu) and Simone Tosi, Univ. of California, La Jolla, CA*

9:25 AM **81** **It's complicated: How pesticide applicators understand pollinator hazards expressed on pesticide labels.**
Andony Melathopoulos *(andony.melathopoulos@oregonstate.edu)[1], Rose Kachadoorian[2] and Matthew Bucy[1], [1]Oregon State Univ., Corvallis, OR, [2]Oregon Dept. of Agriculture, Salem, OR*

9:45 AM **82** **The omics approach to pollinator nutrition.**
Priyadarshini Chakrabarti *(priyadarshini.chakrabarti@oregonstate.edu) and Ramesh Sagili, Oregon State Univ., Corvallis, OR*

10:05 AM **Break**

10:25 AM **83** **The exciting potential for commercial indoor storage of honey bee colonies and carbon-based feed supplements for pesticide risk reduction.**
Brandon Hopkins *(bhopkins@wsu.edu) and Waled Suliman, Washington State Univ., Pullman, WA*

10:45 AM 84 **Understanding the multi-host multi-parasite system with *Bombus* as a model system.**
James Strange *(james.strange@ars.usda.gov) and Amber Tripodi, USDA - ARS, Logan, UT*

11:05 AM 85 **Signals under stress: honey bee communication and coordination in changing landscapes.**
Mark J. Carroll *(mark.carroll@ars.usda.gov) and Nicholas Brown, USDA - ARS, Tucson, AZ*

11:25 AM 86 **The honey bee microbiome in health and disease.**
Kirk E. Anderson *(kirk.anderson@ars.usda.gov)[1], Amy Floyd[2], Duan Copeland[2], Patrick Maes[3] and Brendon Mott[4], [1]North Dakota State Univ., Fargo, ND, [2]Univ. of Arizona, Tuscon, AZ, [3]Carl Hayden Bee Research Center, Tucson, AZ, [4]USDA - ARS, Tucson, AZ*

11:45 AM 87 **Designing forage habitat to benefit pollinators and pollination: What and where to plant.**
Neal Williams *(nmwilliams@ucdavis.edu)[1] and Eric Lonsdorf[2], [1]Univ. of California, Davis, CA, [2]Univ. of Minnesota, St. Paul, MN*

Mighty Spider Mites

Bayview II (Hyatt Regency Mission Bay Spa)

Organizers: Doug Walsh, Washington State Univ., Prosser, WA and Elizabeth Beers, Washington State Univ., Wenatchee, WA

8:40 AM **Introductory Remarks**

8:45 AM 88 **California strawberries.**
Anna Howell *(adhowell@ucanr.edu), Univ. of California, Ventura, CA*

9:05 AM 89 **Spider mite management in annual specialty crop production: Lessons from the Southeast.**
Rebecca Schmidt-Jeffris *(rschmi3@clemson.edu)[1], Paul Bergeron[2], Monica Farfan[3] and Matthew Cutulle[3], [1]USDA - ARS, Wapato, WA, [2]Clemson Univ., Clemson, SC, [3]Clemson Univ., Charleston, SC*

9:25 AM 90 **Acaricide resistance markers.**
Adekunle Adesanya *(adekunle.adesanya@wsu.edu), Washington State Univ., Pullman, WA*

9:45 AM 91 **Avocados.**
Mark Hoddle *(mark.hoddle@ucr.edu), Univ. of California, Riverside, CA*

10:05 AM **Break**

10:25 AM 92 **Spider mites on Hops..**
Doug Walsh *(dwalsh@wsu.edu), Washington State Univ., Prosser, WA*

10:45 AM 93 **Almonds.**
David Haviland *(dhaviland@ucdavis.edu), Univ. of California Cooperative Extension, Bakersfield, CA*

11:05 AM 94 **PNW tree fruits.**
Elizabeth Beers *(ebeers@wsu.edu), Washington State Univ., Wenatchee, WA*

11:25 AM **Concluding Remarks**

Innovative Technologies and Methods in Insect Pest Management: Part 2

Belmont (Hyatt Regency Mission Bay Spa)

Organizers: Kelsey Schall, Univ. of California, Riverside, CA and Mark Hoddle, Univ. of California, Riverside, CA

11:05 AM **Introductory Remarks**

11:10 AM 95 **Towards digital quantification of Argentine ants.**
Shailendra Singh *(shail@farmsense.io)[1,2], Allen Bagby[1], Renjie Wu[1], Kelsey Schall[1], Michael Lewis[1], Eamonn Keogh[1,2] and Mark Hoddle[1], [1]Univ. of California, Riverside, CA, [2]FarmSense, Riverside, CA*

11:30 AM 96 **Studying insect behavior and predation in the age of digital surveillance.**
Ivan Milosavljević *(ivanm@ucr.edu) and Mark Hoddle, Univ. of California, Riverside, CA*

11:50 AM **Lunch**

1:30 PM 97 **Advancing IPM implementation using pesticide effects models, spray records, and site-specific weather data.**
Vincent Jones *(vpjones@wsu.edu)[1], Matthew Jones[2] and Stefano Borghi[1], [1]Washington State Univ., Wenatchee, WA, [2]Washington State Univ., Pullman, WA*

1:50 PM 98 **Short circuiting the educational process - using a decision support system to advance IPM in Washington and British Columbia tree fruit.**
Matthew Jones *(matthew.s.jones@wsu.edu)[1], Vincent Jones[2] and Stefano Borghi[2], [1]Washington State Univ., Pullman, WA, [2]Washington State Univ., Wenatchee, WA*

2:10 PM 99 **Improved monitoring systems for potato pests in the Columbia Basin.**
Silvia Rondon *(silvia.rondon@oregonstate.edu), Oregon State Univ., Hermiston, OR*

2:30 PM **Concluding Remarks**

TUESDAY, APRIL 2, 2019, AFTERNOON

Communicating Science in a Fake News, Emotional World

Palm I (Hyatt Regency Mission Bay Spa)

Moderators and Organizers: Allison Walston, Valent USA, Hood River, OR and Laura Lavine, Washington State Univ., Pullman, WA

1:30 PM **Welcoming Remarks**

1:35 PM **100** **The science of talking science and the importance of science communication.**
Katherine Wu *(katherine_wu@wgbh.org), PBS NOVA, Boston, MA*

2:35 PM **Break**

2:50 PM **101** **Detroit Hives: Work hard, stay bumble!.**
Timothy Paule *(honey@detroithives.com), Detroit Hives, Detroit, MI*

3:50 PM **Discussion**

Climate Change Impacts on Integrated Pest Management

Bayview II (Hyatt Regency Mission Bay Spa)

Organizers: Casey Butler, Bayer CropScience, Arroyo Grande, CA and Sanford D. Eigenbrode, Univ. of Idaho, Moscow, ID

1:30 PM **Introductory Remarks**

1:35 PM **102** **Climate change and California agriculture: Past and the future.**
Tapan Pathak *(tpathak@ucmerced.edu)[1], Mahesh Maskey[2], Jeffrey Dahlberg[3], Faith Kearns[4], Khaled Bali[3] and Daniele Zaccaria[2], [1]Univ. of California, Merced, CA, [2]Univ. of California, Davis, CA, [3]Kearney Agricultural Research and Extension Center, Parlier, CA, [4]Univ. of California, Oakland, CA*

1:55 PM **103** **Understanding the effects of climate on Pierce's disease epidemiology.**
Matt Daugherty *(matt.daugherty@ucr.edu)[1] and Rodrigo P. P. Almeida[2], [1]Univ. of California, Riverside, CA, [2]Univ. of California, Berkeley, CA*

2:15 PM **104** **Climate change implications for managing codling moth pest pressures in the Pacific Northwest US.**
Kirti Rajagopalan *(kirtir@wsu.edu)[1], Vincent Jones[2] and Hossien Noorazar[1], [1]Washington State Univ., Pullman, WA, [2]Washington State Univ., Wenatchee, WA*

2:35 PM **105** **Implementing season-long weather and climate forecasts for pest and crop phenology models.**
Leonard Coop *(coopl@science.oregonstate.edu), Oregon State Univ., Corvallis, OR*

2:55 PM **106** **Climate change and the abundance-suitability relationship for light brown apple moth in California.**
Nicholas J. Mills *(nmills@berkeley.edu), Univ. of California, Berkeley, CA*

3:15 PM **107** **Climate change and insects affecting dryland cereal systems of the inland Pacific Northwest.**
Sanford D. Eigenbrode *(sanforde@uidaho.edu)[1], Jessica Kalin[1] and Subodh Adhikari[2], [1]Univ. of Idaho, Moscow, ID, [2]Montana State Univ., Bozeman, MT*

3:35 PM **108** **Climate change impacts on western forest insects and their management.**
Christopher J. Fettig *(cfettig@fs.fed.us), USDA - Forest Service, Davis, CA*

General Paper Session 1

Palm II (Hyatt Regency Mission Bay Spa)

Moderator: Emily Bick, Univ. of California, Davis, CA

1:30 PM **109** **Isoclast® active for managing *Lygus hesperus* in California and Arizona crops.**
Jesse Richardson *(jesse.richardson@corteva.com)[1], Alistair McKay[2], Peter Ellsworth[3], Michael Rethwisch[4], Mark Bolda[5], Treanna Pierce[6] and Shine Taylor[7], [1]Corteva Agriscience, Mesa, AZ, [2]Corteva Agriscience, Clovis, CA, [3]Univ. of Arizona, Maricopa, AZ, [4]Univ. of California Cooperative Extension, Blythe, CA, [5]Univ. of California, Watsonville, CA, [6]Univ. of California, Shafter, CA, [7]Corteva Agriscience, Bradenton, FL*

1:42 PM **110** **Citrus thrips (*Scirtothrips citri*), an emerging pest of mid to late season cotton in the low desert.**
Michael Rethwisch *(mdrethwisch@ucanr.edu) and Kassandra Allan, Univ. of California Cooperative Extension, Blythe, CA*

1:54 PM **111** **Addressing armyworms in rice through research and outreach.**
Luis Espino *(laespino@ucanr.edu), Univ. of California Cooperative Extension, Colusa, CA*

2:06 PM **112** ***Vitis vinifera* as a reproductive host of *Spissistilus festinus*, a vector of *Grapevine red blotch virus*.**
Cindy Preto *(crpreto@ucdavis.edu), USDA - ARS, Parlier, CA*

2:18 PM **113** **Thrips of cultivated Fabaceae at Biskra region (Algeria).**
Sabah Razi *(sabah_razi@yahoo.fr), Univ. of Biskra, Biskra, Algeria*

2:30 PM **114** **Two molecular diagnostic tools for lepidopteran pests of California tree nuts.**
Jacob Wenger *(jawenger@csufresno.edu)[1], Rohith Vulchi[1] and Kent Daane[2], [1]California State Univ., Fresno, CA, [2]Univ. of California, Parlier, CA*

2:42 PM **115** **Cross border effects and management of fall armyworm (FAW), *Spodoptera frugiperda* (J. E. Smith) on maize in a changing world.**
Ismaila Aderolu *(adeisma@yahoo.com) and Nafisat Bello, Kwara State Univ., Ilorin, Nigeria*

2:54 PM **116** **Comparative toxicity and side-effects of insecticides on the invasive pink hibiscus mealybug, *Maconellicoccus hirsutus* (Hemiptera: Pseudococcidae).**
Fatemeh Ganjisaffar *(fatemeh.ganjisaffar@email.ucr.edu), Sharon Andreason and Thomas M. Perring, Univ. of California, Riverside, CA*

3:06 PM **117** **Evaluation of tannic acid effects on alfalfa weevil (*Hypera postica)* larvae mortality and feeding behavior.**
Jasmin Ramirez Bonilla *(jramirezbonilla@ucdavis.edu)[1], Daniel Putnam[1], Kevin Goding[1], Rachael Long[2] and Ian Grettenberger[1], [1]Univ. of California, Davis, CA, [2]Univ. of California Cooperative Extension, Woodland, CA*

3:18 PM **Break**

3:38 PM **118** **Field spatial scale and predator colonization behavior mediates pest suppression in diversified agroecosystems.**
John Banks *(jebanks@csumb.edu), California State Univ., Seaside, CA*

3:50 PM **119** **Biorational solutions for the western grapeleaf skeletonizer, a re-emerging pest in California grapes.**
Surendra K. Dara *(skdara@ucdavis.edu)[1], Suchitra S. Dara[2] and Stefan T. Jaronski[3], [1]Univ. of California Cooperative Extension, San Luis Obispo, CA, [2]Global Agricultural Solutions, Bakersfield, CA, [3]USDA - ARS, Sidney, MT*

4:02 PM **120** **Population-level outcomes of differential susceptibility among life stages of the aphid parasitoid, *Diaeretiella rapae* to pesticides.**
John Stark *(starkj@wsu.edu), Washington State Univ., Puyallup, WA*

4:14 PM **121** **Demonstration and Implementation of IPM in Almonds in the San Joaquin Valley.**
Stephanie Rill *(smrill@ucdavis.edu)[1], David Haviland[1] and Jhalendra Rijal[2], [1]Univ. of California Cooperative Extension, Bakersfield, CA, [2]Univ. of California Cooperative Extension, Modesto, CA*

4:26 PM **122** **Modelling biotic interactions of phytophagous insect pests across an agriculturally-dominated landscape.**
Javier Illan *(javier.illan@wsu.edu)[1], David Crowder[1], Elias Bloom[1], Carrie Wohleb[2], Silvia Rondon[3], Andrew Jensen[4] and William Snyder[1], [1]Washington State Univ., Pullman, WA, [2]Washington State Univ., Moses Lake, WA, [3]Oregon State Univ., Hermiston, OR, [4]Washington State Potato Commission, Moses Lake, WA*

4:38 PM **123** **Evaluation of a Novel Biological Peptide Insecticide for Greenhouse and Field Use.**
Tim Ksander *(tksander@vestaron.com), Vestaron Corporation, Kalamazoo, MI*

4:50 PM **124** **Laboratory and field evaluation of a novel food-grade behavior disruptor as a management tool for spotted-wing drosophila, *Drosophila suzukii*.**
Marco Valerio Rossi Stacconi *(marco.stacconi@oregonstate.edu)[1], Clive Kaiser[2], Gabriella Tait[3], Ryan Chave[1], Rachel Blood[1] and Vaughn Walton[1], [1]Oregon State Univ., Corvallis, OR, [2]Oregon State Univ., Milton Freewater, OR, [3]Udine Univ., Udine, Italy*

5:02 PM **125** **The response of bumble bees (*Bombus vosnesenskii*) to fire revealed via genetic mark-recapture.**
John Mola *(johnmmola@gmail.com) and Neal Williams, Univ. of California, Davis, CA*

Bee Biology, Pollination and Conservation: A Symposium Honoring Robbin W. Thorp

Bayview I (Hyatt Regency Mission Bay Spa)

Organizer: Neal Williams, Univ. of California, Davis, CA

1:30 PM **Introductory Remarks**

1:35 PM **126** **Reassembling pollinator communities and functions in intensively-managed agricultural landscapes.**
Claire Kremen *(ckremen@berkeley.edu), Univ. of British Columbia, Vancouver, BC, Canada*

1:55 PM **127** **Understanding the scope and causes of western bumble bee (*Bombus occidentalis*) declines.**
James Strange *(james.strange@ars.usda.gov)[1], Jonathan Koch[2] and Ashley Rhode[3], [1]USDA - ARS, Logan, UT, [2]Univ. of Hawai'i at Hilo, Hilo, HI, [3]Utah State Univ., Logan, UT*

2:15 PM **128** **Oligolectic bees: How they select their host flowers.**
Heidi Dobson *(dobsonhe@whitman.edu), Whitman College, Walla Walla, WA*

2:35 PM **129** **Nearctic bees: A half century of investigations in biodiversity and taxonomy.**
Terry Griswold *(terry.griswold@ars.usda.gov), USDA - ARS, Logan, UT*

2:55 PM **130** **Buzzworthy? Using volunteers to conduct a multi-state bumble bee (*Bombus* spp.) atlas in the Pacific Northwest.**
Rich Hatfield *(rich@xerces.org)[1], Sarina Jepsen[1], Ross Winton[2] and Ann Potter[3], [1]The Xerces Society for Invertebrate Conservation, Portland, OR, [2]Idaho Dept. of Fish and Game, Jerome, ID, [3]Washginton Dept. of Fish and Wildlife, Olympia, WA*

3:15 PM **Break**

3:35 PM **131** **Does bumble bee (*Bombus* spp.) emergence timing predict community composition?**
Gretchen LeBuhn *(lebuhn@sfsu.edu)[1], Rich Hatfield[2], Erin Elsey[1] and Jennifer VanWyk[3,4], [1]San Francisco State Univ., San Francisco, CA, [2]The Xerces Society for Invertebrate Conservation, Portland, OR, [3]California State Univ., Chico, CA, [4]Univ. of Massachusetts, Amherst, MA*

3:55 PM **132** **Solitary bee nest parasite *Meloe franciscanus* is adaptively polyphenic to its local hosts across its geographic range.**
Leslie Saul-Gershenz *(lsaulgershenz@ucdavis.edu), Robbin W. Thorp and Thomas Zavortink, Univ. of California, Davis, CA*

4:15 PM **133** **Habitat gardening for pollinators produces expected and unexpected results.**
Gordon W. Frankie *(gwfrankie@berkeley.edu)[1], Robbin W. Thorp[2], M Chase, Jaime Pawelek[1], Ben Faber[4], M. Rizzardi[5] and Rollin Coville[1], [1]Univ. of California, Berkeley, CA, [2]Univ. of California, Davis, CA, [3]Univ. of California Cooperative Extension, Ventura, CA, [4]Humboldt State Univ., Arcata, CA*

4:35 PM **134** **Resource timing and life history allocation in bees.**
Neal Williams *(nmwilliams@ucdavis.edu), Univ. of California, Davis, CA*

4:45 PM **Concluding Remarks**

Bridging the Gap Between Molecular Techniques and Ecological Questions

Belmont (Hyatt Regency Mission Bay Spa)

Moderator and Organizer: Karol Krey, USDA - ARS, Wapato, WA

2:40 PM **Introductory Remarks**

2:45 PM **135** **Transcript analysis of potato psyllid (*Bactericera cockerelli*) salivary glands.**
Karol Krey *(karol.krey@gmail.com) and William Rodney Cooper, USDA - ARS, Wapato, WA*

3:00 PM **136** **Mating behavior and antennal responses of male moths explained by sex pheromone receptor specificity.**
Kevin Wanner *(kwanner@montana.edu)[1], Thomas C. Baker[2] and Charles E. Linn[3], [1]Montana State Univ., Bozeman, MT, [2]Pennsylvania State Univ., Univ. Park, PA, [3]Cornell Univ., Geneva, NY*

3:15 PM **Break**

3:35 PM **137** **Comparison of bacterial endosymbionts among six species of triozidae (Hemiptera).**
William Rodney Cooper and ***Karol Krey*** *(karol.krey@gmail.com), USDA - ARS, Wapato, WA*

3:50 PM **138** ***Wolbachia* drives the genetic integration of vector populations.**
Zhen Fu *(zhen.fu@wsu.edu), Washington State Univ., Pullman, WA*

4:05 PM **139** **Understanding plant virus communities in the keystone perennials of a Mediterranean-climate biodiversity hot spot.**
Kerry Mauck *(kerry.mauck@ucr.edu)[1], Tessa Shates[1], Penglin Sun[1] and Carolyn M. Malmstrom[2], [1]Univ. of California, Riverside, CA, [2]Michigan State Univ., East Lansing, MI*

4:20 PM **140** **Molecular mechanisms underlying function and evolution of insect extended phenotypes.**
Chaoyang Zhao[1], Josh Wemmer[2] and ***Paul Nabity*** *(pauln@ucr.edu)[2], [1]Purdue Univ., West Lafayette, IN, [2]Univ. of California, Riverside, CA*

4:35 PM **141** **Application of molecular tools to plant insect vector ecology.**
Sean Prager *(sean.prager@usask.ca), Univ. of Saskatchewan, Saskatoon, SK, Canada*

4:50 PM **142** **High resolution melt curves used in ecological studies: examples from biological control.**
Richard Stouthamer *(richard.stouthamer@ucr.edu) and Paul F. Rugman-Jones, Univ. of California, Riverside, CA*

5:05 PM **Concluding Remarks**

WEDNESDAY, APRIL 3, 2019, MORNING

Use of Models in Entomological Research

Palm II (Hyatt Regency Mission Bay Spa)

Moderator and Organizers: Emily Bick, Univ. of California, Davis, CA and Miles Dakin, Univ. of California, Davis, CA

8:00 AM **Introductory Remarks**

8:05 AM **143** **An agent-based model of disease-induced cannibalism.**
Michael Culshaw-Maurer *(mjculshawmaurer@ucdavis.edu), Univ. of California, Davis, CA*

8:25 AM **144** **Timing the implementation of cultural practices using a degree day model for *Spissistilus festinus* in California vineyards.**
Cindy Preto *(crpreto@ucdavis.edu), USDA - ARS, Parlier, CA*

8:45 AM **145** **Using survival models in entomological research with case studies.**
Hanna Kahl *(hkahl@ucdavis.edu), Univ. of California, Davis, CA*

9:05 AM **146** **Can pollinator visitation and pollen transport patterns predict plant pollination.**
Maureen Page *(mpage@ucdavis.edu)[1], Karen Goodell[2] and Neal Williams[1], [1]Univ. of California, Davis, CA, [2]The Ohio State Univ., Newark, OH*

9:25 AM **147** **Toward computational morphology: Modeling anatomical evolution and phylogeny..**
Brendon Boudinot *(beboudinotb@ucdavis.edu), Univ. of California, Davis, CA*

9:45 AM **148** **Using a simulation model to help quantify the economic impact of *Peristenus relictus* establishment on host *Lygus* spp. populations in California strawberry.**
Diego J. Nieto *(dnieto@ucsc.edu)[1] and Emily Bick[2], [1]Driscoll's, Watsonville, CA, [2]Univ. of California, Davis, CA*

10:05 AM **149** **Optimizing an agroecosystem using simulation models: A case study in California strawberries.**
Emily Bick *(enbick@ucdavis.edu), Univ. of California, Davis, CA*

General Paper Session 2

Bayview II (Hyatt Regency Mission Bay Spa)

Moderators: James Hepler, Washington State Univ., Wenatchee, WA and Adrian Marshall, Washington State Univ., Wenatchee, WA

8:00 AM **150** **Use of hypochlorous acid (HOCL) for chalkbrood control in managed bees..**
Ellen Klinger *(Ellen.Klinger@ars.usda.gov) and Diana Cox-Foster, USDA - ARS, Logan, UT*

8:12 AM **151** **Prospects for biological control of bagrada bug in California.**
Brian Hogg *(brian.hogg@ars.usda.gov)[1], Ian Grettenberger[2] and Charles H. Pickett[3], [1]USDA - ARS, Albany, CA, [2]Univ. of California, Davis, CA, [3]California Dept. of Food and Agriculture, Sacramento, CA*

8:24 AM **152** **Assessment of impacts of entrance modifications on colony establishment and honeybee pest management in Nigeria.**
Akeem Oyerinde *(oyerindehyphae2002@gmail.com)[1], Theresa Omara-achong[2] and Abdrahman Lawal[1], [1]Univ. of Abuja, Abuja, Nigeria, [2]Raw Material Research and Development Council, Abuja, Nigeria*

8:36 AM **153** **A gut analysis technique for identifying egg-specific predation event.**
James Hagler *(james.hagler@ars.usda.gov)[1] and Ayman Mostafa[2], [1]USDA - ARS, Maricopa, AZ, [2]The Univ. of Arizona, Phoenix, AZ*

8:48 AM **154** **The gut microbiome & aging plasticity: Stability in the honey bee (*A. mellifera*) gut microbiota with prolonged life expectancy.**
Patrick Maes *(pmaes@email.arizona.edu), Carl Hayden Bee Research Center, Tucson, AZ*

9:00 AM **155** **Effects of Various Miticides on *Brevipalpus californicus* (Acari: *Tenuipalpidae*) *and Lorryia formosa* (Acari: *Tydeidae*).**
Yuling Ouyang *(yulouyang@ucanr.edu)[1], Ping Gu[2], Sandipa Gautam[2] and Elizabeth Grafton-Cardwell[2], [1]Univ. of California, Parlier, CA, [2]Univ. of California, Riverside, CA*

9:12 AM **156** **Shared genes involved in resistance to Bt cotton in pink bollworm selected in the lab and field.**
Jeffrey Fabrick *(jeff.fabrick@ars.usda.gov)[1], Xianchun Li[2], Yves Carrière[2] and Bruce Tabashnik[2], [1]USDA - ARS, Maricopa, AZ, [2]Univ. of Arizona, Tucson, AZ*

9:24 AM 157 Insights from invasive species: Identifying the genetic basis of a recently evolved social phenotype.
Jessica Purcell *(jessica.purcell@ucr.edu)[1], Kevin Loope[2] and Erin Wilson Rankin[1], [1]Univ. of California, Riverside, CA, [2]Georgia Southern Univ., Statesboro, GA*

9:36 AM 158 Behavioral manipulation of *Drosophila suzukii* exposed to different oviposition substrates.
Rachele Nieri *(nierir@oregonstate.edu)[1], Hunter Cromwell[1], Vaughn Walton[1], Marco Valerio Stacconi[1] and Nik G. Wiman[2], [1]Oregon State Univ., Corvallis, OR, [2]Oregon State Univ., Aurora, OR*

9:48 AM 159 Rearing methods for brown marmorated stink bug, *Halyomorpha halys*, on live host plants.
Adelaine Abrams *(aeabrams@ucdavis.edu)[1,2] and Spencer Walse[2], [1]Univ. of California, Davis, CA, [2]USDA - ARS, Parlier, CA*

10:00 AM Break

10:20 AM 160 Plant – mediated effects of *Potato virus Y* on zebra chip pathosystem.
Regina Cruzado[1], Sean Prager[2], Clare Casteel[3], Nilsa A. Bosque-Pérez[4] and ***Arash Rashed*** *(arashed@uidaho.edu)[4], [1]Univ. of Idaho, Aberdeen, ID, [2]Univ. of Saskatchewan, Saskatoon, SK, Canada, [3]Univ. of California, Davis, CA, [4]Univ. of Idaho, Moscow, ID*

10:32 AM 161 Investigating ecological factors underlying shifts in colony structure in native and introduced populations of *Vespula pensylvanica*.
Erin Wilson Rankin *(erin.rankin@ucr.edu)[1], Penglin Sun[1] and Kevin Loope[1,2], [1]Univ. of California, Riverside, CA, [2]Georgia Southern Univ., Statesboro, GA*

10:44 AM 162 Improving production efficiency of *Tamarixia radiata,* a parasitoid of the Asian citrus psyllid *Diaphorina citri*, under greenhouse conditions.
Raju Pandey *(raju@citrusresearch.org)[1], Ruth Henderson[1], Gregory Simmons[2] and David Morgan[3], [1]Citrus Research Board, Riverside, CA, [2]USDA - APHIS, PPQ, CPHST, Salinas, CA, [3]California Dept. of Food and Agriculture, Riverside, CA*

10:56 AM 163 Developing an efficient field cage insectary system for mass-production of *Tamarixia radiata*, a parasitoid of the Asian citrus psyllid *Diaphorina citri*.
Ruth Henderson *(ruth@citrusresearch.org)[1], Raju R. Pandey[1] and Gregory Simmons[2], [1]Citrus Research Board, Riverside, CA, [2]USDA - APHIS, Salinas, CA*

11:08 AM 164 The vibrational mating duet and the potential for a vibrational pest management strategy of treehopper pests.
Rachele Nieri *(nierir@oregonstate.edu)[1], Daniel Dalton[1], Jessica Buser[1], Samantha Nizich[1], Nik G. Wiman[2] and Vaughn Walton[1], [1]Oregon State Univ., Corvallis, OR, [2]Oregon State Univ., Aurora, OR*

11:20 AM 165 Identification and characterization of the first molluscan GPCRs for PRX family peptides in the gray garden slug, *Deroceras reticulatum*.
Seung-Joon Ahn *(seungjoon.ahn@ars.usda.gov)[1] and Man-Yeon Choi[2], [1]Oregon State Univ., Corvallis, OR, [2]USDA - ARS, Corvallis, OR*

11:32 AM 166 Discovery of bioactive peptides through a novel G-protein coupled receptor-based screening..
Man-Yeon Choi *(MYChoi@ARS.USDA.GOV), USDA - ARS, Corvallis, OR*

Working out the Bugs: Multidisciplinary Approaches to Unraveling Insect-Microbe Symbioses

Palm I (Hyatt Regency Mission Bay Spa)

Moderators and Organizers: Kaleigh Russell, Univ. of California, Riverside, CA and Christine Dodge, Univ. of California, Riverside, CA

8:00 AM Welcoming Remarks

8:05 AM 167 Nutritional interactions between tsetse flies and their obligate symbiont *Wigglesworthia* – insights from transcriptomic and metabolomic analyses.
Geoffrey Attardo *(gmattardo@ucdavis.edu)[1], XiaoLi Bing[2], Aurélien Vigneron[3], Emre Aksoy[4], Francesca Scolari[5], Anna Malacrida[5], Brian Weiss[3] and Serap Aksoy[3], [1]Univ. of California, Davis, CA, [2]Cornell Univ., Ithaca, NY, [3]Yale Univ., New Haven, CT, [4]Univ. of California, Riverside, CA, [5]Univ. of Pavia, Pavia, Italy*

8:25 AM **168** **The dark matter underlying insect-microbe interactions in sap-feeding insects.**
Dohyup Kim *(do.kim007@email.ucr.edu) and Allison Hansen, Univ. of California, Riverside, CA*

8:45 AM **169** **Evolutionary origins and integration of two ancient and obligate symbionts in the leafhopper host, *Macrosteles quadrilineatus* (Hemiptera: Cicadellidae).**
Gordon Bennett *(gbennett2@ucmerced.edu) and Meng Mao, Univ. of California, Merced, CA*

9:05 AM **170** **Small RNAs in small genomes: Unravelling the role of small RNAs in hemipteran bacterial symbionts.**
Margaret Thairu *(mthai005@ucr.edu) and Allison Hansen, Univ. of California, Riverside, CA*

9:25 AM **171** **In vitro methods to elucidate interactions in an ambrosia beetle-fungus complex.**
Christine Dodge *(cdodg001@ucr.edu)[1], Joseph Carrillo[1], Akif Eskalen[2] and Richard Stouthamer[1], [1]Univ. of California, Riverside, CA, [2]Univ. of California, Davis, CA*

9:45 AM **172** **Arthropods are provided with superpowers by their associated microbes: A tale of a coffee pest, a wood-feeding beetle, and soil arthropods.**
Javier Ceja-Navarro *(jcnavarro@lbl.gov), Abelardo Arellano and Leila Ramanculova, Lawrence Berkeley National Laboratory, Berkeley, CA*

10:05 AM **Break**

10:25 AM **173** **A gut feeling: The response of core gut microbiome communities to their host's environment.**
Amanda Hale *(ahale004@ucr.edu), Univ. of California, Irvine, CA*

10:45 AM **174** **Trick or treat: The effects of climate change on floral microbes and nectar reward.**
Kaleigh Russell *(kruss002@ucr.edu) and Quinn McFrederick, Univ. of California, Riverside, CA*

11:05 AM **175** **Migratory pollinators and microbial symbionts.**
Quinn McFrederick *(quinnmc@ucr.edu)[1], Kristal Watrous[2], Kyle Parks[3] and Erin E. Wilson-Rankin[1], [1]Univ. of California, Riverside, CA, [2]Pennsylvania State Univ., Univ. Park, PA, [3]Univ. of Illinois, Champaign, IL*

11:25 AM **176** **Unanswered questions after 30 years of Parthenogenesis-Inducing *Wolbachia* research in parasitoids.**
Richard Stouthamer *(richard.stouthamer@ucr.edu), Univ. of California, Riverside, CA*

11:45 AM **Concluding Remarks**

Agricultural Trade Barrier Pests – Significance, Challenges, and Management

Bayview I (Hyatt Regency Mission Bay Spa)

Moderator and Organizers: Sandipa Gautam, Univ. of California, Riverside, CA and Elizabeth Grafton-Cardwell, Univ. of California, Riverside, CA

8:00 AM **Introductory Remarks**

8:05 AM **177** **The challenge of disinfesting citrus fruit of Asian citrus psyllid to move it between quarantine areas.**
Elizabeth Grafton-Cardwell *(eegraftoncardwell@ucanr.edu), Univ. of California, Riverside, CA*

8:25 AM **178** **Alternatives to meeting quarantine requirements for exported fruits and vegetables.**
Lisa Neven *(lisa.neven@ars.usda.gov), USDA - ARS, Wapato, WA*

8:45 AM **179** **California citrus export trade issues: pests of concern, harmful organisms list, work plan pest list requirements.**
John Loyd *(john.e.loyd@aphis.usda.gov), USDA - APHIS, Fresno, CA*

9:05 AM **180** **Postharvest treatment research at USDA ARS.**
James Kawagoe[1] *(jckawagoe@ucdavis.edu) and Spencer Walse[2] (spencer.walse@ars.usda.gov), [1]Univ. of California, Davis, CA, [2]USDA - ARS, Parlier, CA*

9:25 AM **181** **Insects and mites of export concern in fresh citrus - ecology, biology, significance, and management options.**
Sandipa Gautam *(sangautam@ucanr.edu) and Elizabeth Grafton-Cardwell, Univ. of California, Riverside, CA*

9:45 AM **182** **What do we know about the BMSB invasion to agricultural areas in upper San Joaquin Valley, California.**
Jhalendra Rijal *(jrijal@ucanr.edu), Univ. of California Cooperative Extension, Modesto, CA*

10:05 AM **183** **Developing ethyl formate fumigation for cut flower exports in Hawaii.**
Dong H. Cha *(dong.cha@ars.usda.gov)[1], Byung-Ho Lee[1], Sandra Silva[1], Maryann Villalun[1] and Marisa Wall[2], [1]USDA - ARS, Hilo, HI, [2]USDA-ARS, Hilo, HI*

10:25 AM **Concluding Remarks**

Arthropod Pest Management in Cannabis

Belmont (Hyatt Regency Mission Bay Spa)

Organizers: Houston Wilson, Univ. of California, Parlier, CA; Kent Daane, Univ. of California, Parlier, CA; Mark Hoddle, Univ. of California, Riverside, CA and Monique Rivera, Univ. of California, Riverside, CA

8:30 AM **Introductory Remarks**

8:35 AM **184** **Survey of cannabis production and key arthropod pests in California.**
Houston Wilson *(houston.wilson@ucr.edu) and Kent Daane, Univ. of California, Parlier, CA*

8:45 AM **185** **Insect pest management needs identified in Colorado hemp production.**
Whitney Cranshaw *(Whitney.Cranshaw@colostate.edu) and Melissa Schreiner, Colorado State Univ., Fort Collins, CO*

9:15 AM **186** **Usual and unusual suspects: Key arthropod pests of cannabis in California.**
Kelly Vance *(kmvance@insectary.com), Beneficials Insectary, Redding, CA*

9:35 AM **187** **Pesticide residues in medicinal & recreational marijuana: How "high" should our concern be?**
Allan Felsot *(afelsot@wsu.edu), Washington State Univ., Richland, WA*

9:55 AM **188** **Cannabis and pesticides.**
Rachel Kubiak *(Rachel.Kubiak@cdpr.ca.gov), California Dept. of Pesticide Regulation, Sacramento, CA*

10:15 AM **189** **Cannabis ecology: A practical approach to optimizing arthropod interactions.**
Bethany Johnston *(drbug2847@gmail.com) and Aaron Appleby, Cannabis Farmers Council, Pullman, WA*

NOTES:

Author Index

Numbers represent oral or poster presentation number.

Author Index

Scientific Name Index

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- Currency: USD
- Climate: mild, sunny weather throughout the year
- Visa: Please refer to your local travel consultant for visa information prior to travel

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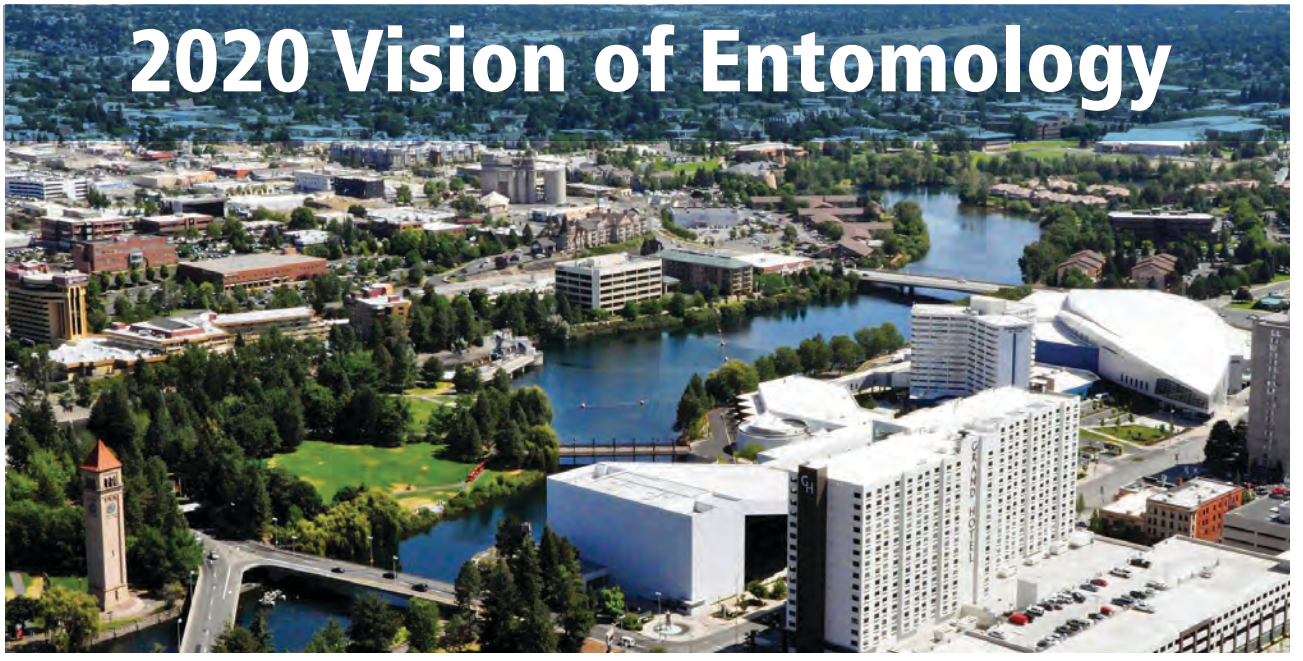

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