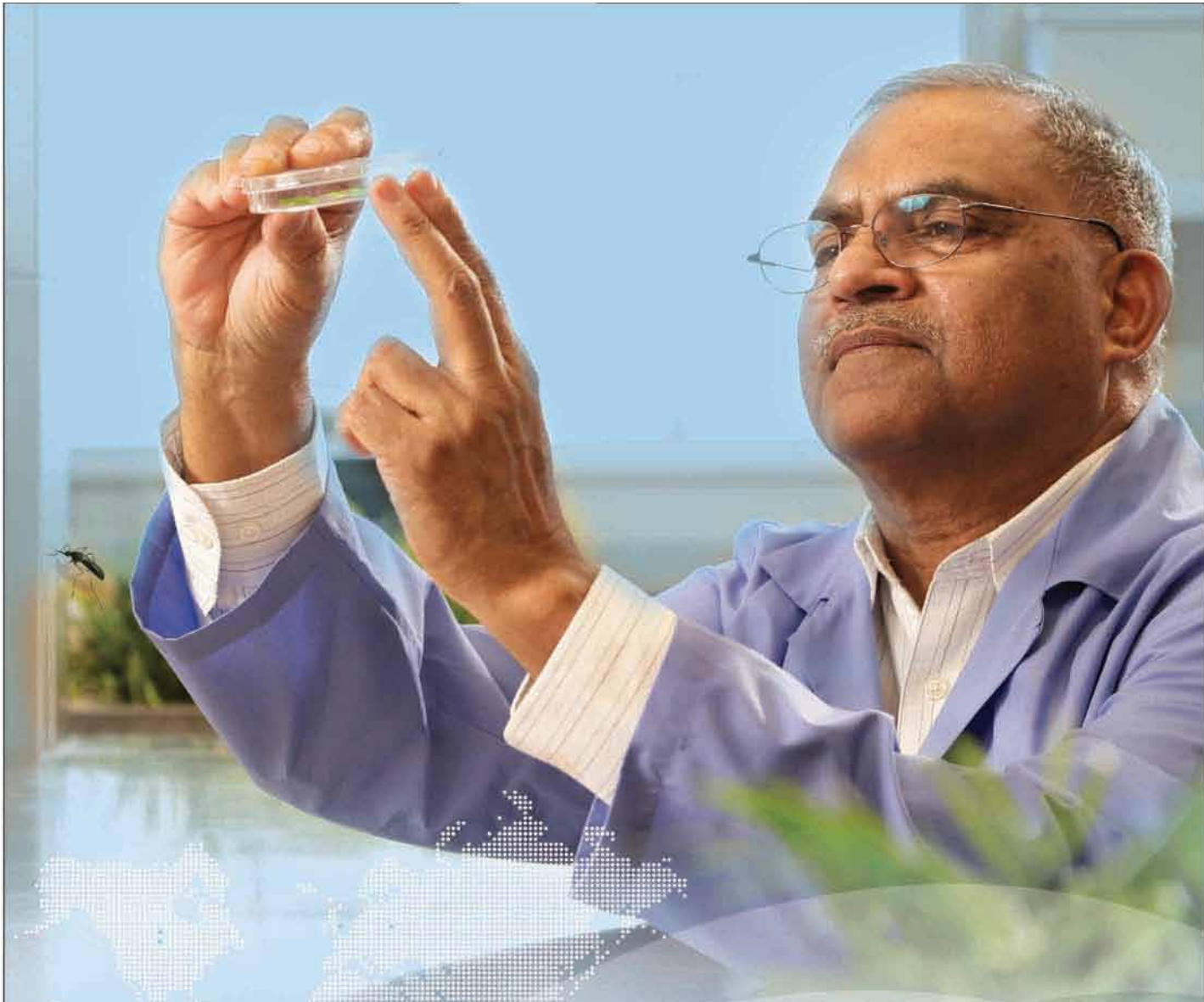


The 59th Annual Meeting of the Entomological Society of America

November 13-16, 2011
Reno-Sparks Convention Center
Reno, Nevada





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ENTOMOLOGY 2011

59th Annual Meeting of the Entomological Society of America

November 13–16, 2011
The Reno-Sparks Convention Center
Reno, Nevada

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President's Message

Welcome to Reno and **Entomology 2011** – the 59th Annual Meeting of the Entomological Society of America!

This is the fourth time we have met in Reno for our Annual Meeting. The first three were in 1986, 1991, and 2008, under Presidents Lowell R. Nault ("Skip"), William A. Allen, and Mike Gray, respectively. It's interesting to note that the membership in those years was 7,721, 7,052, and 6,056, and our current membership is 6,410. Although the increase from 2008 is slight, the trend is in the right direction, and we all have a role to play in helping to make ESA more relevant to new students and non-traditional members. Many societies of our size are seeing declining membership and weak budgets, and we are strong in both of these key measures.

Themes, Subthemes, and ESA Goals. We have an exciting program again this year, with a unique mixture of social and scientific issues, and three Plenary Sessions. The meeting theme for Entomology 2011 is "*Identify... Clarify... Speak Out!*" This reflects the need for entomologists to inform others about exactly what it is that we do and don't do. Rapid communication on key issues has not been a hallmark of ESA, and our voices need to be heard, individually and collectively. Arthropods touch the lives of every person on the planet, every day, in both positive and negative ways. Let's talk about how entomology is the encompassing discipline for many of these interactions.

There are three subthemes for Entomology 2011, each aligned with one of our new goals. The first subtheme is "*Entomology and Social Responsibility*," an area where there is an important nexus of science and society. Three of the six Program Symposia, one of the Section Symposia, and several Member Symposia and submitted papers and posters deal with this issue. These are particularly exciting symposia, because an ESA National Meeting has never had this degree of focus on social issues. One issue of particular visibility is the dominance of white males in elected leadership positions in ESA. Therefore, I proposed a new ESA goal that in 10 years the leadership of ESA will look like the membership of ESA.

The second subtheme of the meeting is "*Providing Informed, Objective, and Timely Communication*," which relates to the second new ESA goal, that ESA will increasingly become known as a society that provides objective, timely information for the policymakers and the public on important scientific issues. Many of the Program, Section and Member Symposia, plus oral presentations and posters, focus on the role of entomology in key issues such as invasive species; integrated pest management; international collaboration; students and young professionals; food safety; food security; agricultural and environmental sustainability; climate change; Homeland Security; human and animal diseases; systematics and taxonomy; and other priority areas.

The third subtheme of the meeting is "*Increasing Global Involvement*," which is related to the third new goal, for ESA to engage even more formally with other entomological groups at all levels. Our new International Branch is key to this activity. Several activities around this subtheme have been developed for *Entomology 2011* and into the future.

Keynote address. During the Opening Plenary Session, at 6:00 pm on Sunday, November 13, Ms. Christianne Corbett, a research associate at the American Association of University Women, will discuss women in leadership positions in scientific societies. Ms. Corbett is



Ernest S. Delfosse

co-author of *Where the Girls Are: The Facts About Gender Equity in Education* and the book *Why So Few? Women in Science, Technology, Engineering, and Mathematics*. Both of these books are available as free downloads, and I recommend that you check them out before the meeting.

Founder's Memorial Award Lecture. Dr. Angela Douglas, Daljit S. & Elaine Sarkaria Professor of Insect Physiology and Toxicology at Cornell University, will present the lecture in honor of Professor Reginald Chapman. This presentation will be the highlight of the second evening Plenary Session, starting at 5:00 pm on Monday, November 14.

Symposia. There will be 86 Symposia offered during Entomology 2011 (six Program Symposia, 35 Section Symposia, and 45 Member Symposia). The Program Symposia are: 1) *Identifying the Current Status of Women in Entomology, Clarifying Initiatives for Retention, and Speaking Out to Share Experience* (organized by Patricia Prasifka and Rayda K. Krell); 2) *Identify, Clarify, Speak Out: Turning Young People onto Science Through Insects and Ensuring a Future for Entomology!* (Sharron Quisenberry and Thomas A. Green); 3) *Citizen Scientists in Entomology Research* (John Carlson and Mark S. Fox); 4) *Bee Declines I - Identification, Clarification, and Communication of the Real Truths* (Rosalind James, Jeff Pettis, Theresa Pitts-Singer, and James Strange); 5) *The Molecular Physiology of Arthropod Vectors and Pests: Towards the Development of Novel Control Agents and Approaches* (Peter M. Piermarini); and 6) *Basic Science to Application for Management of Bed Bug Populations* (Kenneth F. Haynes, Subba R. Palli, Michael F. Potter, and James D. Harwood).

Virtual Posters. For the third straight year, there will be Virtual (electronic) Posters presented at Entomology 2011. You will be able to view posters from international colleagues who could not attend the meeting, and even discuss the posters with them via streaming video at specific times. This is a great way for the international scientific community to participate in the meeting and interact with attendees at the meeting.

Student Activities. Monday will again focus on student activities. Last year the suggestion was made by many students to try not to schedule student presentations and posters at the same time. Thus, this became a priority for me this year. The Program Committee, led by Co-chairs Andrew Norton and Paul Ode, has been able to make this scheduling change. Student papers will be in the morning, and student posters will start during lunch, and be up for viewing all afternoon. We will also focus on highlighting student activities in the lead-up to Entomology 2011, in *eNews* and in my occasional column, *JustDel*.

An Exciting Exhibit Hall. Once again, our exhibit hall will be packed with the latest products and services serving the field of entomology. These include the latest publications, research support materials, specimens, software, instrumentation, educational products, pest control services, educational institutions, recruitment companies, and much more. In addition, vendors showcasing a variety of insect jewelry, T-shirts, art, and novelty items will help you with your early holiday shopping.

Section Meetings. Section meetings and symposia will take place on Tuesday, November 14, from 2:00 – 4:30 pm. There will be no competing activities during this time period, and I encourage you to take

President's Message continued

an active role in your Section, and consider running for an elected office, or volunteer for a committee.

ESA is a society of volunteers. Last year, over 400 members—14% of the attendees—volunteered their time by serving on committees, judging student papers or posters, chairing student paper sessions, working at the help desk, etc. for the Annual Meeting. Our meetings could not be run without this cadre of dedicated people, and I thank them all very much on behalf of ESA for their service.


I am especially grateful to the Annual Meeting Program Committee: Student Competition Co-Chairs Jerome Grant and Michael Jackson; Poster Co-Chairs Megha Parajulee and Bonnie Pendleton; Section Presidents and Vice-Presidents, respectively, Douglas E. Norris and Christopher Geden (Medical, Urban, and Veterinary Entomology); Jeffrey Scott and Subba Palli (Physiology, Biochemistry and Toxicology); Rogers Leonard and Bonnie Pendleton (Plant-Insect Ecosystems); and Jason Cryan and Kelly Miller (Systematics, Evolution and Biodiversity); Student Liaison Cheri Abraham; and Director of Meetings Keith Schlesinger and Meetings Assistant Cassie Mescher.

Finally, the meeting would not be possible without the expertise and professionalism of the entire ESA staff, particularly staff liaisons Mary Falcone and Debi Sutton, and new Executive Director David Gammel.

Entomology 2011 Program Co-Chairs Andrew Norton and Paul Ode have earned my highest accolades for their dedication. There are literally thousands of details that Program Co-Chairs for a large meeting like this must handle, and they have done so quickly and with good humor. The success of Entomology 2011 is largely due to their magnificent service, so please thank them personally in Reno.

We've tried a number of new things for Entomology 2011. I hope you find the meeting challenging, interesting, informative, and fun, and that it helps you *Identify, Clarify, and Speak Out!* about entomological issues. See you in Reno!

Hang in There!



Ernest S. Delfosse, 2011 ESA President

ESA Program Committee Co-Chairs' Welcome

On behalf of the entire program committee, we welcome you to the 59th Annual Meeting of the Entomological Society of America. In recent years this has become the largest annual meeting of entomologists in the world and this year's meeting promises to be no different. Our meeting continues to grow. This year there are over 2,200 presentations from entomologists from all 50 states and 37 countries. With this many presentations we have a full day's schedule for each of the four days of the meeting.

At the close of last year's annual meeting, current President Ernest Delfosse introduced the theme for Entomology 2011: "Identify... Clarify... Speak Out!" The motivation behind this theme comes from our strong belief that as entomologists we must do more to communicate our positions and take stands on the important social, policy, and scientific issues that face us all. One aspect of this theme looks outward. As scientists we must become better at communicating our results with the public and with policy makers. This theme also calls on us to look inward and to identify, clarify and speak out about barriers to diversity within the scientific community. At the opening plenary session, Ms. Christianne Corbett will address the society on the topic of "why so few", an analysis of why there are so few women scientists and engineers relative to other professions. We encourage you to read President Delfosse's message for more on this year's theme.

At the beginning of this year the Program Committee solicited proposals for symposia that best exemplified this theme. We have selected six Program Symposia, 35 Section Symposia, and 45 Member Symposia. Many of these symposia are excellent examples of how we, as a society, can provide cutting-edge information to inform



Paul Ode and Andrew Norton

policy decisions. There are many great examples of this throughout the program. Some examples include:

- Basic Science to Application for Management of Bed Bug Populations
 - Bee Declines: Identification, Clarification, and Communication of the Real Truths
 - The Molecular Physiology of Arthropod Vectors and Pests: Towards the Development of Novel Control Agents and Approaches
 - Biodiversity, Global Change and Insect-Mediated Ecosystem Services
- Many symposia demonstrate the ways that as entomologists we can broaden our impact. A few great examples are:
- Citizen Scientists in Entomology Research
 - Identifying the Current Status of

- Women in Entomology, Clarifying Initiatives for Retention, and Speaking Out to Share Experience
- Identify, Clarify, Speak Out: Turning Young People Onto Science Through Insects and Ensuring a Future for Entomology!
- Speak Out – Interaction and Education in a Brave New World of Social Media and Online Resources

In addition, we are delighted to have three special symposia. The first is "Impacts of the March 2011 Japanese Earthquake and Tsunami on Entomologists, Research, and Society" and promises to provide a comprehensive view of how this tragic earthquake has affected both insects, entomologists, the scientific community and society as a whole. The second special symposium, "An Eisnerian View of Nature: a Tribute to the Life and Work of Thomas Eisner", honors the scientific contributions of the late Thomas Eisner with presentations by former students and colleagues of this amazing entomologist. Finally, the 5,000 Insect Genome Project (i5k) will hold an information session and workshop on this exciting new initiative.

Students, both graduate and undergraduate, continue to play a vital role in our Society and this is reflected throughout our annual meeting. This year, we have 392 ten-minute talks scheduled in the student competition for the President's Prize on Monday morning. We have 190 competition posters, which will be available for viewing all day Monday. We look forward to an exciting student debate on the "Land Grant Mission, Organic Agriculture, and Host Plant Resistance Programs" on Tuesday afternoon and the Linnaean Games on Sunday (preliminary rounds) and Tuesday evening (final rounds).

Another unique aspect of this year's program is a series of 'Lunch and Learn' sessions held each day of the meeting. These are intended to be informal sessions where people can grab lunch from vendors located throughout the convention center and listen/participate in a variety of sessions ranging from 'Working with the Media' to a discussion with this year's plenary speaker, Christianne Corbett on 'Why so Few' women are in positions of leadership in the sciences to 'Interviewing Strategies'. These informal sessions should provide something for everyone, so grab your lunch and learn!

We continue to take advantage of recent technology to improve the program. As in previous years, 'virtual posters' will provide an opportunity for even more overseas entomologists to present their work. Attendees of the meeting in Reno will be able to view the posters in Reno and interact remotely with the presenters to discuss their research. Also, we have dedicated one room at the conference site to handle remote video-audio links enabling international speakers to speak and interact with the audience in Reno from a location abroad in real time. Both capabilities will strengthen the presence of ESA internationally.

Finally, it has been a pleasure working with the entire program planning committee. This year's program committee includes Student Competition Co-chairs (and next year's program co-chairs) Jerome Grant and Michael Jackson, Poster Co-chairs (and last year's program chairs) Megha Parajulee and Bonnie Pendleton, MUVE (Medical, Urban, and Veterinary Entomology) Section President Douglas Norris and Vice-President Christopher Geden, PBT (Physiology, Biochemistry, and Toxicology) Section President Jeffrey Scott and Vice-President Subba Palli, P-IE (Plant-Insect Ecosystems) Section President B. Rogers Leonard and Vice-President Bonnie Pendleton, and SEB (Systematics, Evolution, and Biodiversity) Section President Jason Cryan and Vice-President Kelly Miller, and Student Liaison Cheri Abraham. President Delfosse has been an active member of the committee throughout the process. Thanks also to the Technology Committee, chaired by Roger Moon, for their efforts in making sure the presentation preview room, moderator training and virtual posters all operate smoothly. Special thanks go to Whitney Cranshaw, Chair of the Common Names of Insects committee, Boris Kondratieff and Frank Peairs for assistance in proofing and editing this year's program.

We are particularly indebted to Director of Meetings Keith Schlesinger and Meetings Assistant Cassie Mescher along with ESA staff members Mary Falcone, Debi Sutton, and the new Executive Director David Gammel. When you see each of these individuals in Reno, please thank them in person.

We look forward to seeing you all in Reno!

Paul Ode and Andrew Norton
2011 Entomology Program Co-chairs



Standing (left to right): Bonnie Pendleton, Chris Geden, Doug Norris, Jerome Grant, Subba Reddy Palli, Jeffrey Scott, Jason Cryan, Kelly Miller, Cheri Abraham, Andrew Norton, Rogers Leonard. Seated (left to right): Megha Parajulee, Cassie Mescher (ACSESS), Mike Jackson, Paul Ode, Ernest 'Del' Delfosse.

ABOUT RENO

Reno

Welcome to Reno, the “The Biggest Little City in the World”, host to Entomology 2011! And thanks for participating in ESA’s 59th Annual Meeting. Before the late 1950s, Reno was the gambling capital of the United States. It boasts over 300 sunny days each year, and offers an abundance of dining options, 24-hour entertainment (the number-one tourist attraction is gambling), and outdoor recreation that includes North America’s highest concentration of ski and snowboard resorts. It’s an exciting city and great setting for Entomology 2011.

Reno was established in 1868, and even at 220,000 residents, it is an easy city to navigate. If you are new to the city or to the ESA Annual Meeting, you’ll want to take advantage of the Lunch & Learn program on Sunday at 12:15 pm entitled, “How to Navigate the Annual Meeting and How to Get the Most Out of ESA”. Grab some lunch, take a seat, become familiar with highlights of the meeting, learn how to get around the facility and downtown Reno, and get tips from a local entomologist on where to eat and what to see (along with discounted coupons!).

The two host hotels for Entomology 2011—Atlantis Casino Resort Spa and Peppermill Resort Spa Casino (see next page for detail) are less than two miles from the airport and both offer complimentary shuttle service to/from the airport. The weather in Reno for mid-November is generally cool, as daytime highs average 55°F (13°C), but nighttime temperatures average a chilly 26°F (-3°C). Precipitation for the month of November averages 0.8 inches (2 cm).

Entomology 2011 takes place just outside ‘downtown’ Reno at the modern Reno-Sparks Convention Center. Connected by a skybridge to the Convention Center, the Atlantis Casino Resort Spa offers beautiful meeting rooms, well-appointed sleeping rooms, and convenience to ESA’s meeting attendees. And the Peppermill Resort Spa Casino, which offers additional sleeping rooms, is located just a few blocks away and will have complimentary shuttle service to and from the Convention Center each day. Offering top-notch amenities and friendly service (including FREE Wi-Fi throughout), these facilities will allow attendees many opportunities to relax, unwind, and catch up with friends and colleagues while attending to the business of the meeting. The hotels are just a 10 minute ride from the airport. For more details on these hotels, see “Hotels” in this section of the Program Book.

Parking

Both the Atlantis and Peppermill Resorts offer free parking for their guests. Parking in the general parking lots of the Convention Center costs \$7.00 per vehicle per entry with no in-out privileges.

Transportation

Air

Reno-Tahoe International Airport (RNO) welcomes all the major carriers from around the United States each day, with many non-stops and arrival times to select from. The airport operates 72 daily departures nonstop to 15 cities. With just one stop through ten major hubs, visitors to Reno-Tahoe can connect to hundreds of domestic and international destinations, making travel to the region easily accessible. In addition, recognizing the value in airline frequent flyer and loyalty programs, Reno-Tahoe maintains strong partnerships with the leading domestic carriers including but not limited to American Airlines, United Airlines, US Air, Delta and Southwest Airlines.

The airport is a model of smooth operations recognized as the fifth most efficient airport in North America by the Air Transportation Research Society. In fact, Reno-Tahoe was ranked ahead of other regional airports including Las Vegas, San Francisco and Seattle.

Ground By Train

Amtrack’s California Zephyr, which arrives daily from the Bay Area and Sacramento to the west and Salt Lake, Denver and Chicago to the east, offers convenient service to Reno. Trains from the Northwest, coastal southern California and the Central Valley connect to the Zephyr in Sacramento.

By Car

For those wishing to drive, Reno and Sparks are located at the junction of Interstate 80 and U.S. 395. It’s an easy and scenic drive from most of the 11 western states. I-80 provides all-weather access via Donner Summit from central and northern California. From southern California, it’s a straight shot up U.S. 395 along the dramatic eastern front of the Sierra Nevada. From the Northwest, take I-5 south to I-80 or, in good weather, opt for the scenic shortcut that leaves I-5 at Mount Shasta and follow California 89 and 44 southeast through Susanville.

If you choose to drive, the following contacts may be helpful:

Road Conditions	Phone Number	Web Site
Nevada DOT	1-877-687-6237	Nevada Department of Transportation Road 24 hour Road Conditions.
Caltrans	1-800-427-ROAD	California Department of Transportation Road 24 hour Road Conditions.
RTC	1-775-348-7433	Regional Transportation Commission - Public transportation and road project information.

Taxi Service and Limousines

Alpine Taxi

Reno, NV 1-775-833-4433

Capitol Cab Company

Reno, NV 1-775-885-0300

De Luxe Taxi/Star/Yellow Service

Sparks, NV 1-775-355-5555

Minden Taxi Ltd.

Gardnerville, NV 1-775-265-7060

Reno-Sparks Cab Company

Reno, NV 1-775-333-3333

Reno-Tahoe Limousine

Reno/Sparks 1-775-348-0868

Tahoe/Truckee 1-530-582-1300

Star Taxi Company

Sparks, NV 1-775-355-5555

Whittlesea Checker Taxi

Reno, NV 1-775-322-2222

Yellow Cab Company

Reno, NV 1-775-831-8294

Yellow Cab Company

Stateline, NV 1-775-588-1234

Public Transportation

RTC Ride / RTC Sierra Spirit
1-775-348-7433
<http://www.rtcwashoe.com>

Hotels

Atlantis Casino Resort Spa

300 South Virginia Street
Reno, NV 89502
1-775-825-4700

Atlantis Casino Resort Spa recently completed a \$100 million expansion, including a 27,000-square-foot addition with a new Grand Ballroom, eight new meeting/break-out rooms and a high-tech executive boardroom. The new Manhattan Deli serves up authentic New York deli-style menu items in a 160-seat full-service restaurant, while Bistro Napa offers a taste of the wine country with a fresh, organically inspired menu. The property also added an all-new spa with state-of-the-art fitness equipment, an Aqua Lounge complementing the indoor and outdoor pools and exclusive spa services in opulently appointed treatment rooms. A 20,000-square-foot casino addition includes a new race and sports book, a sports bar and lounge, and a poker room. The property has also invested several million dollars on renovations in the hotel rooms, lobby and corridors as well as remodeling the existing casino and the seafood steakhouse. The hotel offers free Wi-Fi to all guests in sleeping and meeting rooms, and free valet and self parking.

The Sky Bridge connects the casino resort to the Reno-Sparks Convention Center. Leave your coat in your room as the bridge is fully enclosed and climate controlled. The Atlantis offers complimentary

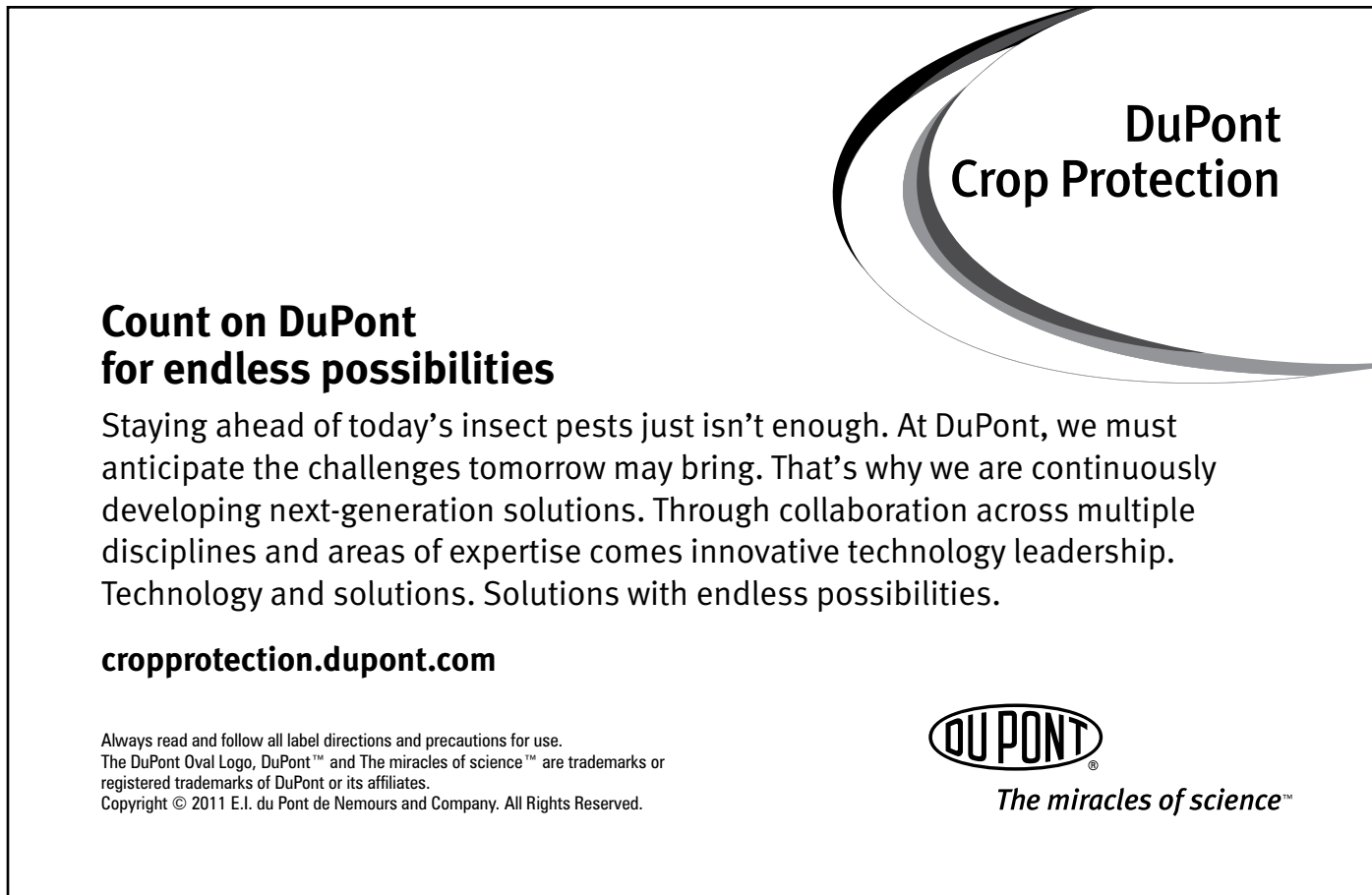
shuttle service *from* the airport 15 minutes before the hour and 15 minutes after the hour. The shuttle service *to* the airport leaves the front door on the hour and 30 minutes after the hour. The service is available from 5:00 am to midnight seven days a week.

Peppermill Resort Spa Casino

2707 South Virginia Street
Reno, NV 89502
1-866-821-9996

The Peppermill recently unveiled a new all-suite hotel tower and a 62,000-square-foot ballroom, which was part of a \$400 million expansion/renovation. The new Tuscany hotel tower added 600 rooms. Suites range in size from 550 square feet to 2,200 square feet and offer contemporary luxury amenities such as pillow-top king-sized beds, custom-made furniture, marble showers and European-style soaking tubs. The hotel offers free Wi-Fi to all guests in sleeping rooms, and free parking. The expansion also includes a Tuscan garden where guests are able to unwind with cabanas, Jacuzzis and three pools. The garden also serves as an outdoor setting for private events and parties. Honoring the old-world tradition of restorative spa treatments, improvements include a three-story spa and salon in addition to a new nightclub and steakhouse. There will be free shuttle service to and from the Convention Center. Please look for the signs and schedules posted in the registration area. The Peppermill is also only about a 20 minute walk to the Convention Center.

The Peppermill offers complimentary shuttle service *from* the airport 15 minutes before the hour and 15 minutes after the hour. The shuttle service *to* the airport leaves the front door on the hour and 30 minutes after the hour. The service is available from 4:00 am to midnight seven days a week.




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GENERAL INFORMATION

ESA Registration and Information Desk

Registration will be held at the Reno-Sparks Convention Center, Concourse C, inside the main entrance during the following hours:

Saturday, November 12, 2:00 pm – 6:00 pm
 Sunday, November 13, 7:00 am – 9:00 pm
 Monday, November 14, 7:00 am – 5:00 pm
 Tuesday, November 15, 7:00 am – 5:00 pm
 Wednesday, November 16, 7:30 am – 1:30 pm

Information and Registration Phone number: 1-775-236-1200
 Attendees can pick up their registration materials at the Registration Center. ESA staff are always available here to answer your questions.

*Note: Pre-registrants may pick up their Annual Meeting badge and credentials from 10:00 am – 2:00 pm on Saturday near the main entrance to the Convention Center.

Cancellation and Refund Policy

ESA will honor cancellation refunds in full for its Annual Meeting until 5:00 pm EST, October 3, 2011. Partial refunds will be granted for requests submitted from October 4-11, 2011. No refunds will be granted for cancellations received after October 11, 2011. Please submit cancellation requests via email to esa@signatures.com, or to wwilloughby@entsoc.org. Requests can also be faxed to 1-301-731-4538.

Information Desk

The Information Desk is part of the ESA Registration Center and will be staffed the same hours as registration. Stop by and let us help you!

Business Center

The Business Center is located in Concourse A across from Exhibit Halls 1-2. This is the concourse leading to and from the Atlantis Casino Resort Spa. Copying and shipping services are available here during normal business hours. Phone number: 1-775-236-1220.

Career Center

Exhibit Hall 3 is the site for all of the action in the Career Center. Drop off your resume or review current position openings. Operating hours are:
 Sunday, November 13, 10:00 am - 2:00 pm (outside the entrance to Exhibit Hall 3)
 Sunday, November 13, 7:30pm - 9:30 pm
 Monday, November 14, 9:00 am - 6:00 pm
 Tuesday, November 15, 9:00 am - 6:00 pm
 Wednesday, November 16, 9:00 am - 2:00 pm

Coat/Bag Check

Attendees will be able to check their coat and bags at the Coat/Bag Check located across from the ESA Registration Center, in the Convention Center, Concourse C. ESA provides this complimentary service to you.

Cyber Café

If you left your laptop at home, we still have you covered. Just head to the rear of the ESA Exhibit Hall (Hall 3) during regular exhibit hours where you can use the computer stations located in the Cyber Café to check your email.

Daily Announcements and Messages

In addition to using the Entomology 2011 mobile app, you may check last-minute announcements and messages on the bulletin board located outside the Preview Presentation Room (PPR), Convention Center, Room A7.

ESA Central Booth

Be sure to stop by the ESA booth #210 in the center of the Exhibit Hall. Come rest your feet, meet with colleagues and friends, learn about the certification program, and spend time talking with the headquarters staff.

You may also renew your membership (and receive a nice gift), purchase a 2012 World of Insects calendar, take a chance at winning a prize during the annual Treasure Chest Drawing, and learn more about what the Society has to offer. **We have a special gift for the first 100 members to stop by and renew their membership or join for 2012!**

Special Events in the ESA booth:

Monday, November 14, 9:00 am – 11:00 am: pick up a complimentary copy of the American Association for University Women's "Why So Few?" report, and have Christi Corbett autograph it for you! (limited quantity available)

Tuesday, November 15, 11:00 am – Noon: Loree Griffin Burns, scientist/writer and speaker at the Entomological Foundation-sponsored symposium will be signing copies of her childrens book "The Hive Detectives: Chronicle of a Honey Bee Catastrophe." Pick up a complimentary copy of this exciting book for ages 10 and up (limited quantity available).

Be sure to be in the ESA booth on Wednesday at 1:00 pm for the annual **Treasure Chest Drawing** where you'll have the opportunity to win valuable prizes donated by our exhibitors, or a \$200 Visa gift card! Drop off and the ticket you received with your badge in the prize hopper. You must be present on Wednesday to win – good luck!

Alpha Scents, Inc. has donated a product sampler gift pack valued at \$75, Barnhill Fine Arts Studios has provided several beautiful bronze sculptures and paperweights, and CRC Press: Taylor & Francis Group has donated several books for the Treasure Chest Drawing, and there will be many other nice items!

First Aid

If first aid services are needed while in the Convention Center, please pick up the nearest house phone and dial 1 or from a cell phone call 1-775-827-7629. Please be ready to explain 1) your exact location, 2) the nature of the emergency, 3) whether the patient is conscious, and 4) whether there are life-threatening injuries, bleeding, etc.

Global Pavilion

Stop by this new area in ESA's Exhibit Hall showcasing international committees, societies, and more. Visit with representatives from the International Congress of Entomology, ESA's new International Branch, the Committee on International Affairs, and others. And take time to view the research of entomologists outside of North America who couldn't attend the ESA Annual Meeting in person at the Virtual Poster area located adjacent to the Global Pavilion.

Guest Hospitality

Registered guests are allowed access to the exhibit hall, Welcome Reception, three plenary sessions, the Linnaean Games, the Student Awards program, and to the presentation given by the primary registrant. For more information, please visit the ESA Registration Area.

Internet Access

New this year!! ESA will be offering complimentary Wi-Fi throughout the Convention Center, including the Exhibit Hall. There are plenty of networking tables positioned throughout the Convention Center, so take a break with friends, do some networking, check your email, or Skype with the family back home. Here is the login information to the ESA network:

Network Name: Ento2011
User Name: Reno
Password: ESA

If you left your laptop at home, we still have you covered. Just head to the ESA Exhibit Hall (Hall 3) during regular exhibit hours where you can use the computer stations located in the Cyber Café to check your email.

Limerick Contest

Watch the big screens while you're waiting for the Plenary sessions to begin and you'll see great talent from amongst your friends and peers. Limericks submitted for the Entomology 2011 Limerick Contest will run prior to each session. The top three will be awarded a prize at the Monday evening Second Plenary with the Vice-President's Remarks, Founders' Memorial and Awards.

Lost and Found

Check in with the staff at the ESA Registration Center if you have lost something or have found a treasure and need to turn it in. We'll do our best to help you!

Entomology 2011 Mobile App

ESA has gone mobile! You can now access the latest program information and schedules, news and announcements, create a personal schedule, link to exhibitors, connect with other attendees, and provide feedback to ESA—all from your smart phone. The app is available via the iPhone App Store, Android Market, as a mobile web app (www.entsoc.org/ammobile), and as a web-based application for desktops and laptops (www.entsoc.org/amconnect). The app is fully integrated with the Confex abstract management system so you have the latest information at your fingertips! The app will be available two weeks prior to the meeting and two weeks afterwards.

Mother's Room

This year at Entomology 2011 ESA is offering a comfortable private place for nursing mothers. The room is located in the Convention Center, next to room A-7. Please knock before you enter.

No Photographs Please

ESA requests that attendees not take photographs or videos during sessions, as they are disruptive to the presenters. If you wish to take photographs of a poster, please contact the poster presenter for permission. ESA reserves the right to use photographs and videos taken during the Entomology 2011 meeting for promotional purposes.

Press

The ESA Information Booth, located in the ESA Registration area (Convention Center, Lobby C), serves as the press desk. Reporters and other members of the media must register at the Information Booth. Proper media credentials must be presented upon arrival at Entomology 2011 and the credentials must show a direct affiliation with an accredited news organization (print, TV, or radio). Public Information Officers from universities may also receive press passes with proper credentials and ID. Freelance journalists who do not have media credentials and a professional affiliation will not receive press passes. Interviews can be arranged by calling 1-301-602-8953. Please refer to the ESA press policy at <http://www.entsoc.org/annu->

al_meeting/current_meeting/press/index.htm.

Companies or organizations producing publications, videos, and/or other electronic media intended for marketing, advertising, financial analysis, or public relations purposes may not register as members of the media. ESA reserves the right to bar from this and future meetings any registered media personnel who, at the determination of the ESA Executive Director, misuse media privileges to engage in activities other than journalistic pursuits. No member of the media will be permitted to record symposia, lectures, meetings, or other events without prior written permission from the ESA; and no film or videotape may be broadcast or rebroadcast without prior review and written permission from the ESA.

The press contact for the ESA Annual Meeting is [Richard Levine](mailto:Richard.Levine@entsoc.org), rlvine@entsoc.org, 1-301-602-8953.

Refreshments and Concessions

Hungry or thirsty? Need that morning cup of coffee? Well Bread, the official caterer at the Convention Center, has you covered. For those early morning sessions, stop by the concession cart in the Main Lobby Sunday through Wednesday for a quick cup of coffee, juice, Danish, and more. Concessions will also be available throughout the day in the Exhibit Hall, outside the Exhibit Hall, and locations near the Lunch and Learn sessions.

Shuttle Bus Service

ESA will provide complimentary daily shuttle service from the Peppermill to the Convention Center lobby Virginia Avenue entrance and will also include service to the Atlantis on Tuesday evening. See signs in for daily schedules.

Smoking Policy

Smoking is not allowed in any of the public meeting space at the Convention Center. Check with the front desk of your hotel regarding the smoking policy in guest rooms.

Tours

Both tours are held rain or shine and require a minimum number of participants. Please stop by the ESA Registration Area to check tour availability on site. Tour buses leave from Virginia Avenue outside the main entrance of the Convention Center. Please arrive a few minutes early to board the bus and have your tour ticket(s) with you.

Virginia City Tour and Downtown Reno

Monday, November 14, 10:00 am to 3:00 pm, \$46.00 per person

Our tour of Reno begins by taking you away from the noise and lights of the gaming district to some of the most interesting sights in Reno. Enjoy seeing the Reno Arch, learn the history of the Lake Street Bridge, the architecture of many of the unique buildings, and the beauty of the downtown Truckee River; then on to Virginia City. Established in 1859, Virginia City became the richest mining town in the world. San Francisco was built from the mines of the Lode River, and the Civil War was partially financed from the gold and silver discovered beneath the city. Participants will see the famous Delta Saloon, bearing Virginia City's oldest business name, dating back more than 100 years to 1862. Here you'll view the Suicide Table, so called after three owners committed suicide due to crushing house losses incurred while gambling. Lunch is included at a local Virginia City restaurant, and you'll have time to shop and explore Virginia City on your own. Today, Virginia City is remarkably the same as it was during its heyday, with wooden sidewalks, restored mansions, "Old West" saloons, the Piper Opera House, and mine tours.

Mustangs, Myths, and Scourges

Thursday, November 17, 9:00 am - 1:00 pm, \$30.00 per person

Begin with a drive on Pyramid Lake Highway, traveling north through the beautiful Nevada desert. Your first stop is the National

Wild Horse and Burros Center at Palomino Valley, where wild horses are captured and cared for by the Bureau of Land Management before being auctioned to the public. You'll learn firsthand how the animals are captured, how they receive veterinary care, and are separated by gender in the corrals before the auction. Next you will travel through the breeding ground and migration area of the legendary Mormon cricket. Conditions permitting, the tour will include a stop to look for eggs and nymphs of this fascinating insect.

Then it's off to discover Pyramid Lake, which is located on the Paiute Indian reservation. Pyramid Lake has a bigger surface area than Lake Tahoe, with far fewer residents. The journey getting to the lake is half the fun, as Route 33 winds through some of the most dramatic desert scenery in all of Nevada. When you reach the reservation, watch for the spectacular moment when the deep sapphire color of Pyramid Lake comes into view. Participants will view The Pyramid and Anaho Island National Wildlife Refuge that was established by President Woodrow Wilson in 1913 as a sanctuary for colonial nesting birds, primarily American White Pelicans. Visitors can see Double-crested Cormorants, California Gulls, Great Blue Herons, Burrowing Owls, Sage Thrashers, Black-crowned Night Herons, Caspian Terns, in addition to over 200 bird species. To provide a secure environment, the Island is closed to the public and boating is prohibited within 500 feet. Before heading home, you'll have time to visit the Pyramid Lake Museum and Visitors Center, where you will see displays of historical and pre-historic tribal artifacts. On the way, you'll witness the tufa formations that are made of calcium carbonate deposits formed by precipitation over hot springs.

University Entomology Clubs

Representatives from the following will be available to sell t-shirts and more in ESA's Exhibit Hall (Hall 3) during normal exhibit hall hours.

- Auburn University, F.S. Arant Entomology Club
- Colorado State University, Gillette Entomology Club
- Kansas State University, Popenoe Entomology Club
- Louisiana State University, Entomology Club
- Michigan State University, Graduate and Undergraduate Entomology Student Society
- North Carolina State University, Entomology Graduate Student Association
- Texas A&M, Entomology Graduate Student Organization (EGSO)
- The Ohio State University, Entomology Graduate Student Association
- University of Arizona, Graduate Program in Entomology and Insect Science
- University of California-Berkeley, Entomology Student Organization
- University of California-Davis, Entomology Graduate Students' Association
- University of California-Riverside, Entomology Graduate Student Association
- University of Idaho, Aldrich Entomology Club
- University of Wisconsin-Madison, Entomology Graduate Student Association (EGSA)

Virtual Posters

These electronic posters provide you with a unique opportunity to view the research of entomologists outside of North America who couldn't attend the ESA Annual Meeting in person. See page 45 for more detail.

YouTube Videographers

Student volunteers will be shooting video throughout the meeting for uploading to the ESA Channel on YouTube. Videographers will also be interviewing presenters and others during the meeting. You could be on ESA's YouTube channel!

PROGRAM INFORMATION

Uploading Presentations

Presenters may upload and/or preview their presentations in the Presentation Preview Room (PPR) located in Room A7 at the Convention Center. Presenters are asked to be considerate of their fellow presenters and take only 15 minutes to preview their presentation materials.

All speakers (including moderators/symposia organizers with introductory or summary slides) must upload their PowerPoint presentation either electronically via the ESA website (*preferred method!*) or in person at the Preview Presentation Room. **Please note that you must upload your presentation at least one day before your actual date of presentation.** It is always a good idea to bring a backup copy of your presentation on a flash drive. PPR Room phone number: 1-775-236-1202

PPR Room operating hours are as follows:
 Saturday, November 12, 2:00 pm – 8:00 pm
 Sunday, November 13, 6:30 am – 6:00 pm
 Monday, November 14, 6:30 am – 6:00 pm
 Tuesday, November 15, 6:30 am – 6:00 pm
 Wednesday, November 16, 6:30 am – 4:00 pm

Moderator Training

Moderators for symposia, student competition sessions, and 10-minute paper sessions must attend one of the moderator training sessions. This is where you will receive details on equipment operation, light controls, and other responsibilities. The audio-visual and Confex representatives will be available to answer your questions. Moderators must keep the program on schedule, and not move up talks if one is withdrawn.

All moderator training sessions will be held in Room A8 at the Convention Center. The dates and times for the training sessions are as follows:

Sunday, November 13, 7:00 - 7:30 am or 12:00 - 12:30 pm
 Monday, November 14, 7:00 - 7:30 am or 12:00 - 12:30 pm
 Tuesday, November 15, 7:00 - 7:30 am or 12:00 - 12:30 pm
 Wednesday, November 16, 7:00 - 7:30 am

Lunch and Learn Sessions

New this year is the opportunity for you and your friends to get together after the morning sessions, have lunch together, and learn something new all at the same time. Catering will be available near the Lunch and Learn meeting rooms so you can quickly purchase your lunch and enjoy it during the presentation.

There will be five Lunch and Learn sessions this year in the Convention Center:

How to Navigate the Annual Meeting and How to Get the Most Out of ESA

Sunday, November 13, 12:15 - 1:15 pm
 Room D6, Convention Center

ESA's Annual Meeting can be overwhelming for even the most seasoned attendee, with so much taking place in just four days. So take an hour while you eat lunch to become familiar with highlights of the meeting, learn how to get around the convention center and downtown Reno, and get tips from a local entomologist on where to eat and what to see (along with discounted coupons!). You'll leave this session much more informed and ready to tackle the week head-on. Presenters: Dr. Rayda Krell, Rayda K. Krell, LLC; Joy Newton, University of Nevada; Dr. Scott Hutchins, BCE, Dow AgroSciences.

Don't Get Stung by the Media! Learn how to Masterfully Manage Reporters and Get Your Message Out

Sunday, November 13, 12:15 - 1:15 pm
Room D7, Convention Center

Let our media expert help relieve your stress when the media calls! She will share her quick tips and advice for putting a policy in place for deciding who should take the call, how you should respond, general DOs and DON'Ts, and legal considerations. Presenter: Ruth Borger, Ed.D., APR, Director of Communications, College of Agriculture and Natural Resources, Michigan State University.

Why So Few?

Monday, November 14, 12:45 - 1:45 pm
Rooms C1-C4, Convention Center

You heard Christianne Corbett's thought-provoking Opening Plenary keynote address on women and girls in science, technology, engineering and math. Now sit with her to learn how this affects the world of entomology and what you can do to contribute to ESA's goal of having the leadership look like the membership in 10 years. Presenter: Ms. Christianne Corbett, Senior Researcher, American Association of University Women.

International Entomological Society Presidents Forum

Tuesday, November 15, 12:15 - 1:15 pm
Room D2-D3, Convention Center

Entomology affects every person on the planet every day, and entomologists everywhere share many common experiences, needs, successes and problems. Our panel of International Entomology Presidents will present brief comments on the state of entomology in their countries, will share their thoughts on the future of entomology, and discuss topics of common interest to entomologists from around the world. Bring your questions for this unique opportunity to meet some of the leaders of global entomology societies.

Interviewing Strategies

Tuesday, November 15, 12:15 pm - 1:15 pm
Room D6, Convention Center

You got the call. Now learn how to market yourself and land the perfect position! The best advice is to be prepared. This session will help you learn how to plan for the interview and set yourself above the competition. Presenter: Dr. Scott Hutchins, BCE, Dow AgroSciences.

Opening Plenary with President's Address and Keynote

Sunday, November 13, 6:00 pm - 7:30 pm
Rooms C1 - C4, Convention Center

The Opening Plenary Session of Entomology 2011 will include a presentation by Keynote Speaker Ms. Christianne Corbett, Senior Researcher at the American Association of University Women, on "Why So Few?".

An important subtheme of Entomology 2011 is "Entomology and Social Responsibility," an area where ESA President Dr. Ernest Delfosse feels there is an important nexus of science and society. One issue of particular visibility is the dominance of white males in elected leadership positions in ESA. Ms. Corbett's presentation, "Why So Few? Women in Science, Technology, Engineering, and Mathematics," will address these issues. (An important report on this subject is available on the AAUW website; <http://www.aauw.org/learn/research/whysofew.cfm>. The site also provides PowerPoint presentations on this subject that you can share with interested groups.)



Note: complimentary copies of the "Why So Few?" research will be available in the ESA booth on Monday morning from 9:00 am - 11:00 am.

Call to Order, Welcome, Introductions, Remembrance

Ernest S. Delfosse, *President*

State of the Society

Ernest S. Delfosse, *President*

Introducing ESA's New Executive Director

C. David Gammel, CAE, *ESA Executive Director*

Entomological Foundation Report

Sharron Quisenberry, *Entomological Foundation President*

International Congress of Entomology 2012 Report

Dr. Byung-Jin Kim, *F. Res*

Keynote Address: Why So Few? Women in Science, Technology, Engineering, and Mathematics

Ms. Christianne Corbett, Senior Researcher, American Association of University Women, Washington, D.C.

Closing Remarks

Ernest S. Delfosse, *President*

Adjourn to Welcome Reception, Exhibit Hall 3

Second Plenary with Vice-President's Remarks, Founders' Memorial Lecture and Awards

Monday, November 14, 5:00 pm - 6:30 pm
Rooms C1 - C4, Convention Center

Vice President's Remarks

Grayson Brown, *Vice President*

ESA Awards Program

Ernest S. Delfosse, *President* and Grayson Brown, *Vice President*

Insect Photo Salon Winners

James Appleby

Founder's Memorial Lecture

Dr. Angela Douglas, on the life of Dr. Reginald Frederick Chapman

Closing Plenary with Old Masters Linnaean Games

Wednesday, November 16, 5:30 pm - 7:30 pm
Rooms C1 - C4, Convention Center

Join President Delfosse as he thanks those who have made **Entomology 2011** a success, those who have served their Branches and Sections throughout the year, and Governing Board members and other Society leaders for their valuable service to ESA. He'll then pass the gavel to Vice President Dr. Grayson Brown who will share his theme and thoughts for Entomology 2012. Complimentary beer, wine, soft drinks and snacks will be served at this program."

Then stay in your seat for the fun-filled All Stars Linnaean Games featuring the 2011 winners versus the "Old Masters." Make sure your name is in the prize drum for a chance to win a free registration to Entomology 2012 in Knoxville, Tennessee.

Special Symposia Sessions and Activities

The Cockroach Monologues: I & II Insect Poetry

Sunday, November 13, 1:00 pm - 2:00 pm

Tuesday, November 15, 7:00 pm - 8:00 pm

Room A8, Convention Center

It's their turn! Hear from an activist cockroach trying to organize a union, a praying mantis in group therapy, an assassin bug being interviewed by a naïve reporter--these insects and many others will get a chance to tell their "side of the story" in a poetry reading by Shelly Clark Geiser.

Special Symposium: i5k

Sunday, November 13, 1:00 pm – 4:30 pm
Rooms E1 – E3, Convention Center

The campaign to sequence the genomes of 5000 arthropods (mostly insects), will be introduced and explained in detail at the i5k workshop. Join the i5k and join the fun! Take this opportunity to describe the genomes you are sequencing, or what genomes you would like sequenced.



Special Symposium: An Eisnerian View of Nature: a Tribute to the Life and Work of Thomas Eisner

Sunday, November 13, 1:30 pm – 5:30 pm
Room D3, Convention Center

Learn about the life and work of Dr. Thomas Eisner, a groundbreaking authority on insects whose research revealed the complex chemistry that they use to repel predators, attract mates and protect their young.

Buzz Words: the movie; a low-cost platform for production of outreach media based on smartphone apps

Sunday, November 13, 1:45 pm – 2:00 pm
Rooms C1 – C4, Convention Center

Saber Miresmailli will be discussing his idea of using new technologies (in this case iPad 2) to produce movie clips and animations to convey scientific concepts to a greater audience via social outlets such as YouTube or Facebook.

Special Symposium: Impacts of the March 11 Japanese Earthquake and Tsunami on Entomologists, Research, and Society

Tuesday, November 15, 8:00 am – 11:00 am
Room D4, Convention Center

On March 3, 2011, a magnitude 9.0 earthquake hit northeastern Japan. Many lives were lost and many cities were severely damaged by the earthquake and tsunami. This special symposium will help you understand the effects of the Japan disaster on entomologists, research facilities, universities, agriculture, ecosystems, as well as food industries and trade between Japan and the United States. You will also learn what you, ESA, and others can do to aid researchers, especially entomologists, in Japan.

Insect Photo Salon

Sunday, November 13, 2:00 pm - 3:00 pm
Tuesday, November 15, 8:00 pm - 9:00 pm
Room A8, Convention Center

Some of the most beautiful insect photos will be presented twice this year in the Insect Photo Salon. Plan on joining the Photographic Society of America and fellow ESA members and guests for the Insect Photo Salon. You'll witness a terrific show of insects, spiders, and other related arthropods.

POSTERS

Poster Presentations

Traditional Posters

The Program Committee has scheduled three sessions of poster presentations for the Annual Meeting. Posters are numbered sequentially in the Program Book and where possible, grouped according to Section and subject matter. Authors must display their poster on the board bearing the same number as that indicated in the Program Book for each poster.

Poster Size: Each poster must be contained within the 46x46 inch (117x117 cm) space provided. Two posters will be displayed on each

side of a single board (four posters per board). The poster must NOT exceed the size limit. Please be considerate of the person with whom you are sharing a display space.

Set Up: Your poster must be placed in the assigned space in the exhibit hall the night before your poster is scheduled. Monday posters for the student competition must be set up on Sunday evening between 7:30 pm and 9:30 pm. Posters for Tuesday and Wednesday must be set up between 7:30 pm and 9:30 pm of the preceding evening. Bring your own Velcro strips (*push pins are not allowed in the exhibit hall*) to secure your display to the poster board. The poster board is covered with felt cloth and the frame is aluminum. Please do not attach anything to the metal frame.

Poster Presentation Times: The exhibit hall may become quite congested during midday presentation hours. To alleviate crowding, presenters of posters with odd and even numbers are asked to be present at their posters at different times. You should attach a card to your poster indicating additional times that you will be present. Authors of all Monday posters are scheduled to be available during the morning to avoid conflicts with the Section meetings in the afternoon. Presenters are expected to be available at their displays during the "presenters present" time slot for questions and discussion.

Poster Removal: Posters should be removed promptly between 6:00 pm and 7:00 pm every day except Wednesday (take down between 2:00 pm and 3:00 pm). Do not remove poster numbers when removing posters from boards. *Student Competition presenters should not remove the student competition cards when removing posters.*

Monday Posters:

<i>Set up:</i> Sunday	7:30 pm – 9:30 pm
<i>Viewing:</i> Monday	8:00 am – 6:00 pm
<i>Presenters Present:</i>	
Posters with odd numbers:	9:00 am – 10:00 am
Posters with even numbers:	10:00 am – 11:00 am
<i>Take down:</i>	6:00 pm – 7:00 pm

Tuesday Posters:

<i>Set up:</i> Monday	7:30 pm – 9:30 pm
<i>Viewing:</i> Tuesday	8:00 am – 6:00 pm
<i>Presenters Present:</i>	
Posters with odd numbers:	9:00 am – 10:00 am
Posters with even numbers:	10:00 am – 11:00 am
<i>Take down:</i>	6:00 pm – 7:00 pm

Wednesday Posters:

<i>Set up:</i> Tuesday	7:30 pm – 9:30 pm
<i>Viewing:</i> Wednesday	8:00 am – 2:00 pm
<i>Presenters Present:</i>	
Posters with odd numbers:	9:00 am – 10:00 am
Posters with even numbers:	10:00 am – 11:00 am
<i>Take down:</i>	2:00 pm – 3:00 pm

Virtual Posters

The number of Virtual Posters is growing each year! These electronic posters provide you with a unique opportunity to view the research of entomologists outside of North America who couldn't attend the ESA Annual Meeting in person. Virtual posters will be presented electronically via Skype, and there will be opportunities for you to interact online with the presenters during pre-scheduled times. You can view the Virtual Posters from special computers located in the rear of the Exhibit Hall. In addition, virtual poster viewing will be available in Convention Center Room A7 beginning at 2:00 pm, Tuesday, November 15, and all day Wednesday, November 16. See page 45 for a complete listing of Virtual Posters.

SOCIAL ACTIVITIES & MIXERS

New Member Meet and Greet

Sunday, November 13, 2011, 4:30pm - 5:15pm
Room A10, Convention Center

If you are a new ESA member this year, you are invited to our 'Hooray for Hollywood—Spotlight on New Members' Meet & Greet Reception. Mingle with other new members, ESA leaders, and staff. Learn about the benefits of ESA membership and the Entomology 2011 Annual Meeting. Light refreshments will be served. New members should have received a special invitation to the reception in the mail – bring it and exchange it for a special ESA welcome gift!

Entomology 2011 Welcome Reception

Sunday, November 13, 7:30 - 9:30 pm
Convention Center, Exhibit Hall 3, First Floor

You are cordially invited to attend the Welcome Reception on Sunday evening in ESA's Exhibit Hall (Hall 3) immediately following the Opening Plenary Session. This is a great opportunity for attendees to have dedicated time with the exhibitors. Grab some light refreshments and a drink, network with your friends, and check out the exhibits. What a way to kick off Entomology 2011!! Sponsored by Taylor & Francis.

Social Events

See the complete schedule of social functions on page 34.

Everyone has the opportunity to network at numerous receptions throughout the week. Monday night is the traditional time for receptions with no scientific sessions scheduled for Monday evening.

STUDENT ACTIVITIES

Linnaean Games

Preliminary Round: Sunday, November 13, 2:00 pm – 5:00 pm
Rooms C1 – C4, Convention Center

Final Round: Tuesday, November 15, 5:30 pm – 7:30 pm
Rooms C1 - C4, Convention Center, followed immediately by the Student Awards Session and Student Reception.

Be sure to check out the Linnaean Games, a "College Bowl"-type competition that is one of the more spirited sessions of our annual meetings. Stop in and cheer on your favorite team! Winners and runners-up will be recognized at the Student Awards Session immediately following the Linnaean Games Finals on Tuesday evening.

Student Competition for the President's Prize

Monday, November 14, 8:00 am – 12:00 pm
Convention Center, multiple locations

To support ESA's student members and encourage them to get more involved in the world of entomology, Monday morning is dedicated to student paper competition. There are 26 sessions containing graduate and undergraduate student oral presentations and 17 sessions focusing on student posters. Stop by and show your support for ESA's students!

Student Debate

Tuesday, November 15, 1:30 pm – 4:30 pm

Rooms C1 – C4, Convention Center

The 2011 Student Debate topic will be: "Identify... Clarify... Speak Out! Land Grant Mission, Organic Agriculture & Host Plant Resistance Programs". With nearly 30 students participating in the

Student Debate this year, there is sure to be heated discussion and excitement. Join us for all the action and cheer for your favorite team.

Student Awards

Tuesday, November 15, 7:30 pm – 8:30 pm
Room C1 – C4, Convention Center

The winners of the President's Prize, Entomological Foundation awards, Entomological Society of America student awards, as well as Linnaean Game winners and 2nd Place teams will be recognized.

Student Reception

Tuesday, November 15, 8:30 pm – 11:30 pm
C4 Ballroom Lobby, Convention Center

All students are invited to a fun-filled Student Reception. The evening's festivities will include plenty of music, dancing, games, prizes, food and beverages*. This will be a fantastic opportunity to see old friends and to meet new ones in an exciting environment blended with special surprises. Join us for a great time – celebrating entomology! The Student Affairs Committee would like to give a special thanks to the Committee on Students and Young Professionals for their support as well as sponsorship of this event, and would like to thank DuPont Crop Protection for providing t-shirts, and Dow AgroSciences LLC and Pioneer Hi-Bred, a DuPont business for providing prizes. *Note: you must be at least 21 years of age to consume alcoholic beverages during this function.

Student Volunteers

All volunteers should report to their designated assignments 30 minutes prior to the start of their shift. All needed materials will be provided by ESA. All proof-of-attendance forms should be turned in to your supervisor at the completion of your shift. If you are unable to make it to your assignment or you need additional information please contact Mary Falcone, ESA Meetings Assistant, via e-mail at mfalcone@entsoc.org or by phone at 1-240-475-8896.

AWARDS & HONORS

All award recipients are profiled in the Awards Program brochure, which will be distributed at the Monday evening ESA Plenary, Founders' Memorial Lecture and Awards Session.

Honorary Membership

Dr. Marvin K. Harris, Ms. Gail E. Kampmeier, Dr. Kevin L. Steffey and Dr. Michael L. Williams have been elected as Honorary Members this year. The purpose of Honorary Membership is to acknowledge those who have served the ESA for at least 20 years through significant involvement in the affairs of the Society that has reached an extraordinary level. The newly elected Honorary Members will be honored at the ESA Plenary, Founders' Memorial Lecture and Awards Session Monday, November 14, 5:00 pm – 6:30 pm, Rooms C1 – C4, Convention Center.

ESA Fellows

The designation of ESA Fellow recognizes individuals who have made outstanding contributions to entomology. The 2011 Fellows will be honored at the ESA Plenary, Founders' Memorial Lecture and Awards Session, Monday, November 14, 5:00 pm – 6:30 pm, Rooms C1 – C4, Convention Center.

The 2011 ESA Fellows are:

Dr. Susan J. Brown
Dr. James R. Carey
Dr. Angela E. Douglas
Dr. Frank E. Gilstrap
Dr. Anthony A. James

Dr. Bradley A. Mullens
Dr. Naomi E. Pierce
Dr. Marlin E. Rice
Dr. Frederick M. Stephen
Dr. Diane E. Ullman

Founders' Memorial Award

Dr. Angela Douglas, the Sarkaria Professor of Insect Physiology and Toxicology at Cornell University, has been selected to deliver the Founders' Memorial Award lecture at **Entomology 2011**. The honoree is the late Professor Reginald Frederick Chapman.

Dr. Douglas is a recognized researcher, scholar, teacher, and mentor. Her main area of expertise is nutritional physiology; she is one of the most innovative and productive insect physiologists in the world.



Her work on symbiosis is highly regarded, and her work on aphid-*Buchnera* symbiosis has defined the field. Her work spans several areas of insect physiology and includes physiological ecology and insect nutrition. With over 150 publications, millions of dollars of extramural support received, 29 PhD students trained, authorship of three books, scores of presented talks, and more, she is clearly an outstanding scientist.

Born in 1930, **Dr. Chapman** had a long and distinguished career as an entomologist in university and government institutions in Britain and in the United States. His success stemmed from a wide knowledge and a genuine love of entomology. He was a pioneer in the area of insect physiology and made numerous contributions to the field, from his work on locusts, to his work on plant-insect interactions. He was the author of more than 110 scientific publications, a dedicated teacher, and a committed mentor. He was one of the first physiologists to make detailed quantitative observations of insects in the field, and to establish active lab and field research. In addition, he was the author of *The Insects: Structure and Function*, one of the most influential textbooks in entomology in the last 50 years.

ESA Professional Awards

The 2011 ESA professional awards will be presented at the ESA Plenary, Founders' Memorial Lecture Awards Session, Monday, November 14, 5:00 pm – 6:30 pm, C1 – C4, Convention Center.

The following ESA award winners will be honored:

Dr. Walter Leal, Nan-Yao Su Award for Innovation and Creativity in Entomology
Dr. Jonathan Lundgren, Early Career Innovation Award (sponsored by BASF)
Dr. Michael Gray, Distinguished Achievement Award in Extension
Dr. Michael Parrella, Distinguished Achievement Award in Horticultural Entomology (sponsored by Gowan Company)
Dr. Tanja McKay, Distinguished Achievement Award in Teaching
Mr. Forrest E. St. Aubin, Distinguished Service Award from the Certification Program
Dr. Steven Naranjo, Recognition Award in Entomology (sponsored by Syngenta Crop Protection, Inc.)
Dr. John Carlson, Recognition Award in Insect Physiology, Biochemistry and Toxicology (sponsored by Bayer CropScience)

ESA Student Awards

The winners of the President's Prize, Entomological Foundation awards, Entomological Society of America student awards, as well as Linnaean Game winners and second-place teams will be recognized Tuesday, November 15, 7:30 pm – 8:30 pm, Room C1 – C4, Convention Center.

The following ESA student award winners will be honored:

Abdul AM Majid, Student Certification Award
(sponsored by PestWest Environmental Science)

Ashfaq Sial, Student Activity Award
(sponsored by Monsanto Company)
John Henry Comstock Graduate Student Awards:
Akito Kawahara, Eastern Branch
Itai Opatovsky, International Branch
Todd M. Gilligan, North Central Branch
Casey Butler, Pacific Branch
Julien Beuzelin, Southeastern Branch
Hsiao Ling Lu, Southwestern Branch

Stinger Awards

These awards are given to the winners of the YouTube Your Entomology video contest. This contest gives ESA Members the opportunity to showcase their talents and creativity through video. The winners will be announced at the ESA Plenary, Founders' Memorial Lecture Awards Session, Monday, November 14, 5:00 pm – 6:30 pm, Rooms C1 – C4. Winners will be determined from the following finalists in each of the four categories: Outreach (extension-based); Discovery (research-based); Instruction (teaching-based); and Open (anything goes, for the uber-creative entomologist).

Limerick Contest

There once was an entomologist....

To add some additional fun to this year's meeting, President Delfosse has added his ESA 2011 Limerick Contest! Prizes will be awarded for the top three most creative limericks. Limericks will be displayed at the Plenary Sessions for everyone to enjoy.

Entomological Foundation Professional Awards

The Entomological Foundation Professional Awards will be presented at the Entomological Foundation Awards Luau Reception, Monday, November 14, 6:30 pm – 8:30 pm Golden Ballroom 4, Atlantis Casino Resort.

The following Foundation award winners will be honored:

Dr. Joseph G. Morse, Award for Excellence in Integrated Pest Management (sponsored by the Entomological Foundation and Syngenta)
Ms. Christelle N. Guedot, Henry & Sylvia Richardson Research Grant (sponsored by the Entomological Foundation)
Integrated Pest Management Team Award (sponsored by Dow AgroSciences) – European Corn Borer Team (team members include: Eric Burkness, Michael Gray, Richard Hellmich, Thomas Hunt, William Hutchison, L.V. Kaster, Paul Mitchell, Roger Moon, Kevin Steffey, Robert Wright).
Ms. Amber Stout, President's Prize for Outstanding Achievement in Primary Education (sponsored by the Entomological Society of America)
Ms. Tanya Ashimine, President's Prize for Outstanding Achievement in Secondary Education (sponsored by the Entomological Society of America)
Dr. Shripat T. Kamble, Recognition Award in Urban Entomology (sponsored by S.C. Johnson & Son and the Entomological Foundation)
Dr. James B. Whitfield, Thomas Say Award

Entomological Foundation Student Awards

The Entomological Foundation Student Awards will be presented in conjunction with the ESA Student Awards on Tuesday, November 15, 7:30 pm – 8:30 pm, Rooms C1 – C4, Convention Center.

The following Foundation student award winners will be honored: Ginny Morgal, BioQuip Undergraduate Scholarship (sponsored by BioQuip Products)

Dr. Joe Louis, International Congress on Insect Neuro-chemistry and Neurophysiology (ICINN) Student Recognition Award in Insect Physiology, Biochemistry, Toxicology, & Molecular Biology (Sponsored by ICINN)

Mr. Timothy Husen, Jeffrey P. LaFage Graduate Student Research Award
Diane Silcox, Larry Larson Graduate Student Award for Leadership in Applied Entomology (sponsored by Dow Agro Sciences)
Genet Tulgetske, Lillian and Alex Feir Graduate Student Travel Award Physiology, Biochemistry, Toxicology, and Molecular Biology
Elina Lastro Nino, Lillian and Alex Feir Graduate Student Travel Award Physiology, Biochemistry, Toxicology, and Molecular Biology
Mr. Casey D. Butler, Kenneth & Barbara Starks Plant Resistance to Insects Graduate Student Research Award
Mr. Scott Ferrenberg, Stan Beck Fellowship

Award Sponsors

ESA and the Entomological Foundation thank the following list of sponsors for their continued support of ESA's and the Foundation's Award programs:

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The Entomological Foundation

ENTOMOLOGICAL FOUNDATION



Entomological Foundation Silent Auction & Raffle

Exhibit Hall 3, Convention Center – Booth 420-422
Monday, November 14, 9:00 am – 5:00 pm
Tuesday, November 15, 9:00 am – 5:00 pm
Wednesday, November 16, 9:00 am – Noon

Meet the Entomological Foundation's staff and volunteers and participate in the Entomological Foundation's Raffle and Silent Auction to support programs that **educate and excite young people about science through insects**. The Raffle and Auction will commence on Monday and close with final bids placed by noon on Wednesday.

Entomological Foundation Board of Directors

Monday, November 14, 8:00 am – 11:00 am (Board of Directors only)
Treasures A and B, Atlantis Casino Resort

Entomological Foundation Development Committee Meeting

Monday, November 14, 9:00 am – 12:00 pm
Treasures D, Atlantis Casino Resort

Entomological Foundation Awards Luau Reception

Monday, November 14, 6:30 pm – 8:30 pm
Grand Ballroom 4, Atlantis Casino Resort
Limbo with us at the Entomological Foundation's 2011 Awards Luau honoring the Foundation's 2011 Medal of Honor recipient Dr. George Kennedy and our 2011 Professional Award Winners. Formerly the Foundation's Awards Dinner, the Entomological Foundation's Annual Event pays tribute to individuals who have demonstrated outstanding support and commitment to entomology. It is through our awards that we recognize the special educators and entomologists who have advanced the field of

entomology, the science, and the quality of education for our nation's youth. Plenty of hors d'oeuvres, desserts, beverages, and more for all! Door prizes too. Come join the fun!
This FREE event is made possible by the generous support of our Event Sponsors. If you would like to attend, please stop by the Entomological Foundation's booth (420-422) in the ESA Exhibit Hall at the Convention Center.

Entomological Foundation Board of Counselors Meeting

Tuesday, November 15, 1:00 pm – 3:00 pm
Emerald A, Atlantis Casino Resort

Entomological Foundation's Education Symposium: *Identify, Clarify, Speak Out: Turning Young People onto Science through Insects and Building a Future for Entomology*

Tuesday, November 15, 8:00 am – 11:00 am
Room A4, First Floor, Convention Center

This Symposium is a unique opportunity to hear from ESA members and K-12 educators about opportunities to use insects to turn young people onto critical issues threatening our natural world and to the value of entomology and science in meeting those challenges. Guest Speaker Loree Griffin Burns, scientist/writer specializing in books about science and nature for young readers, will open the Symposium with *Spreading the Buzz: Sharing Science and Insects with Young Readers*. The Symposium will also feature presentations by Tom Turpin, Purdue University, *Identifying the Need and Opportunity to Turn Young People onto Science and Entomology through Insects*; Sharron Quisenberry, Iowa State University, *Clarifying the Role of your Entomological Foundation in Building a Future for Entomology*; and Brad Vinson, Texas A&M University, *Speaking Out to Young People through INSEKT: Insect Science Education Kit*. ESA's 2011 President Prize Winners for Primary and Secondary Education will also provide award winning demonstrations of techniques used in classrooms to teach science through the use of insects.

Entomological Foundation Corporate Funding Partners

(as of 7/28/2011)

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Sharron Quisenberry
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Michelle Smith
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Exhibit Hall Map

Please plan to visit the exhibits, poster presentations, and more in Exhibit Hall 3, Convention Center, First Floor. See the latest in entomological equipment, supplies, gifts, and reference materials. The following is a list of exhibitors (*as of September 28*). **A map of the exhibit hall and location of exhibit booths is on page 19.**

Exhibit hours are:

Sunday, November 13, 7:30– 9:30 pm (Welcome Reception)
 Monday, November 14, 9:00 am – 5:00 pm
 Tuesday, November 15, 9:00 am – 5:00 pm
 Wednesday, November 16, 9:00 am – 2:00 pm

Exhibitors

The following exhibitors are participating in Entomology 2011 as of September 28, 2011.

Alpha Scents, Inc. **Booth #206**
 Dwayne Hancock, 1089 Willamette Falls Drive, West Linn, OR 97068;
 Phone: (971) 998-8248, Fax: (314) 271-7297, Email: dwayne@alphascents.com, Web: www.alphascents.com
 A global supplier of quality insect monitoring systems— traps, lures, A&K, designed to reduce toxic pesticide use. Products for most native and exotic insect species in agriculture, horticulture, ornamentals, forestry, and home and garden. Custom pheromone synthesis for research, manufacturing, and governments. Made with high purity pheromones per recommendations from the research community. Meets, or exceeds, industry standards. Pricing is attractive and competitive.

American Peat Technology **Booth #221**
 36203 350th Ave, Aitkin, MN 56431; Phone: (218) 927-7888,
 Fax: (218) 927-3272, Email: rmenzel@americanpeattech.com,
 Web: www.americanpeattech.com

Atlas Screenprinting **Booth #421**
 Paul Wales, 131 SE 10th Ave, Gainesville, FL 32601-7998; Phone:
 (352) 376-7646, Fax: (352) 373-4975, Email: pjwgl@aol.com, Web:
www.wildcotton.com
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Barnhill Fine Arts Studios **Booth #205**
 George Barnhill, 115 South 100 East, PO Box 92, Levan, UT 84639;
 Phone: (801) 717-5070, Email: george@barnhillfineartstudios.com,
 Web: www.barnhillfineartstudios.com
 George specializes in bronze sculpture of beetles and insects ranging from small specimens and belt buckles, to architectural elements and large sculpture. The astounding array of colors, intricate patterns, designs, and forms, of beetles and insects are the inspiration for his interpretative and technical sculptures.

BigC **Booth #517**
 Andrea Serna, 20655 S Western Ave, Ste 116, Torrance, CA 90501;
 Phone: (310) 618-9990 ext 120, Fax: (610) 618-9996, Email:
 aserna@bigc.com, Web: www.bigc.com
 Bigc.com offers the portable Dino-Lite digital microscope that provides high-quality microscopy video interfacing to PC and MAC with clear and steady imaging and 10x–200x magnification. The included software, DinoCapture, makes it easy and convenient to capture snapshots, take video, manipulate images, and save and e-mail discoveries.

Bio Chambers Inc. **Booth #307**
 Robert Pauls, 477 Jarvis Ave, Winnipeg, MB R2W 3A8, Canada;
 Phone: (204) 589-8900, Fax: (204) 582-1024, Email: rpauls@biochambers.com, Web: www.biochambers.com
 Visit us at the Bio Chambers display to discuss your research requirements for plant growth chambers or growth rooms. You can learn about our newest products and pick up literature, or arrange for it to be sent to you.

BioQuip Products **Booth #110, 112, & 114**
 Christopher Fall, 2321 E Gladwick St, Rancho Dominguez, CA 90220-6209; Phone: (310) 667-8800, Fax: (310) 667-8808, Email: bqinfo@bioquip.com, Web: www.bioquip.com
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BioQuipBugs.com **Booth #116**
 Christopher Fall, 2321 E Gladwick St, Rancho Dominguez, CA 90220-6209; Phone: (310) 667-8800, Fax: (310) 667-8808, Email: bugs@bioquip.com, Web: www.bioquipbugs.com
 BioQuipBugs.com sells insect and other arthropod specimens! More than 9,000 diverse species from most insect orders are represented. Specimens from many worldwide localities are available. We will be offering live insects and other arthropods in the coming months. Visit www.bioquipbugs.com to view the listings.

Bio-Serv **Booth #320**
 Tim Fisher, One 8th St, Ste 1, Frenchtown, NJ 08825; Phone: (908) 996-2155 ext 120, Fax: (908) 996-4123, Email: tfisher@bio-serv.com, Web: www.insectrearing.com

CABI **Booth #222**
 Patricia Webb, 22883 Quicksilver Dr, Sterling, VA 20166; Phone: (404) 636-3996, Fax: (703) 661-1547, Email: patricia@styluspub.com, Web: www.styluspub.com
 CABI is a not-for-profit international organization that improves lives by providing information and applying scientific expertise to solve problems in agriculture and the environment. CSIRO is Australia's national science agency. CSIRO is involved in more than 740 research activities in over 80 countries to deliver great science and innovative solutions.

Cambridge University Press **Booth #321**
 James Murphy, 32 Avenue of The Americas, New York, NY 10013-2473; Phone: (212) 924-3900, Fax: (212) 691-3239, Email: jmurphy@cambridge.org, Web: www.cambridge.org/us
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Contech Enterprises **Booth #203**
 John H. Borden, 7572 Progress Way, Delta, BC V4G 1E9, Canada;
 Phone: (604) 940-9944 ext 303, Fax: (604) 940-9933, Email: john.borden@contech-inc.com, Web: www.contech-inc.com
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Conviron **Booth #220**
 Sharon Reid, 590 Berry Street, Winnipeg, MB R3H 0R9, Canada;
 Phone: (204) 786-6451, Fax: (204) 786-7736, Email: sreid@conviron.com, Web: www.conviron.com

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Cornell University Press **Booth #505**

David Mitchell, 512 E State St, Sage House, Ithaca, NY 14850-4412; Phone: (607) 277-2338, Fax: (607) 277-2397, Email: dwm23@cornell.edu, Web: www.cornellpress.cornell.edu
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Cricket Science **Booth #302**

Robert Anderson, 1611 Shane Dr, Pocatello, ID 83204-4901; Phone: (208) 233-5313, Fax: (208) 232-5548, Email: robert@cricketscience.com, Web: www.cricketscience.com
Cricket Science offers a variety of antiquarian Books, Prints, Jewelry, Stationery, Games, Wallets and an eclectic array of other items (e.g., Baltic Amber with Insects, Calendars, Checkbook Covers, Cricket Cages, etc.) of interest to insect enthusiasts and entomologists. All credit cards accepted; Prepaid shipping is available.

Elsevier **Booth #202**

Katherine Boulter, 360 Park Ave South, New York, NY 10010-1710; Phone: (978) 368-3293, Fax: (212) 633-3990, Email: k.boulter@elsevier.com, Web: www.elsevier.com
Stop by the Elsevier booth to browse our recently published books in entomology. These include *Insect Molecular Biology and Biochemistry*, *Insect Endocrinology and Parasitoid Viruses*. Our innovative electronic products and services such as SciVerse ScienceDirect provide cutting-edge online content for the needs of educators, researchers, and students worldwide. Our high impact journals include *Journal of Insect Physiology*, *Insect Biochemistry and Molecular Biology* and *International Journal for Parasitology*.

EmCal Scientific **Booth #416**

Jim Snyder, PO Box 27105, San Diego, CA 92198-1105; Phone: (858) 486-0207, Fax: (858) 486-1346, Email: imaging@emcalscientific.com, Web: www.emcalscientific.com
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Entomological Foundation **Booth #420-422**

Melodie Dgiduch, 9332 Annapolis Rd, Suite #210, Lanham, MD 20706-3150; Phone: (301) 459-9082, Fax: (301) 459-9084, Email: melodie@entfdn.org, Web: www.entfdn.org
Meet the Foundation's staff and volunteers and participate in the Foundation's Raffle and Silent Auction to support programs that educate and excite young people about science through insects. The Raffle and Auction will commence on Monday and close with final bids placed by noon on Wednesday.

Entomological Society of America **Booth #210**

Debi Sutton, ESA Director of Membership and Marketing, 10001 Derekwood Lane, Suite 100, Lanham, MD 20706; Phone: (301) 731-4535 ext 3021, Fax: (301) 731-4538, Email: dsutton@entsoc.org, Web: www.entsoc.org
Stop by to rest your feet, grab a bag of popcorn, meet with colleagues and friends, learn about the certification program,

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For details on book signings taking place in the booth, see page 8.

Environmental Growth Chambers **Booth #511**

Steven Griggs, 510 East Washington Street, Chagrin Falls, OH 44022-4448; Phone: (800) 321-6854, Fax: (440) 247-8710, Email: sgriggs@egc.com, Web: www.egc.com
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Dwain Graham, 117 Trinity Drive, Willow Park, TX 78087; Phone: 817-304-0609; Fax: 817-441-2031; Email: Dwaine@itbcompany.com

LI-COR Biosciences **Booth #217**

Ron Nelson, 4647 Superior Street, Lincoln, NE 68504; Phone: (402) 467-0741, Fax: (402) 467-0831, Email: ron.nelson@licor.com, Web: www.licor.com/env
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Michigan State University **Booth #323**

Heather E. Lenartson-Kluge, 245 Natural Science, Department of Entomology, East Lansing, MI 48824-1115; Phone: (517) 355-4665, Fax: (517) 353-4354, Email: lenartso@msu.edu, Web: www.ent.msu.edu
Michigan State University's Department of Entomology offers B.S., M.S. and Ph.D. Degrees, with degrees in a vast number of areas such as integrated pest management, medical entomology, ecology and ecosystems management, molecular entomology, forensic entomology, apiculture, and specialty crop entomology and nematology. The Department's display provides program information, as does its web site: www.ent.msu.edu.

Midwest Photo Exchange **Booth #523**

Jim Andracki, 3313 N. High Street, Columbus, OH 43202; Phone: (614) 261-1264; Fax: 614-261-1637; Email: marty@mpex.com
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National Pest Management Association **Booth #223**

Jim Fredericks, 10460 North Street, Fairfax, VA 22030; Phone: (703) 352-6762, Fax: (703) 352-3031, Email: jfredericks@pestworld.org, Web: www.npmapestworld.org

The National Pest Management Association (NPMA), a non-profit organization with more than 7,000 members from around the world, was established in 1933 to support the pest management industry's commitment to the protection of public health, food and property. This commitment is reflected both in the continuing education of pest management professionals and the dissemination of timely information to homeowners and businesses.

National Plant Diagnostic Network **Booth #104**

Molly Sklapsky, 107 CIPS, Michigan State University, East Lansing, MI 48824; Phone: (517) 353-8640, Fax: (517)353-1781, Email: buggsmol@msu.edu

The National Plant Diagnostic Network (<http://www.npdn.org>) is a consortium of plant diagnostic facilities at Land Grant Universities and several State Departments of Agriculture. The NPND mission is to facilitate early detection of plant pathogens and pests through education, perform rapid and accurate diagnoses, and support response through partnerships.

Noldus Information Technology **Booth #406**

Wilant van Giessen, 1503 Edwards Ferry Rd, Suite 201, Leesburg, VA 20176; Phone: (703) 771-0440, Fax: (703) 771-0441, Email: paige@noldus.com, Web: www.noldus.com

Noldus Information Technology (www.noldus.com) offers systems for the recording, tracking, coding, and analysing insect behavior. Our solutions include EthoVision XT, The Observer XT, DanioVision, and Track3D, our system for tracking insect flight in 3D in a wind tunnel. Please visit our booth for a demonstration and more information.

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Pioneer Hi-Bred, a DuPont business **Booth #207**

Susan Moser, 7250 NW 62nd Ave., Johnston, IA 50131; Phone: (515) 248-4963, Fax: (515) 535-4415, Email: susan.moser@pioneer.com, Web: www.pioneer.com

Pioneer Hi-Bred (www.pioneer.com), a DuPont business, is the world's leading developer and supplier of advanced plant genetics, providing high-quality seeds to farmers in more than 90 countries. Pioneer provides agronomic support and services to help increase farmer productivity and profitability and strives to develop sustainable agricultural systems for people everywhere.

Purdue University **Booth #322**

Steve Yaninek, 901 W State St., West Lafayette, IN 47909; Phone:

(765) 494-4554, Fax: (765) 494-7197, Email: Yaninek@purdue.edu
Opportunities for undergraduate and graduate studies and information on programs in teaching, research, extension and outreach education. Update on department centennial celebration plans for 2012.

Sable Systems International, Inc. **Booth #403**

Eric Fox, 6000 S Eastern Ave, Bldg 1, Las Vegas, NV 89119; Phone: (702) 269-4445, Fax: (702) 269-4446, Email: accounts@sablesys.com, Web: www.sablesys.com

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The Knoxville Tourism & Sports Corporation **Booth #412**

Kelli Gibson, 301 S. Gay Street, Knoxville, TN 37902; Phone: (865) 523-3974, Email: kgibson@knoxville.org, Web: www.knoxville.org
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University of Arkansas **Booth #515**

Robert Wiedenmann, 319 AGRI, Fayetteville, AR 72701; Phone: (479) 575-2451, Fax: (479) 575-2452, Email: rwieden@uark.edu
The Department of Entomology at the University of Arkansas offers M.S. and Ph.D. Degrees, with strengths in systematics, host-plant interactions, applied insect ecology, among other research areas. The Department's display provides information on graduate study, available fellowships and other opportunities.

Program Information

University of Maryland Insect Transformations Facility Booth #122

Robert Harrell, 9600 Gudisky Dr, Rockville, MD 20850; Phone: (240) 314-6331, Fax: (240) 314-6255, Email: harrelr@umd.edu
The University of Maryland's Insect Transformation Facility specializes in transforming non-model insects. Services include "fee for service" transformation (with established protocols), collaboration (to develop new protocols), training (microinjection, insect rearing) and consultation. The Facility has a staff with broad and deep experience in insect biology and transformation technologies.

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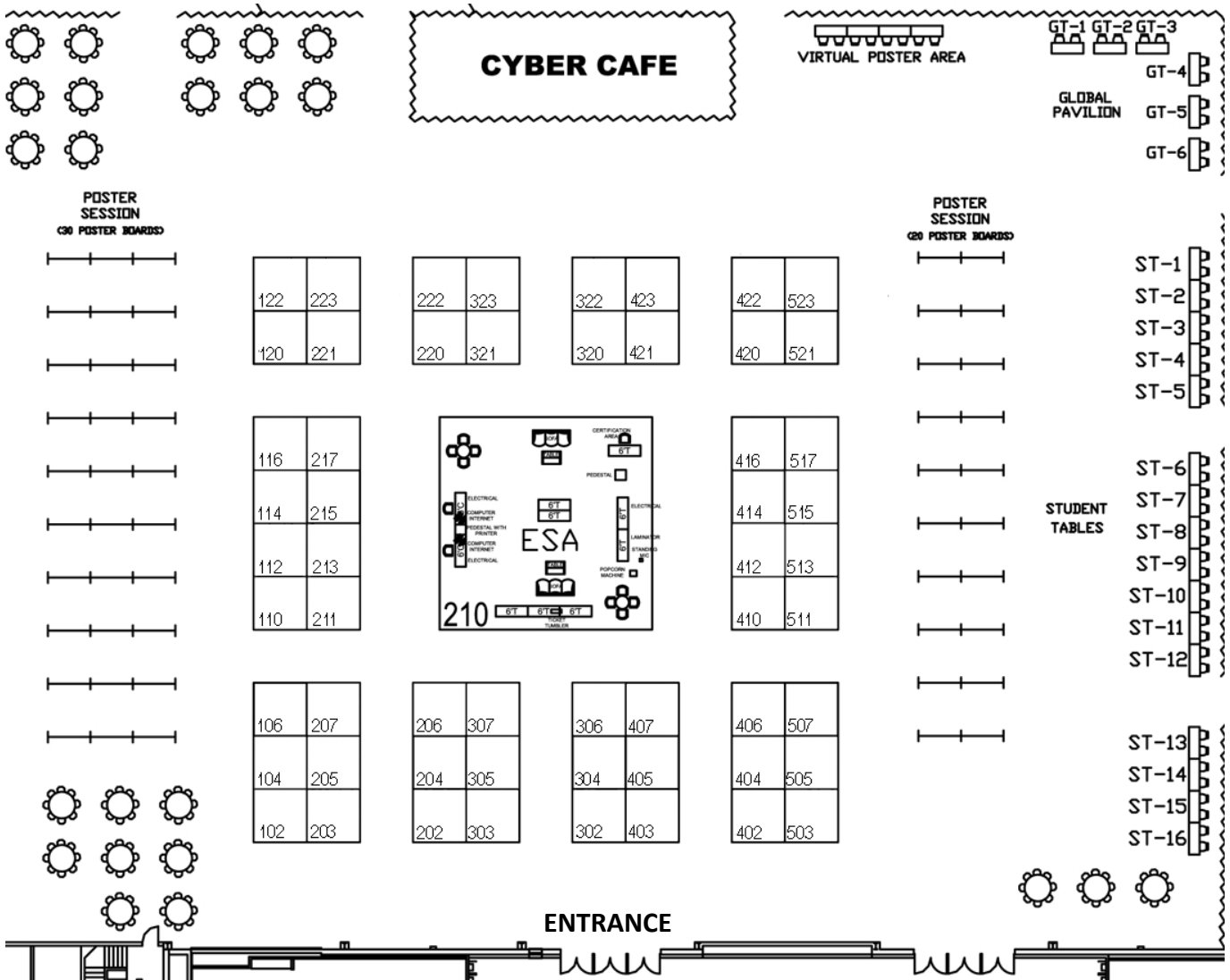
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Daily Schedule by Date and Time

FRIDAY, NOVEMBER 11		
Time	Session/Function	Location
5:00 PM - 6:00 PM	Executive Committee Meeting	Presidential Suite, Atlantis Casino Resort Spa
SATURDAY, NOVEMBER 12		
Time	Session/Function	Location
7:00 AM - 5:00 PM	Entomological Collections Network - Symposium	Rooms E1-E3, First Floor, Convention Center
7:00 AM - 5:00 PM	Pioneer Hi-Bred Academic Forum	Room D5, First Floor, Convention Center
7:30 AM - 2:30 PM	ESA Governing Board Meeting:	Executive Board Room, Second Floor, Atlantis Casino Resort Spa
8:00 AM - 5:00 PM	Annual Reviews - Entomology Committee Meeting	Room M6, Mezzanine Level, Convention Center
2:00 PM - 5:00 PM	CEDA Meeting	Paradise Ballrooms AB, Second Floor, Atlantis Casino Resort Spa
2:30 PM - 3:00 PM	ESA Certification Corporation Governing Board Meeting	Executive Board Room, Second Floor, Atlantis Casino Resort Spa
4:00 PM - 6:00 PM	P-IE Governing Council Meeting	Emerald A, Second Floor, Atlantis Casino Resort Spa
5:00 PM - 6:00 PM	CEDA/ESA Governing Board Meeting	Paradise Ballrooms ABC, Second Floor, Atlantis Casino Resort Spa
6:00 PM - 7:00 PM	CEDA/ESA Governing Board Reception	Paradise Ballrooms ABC, Second Floor, Atlantis Casino Resort Spa
6:00 PM - 9:00 PM	Entomological Collections Network - Dinner	Rooms D1/D2, First Floor, Convention Center
7:30 PM - 8:30 PM	Certification Board/ESA Executive Committee Reception	Presidential Suite, Atlantis Casino Resort Spa
SUNDAY, NOVEMBER 13		
Time	Session/Function	Location
7:00 AM - 7:30 AM	Moderator Training: I	Room A8, First Floor, Convention Center
7:00 AM - 8:00 AM	2011 Annual Meeting Program Committee Meeting	Room M6, Mezzanine Level, Convention Center
7:00 AM - 12:00 PM	Entomological Collections Network - Symposium	Rooms E1-E3, First Floor, Convention Center
7:45 AM - 12:00 PM	Citizen Scientists in Entomology Research	Room A2, First Floor, Convention Center
8:00 AM - 9:55 AM	Advances in Acarology	Room A11, First Floor, Convention Center
8:00 AM - 10:00 AM	Environmental Entomology Board Meeting	Rooms A14-A15, First Floor, Convention Center
8:00 AM - 10:00 AM	Experiences With Bees, Stamps, Invasive And Beneficial Insects	Room A3, First Floor, Convention Center
8:00 AM - 10:10 AM	Speaking Out on Biofuel Entomology: Identifying the Problem and Clarifying the Goals	Room A5, First Floor, Convention Center
8:00 AM - 10:55 AM	International Branch: Contribution of Chemical Ecology to IPM in the Tropics	Room A1, First Floor, Convention Center
8:00 AM - 11:15 AM	Ten-Minute Papers, MUVE Session 1: Bed Bugs	Room D3, First Floor, Convention Center
8:00 AM - 11:30 AM	Public Health Pests, from History to Scourge of the 21st Century	Room A4, First Floor, Convention Center
8:00 AM - 11:40 AM	Americas Neuropterists Meeting	Room D4, First Floor, Convention Center
8:00 AM - 11:45 AM	State-of-the-art Molecular Research of Global Interest	Room A13, First Floor, Convention Center
8:00 AM - 12:00 PM	Greenhouse Pest Management: Past, Present, and Future.	Room A12, First Floor, Convention Center
8:00 AM - 12:00 PM	Identify and Clarify: Regulatory Compliance for the Rearing, Releasing, Shipping, and Studying of Arthropods in Today's World: Part 1: Demystifying the Permit Process- Understanding the Black Box	Room A6, First Floor, Convention Center

Daily Schedule by Date and Time

8:00 AM - 11:55 AM	Predictors of Vector and Disease Dynamics	Room D9, First Floor, Convention Center
8:00 AM - 12:00 PM	ABSTC Northern Corn Rootworm Workshop	Room D10, First Floor, Convention Center
8:00 AM - 12:00 PM	Extra-curricular Engagements Enrich Entomology Education	Room D5, First Floor, Convention Center
8:00 AM - 12:00 PM	Impact of Brown Marmorated Stink Bug in US Agroecosystems	Room D2, First Floor, Convention Center
9:00 AM - 12:00 PM	Ten-Minute Papers PBT Session 1	Room D7, First Floor, Convention Center
10:00 AM - 11:30 AM	International Presidents Forum Meeting	Room M4, Mezzanine Level, Convention Center
10:00 AM - 12:00 PM	Annals of the ESA Board Meeting	Rooms A14-A15, First Floor, Convention Center
12:00 PM - 12:30 PM	Moderator Training: II	Room A8, First Floor, Convention Center
12:15 PM - 1:15 PM	Lunch and Learn: Don't get stung by the media! Learn how to masterfully manage reporters and get your message out.	Room D7, First Floor, Convention Center
12:15 PM - 1:15 PM	Lunch and Learn: How to Navigate the Annual Meeting and How to Get the Most out of ESA	Room D6, First Floor, Convention Center
12:30 PM - 4:30 PM	Certification Board Meeting	Room M6, Mezzanine Level, Convention Center
1:00 PM - 2:00 PM	The Cockroach Monologues: I	Room A8, First Floor, Convention Center
1:00 PM - 3:00 PM	Journal of Economic Entomology Board Meeting	Room A14-A15, First Floor, Convention Center
1:00 PM - 4:30 PM	5,000 Insect Genome Project Workshop	Rooms E1-E3, First Floor, Convention Center
1:00 PM - 5:00 PM	IOBC Board Meeting	Treasures C, Second Floor, Atlantis Casino Resort Spa
1:00 PM - 5:15 PM	Evert Lindquist's Approach to the Taxonomic Impediment in Acarology: Diversity in Specialization	Room A1, First Floor, Convention Center
1:00 PM - 5:35 PM	An Overlooked Insect Group. Dragonflies and Damselflies (Odonata), Model Organisms for Systematics, Ecology and Evolutionary Biology Studies	Room D4, First Floor, Convention Center
1:15 PM - 4:35 PM	Ten-Minute Papers, P-IE Section, Chemical Control Strategies I	Room A17, First Floor, Convention Center
1:15 PM - 4:35 PM	Ten-Minute Papers, P-IE Section, Pollinators I	Room A19, First Floor, Convention Center
1:30 PM - 4:35 PM	Ten-Minute Papers, MUVE Session 2: Termites	Room A20, First Floor, Convention Center
1:30 PM - 4:55 PM	Ten-Minute Papers, P-IE Section, Biological Control I	Room A18, First Floor, Convention Center
1:30 PM - 5:00 PM	Identify and Clarify: Regulatory Compliance for the Rearing, Releasing, Shipping, and Studying of Arthropods in Today's World: Part 2: Regulatory Compliance for Rearing, Releasing, Shipping, and Studying Arthropods	Room A6, First Floor, Convention Center
1:30 PM - 5:25 PM	Biology, Ecology and Management of Native and Invasive Stink Bugs	Room D5, First Floor, Convention Center
1:30 PM - 5:25 PM	Hardly Boring: Cerambycid Workers Symposium	Room D1, First Floor, Convention Center
1:30 PM - 5:30 PM	An Eisnerian View of Nature: a Tribute to the Life and Work of Thomas Eisner	Room D3, First Floor, Convention Center
1:30 PM - 5:30 PM	Host Plant Volatiles: Identifying New Approaches for Insect Pest Management	Room A5, First Floor, Convention Center
1:30 PM - 5:30 PM	International Society of Hymenopterists	Room D9, First Floor, Convention Center
1:30 PM - 5:30 PM	Myths, Misconceptions, and Mental Modifications: Identify, Clarify and Speak Out about Entomology.	Room A13, First Floor, Convention Center
1:30 PM - 5:30 PM	Recent Advances in Grape Pest Management	Room A12, First Floor, Convention Center
1:30 PM - 5:30 PM	Signaling Workshop	Room D10, First Floor, Convention Center
1:30 PM - 5:35 PM	Identifying, Clarifying, and Communicating Challenges in Stored Products Protection	Room A11, First Floor, Convention Center
1:30 PM - 5:40 PM	Invasive Species: International Perspectives	Room A4, First Floor, Convention Center
1:30 PM - 5:45 PM	Identifying the Current Status of Women in Entomology, Clarifying Initiatives for Retention, and Speaking Out to Share Experience	Room A3, First Floor, Convention Center
1:30 PM - 5:50 PM	Ten-Minute Papers, MUVE Session 3: Vector Biology	Room D2, First Floor, Convention Center
1:45 PM - 2:00 PM	Buzz Words	Room C1-C4, First Floor, Convention Center

Daily Schedule by Date and Time

2:00 PM - 3:00 PM	Insect Photo Salon: I	Room A8, First Floor, Convention Center
2:00 PM - 4:35 PM	Ten-Minute Papers, P-IE Section, Forest Entomology	Room A16, First Floor, Convention Center
2:00 PM - 5:00 PM	Linnaean Games - Prelims	Rooms C1-C4, First Floor, Convention Center
2:00 PM - 6:00 PM	SOLA Scarab Workers Symposium	Room D6, First Floor, Convention Center
2:30 PM - 5:40 PM	Onion Thrips Workshop	Room D8, First Floor, Convention Center
3:00 PM - 5:00 PM	Journal of Medical Entomology Board Meeting	Room A14-A15, First Floor, Convention Center
3:30 PM - 5:00 PM	P-IE Governing Council--Member Feedback Opportunity: I	Treasures AB, Second Floor, Atlantis Casino Resort Spa
4:00 PM - 4:30 PM	Student Competition Judges' Training: I	Room A2, First Floor, Convention Center
4:30 PM - 5:15 PM	New Member Welcome Reception	Room A10, First Floor, Convention Center
5:00 PM - 5:30 PM	Acarological Society of America Business Meeting	Room A1, First Floor, Convention Center
6:00 PM - 7:30 PM	Opening Plenary with President's Address and Keynote	Rooms C1-C4, First Floor, Convention Center
7:30 PM - 9:30 PM	Welcome Reception	Exhibit Hall 3, First Floor, Convention Center
7:30 PM - 9:30 PM	Virtual Posters	Exhibit Hall 3, First Floor, Convention Center

MONDAY, NOVEMBER 14

Time	Session/Function	Location
6:30 AM - 8:00 AM	Women in Entomology Breakfast	Toucan Charlie's, First Floor, Atlantis Casino Resort Spa
7:00 AM - 7:30 AM	Moderator Training: III	Room A8, First Floor, Convention Center
7:00 AM - 7:30 AM	Student Competition Judges' Training: II	Room E2, First Floor, Convention Center
8:00 AM - 9:00 AM	School IPM Network & eXtension Meeting	Room M6, Mezzanine Level, Convention Center
8:00 AM - 10:00 AM	Arthropod Management Tests Board Meeting	Rooms A14-A15, First Floor, Convention Center
8:00 AM - 11:00 AM	Entomological Foundation Board of Directors Meeting	Treasures AB, Second Floor, Atlantis Casino Resort Spa
8:00 AM - 11:00 AM	Graduate Student Ten-Minute Paper Competition, MUVE - 3	Room D5, First Floor, Convention Center
8:00 AM - 11:15 AM	Graduate Student Ten-Minute Paper Competition, P-IE - 6	Room A4, First Floor, Convention Center
8:00 AM - 11:20 AM	Graduate Student Ten-Minute Paper Competition, MUVE - 2	Room A2, First Floor, Convention Center
8:00 AM - 11:20 AM	Graduate Student Ten-Minute Paper Competition, P-IE - 12	Room A3, First Floor, Convention Center
8:00 AM - 11:20 AM	Graduate Student Ten-Minute Paper Competition, SysEB - 2	Room E1, First Floor, Convention Center
8:00 AM - 11:20 AM	Graduate Student Ten-Minute Paper Competition, SysEB-4	Room D2, First Floor, Convention Center
8:00 AM - 11:30 AM	Graduate Student Ten-Minute Paper Competition, MUVE-1	Room A1, First Floor, Convention Center
8:00 AM - 11:30 AM	Graduate Student Ten-Minute Paper Competition, P-IE-1	Room A11, First Floor, Convention Center
8:00 AM - 11:30 AM	Graduate Student Ten-Minute Paper Competition, P-IE-10	Room A17, First Floor, Convention Center
8:00 AM - 11:30 AM	Graduate Student Ten-Minute Paper Competition, P-IE-11	Room A18, First Floor, Convention Center
8:00 AM - 11:30 AM	Graduate Student Ten-Minute Paper Competition, P-IE-2	Room A12, First Floor, Convention Center
8:00 AM - 11:30 AM	Graduate Student Ten-Minute Paper Competition, P-IE-3	Room A13, First Floor, Convention Center
8:00 AM - 11:30 AM	Graduate Student Ten-Minute Paper Competition, P-IE-4	Room A19, First Floor, Convention Center
8:00 AM - 11:30 AM	Graduate Student Ten-Minute Paper Competition, P-IE-5	Room A16, First Floor, Convention Center
8:00 AM - 11:30 AM	Graduate Student Ten-Minute Paper Competition, P-IE-7	Room A5, First Floor, Convention Center
8:00 AM - 11:30 AM	Graduate Student Ten-Minute Paper Competition, P-IE-9	Room A10, First Floor, Convention Center
8:00 AM - 11:30 AM	Graduate Student Ten-Minute Paper Competition, SysEB-5	Room D7, First Floor, Convention Center
8:00 AM - 11:45 AM	Graduate Student Ten-Minute Paper Competition, P-IE-8	Room A6, First Floor, Convention Center
8:00 AM - 11:45 AM	Graduate Student Ten-Minute Paper Competition, SysEB-1	Room D1, First Floor, Convention Center
8:00 AM - 11:45 AM	Graduate Student Ten-Minute Paper Competition, SysEB-3	Room D6, First Floor, Convention Center
8:00 AM - 11:45 AM	Graduate Student Ten-Minute Paper Competition, SysEB-6	Room D3, First Floor, Convention Center
8:00 AM - 1:00 PM	IRAC-US Meeting	Treasures C, Second Floor, Atlantis Casino Resort Spa
8:00 AM - 6:00 PM	Graduate Student Poster Display Competition, MUVE-1	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Graduate Student Poster Display Competition, MUVE-2	Exhibit Hall 3, First Floor, Convention Center

Daily Schedule by Date and Time

Daily Schedule
by Date and Time

8:00 AM - 6:00 PM	Graduate Student Poster Display Competition, P-IE-1	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Graduate Student Poster Display Competition, P-IE-2	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Graduate Student Poster Display Competition, P-IE-3	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Graduate Student Poster Display Competition, P-IE-4	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Graduate Student Poster Display Competition, P-IE-5	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Graduate Student Poster Display Competition, PBT-1	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Graduate Student Poster Display Competition, PBT-2	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Graduate Student Poster Display Competition, SysEB-1	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Graduate Student Poster Display Competition, SysEB-2	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Graduate Student Poster Display Competition, SysEB-3	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Undergraduate Student Poster Display Competition, MUVE	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Undergraduate Student Poster Display Competition, P-IE	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Undergraduate Student Poster Display Competition, PBT	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Undergraduate Student Poster Display Competition, SysEB-1	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Undergraduate Student Poster Display Competition, SysEB-2	Exhibit Hall 3, First Floor, Convention Center
8:30 AM - 11:00 AM	Undergraduate Student Ten-Minute Paper Competition, P-IE	Room A20, First Floor, Convention Center
8:30 AM - 11:00 AM	Undergraduate Student Ten-Minute Paper Competition, SysEB/MUVE	Room D4, First Floor, Convention Center
8:30 AM - 11:15 AM	Graduate Student Ten-Minute Paper Competition, PBT-1	Room D8, First Floor, Convention Center
8:30 AM - 11:15 AM	Graduate Student Ten-Minute Paper Competition, PBT-2	Room D9, First Floor, Convention Center
8:30 AM - 11:15 AM	Graduate Student Ten-Minute Paper Competition, PBT-3	Room D10, First Floor, Convention Center
8:30 AM - 12:00 PM	Coleopterists Society Executive Meeting	Room M4, Mezzanine Level, Convention Center
9:00 AM - 6:00 PM	Virtual Posters	Exhibit Hall 3, First Floor, Convention Center
10:00 AM - 12:00 PM	Journal of Integrated Pest Management Board Meeting	Rooms A14-A15, First Floor, Convention Center
11:00 AM - 1:00 PM	Certification Business Meeting	Room M6, Mezzanine Level, Convention Center
11:30 AM - 1:30 PM	DOD Entomology Working Lunch	Room E3, First Floor, Convention Center
12:00 PM - 12:30 PM	Moderator Training: IV	Room A8, First Floor, Convention Center
12:00 PM - 1:30 PM	Hemipteran Feeding Network Meeting	Treasures AB, Second Floor, Atlantis Casino Resort Spa
12:45 PM - 1:45 PM	Lunch and Learn: Why So Few?	Rooms C1-C4, First Floor, Convention Center
1:00 PM - 2:00 PM	Thomas Say	Rooms A14-A15, First Floor, Convention Center
1:30 PM - 4:00 PM	SysEB Section Networking Meeting	Room D1, First Floor, Convention Center
1:30 PM - 4:45 PM	P-IE Section Symposium and Networking Meeting	Rooms A2-A5, First Floor, Convention Center
1:30 PM - 5:00 PM	MUVE Highlights, Reception and Section Meeting: Medical, Urban and Veterinary Entomology	Room D3, First Floor, Convention Center
1:30 PM - 5:00 PM	PBT Section Networking Meeting	Room D7, First Floor, Convention Center
2:00 PM - 3:00 PM	Book and Media Reviews	Rooms A14-A15, First Floor, Convention Center
2:00 PM - 4:00 PM	ICE 2016 Organizing Committee Meeting	Room M6, Mezzanine Level, Convention Center
3:00 PM - 5:00 PM	American Entomologist Editorial Board Meeting	Rooms A14-A15, First Floor, Convention Center
5:00 PM - 6:30 PM	Second Plenary with Vice-President's Remarks, Founders Memorial and Awards	Rooms C1-C4, First Floor, Convention Center
6:00 PM - 7:30 PM	University of Florida Alumni Mixer	Paradise Ballroom C, Second Floor, Atlantis Casino Resort Spa
6:00 PM - 8:00 PM	Illinois Entomology	Paradise Ballroom B Second Floor, Atlantis Casino Resort Spa
6:00 PM - 8:00 PM	Purdue Mixer	Grand Ballroom 7, Second Floor, Atlantis Casino Resort Spa
6:00 PM - 8:00 PM	Univ. of California Entomology Alumni Reception	Room E2, First Floor, Convention Center
6:00 PM - 8:30 PM	Iowa State University Alumni Mixer	Grand Ballroom 2, Second Floor, Atlantis Casino Resort Spa

Daily Schedule by Date and Time

6:00 PM - 9:00 PM	Black Entomologists Social	Grand Ballroom 3, Second Floor, Atlantis Casino Resort Spa
6:30 PM - 8:30 PM	CSU-KSU-UNL Mixer	Paradise Ballrooms DE, Second Floor, Atlantis Casino Resort Spa
6:30 PM - 8:30 PM	Entomological Foundation Awards Reception	Grand Ballroom 4, Second Floor, Atlantis Casino Resort Spa
7:00 PM - 9:00 PM	Arkansas, Auburn, Clemson & Tennessee Reception	Grand Ballroom 6, Second Floor, Atlantis Casino Resort Spa
7:00 PM - 9:00 PM	Maryland Mixer	Grand Ballroom 5, Second Floor, Atlantis Casino Resort Spa
7:00 PM - 9:00 PM	Mizzou Reception	Treasures B, Second Floor, Atlantis Casino Resort Spa
7:00 PM - 9:00 PM	Northwest Mixer	Emerald CD, Second Floor, Atlantis Casino Resort Spa
7:00 PM - 9:00 PM	Southwestern Entomologists Mixer	Paradise Ballroom A, Second Floor, Atlantis Casino Resort Spa
7:30 PM - 9:00 PM	NCSU Entomology Mixer	Emerald AB, Second Floor, Atlantis Casino Resort Spa
7:30 PM - 9:30 PM	Department of Defense Entomology Mixer	Treasures CD, Second Floor, Atlantis Casino Resort Spa
8:00 PM - 10:00 PM	Cornell Mixer	Grand Ballroom 1, Second Floor, Atlantis Casino Resort Spa

TUESDAY, NOVEMBER 15

Time	Session/Function	Location
7:00 AM - 7:30 AM	Moderator Training: V	Room A8, First Floor, Convention Center
7:00 AM - 8:00 AM	Fire Ant eXtension Network Meeting	Room M4, Mezzanine Level, Convention Center
7:00 AM - 8:00 AM	Past Presidents Breakfast	Treasures D, Second Floor, Atlantis Casino Resort Spa
7:00 AM - 8:15 AM	USDA ARS All Hands Meeting	Room D8, First Floor, Convention Center
7:30 AM - 9:00 AM	MSU Alumni & Friends Breakfast	Grand Ballroom 7, Second Floor, Atlantis Casino Resort Spa
7:40 AM - 12:00 PM	Ten-Minute Papers, SysEB: Population Genetics and Biogeography	Room A20, First Floor, Convention Center
7:45 AM - 12:00 PM	Communicating Challenges in Turfgrass & Ornamental Pest Management	Room A10, First Floor, Convention Center
7:50 AM - 12:00 PM	Communicating Sociality: Evolutionary Developments In Social Insect Communication Systems	Room A13, First Floor, Convention Center
7:55 AM - 11:40 AM	Identify and Clarify Current Arthropod Repellent Research	Room D3, First Floor, Convention Center
8:00 AM - 9:00 AM	Committee on Awards and Honors	Room M4, Mezzanine Level, Convention Center
8:00 AM - 9:00 AM	Committee on Education and Outreach Meeting	Rooms A14-A15, First Floor, Convention Center
8:00 AM - 9:00 AM	New Governing Board Member Orientation	Room M6, Mezzanine Level, Convention Center
8:00 AM - 10:50 AM	Bee Declines. I. Identification, Clarification, and Communication of the Real Truths	Room A2, First Floor, Convention Center
8:00 AM - 10:55 AM	Identify, Clarify, Speak Out: Turning Young People onto Science Through Insects and Ensuring a Future for Entomology!	Room A4, First Floor, Convention Center
8:00 AM - 10:55 AM	New Approaches to Mass Production and Augmentation Biological Control	Room A6, First Floor, Convention Center
8:00 AM - 11:00 AM	Impacts of the March 2011 Japanese Earthquake and Tsunami on Entomologists, Research, and Society.	Room D4, First Floor, Convention Center
8:00 AM - 11:10 AM	Insect Demography: Emerging Concepts and Applications	Room A17, First Floor, Convention Center
8:00 AM - 11:40 AM	Can Entomologists Stop The Threat of Invasive Palm Weevils, (<i>Rhynchophorus</i>) spp.?	Room A1, First Floor, Convention Center
8:00 AM - 11:45 AM	Identifying And Clarifying Emerging Technologies For Entomological Research: From Molecules To Landscapes	Room A11, First Floor, Convention Center

Daily Schedule by Date and Time

Daily Schedule
by Date and Time

8:00 AM - 11:55 AM	Biology, Biochemistry and Genomics of Pine Bark Beetles	Room D2, First Floor, Convention Center
8:00 AM - 12:00 PM	Basic Science to Application for Management of Bed Bug Populations I	Rooms E1-E3, First Floor, Convention Center
8:00 AM - 12:00 PM	Endurance Lessons from International Students Trained in the US Departments of Entomology: Genuine Success Histories	Room D9, First Floor, Convention Center
8:00 AM - 12:00 PM	Ten Minute Papers, P-IE Section, Horticultural Entomology I	Room A18, First Floor, Convention Center
8:00 AM - 12:00 PM	Ten-Minute Papers, P-IE Section, Biology and Ecology	Room A12, First Floor, Convention Center
8:00 AM - 12:00 PM	Ten-Minute Papers, PBT Session 2	Room D7, First Floor, Convention Center
8:00 AM - 12:00 PM	Ten-Minute Papers, SysEB: Systematics I	Room A3, First Floor, Convention Center
8:00 AM - 12:00 PM	The Larry L. Larson Symposium: 20 Years of Research on New Insecticide Modes of Action, Its Implication on Insect Control and Insecticide Resistance Management.	Room A5, First Floor, Convention Center
8:00 AM - 6:00 PM	Poster Display Presentations, MUVE I	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Poster Display Presentations, P-IE I	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Poster Display Presentations, PBT I	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 6:00 PM	Poster Display Presentations, SysEB I	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 11:05 PM	Web-Based Digital Insect Identification: Our Progress, Challenges, and Opportunities	Room D1, First Floor, Convention Center
8:15 AM - 11:25 AM	Ten-Minute Papers, P-IE Section, Plant Resistance	Room A16, First Floor, Convention Center
8:15 AM - 11:50 AM	Ten-Minute Papers, P-IE Section, Field Crop Entomology	Room A19, First Floor, Convention Center
9:00 AM - 6:00 PM	Virtual Posters	Exhibit Hall 3, First Floor, Convention Center
10:00 AM - 11:00 AM	ESA Standing Committee on Membership	Room M4, Mezzanine Level, Convention Center
11:00 AM - 12:00 PM	Common Names Committee	Rooms A14-A15, First Floor, Convention Center
11:00 AM - 12:00 PM	Section Leaders Meeting	Room M6, Mezzanine Level, Convention Center
12:00 PM - 12:30 PM	Moderator Training: VI	Room A8, First Floor, Convention Center
12:15 PM - 1:15 PM	Lunch and Learn: International Entomological Society Presidents Forum	Room D2/D3, First Floor, Convention Center
12:15 PM - 1:15 PM	Lunch and Learn: Interviewing Strategies	Room D6, First Floor, Convention Center
1:00 PM - 3:00 PM	Entomological Foundation Board of Counselors Meeting	Emerald AB, Second Floor, Atlantis Casino Resort Spa
1:00 PM - 3:00 PM	Informal Weevil Conference	Treasures AB, Second Floor, Atlantis Casino Resort Spa
1:00 PM - 5:00 PM	Publications Council	Rooms A14-A15, First Floor, Convention Center
1:10 PM - 5:10 PM	Ten-Minute Papers, P-IE Section, Population Monitoring and Modeling	Room A19, First Floor, Convention Center
1:15 PM - 5:00 PM	Ten-Minute Papers, SysEB: Ecology and Behavior	Room A20, First Floor, Convention Center
1:30 PM - 3:20 PM	Overseas Chinese Entomologists Association	Room D8, First Floor, Convention Center
1:30 PM - 4:15 PM	Ten-Minute Papers, P-IE Section, Biocontrol - Entomopathogens and Weed Management	Room A16, First Floor, Convention Center
1:30 PM - 5:00 PM	Invasion of Palm Ecosystems by Red Palm Weevil and its Management	Room D4, First Floor, Convention Center
1:30 PM - 4:30 PM	Student Debate: Identify.. Clarify.. Speak Out !! Land Grant Mission, Organic Agriculture & Host Plant Resistance Programs	Rooms C1-C4, First Floor, Convention Center
1:30 PM - 4:30 PM	Ten-Minute Papers, P-IE Section, Insect Resistance and IRM	Room A5, First Floor, Convention Center
1:30 PM - 4:40 PM	Bee Declines. II. Causes, Solutions, and Activating the Public	Room A2, First Floor, Convention Center
1:30 PM - 5:00 PM	Basic Science to Application for Management of Bed Bug Populations II	Rooms E1-E3, First Floor, Convention Center
1:30 PM - 5:00 PM	Nepal Overseas Entomologists Conference	Room A10, First Floor, Convention Center
1:30 PM - 5:00 PM	School IPM - Change Agent Practicum	Room D6, First Floor, Convention Center
1:30 PM - 5:30 PM	Ten-Minute Papers, PBT Session 3	Room D7, First Floor, Convention Center

Daily Schedule by Date and Time

1:30 PM - 5:05 PM	Forest Entomology: Reflection on a Decade of Change	Room D5, First Floor, Convention Center
1:30 PM - 5:15 PM	Culicoides Biting Midges (Diptera: Ceratopogonidae) Vectors Of Economically Important Arboviral Diseases Of Livestock: Vector Status, Biology And Control	Room A6, First Floor, Convention Center
1:30 PM - 5:15 PM	Biological Control of Invasive Wood Borers: Feasibility, Potential, Progress and Challenges	Room A17, First Floor, Convention Center
1:30 PM - 5:30 PM	Celebrating the Career of Pedro Barbosa: A Passion for Insects and Plants	Room A11, First Floor, Convention Center
1:30 PM - 5:30 PM	Epigenetics, Phenotypic Plasticity, and Insect Evolution: First Insights from an Emerging Field	Room D10, First Floor, Convention Center
1:30 PM - 5:30 PM	Getting Wet and Making Friends: Aquatic Entomology's Role Outside Academia	Room A13, First Floor, Convention Center
1:30 PM - 5:30 PM	Illuminating the Phenome: the Future of Morphology in Entomology	Room D1, First Floor, Convention Center
1:30 PM - 5:30 PM	Progress Toward Insecticide Resistance Management for Thrips	Room D9, First Floor, Convention Center
1:30 PM - 5:35 PM	Chemical Signaling, Defense and Counter-Defense between Insect Herbivores and Their Hosts	Room A4, First Floor, Convention Center
1:30 PM - 5:45 PM	Speak Out – Interaction and Education in a Brave New World of Social Media and Online Resources	Room A1, First Floor, Convention Center
1:30 PM - 5:50 PM	Ten-Minute Papers, SysEB: Systematics II	Room A3, First Floor, Convention Center
1:30 PM - 5:00 PM	Entomopathogenic Nematodes: Their Biology, Ecology, and Application. A Tribute to the Dynamic Career of Harry K. Kaya.	Room A12, First Floor, Convention Center
2:00 PM - 3:00 PM	Branch Leaders Meeting	Room M6, Mezzanine Level, Convention Center
2:00 PM - 3:00 PM	Committee on International Affairs	Treasures CD, Second Floor, Atlantis Casino Resort Spa
2:00 PM - 5:00 PM	Ten Minute Papers, P-IE Section, Horticultural Entomology II	Room A18, First Floor, Convention Center
3:00 PM - 3:30 PM	Branch Treasurers	Room M6, Mezzanine Level, Convention Center
3:30 PM - 4:00 PM	Section Treasurers	Room M4, Mezzanine Level, Convention Center
3:30 PM - 5:00 PM	P-IE Governing Council--Member Feedback Opportunity: II	Treasures AB, Second Floor, Atlantis Casino Resort Spa
5:00 PM - 6:00 PM	Entomological Foundation Board/ESA Executive Committee Reception	Presidential Suite, Atlantis Casino Resort Spa
5:00 PM - 6:30 PM	Harry Kaya Symposium Reception	Room A12, First Floor, Convention Center
5:00 PM - 7:00 PM	Basic Science to Application for Management of Bed Bug Populations III (Posters and Reception)	Rooms E1-E3, First Floor, Convention Center
5:00 PM - 7:00 PM	Reception for Bed Bug Symposium and to Celebrate 125th Year of University of Kentucky Entomology Department	Rooms E1-E3 Foyer, Convention Center
5:30 PM - 7:30 PM	Linnaean Games - Finals	Rooms C1-C4, First Floor, Convention Center
5:30 PM - 9:30 PM	Korean Young Entomologists (KYE)	Room D9, First Floor, Convention Center
6:00 PM - 8:30 PM	IOBC Workshop Symposium - Biodiversity and Biological Control	Room D4, First Floor, Convention Center
6:00 PM - 8:30 PM	University of Minnesota Mixer	Grand Ballroom 5, Second Floor, Atlantis Casino Resort Spa
6:30 PM - 9:00 PM	BASF Corporation Reception	Grand Ballroom 7, Second Floor, Atlantis Casino Resort Spa
7:00 PM - 8:00 PM	The Cockroach Monologues: II	Room A8, First Floor, Convention Center
7:00 PM - 8:30 PM	Annual Business Meeting of the International Union for the Study of Social Insects	Room D8, First Floor, Convention Center
7:30 PM - 8:30 PM	Student Awards Session	Rooms C1-C4, First Floor, Convention Center
7:30 PM - 10:00 PM	The Coleopterists Society	Room D5, First Floor, Convention Center
8:30 PM - 10:30 PM	IOBC Workshop Symposium - Mixer	Room D4, First Floor, Convention Center
7:30 PM - 11:30 PM	Heteropterists Conference	Room D6, First Floor, Convention Center
8:00 PM - 9:00 PM	Insect Photo Salon: II	Room A8, First Floor, Convention Center

Daily Schedule by Date and Time

8:30 PM - 11:30 PM	Student Reception	C4 Ballroom Lobby, First Floor, Convention Center
9:00 PM - 10:00 PM	ESA Governing Board/International Presidents Reception	Treasures ABCD, Second Floor, Atlantis Casino Resort Spa
9:30 PM - 11:30 PM	Korean Young Entomologists Mixer	Room D10, First Floor, Convention Center
WEDNESDAY, NOVEMBER 16		
Time	Session/Function	Location
6:30 AM - 7:45 AM	Student Affairs Committee Planning Meeting	Rooms A14-A15, First Floor, Convention Center
6:30 AM - 8:00 AM	All P-IE Section Breakfast Meeting	Room A16, First Floor, Convention Center
7:00 AM - 7:30 AM	Moderator Training: VII	Room A8, First Floor, Convention Center
7:00 AM - 8:00 AM	MUVE Final Business Meeting	Room D3, First Floor, Convention Center
7:00 AM - 8:00 AM	PBT Final Business Meeting & Breakfast	Rooms E1/E2, First Floor, Convention Center
7:55 AM - 12:00 PM	Invasives, Climate Change, and Forest Management: the Forest Service Research Perspective	Room A13, First Floor, Convention Center
8:00 AM - 11:00 AM	Advances in Plant Insect Vectors Using -omic Approaches	Room A12, First Floor, Convention Center
8:00 AM - 10:50 AM	Insect Rearing as Science: Building an Education and Research Infrastructure	Room A11, First Floor, Convention Center
8:00 AM - 11:00 AM	ESA Governing Board Meeting:	Executive Board Room, Second Floor, Atlantis Casino Resort Spa
8:00 AM - 11:25 AM	Employers Speak Out About Professional Opportunities in Entomology; Identifying and Clarifying Career Paths for Graduate Students	Room A10, First Floor, Convention Center
8:00 AM - 11:20 AM	Insect Biodiversity in Chiapas	Room D4, First Floor, Convention Center
8:00 AM - 11:45 AM	Pinpointing the Problem: Assessing the Impact of White-tailed Deer on the Spread of Cattle Fever Ticks (<i>Rhipicephalus (Boophilus) microplus</i> and <i>R. (B.) annulatus</i>) in South Texas	Room D8, First Floor, Convention Center
8:00 AM - 11:45 AM	Taxonomy and Systematics of the Tenebrionoidea (Coleoptera)	Room D2, First Floor, Convention Center
8:00 AM - 11:50 AM	Insecticide Mixtures: IRM, Science, Scope, Solutions and Rationale – IRAC US Symposium Series: No.7	Room A6, First Floor, Convention Center
8:00 AM - 11:55 AM	Insect Research on the Urban Frontier: Biocontrol and Pollination Services in City Landscapes	Room A1, First Floor, Convention Center
8:00 AM - 12:00 PM	Evolution and Biological Control	Room A5, First Floor, Convention Center
8:00 AM - 12:00 PM	Insect Olfaction & Taste: Identifying, Clarifying and Speaking about the Key Issues	Rooms E1/E2, First Floor, Convention Center
8:00 AM - 12:00 PM	Ten Minute Papers, P-IE Section, Chemical Control Strategies II	Room A4, First Floor, Convention Center
8:00 AM - 12:05 PM	Ten-Minute Papers, MUVE Session 4: Vector Biology & Management	Room D3, First Floor, Convention Center
8:00 AM - 3:00 PM	Poster Display Presentations, MUVE II	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 3:00 PM	Poster Display Presentations, P-IE II	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 3:00 PM	Poster Display Presentations, PBT II	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 3:00 PM	Poster Display Presentations, SysEB II	Exhibit Hall 3, First Floor, Convention Center
8:00 AM - 5:00 PM	Social Insect Evolution Today: Clarifying Leading Hypotheses with Novel Approaches	Room D1, First Floor, Convention Center
8:20 AM - 10:40 AM	Ten-Minute Papers, SysEB: Physiology, Morphology, and Development	Room A20, First Floor, Convention Center
8:30 AM - 10:15 AM	Ten-Minute Papers, P-IE Section, Pollinators II	Room A18, First Floor, Convention Center
8:30 AM - 10:30 AM	Ten-Minute Papers, P-IE Section, Transgenic Crops	Room A17, First Floor, Convention Center
9:00 AM - 10:30 AM	Mini-Symposium, SysEB/P-IE: Teaching and Education in Entomology	Room A19, First Floor, Convention Center
9:00 AM - 12:00 PM	New Containment Procedures and Technology for Quarantine and Rearing of Arthropods	Room D5, First Floor, Convention Center

Daily Schedule by Date and Time

9:00 AM - 2:00 PM	Virtual Posters	Exhibit Hall 3, First Floor, Convention Center
11:00 AM - 12:00 PM	ESA Certification Corporation Governing Board Meeting	Executive Board Room, Second Floor, Atlantis Casino Resort Spa
11:30 AM - 5:00 PM	Insect Resistance Management Roundtable	Room D7, First Floor, Convention Center
12:00 PM - 1:30 PM	Bedoukian Research Luncheon	Rooms D9/D10, First Floor, Convention Center
12:00 PM - 2:00 PM	2012 Annual Meeting Program Committee Meeting	Rooms A14-A15, First Floor, Convention Center
1:00 PM - 2:00 PM	SysEB Final Business Meeting	Room D4, First Floor, Convention Center
1:00 PM - 3:30 PM	Monsanto Academic Meeting	Treasures CD, Second Floor, Atlantis Casino Resort Spa
1:30 PM - 3:30 PM	Identify.. Clarify.. Speak Out.. About IPM Implementation in Schools	Room A1, First Floor, Convention Center
1:30 PM - 4:55 PM	Cost-effective Alternatives to Traditional Sequencing: Applying Next Generation Molecular Technologies to Medical and Veterinary Entomology	Room D3, First Floor, Convention Center
1:30 PM - 5:10 PM	Biodiversity, Global Change and Insect-Mediated Ecosystem Services	Room A5, First Floor, Convention Center
1:30 PM - 5:15 PM	Biosurveillance: Using a Native Wasp <i>Cerceris fumipennis</i> to Find Emerald Ash Borer and Other Species of Buprestidae.	Room A12, First Floor, Convention Center
1:30 PM - 5:30 PM	Essentials of Delivering Communitywide Multi-Disciplinary Integrated Pest Management Program	Room A11, First Floor, Convention Center
1:30 PM - 5:30 PM	The Future is Now: Blended Refuge, Resistance, and Root-worm Options for Tomorrow	Room A6, First Floor, Convention Center
1:30 PM - 5:40 PM	The Molecular Physiology of Arthropod Vectors and Pests: Towards the Development of Novel Control Agents and Approaches	Room A3, First Floor, Convention Center
1:30 PM - 5:45 PM	Ten-Minute Papers, MUVE Session 5: Ants and Others	Room D6, First Floor, Convention Center
2:00 PM - 3:00 PM	Committee Chairs Meeting	Rooms A14-A15, First Floor, Convention Center
5:30 PM - 7:30 PM	Closing Plenary	Rooms C1-C4, First Floor, Convention Center



Calling All New ESA Members

Join us for our Meet & Greet!

If you are new to ESA this year, please stop by our
'Hooray for Hollywood'—Spotlight on New Members
Meet & Greet Reception.

Mingle with other new members, ESA leaders
and staff, and learn about ESA benefits and
the Entomology 2011 Annual Meeting.

The New Member Meet & Greet takes place

on Sunday, November 13th from 4:30 - 5:15pm in Ballroom A10 of
the Convention Center. Refreshments will be served.

You should have received a special invitation to the recep-
tion in the mail – bring it and exchange it for a special ESA
welcome gift!



Daily Schedule by Function and Social Event

FRIDAY, NOVEMBER 11		
Function	Time	Location
Executive Committee Meeting	5:00 PM - 6:00 PM	Presidential Suite, Atlantis Casino Resort Spa
SATURDAY, NOVEMBER 12		
Function	Time	Location
Entomological Collections Network - Symposium	7:00 AM - 5:00 PM	Rooms E1-E3, First Floor, Convention Center
Pioneer Hi-Bred Academic Forum	7:00 AM - 5:00 PM	Room D5, First Floor, Convention Center
CEDA/ESA Governing Board Reception	6:00 PM - 7:00 PM	Paradise Ballrooms ABC, Second Floor, Atlantis Casino Resort Spa
Entomological Collections Network - Dinner	6:00 PM - 9:00 PM	Rooms D1/D2, First Floor, Convention Center
Certification Board/ESA Executive Committee Reception	7:30 PM - 8:30 PM	Presidential Suite, Atlantis Casino Resort Spa
SUNDAY, NOVEMBER 13		
Function	Time	Location
Moderator Training: I	7:00 AM - 7:30 AM	Room A8, First Floor, Convention Center
ABSTC Northern Corn Rootworm Workshop	8:00 AM - 12:00 PM	Room D10, First Floor, Convention Center
Moderator Training: II	12:00 PM - 12:30 PM	Room A8, First Floor, Convention Center
Lunch and Learn: Don't get stung by the media! Learn how to masterfully manage reporters and get your message out.	12:15 PM - 1:15 PM	Room D7, First Floor, Convention Center
Lunch and Learn: How to Navigate the Annual Meeting and How to Get the Most out of ESA	12:15 PM - 1:15 PM	Room D6, First Floor, Convention Center
5,000 Insect Genome Project Workshop	1:00 PM - 4:30 PM	Rooms E1-E3, First Floor, Convention Center
The Cockroach Monologues: I	1:00 PM - 2:00 PM	Room A8, First Floor, Convention Center
Buzz Words	1:45 PM - 2:00 PM	Rooms C1-C4, First Floor, Convention Center
Insect Photo Salon: I	2:00 PM - 3:00 PM	Room A8, First Floor, Convention Center
Linnaean Games - Prelims	2:00 PM - 5:00 PM	Rooms C1-C4, First Floor, Convention Center
P-IE Governing Council--Member Feedback Opportunity: I	3:30 PM - 5:00 PM	Treasures AB, Second Floor, Atlantis Casino Resort Spa
Student Competition Judges' Training: I	4:00 PM - 4:30 PM	Room A2, First Floor, Convention Center
New Member Welcome Reception	4:30 PM - 5:15 PM	Room A10, First Floor, Convention Center
Opening Plenary Session	6:00 PM - 7:30 PM	Rooms C1-C4, First Floor, Convention Center
Welcome Reception	7:30 PM - 9:30 PM	Exhibit Hall 3, First Floor, Convention Center
MONDAY, NOVEMBER 14		
Function	Time	Location
Women in Entomology Breakfast	6:30 AM - 8:00 AM	Toucan Charlie's, First Floor, Atlantis Casino Resort Spa
Moderator Training: III	7:00 AM - 7:30 AM	Room A8, First Floor, Convention Center
Student Competition Judges' Training: II	7:00 AM - 7:30 AM	Room E2, First Floor, Convention Center
DOD Entomology Working Lunch	11:30 AM - 1:30 PM	Room E3, First Floor, Convention Center
Moderator Training: IV	12:00 PM - 12:30 PM	Room A8, First Floor, Convention Center
Lunch and Learn: Why So Few?	12:45 PM - 1:45 PM	Rooms C1-C4, First Floor, Convention Center
Second Plenary with Vice-President's Remarks, Founders' Memorial Awards	5:00 PM - 6:30 PM	Rooms C1-C4, First Floor, Convention Center
University of Florida Alumni Mixer	6:00 PM - 7:30 PM	Paradise Ballroom C, Second Floor, Atlantis Casino Resort Spa

Daily Schedule by Function and Social Event

Illinois Entomology	6:00 PM - 8:00 PM	Paradise B, Second Floor, Atlantis Casino Resort Spa
Purdue Mixer	6:00 PM - 8:00 PM	Grand Ballroom 7, Second Floor, Atlantis Casino Resort Spa
Univ. of California Entomology Alumni Reception	6:00 PM - 8:00 PM	Room E2, First Floor, Convention Center
Iowa State University Alumni Mixer	6:00 PM - 8:30 PM	Grand Ballroom 2, Second Floor, Atlantis Casino Resort Spa
Black Entomologists Social	6:00 PM - 9:00 PM	Grand Ballroom 3, Second Floor, Atlantis Casino Resort Spa
CSU-KSU-UNL Mixer	6:30 PM - 8:30 PM	Paradise Ballroom DE, Second Floor, Atlantis Casino Resort Spa
Entomological Foundation Awards Reception	6:30 PM - 8:30 PM	Grand Ballroom 4, Second Floor, Atlantis Casino Resort Spa
Arkansas, Auburn, Clemson & Tennessee Reception	7:00 PM - 9:00 PM	Grand Ballroom 6, Second Floor, Atlantis Casino Resort Spa
Maryland Mixer	7:00 PM - 9:00 PM	Grand Ballroom 5, Second Floor, Atlantis Casino Resort Spa
Mizzou Reception	7:00 PM - 9:00 PM	Treasures B, Second Floor, Atlantis Casino Resort Spa
Northwest Mixer	7:00 PM - 9:00 PM	Emerald CD, Second Floor, Atlantis Casino Resort Spa
Southwestern Entomologists Mixer	7:00 PM - 9:00 PM	Paradise Ballroom A, Second Floor, Atlantis Casino Resort Spa
Department of Defense Entomology Mixer	7:30 PM - 9:30 PM	Treasures CD, Second Floor, Atlantis Casino Resort Spa
Cornell Mixer	8:00 PM - 10:00 PM	Grand Ballroom 1, Second Floor, Atlantis Casino Resort Spa

TUESDAY, NOVEMBER 15

Function	Time	Location
Moderator Training: V	7:00 AM - 7:30 AM	Room A8, First Floor, Convention Center
Past Presidents Breakfast	7:00 AM - 8:00 AM	Treasures D, Second Floor, Atlantis Casino Resort Spa
MSU Alumni & Friends Breakfast	7:30 AM - 9:00 AM	Grand Ballroom 7, Second Floor, Atlantis Casino Resort Spa
Lunch and Learn: International Entomological Society Presidents Forum	12:15 PM - 1:15 PM	Rooms D2/D3, First Floor, Convention Center
Lunch and Learn: Interviewing Strategies	12:15 PM - 1:15 PM	Room D6, First Floor, Convention Center
Moderator Training: VI	12:00 PM - 12:30 PM	Room A8, First Floor, Convention Center
Informal Weevil Conference	1:00 PM - 3:00 PM	Treasures AB, Second Floor, Atlantis Casino Resort Spa
School IPM - Change Agent Practicum	1:30 PM - 5:00 PM	Room D6, First Floor, Convention Center
P-IE Governing Council--Member Feedback Opportunity: II	3:30 PM - 5:00 PM	Treasures AB, Second Floor, Atlantis Casino Resort Spa
Entomological Foundation Board/ESA Executive Committee Reception	5:00 PM - 6:00 PM	Presidential Suite, Atlantis Casino Resort Spa
Harry Kaya Symposium Reception	5:00 PM - 6:30 PM	Room A12, First Floor, Convention Center
Reception for Bed Bug Symposium and to Celebrate 125th Year of University of Kentucky Entomology Department	5:00 PM - 7:00 PM	Rooms E1-E3 Foyer, Convention Center
Linnaean Games - Finals	5:30 PM - 7:30 PM	Rooms C1-C4, First Floor, Convention Center
University of Minnesota Mixer	6:00 PM - 8:30 PM	Grand Ballroom 5, Second Floor, Atlantis Casino Resort Spa
BASF Corporation Reception	6:30 PM - 9:00 PM	Grand Ballroom 7, Second Floor, Atlantis Casino Resort Spa
Student Awards Session	7:30 PM - 8:30 PM	Rooms C1-C4, First Floor, Convention Center
IOBC Workshop Symposium - Mixer	8:30 PM - 10:30 PM	Room D4, First Floor, Convention Center
Insect Photo Salon: II	8:00 PM - 9:00 PM	Room A8, First Floor, Convention Center
Student Reception	8:30 PM - 11:30 PM	C4 Ballroom Lobby, First Floor, Convention Center

Daily Schedule by Function and Social Event

ESA Governing Board/International Presidents Reception	9:00 PM - 10:00 PM	Treasures ABCD, Second Floor, Atlantis Casino Resort Spa
Korean Young Entomologists Mixer	9:30 PM - 11:30 PM	Room D10, First Floor, Convention Center
WEDNESDAY, NOVEMBER 16		
Function	Time	Location
Moderator Training: VII	7:00 AM - 7:30 AM	Room A8, First Floor, Convention Center
Insect Resistance Management Roundtable	11:30 AM - 5:00 PM	Room D7, First Floor, Convention Center
Bedoukian Research Luncheon	12:00 PM - 1:30 PM	Rooms D9/D10, First Floor, Convention Center
Closing Plenary Session	5:30 PM - 7:30 PM	Rooms C1-C4, First Floor, Convention Center

Daily Schedule by Function and Social Event

ESA Thanks 2011 President's Circle Membership Contributors

ESA thanks the following members who are supporting the ESA President's Circle membership this year. This program allows members to provide extra support to the Society, which in turn allows scientists from around the world to experience ESA membership on their behalf. If you would like to know more about how you can help preserve and expand ESA through this program, please visit www.entsoc.org/membership/categories/pres_circle.

- Dr. May R. Berenbaum, Urbana IL
- Mr. Gary D. Curl, Mendham NJ
- Dr. Ernest S. Delfosse, East Lansing MI
- Ms. Sandra Drolshagen, Charleston SC
- Mr. Norman Goldenberg, BCE, Memphis TN
- Dr. Theodore A. Granovsky, BCE, Bryan TX
- Dr. Guy J. Hallman, Weslaco TX
- Dr. David B. Hogg, Madison WI
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- Dr. Marlin E. Rice, Johnston IA
- Dr. Jeffrey P. Shapiro, Gainesville FL
- Dr. Kevin L. Steffey, Indianapolis IN
- Dr. Nan-Yao Su, Davie FL
- Dr. Robert J. Wright, Lincoln NE

Daily Schedule by Topic and Section

SUNDAY, NOVEMBER 13		
Session	Time	Location
Member Symposia		
Advances in Acarology	8:00 AM - 9:55 AM	Room A11, First Floor, Convention Center
Experiences With Bees, Stamps, Invasive And Beneficial Insects	8:00 AM - 10:00 AM	Room A3, First Floor, Convention Center
International Branch: Contribution of Chemical Ecology to IPM in the Tropics	8:00 AM - 10:55 AM	Room A1, First Floor, Convention Center
Public Health Pests, from History to Scourge of the 21st Century	8:00 AM - 11:30 AM	Room A4, First Floor, Convention Center
Americas Neuropterists Meeting	8:00 AM - 11:40 AM	Room D4, First Floor, Convention Center
State-of-the-art Molecular Research of Global Interest	8:00 AM - 11:40 AM	Room A13, First Floor, Convention Center
Greenhouse Pest Management: Past, Present, and Future.	8:00 AM - 11:45 AM	Room A12, First Floor, Convention Center
Extra-curricular Engagements Enrich Entomology Education	8:00 AM - 12:00 PM	Room D5, First Floor, Convention Center
Evert Lindquist's Approach to the Taxonomic Impediment in Acarology: Diversity in Specialization	1:00 PM - 5:15 PM	Room A1, First Floor, Convention Center
Biology, Ecology and Management of Native and Invasive Stink Bugs	1:30 PM - 5:25 PM	Room D5, First Floor, Convention Center
International Society of Hymenopterists	1:30 PM - 5:30 PM	Room D9, First Floor, Convention Center
Myths, Misconceptions, and Mental Modifications: Identify, Clarify and Speak Out about Entomology.	1:30 PM - 5:30 PM	Room A13, First Floor, Convention Center
Recent Advances in Grape Pest Management	1:30 PM - 5:30 PM	Room A12, First Floor, Convention Center
Identifying, Clarifying, and Communicating Challenges in Stored Products Protection	1:30 PM - 5:35 PM	Room A11, First Floor, Convention Center
Invasive Species: International Perspectives	1:30 PM - 5:40 PM	Room A4, First Floor, Convention Center
Signaling Workshop	1:30 PM - 5:30 PM	Room D10, First Floor, Convention Center
SOLA Scarab Workers Symposium	2:00 PM - 6:00 PM	Room D6, First Floor, Convention Center
Onion Thrips Workshop	2:30 PM - 5:40 PM	Room D8, First Floor, Convention Center
Program Symposia		
Citizen Scientists in Entomology Research	7:45 AM - 12:00 PM	Room A2, First Floor, Convention Center
Identifying the Current Status of Women in Entomology, Clarifying Initiatives for Retention, and Speaking Out to Share Experience	1:30 PM - 5:45 PM	Room A3, First Floor, Convention Center
Section Symposia		
Speaking Out on Biofuel Entomology: Identifying the Problem and Clarifying the Goals	8:00 AM - 10:10 AM	Room A5, First Floor, Convention Center
Identify and Clarify: Regulatory Compliance for the Rearing, Releasing, Shipping, and Studying of Arthropods in Today's World: Part 1: Demystifying the Permit Process-Understanding the Black Box	8:00 AM - 11:55 AM	Room A6, First Floor, Convention Center
Predictors of Vector and Disease Dynamics	8:00 AM - 11:55 AM	Room D9, First Floor, Convention Center
Impact of Brown Marmorated Stink Bug in US Agroecosystems	8:00 AM - 12:00 PM	Room D2, First Floor, Convention Center
An Overlooked Insect Group. Dragonflies and Damselflies (Odonata), Model Organisms for Systematics, Ecology and Evolutionary Biology Studies	1:00 PM - 5:35 PM	Room D4, First Floor, Convention Center
Identify and Clarify: Regulatory Compliance for the Rearing, Releasing, Shipping, and Studying of Arthropods in Today's World: Part 2: Regulatory Compliance for Rearing, Releasing, Shipping, and Studying Arthropods	1:30 PM - 5:00 PM	Room A6, First Floor, Convention Center
Hardly Boring: Cerambycid Workers Symposium	1:30 PM - 5:25 PM	Room D1, First Floor, Convention Center
Host Plant Volatiles: Identifying New Approaches for Insect Pest Management	1:30 PM - 5:30 PM	Room A5, First Floor, Convention Center

Daily Schedule by Topic and Section

Signaling Workshop	1:30 PM - 5:30 PM	Room D10, First Floor, Convention Center
Ten Minute Paper (TMP) Oral		
Ten-Minute Papers, MUVE Session 1: Bed Bugs	8:00 AM - 11:15 AM	Room D3, First Floor, Convention Center
Ten-Minute Papers PBT Session 1	9:00 AM - 12:00 PM	Room D7, First Floor, Convention Center
Ten-Minute Papers, P-IE Section, Chemical Control Strategies I	1:15 PM - 4:35 PM	Room A17, First Floor, Convention Center
Ten-Minute Papers, P-IE Section, Pollinators I	1:15 PM - 4:35 PM	Room A19, First Floor, Convention Center
Ten-Minute Papers, MUVE Session 2: Termites	1:30 PM - 4:35 PM	Room A20, First Floor, Convention Center
Ten-Minute Papers, P-IE Section, Biological Control I	1:30 PM - 4:55 PM	Room A18, First Floor, Convention Center
Ten-Minute Papers, MUVE Session 3: Vector Biology	1:30 PM - 5:50 PM	Room D2, First Floor, Convention Center
Ten-Minute Papers, P-IE Section, Forest Entomology	2:00 PM - 4:35 PM	Room A16, First Floor, Convention Center
Poster		
Virtual Posters	7:30 PM - 9:30 PM	Exhibit Hall 3, First Floor, Convention Center
MONDAY, NOVEMBER 14		
Session	Time	Location
Section Symposia		
SysEB Section Networking Meeting	1:30 PM - 4:00 PM	Room D1, First Floor, Convention Center
P-IE Section Symposium and Networking Meeting	1:30 PM - 4:45 PM	Rooms A2-A5, First Floor, Convention Center
MUVE Highlights, Reception and Section Meeting: Medical, Urban and Veterinary Entomology	1:30 PM - 5:00 PM	Room D3, First Floor, Convention Center
PBT Section Networking Meeting	1:30 PM - 5:00 PM	Room D7, First Floor, Convention Center
Student Poster Competition		
Graduate Student Poster Display Competition, MUVE-1	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Graduate Student Poster Display Competition, MUVE-2	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Graduate Student Poster Display Competition, P-IE-1	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Graduate Student Poster Display Competition, P-IE-2	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Graduate Student Poster Display Competition, P-IE-3	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Graduate Student Poster Display Competition, P-IE-4	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Graduate Student Poster Display Competition, P-IE-5	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Graduate Student Poster Display Competition, PBT-1	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Graduate Student Poster Display Competition, PBT-2	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Graduate Student Poster Display Competition, SysEB-1	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Graduate Student Poster Display Competition, SysEB-2	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Graduate Student Poster Display Competition, SysEB-3	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Undergraduate Student Poster Display Competition, MUVE	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Undergraduate Student Poster Display Competition, P-IE	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Undergraduate Student Poster Display Competition, PBT	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Undergraduate Student Poster Display Competition, SysEB-1	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Undergraduate Student Poster Display Competition, SysEB-2	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Student TMP Competition		
Graduate Student Ten-Minute Paper Competition, MUVE-3	8:00 AM - 11:00 AM	Room D5, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, P-IE-6	8:00 AM - 11:15 AM	Room A4, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, MUVE-2	8:00 AM - 11:20 AM	Room A2, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, P-IE-12	8:00 AM - 11:20 AM	Room A3, First Floor, Convention Center

Daily Schedule by Topic and Section

Graduate Student Ten-Minute Paper Competition, SysEB-2	8:00 AM - 11:20 AM	Room E1, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, SysEB-4	8:00 AM - 11:20 AM	Room D2, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, MUVE-1	8:00 AM - 11:30 AM	Room A1, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, P-IE-1	8:00 AM - 11:30 AM	Room A11, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, P-IE-10	8:00 AM - 11:30 AM	Room A17, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, P-IE-11	8:00 AM - 11:30 AM	Room A18, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, P-IE-2	8:00 AM - 11:30 AM	Room A12, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, P-IE-3	8:00 AM - 11:30 AM	Room A13, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, P-IE-4	8:00 AM - 11:30 AM	Room A19, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, P-IE-5	8:00 AM - 11:30 AM	Room A16, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, P-IE-7	8:00 AM - 11:30 AM	Room A5, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, P-IE-9	8:00 AM - 11:30 AM	Room A10, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, SysEB-5	8:00 AM - 11:30 AM	Room D7, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, P-IE-8	8:00 AM - 11:45 AM	Room A6, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, SysEB-1	8:00 AM - 11:45 AM	Room D1, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, SysEB-3	8:00 AM - 11:45 AM	Room D6, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, SysEB-6	8:00 AM - 11:45 AM	Room D3, First Floor, Convention Center
Undergraduate Student Ten-Minute Paper Competition, P-IE	8:30 AM - 11:00 AM	Room A20, First Floor, Convention Center
Undergraduate Student Ten-Minute Paper Competition, SysEB/ MUVE	8:30 AM - 11:00 AM	Room D4, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, PBT-1	8:30 AM - 11:15 AM	Room D8, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, PBT-2	8:30 AM - 11:15 AM	Room D9, First Floor, Convention Center
Graduate Student Ten-Minute Paper Competition, PBT-3	8:30 AM - 11:15 AM	Room D10, First Floor, Convention Center
Poster		
Virtual Posters	9:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
TUESDAY, NOVEMBER 15		
Session	Time	Location
Member Symposia		
Communicating Challenges in Turfgrass & Ornamental Pest Management	7:45 AM - 12:00 PM	Room A10, First Floor, Convention Center
Communicating Sociality: Evolutionary Developments In Social Insect Communication Systems	7:50 AM - 12:00 PM	Room A13, First Floor, Convention Center
Insect Demography: Emerging Concepts and Applications	8:00 AM - 11:10 AM	Room A17, First Floor, Convention Center
Can Entomologists Stop The Threat of Invasive Palm Weevils, (<i>Rhynchophorus</i>) spp.?	8:00 AM - 11:40 AM	Room A1, First Floor, Convention Center
Identifying And Clarifying Emerging Technologies For Entomological Research: From Molecules To Landscapes	8:00 AM - 11:45 AM	Room A11, First Floor, Convention Center
Endurance Lessons from International Students Trained in the US Departments of Entomology: Genuine Success Histories	8:00 AM - 12:00 PM	Room D9, First Floor, Convention Center
Overseas Chinese Entomologists Association	1:30 PM - 3:20 PM	Room D8, First Floor, Convention Center
Invasion of Palm Ecosystems by Red Palm Weevil and its Management	1:30 PM - 4:30 PM	Room D4, First Floor, Convention Center
Student Debate: Identify.. Clarify.. Speak Out !! Land Grant Mission, Organic Agriculture & Host Plant Resistance Programs	1:30 PM - 4:30 PM	Rooms C1-C4, First Floor, Convention Center
Nepal Overseas Entomologists Conference	1:30 PM - 5:00 PM	Room A10, First Floor, Convention Center
Forest Entomology: Reflection on a Decade of Change	1:30 PM - 5:05 PM	Room D5, First Floor, Convention Center
Celebrating the Career of Pedro Barbosa: A Passion for Insects and Plants	1:30 PM - 5:30 PM	Room A11, First Floor, Convention Center

Daily Schedule by Topic and Section

Getting Wet and Making Friends: Aquatic Entomology's Role Outside Academia	1:30 PM - 5:30 PM	Room A13, First Floor, Convention Center
Progress Toward Insecticide Resistance Management for Thrips	1:30 PM - 5:30 PM	Room D9, First Floor, Convention Center
Speak Out – Interaction and Education in a Brave New World of Social Media and Online Resources	1:30 PM - 5:45 PM	Room A1, First Floor, Convention Center
Entomopathogenic Nematodes: Their Biology, Ecology, and Application. A Tribute to the Dynamic Career of Harry K. Kaya.	1:30 PM - 6:15 PM	Room A12, First Floor, Convention Center
Korean Young Entomologists (KYE)	5:30 PM - 9:30 PM	Room D9, First Floor, Convention Center
IOBC Workshop Symposium - Biodiversity and Biological Control	6:00 PM - 10:00 PM	Room D4, First Floor, Convention Center
The Coleopterists Society	7:30 PM - 10:00 PM	Room D5, First Floor, Convention Center
Heteropterists Conference	7:30 PM - 11:30 PM	Room D6, First Floor, Convention Center
Poster		
Poster Display Presentations, MUVE I	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Poster Display Presentations, P-IE I	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Poster Display Presentations, PBT I	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Poster Display Presentations, SysEB I	8:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Virtual Posters	9:00 AM - 6:00 PM	Exhibit Hall 3, First Floor, Convention Center
Program Symposia		
Bee Declines. I. Identification, Clarification, and Communication of the Real Truths	8:00 AM - 10:50 AM	Room A2, First Floor, Convention Center
Identify, Clarify, Speak Out: Turning Young People onto Science Through Insects and Ensuring a Future for Entomology!	8:00 AM - 10:55 AM	Room A4, First Floor, Convention Center
Basic Science to Application for Management of Bed Bug Populations I	8:00 AM - 12:00 PM	Rooms E1-E3, First Floor, Convention Center
Basic Science to Application for Management of Bed Bug Populations II	1:30 PM - 5:00 PM	Rooms E1-E3, First Floor, Convention Center
Basic Science to Application for Management of Bed Bug Populations III (Posters and Reception)	5:00 PM - 7:00 PM	Rooms E1-E3, First Floor, Convention Center
Section Symposia		
Identify and Clarify Current Arthropod Repellent Research	7:55 AM - 11:40 AM	Room D3, First Floor, Convention Center
New Approaches to Mass Production and Augmentation Biological Control	8:00 AM - 10:55 AM	Room A6, First Floor, Convention Center
Biology, Biochemistry and Genomics of Pine Bark Beetles	8:00 AM - 11:55 AM	Room D2, First Floor, Convention Center
The Larry L. Larson Symposium: 20 Years of Research on New Insecticide Modes of Action, Its Implication on Insect Control and Insecticide Resistance Management.	8:00 AM - 12:00 PM	Room A5, First Floor, Convention Center
Web-Based Digital Insect Identification: Our Progress, Challenges, and Opportunities	8:00 AM - 11:05 PM	Room D1, First Floor, Convention Center
Bee Declines. II. Causes, Solutions, and Activating the Public	1:30 PM - 4:40 PM	Room A2, First Floor, Convention Center
Culicoides Biting Midges (Diptera: Ceratopogonidae) Vectors Of Economically Important Arboviral Diseases Of Livestock: Vector Status, Biology And Control	1:30 PM - 5:15 PM	Room A6, First Floor, Convention Center
Biological Control of Invasive Wood Borers: Feasibility, Potential, Progress and Challenges	1:30 PM - 5:15 PM	Room A17, First Floor, Convention Center
Epigenetics, Phenotypic Plasticity, and Insect Evolution: First Insights from an Emerging Field	1:30 PM - 5:30 PM	Room D10, First Floor, Convention Center
Illuminating the Phenome: the Future of Morphology in Entomology	1:30 PM - 5:30 PM	Room D1, First Floor, Convention Center
Chemical Signaling, Defense and Counter-Defense between Insect Herbivores and Their Hosts	1:30 PM - 5:35 PM	Room A4, First Floor, Convention Center

Daily Schedule by Topic and Section

Ten Minute Paper (TMP) Oral		
Ten-Minute Papers, SysEB: Population Genetics and Biogeography	7:40 AM - 12:00 PM	Room A20, First Floor, Convention Center
Ten Minute Papers, P-IE Section, Horticultural Entomology I	8:00 AM - 12:00 PM	Room A18, First Floor, Convention Center
Ten-Minute Papers, P-IE Section, Biology and Ecology	8:00 AM - 12:00 PM	Room A12, First Floor, Convention Center
Ten-Minute Papers, PBT Session 2	8:00 AM - 12:00 PM	Room D7, First Floor, Convention Center
Ten-Minute Papers, SysEB: Systematics I	8:00 AM - 12:00 PM	Room A3, First Floor, Convention Center
Ten-Minute Papers, P-IE Section, Plant Resistance	8:15 AM - 11:25 AM	Room A16, First Floor, Convention Center
Ten-Minute Papers, P-IE Section, Field Crop Entomology	8:15 AM - 11:50 AM	Room A19, First Floor, Convention Center
Ten-Minute Papers, P-IE Section, Population Monitoring and Modeling	1:10 PM - 5:10 PM	Room A19, First Floor, Convention Center
Ten-Minute Papers, SysEB: Ecology and Behavior	1:15 PM - 5:00 PM	Room A20, First Floor, Convention Center
Ten-Minute Papers, P-IE Section, Biocontrol - Entomopathogens and Weed Management	1:30 PM - 4:15 PM	Room A16, First Floor, Convention Center
Ten-Minute Papers, P-IE Section, Insect Resistance and IRM	1:30 PM - 4:30 PM	Room A5, First Floor, Convention Center
Ten-Minute Papers, PBT Session 3	1:30 PM - 5:00 PM	Room D7, First Floor, Convention Center
Ten-Minute Papers, SysEB: Systematics II	1:30 PM - 5:50 PM	Room A3, First Floor, Convention Center
Ten Minute Papers, P-IE Section, Horticultural Entomology II	2:00 PM - 5:00 PM	Room A18, First Floor, Convention Center
WEDNESDAY, NOVEMBER 16		
Session	Time	Location
Member Symposia		
Advances in Plant Insect Vectors Using -omic Approaches	8:00 AM - 10:50 AM	Room A12, First Floor, Convention Center
Insect Rearing as Science: Building an Education and Research Infrastructure	8:00 AM - 10:50 AM	Room A11, First Floor, Convention Center
Employers Speak Out About Professional Opportunities in Entomology; Identifying and Clarifying Career Paths for Graduate Students	8:00 AM - 11:20 AM	Room A10, First Floor, Convention Center
Insect Biodiversity in Chiapas	8:00 AM - 11:20 AM	Room D4, First Floor, Convention Center
Insect Research on the Urban Frontier: Biocontrol and Pollination Services in City Landscapes	8:00 AM - 11:55 AM	Room A1, First Floor, Convention Center
New Containment Procedures and Technology for Quarantine and Rearing of Arthropods	9:00 AM - 12:00 PM	Room D5, First Floor, Convention Center
Biosurveillance: Using a Native Wasp <i>Cerceris fumipennis</i> to Find Emerald Ash Borer and Other Species of Buprestidae.	1:30 PM - 5:15 PM	Room A12, First Floor, Convention Center
Essentials of Delivering Communitywide Multi-Disciplinary Integrated Pest Management Program	1:30 PM - 5:30 PM	Room A11, First Floor, Convention Center
Poster		
Poster Display Presentations, MUVE II	8:00 AM - 3:00 PM	Exhibit Hall 3, First Floor, Convention Center
Poster Display Presentations, P-IE II	8:00 AM - 3:00 PM	Exhibit Hall 3, First Floor, Convention Center
Poster Display Presentations, PBT II	8:00 AM - 3:00 PM	Exhibit Hall 3, First Floor, Convention Center
Poster Display Presentations, SysEB II	8:00 AM - 3:00 PM	Exhibit Hall 3, First Floor, Convention Center
Virtual Posters	9:00 AM - 2:00 PM	Exhibit Hall 3, First Floor, Convention Center
Program Symposia		
The Molecular Physiology of Arthropod Vectors and Pests: Towards the Development of Novel Control Agents and Approaches	1:30 PM - 5:40 PM	Room A3, First Floor, Convention Center
Section Symposia		
Invasives, Climate Change, and Forest Management: the Forest Service Research Perspective	7:55 AM - 12:00 PM	Room A13, First Floor, Convention Center

Daily Schedule by Topic and Section

Pinpointing the Problem: Assessing the Impact of White-tailed Deer on the Spread of Cattle Fever Ticks (<i>Rhipicephalus (Boophilus) microplus</i> and <i>R. (B.) annulatus</i>) in South Texas	8:00 AM - 11:45 AM	Room D8, First Floor, Convention Center
Taxonomy and Systematics of the Tenebrionoidea (Coleoptera)	8:00 AM - 11:45 AM	Room D2, First Floor, Convention Center
Insecticide Mixtures: IRM, Science, Scope, Solutions and Rationale – IRAC US Symposium Series: No.7	8:00 AM - 11:50 AM	Room A6, First Floor, Convention Center
Evolution and Biological Control	8:00 AM - 12:00 PM	Room A5, First Floor, Convention Center
Insect Olfaction & Taste: Identifying, Clarifying and Speaking about the Key Issues	8:00 AM - 12:00 PM	Rooms E1/E2, First Floor, Convention Center
Social Insect Evolution Today: Clarifying Leading Hypotheses with Novel Approaches	8:00 AM - 5:30 PM	Room D1, First Floor, Convention Center
Identify.. Clarify.. Speak Out.. About IPM Implementation in Schools	1:30 PM - 3:30 PM	Room A1, First Floor, Convention Center
Cost-effective Alternatives to Traditional Sequencing: Applying Next Generation Molecular Technologies to Medical and Veterinary Entomology	1:30 PM - 4:55 PM	Room D3, First Floor, Convention Center
Biodiversity, Global Change and Insect-Mediated Ecosystem Services	1:30 PM - 5:10 PM	Room A5, First Floor, Convention Center
The Future is Now: Blended Refuge, Resistance, and Rootworm Options for Tomorrow	1:30 PM - 5:30 PM	Room A6, First Floor, Convention Center
Ten Minute Paper (TMP) Oral		
Ten Minute Papers, P-IE Section, Chemical Control Strategies II	8:00 AM - 12:00 PM	Room A4, First Floor, Convention Center
Ten-Minute Papers, MUVE Session 4: Vector Biology & Management	8:00 AM - 12:05 PM	Room D3, First Floor, Convention Center
Ten-Minute Papers, SysEB: Physiology, Morphology, and Development	8:20 AM - 10:40 AM	Room A20, First Floor, Convention Center
Ten-Minute Papers, P-IE Section, Pollinators II	8:30 AM - 10:15 AM	Room A18, First Floor, Convention Center
Ten-Minute Papers, P-IE Section, Transgenic Crops	8:30 AM - 10:30 AM	Room A17, First Floor, Convention Center
Mini-Symposium, SysEB/P-IE: Teaching and Education in Entomology	9:00 AM - 10:30 AM	Room A19, First Floor, Convention Center
Ten-Minute Papers, MUVE Session 5: Ants and Others	1:30 PM - 5:45 PM	Room D6, First Floor, Convention Center

Thank You!

For being a part of Entomology 2011 in Reno, NV

Mark Your Calendar Now
for Entomology 2012!
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Knoxville Convention Center
Knoxville, Tennessee



We look forward to seeing you in Knoxville!

Daily Schedule by Committee Meetings

FRIDAY, NOVEMBER 11		
Function	Time	Location
Executive Committee Meeting	5:00 PM - 6:00 PM	Presidential Suite, Atlantis Casino Resort Spa
SATURDAY, NOVEMBER 12		
Meeting	Time	Location
ESA Governing Board Meeting:	7:30 AM - 2:30 PM	Executive Board Room, Second Floor, Atlantis Casino Resort Spa
Annual Reviews - Entomology Committee Meeting	8:00 AM - 5:00 PM	Room M6, Mezzanine Level, Convention Center
CEDA Meeting	2:00 PM - 5:00 PM	Paradise Ballrooms AB, Second Floor, Atlantis Casino Resort Spa
ESA Certification Corporation Governing Board Meeting	2:30 PM - 3:00 PM	Executive Board Room, Second Floor, Atlantis Casino Resort Spa
P-IE Governing Council Meeting	4:00 PM - 6:00 PM	Emerald A, Second Floor, Atlantis Casino Resort Spa
CEDA/ESA Governing Board Meeting	5:00 PM - 6:00 PM	Paradise Ballrooms ABC, Second Floor, Atlantis Casino Resort Spa
Annual Business Meeting of the International Union for the Study of Social Insects	7:00 PM - 8:30 PM	Room D8, First Floor, Convention Center
SUNDAY, NOVEMBER 13		
Meeting	Time	Location
2011 Annual Meeting Program Committee Meeting	7:00 AM - 8:00 AM	Room M6, Mezzanine Level, Convention Center
Environmental Entomology Editorial Board Meeting	8:00 AM - 10:00 AM	Rooms A14-A15, First Floor, Convention Center
Annals of the ESA Editorial Board Meeting	10:00 AM - 12:00 PM	Rooms A14-A15, First Floor, Convention Center
International Presidents Forum Meeting	10:00 AM - 11:30 AM	Room M4, Mezzanine Level, Convention Center
Certification Board Meeting	12:30 PM - 4:30 PM	Room M6, Mezzanine Level, Convention Center
IOBC Board Meeting	1:00 PM - 5:00 PM	Treasures C, Second Floor, Atlantis Casino Resort Spa
Journal of Economic Entomology Editorial Board Meeting	1:00 PM - 3:00 PM	Rooms A14-A15, First Floor, Convention Center
Journal of Medical Entomology Editorial Board Meeting	3:00 PM - 5:00 PM	Rooms A14-A15, First Floor, Convention Center
Acarological Society of America Business Meeting	5:00 PM - 5:30 PM	Room A1, First Floor, Convention Center
MONDAY, NOVEMBER 14		
Meeting	Time	Location
Arthropod Management Tests Editorial Board Meeting	8:00 AM - 10:00 AM	Rooms A14-A15, First Floor, Convention Center
Entomological Foundation Board of Directors Meeting	8:00 AM - 11:00 AM	Treasures AB, Second Floor, Atlantis Casino Resort Spa
IRAC-US Meeting	8:00 AM - 1:00 PM	Treasures C, Second Floor, Atlantis Casino Resort Spa
School IPM Network & eXtension Meeting	8:00 AM - 9:00 AM	Room M6, Mezzanine Level, Convention Center
Coleopterists Society Executive Meeting	8:30 AM - 12:00 PM	Room M4, Mezzanine Level, Convention Center
Journal of Integrated Pest Management Editorial Board Meeting	10:00 AM - 12:00 PM	Rooms A14-A15, First Floor, Convention Center
Certification Business Meeting	11:00 AM - 1:00 PM	Room M6, Mezzanine Level, Convention Center
Hemipteran Feeding Network Meeting	12:00 PM - 1:30 PM	Treasures AB, Second Floor, Atlantis Casino Resort Spa
Thomas Say Editorial Board Meeting	1:00 PM - 2:00 PM	Rooms A14-A15, First Floor, Convention Center

Daily Schedule by Committee Meetings

Book and Media Reviews Editorial Board Meeting	2:00 PM - 3:00 PM	Rooms A14-A15, First Floor, Convention Center
American Entomologist Editorial Board Meeting	3:00 PM - 5:00 PM	Rooms A14-A15, First Floor, Convention Center
TUESDAY, NOVEMBER 15		
Meeting	Time	Location
Fire Ant eXtension Network Meeting	7:00 AM - 8:00 AM	Room M4, Mezzanine Level, Convention Center
USDA ARS All Hands Meeting	7:00 AM - 8:15 AM	Room D8, First Floor, Convention Center
Committee on Awards and Honors	8:00 AM - 9:00 AM	Room M4, Mezzanine Level, Convention Center
New Governing Board Member Orientation	8:00 AM - 9:00 AM	Room M6, Mezzanine Level, Convention Center
Committee on Education and Outreach Meeting	8:00 AM - 9:00 AM	Rooms A14-A15, First Floor, Convention Center
ESA Standing Committee on Membership	10:00 AM - 11:00 AM	Room M4, Mezzanine Level, Convention Center
Common Names Committee Meeting	11:00 AM - 12:00 PM	Rooms A14-A15, First Floor, Convention Center
Section Leaders Meeting	11:00 AM - 12:00 PM	Room M6, Mezzanine Level, Convention Center
Entomological Foundation Board of Counselors Meeting	1:00 PM - 3:00 PM	Emerald AB, Second Floor, Atlantis Casino Resort Spa
Publications Council Meeting	1:00 PM - 5:00 PM	Rooms A14-A15, First Floor, Convention Center
Branch Leaders Meeting	2:00 PM - 3:00 PM	Room M6, Mezzanine Level, Convention Center
Committee on International Affairs Meeting	2:00 PM - 3:00 PM	Treasures CD, Second Floor, Atlantis Casino Resort Spa
Branch Treasurers Meeting	3:00 PM - 3:30 PM	Room M6, Mezzanine Level, Convention Center
Section Treasurers Meeting	3:30 PM - 4:00 PM	Room M4, Mezzanine Level, Convention Center
Annual Business Meeting of the International Union for the Study of Social Insects	7:00 PM - 8:30 PM	Room D8, First Floor, Convention Center
WEDNESDAY, NOVEMBER 16		
Meeting	Time	Location
Student Affairs Committee Planning Meeting	6:30 AM - 7:45 AM	Rooms A14-A15, First Floor, Convention Center
All P-IE Section Breakfast Meeting	6:30 AM - 8:00 AM	Room A16, First Floor, Convention Center
MUVE Final Business Meeting	7:00 AM - 8:00 AM	Room D3, First Floor, Convention Center
PBT Final Business Meeting & Breakfast	7:00 AM - 8:00 AM	Rooms E1/E2, First Floor, Convention Center
ESA Governing Board Meeting:	8:00 AM - 11:00 AM	Executive Board Room, Second Floor, Atlantis Casino Resort Spa
ESA Certification Corporation Governing Board Meeting	11:00 AM - 12:00 PM	Executive Board Room, Second Floor, Atlantis Casino Resort Spa
2012 Annual Meeting Program Committee Meeting	12:00 PM - 2:00 PM	Rooms A14-A15, First Floor, Convention Center
SysEB Final Business Meeting	1:00 PM - 2:00 PM	Room D4, First Floor, Convention Center
Monsanto Academic Meeting	1:00 PM - 3:30 PM	Treasures CD, Second Floor, Atlantis Casino Resort Spa

Program Listing for Virtual Posters

VP01 Fruit flies of economic importance: karyotype studies on some *Bactrocera* spp. **Farzana Yesmin**, farzanayesmin75@yahoo.com, and Mahani Mansor Clyde, School of Environment and Natural Resource Sciences, Universiti Kebangsaan Malaysia, Selangor, Selangor, Malaysia

Availability (preferred): Wednesday, Nov 16 8:00 PM - 9:00 PM

VP02 Comparative susceptibility to hyperparasitism of two primary aphid parasitoids, *Binodoxys communis* and *Aphidius colemani* (Hymenoptera: Aphidiidae), introduced to Hawaii. **Angelita L. Acebes**, angelita.acebes@yahoo.com, Department of Plant and Environmental Protection Sciences, University of Hawaii, Kapaa, HI and Russell Messing, Kauai Agricultural Research Center, University of Hawaii, Kapaa, HI

Availability (preferred): Any day, 10 AM - 4:00 PM

VP03 Integrated Pest Management for the German cockroach (*Blattella germanica*) in selected urban communities. **Gholam Hossein Shahraki**¹, shahraki.gh@gmail.com, Yusof B. Ibrahim², Mohd Noor Hafidzi¹, Javad Rafinejad³ and Mohd Shaha Khadri⁴, ¹Department of Entomology, Faculty of Agriculture, University of Putra Malaysia, Seri Kembangan, Selangor, Malaysia, ²Faculty of Technical and Vocational Education, Sultan Idris Education University, Tanjong Malim, Perak, Malaysia, ³Department of Medical Entomology, Tehran University of Medicine, Tehran, Tehran, Iran, ⁴Institute of Medical Research, Kuala Lumpur, Kuala Lumpur, Malaysia

VP04 Chemoreception in *Antheraea assama-Exorista sorbillans* complex: role of host plant chemicals. **AK. Akulwad**¹, a.sen@ncl.res.in, A. Kasav¹, B. Deka², DS Bora² and A. Sen¹, ¹Laboratory of Entomology, National Chemical Laboratory, Pune, Maharashtra, India, ²Department of Life Sciences, Dibrugarh University, Dibrugarh, Assam, India

Availability (preferred): Monday, Nov 14 9:00 AM - 9:00 PM

VP05 Evolutionary history of the tiger mosquito, *Aedes albopictus*, in its native range in Asia. **Sandra Urbanelli**¹, sandra.urbanelli@uniroma1.it, Daniele Porretta², Romeo Bellini³, Simone Sabatelli¹ and Pradya Somborn⁴, ¹Dep. Environmental Biology, University of Rome, Rome, Italy, ²Department of Ecological and Biological Sciences, Tuscia University, Viterbo, Italy, ³Medical and Veterinary Entomology, Agriculture Environment Centre "G. Nicoli", Bologna, Italy, ⁴Department of Parasitology, Chiang Mai University, Chiang Mai, Thailand, Thailand

VP06 Susceptibility of larvae and adult females of *Aedes aegypti* to *Metarhizium anisopliae*. **M. Kapoor**¹, kapoorbiotech@gmail.com, PV. Pawar², M Joseph², A. Sen² and MV. Deshpande¹, ¹Division of Biochemical Sciences, National Chemical Laboratory, Pune, Maharashtra, India, ²Laboratory of Entomology, National Chemical Laboratory, Pune, Maharashtra, India

VP07 Phagostimulant and deterrent fractions in *P. bombycina* (host) and *L. grandifolia* (non host): detection by chemosensory organs of *A.assama* Westwood. **Dipsikha Bora**, dipsikhabora03@yahoo.com, Bhabesh Deka, Manjula Baruah and Bulbuli Khanikor, Department of Life Sciences, Dibrugarh University, Dibrugarh, Assam, India

Availability (preferred): Monday, Nov 14 and Tuesday Nov 15, 7:00 AM - 11:00 AM

VP08 Chromosome, genetic and morphometric variation of the aquatic grasshopper *Cornops aquaticum* (Bruner) (Acrididae: Leptysminae) in the Middle and Lower Paraná River, Argentina. **Maria Luciana Romero**, mlucianar@ege.fcen.uba.ar, Pablo C. Colombo and Maria Isabel Remis, Departamento de Ecología, Genética y Evolución, Universidad de Buenos Aires, Facultad de Ciencias Exactas y Naturales, Ciudad Autónoma de Buenos Aires,

Buenos Aires, Argentina

Availability (preferred): Wednesday, Nov 16 10:00 AM - 4:00 PM

VP09 RGR as a tool to evaluate the relative performance of a plant-herbivore system as affected by temperature. **Sandra Flores-Mejia**¹, sandra.flores-mejia.1@ulaval.ca, Valérie Fournier² and Conrad Cloutier¹, ¹Département de Biologie, Université Laval, Québec, QC, Canada, ²Département de Phytologie, Université Laval, Québec, QC, Canada

VP10 Association of temperature and cold season eggs mortality with the population dynamics of *Aedes aegypti* in Buenos Aires City. **MS. De Majo**, masoldm@hotmail.com, S. Fischer, M. Otero, Universidad de Buenos Aires, Facultad de Ciencias Exactas y Naturales, Buenos Aires, Argentina

Availability (preferred): Tuesday Nov 15, Wednesday Nov 16, 7:00 AM - 2:00 PM

VP11 Alternative system to slash-and-burn for agriculture in the eastern Amazon region: Impacts on ant species richness. **IA. Dos Santos**¹, iracenicir@gmail.com, DS. Assis², OR. Kato³, S. Brienza Junior³, RR. Silva⁴, E. F. Vilela¹, ¹Federal University of Viçosa, Viçosa, Brazil, ²Federal University of Alfenas, Alfenas, Brazil, ³Embrapa Amazônia Oriental, Belém, Brazil, ⁴Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil

VP12 Geographical and morphological comparative analysis of the genus *Dactylopius* (Hemiptera: Dactylopiidae) from America. **CK. Chávez-Moreno**¹, carla_chavezmoreno@yahoo.com.mx, LE. Claps Lucy², A. Saracho Bottero Andy³, ¹Universidad Michoacana de San Nicolás de Hidalgo, Morelia, Mexico, ²Universidad Autónoma de Entre Ríos, Entre Ríos, Argentina, ³Universidad Nacional de Tucumán, Tucumán, Argentina

Availability (preferred): Tuesday, Nov 15, 9:00 AM - 9:00 PM

VP13 Interactive influence of temperature and relative humidity on egg parasitoids of *Riptortus pedestris* (Hemiptera: Alydidae). **BP. Mainali**, mainali.bishwo@gmail.com, UT. Lim, Andong National University, Andong, South Korea

VP14 Seasonal dynamics of larvae and adults of two *Enochrus* (Coleoptera: Hydrophilidae) species in urban temporary and permanent water bodies in Buenos Aires. **B. Byttebier**, bbyttebier@ege.fcen.uba.ar, S. Fischer, PLM. Torres, Universidad de Buenos Aires, Facultad de Ciencias Exactas y Naturales, Buenos Aires, Argentina

Availability (preferred): Monday, Nov 14 and Tuesday Nov 15, 7:00 AM - 2:00 PM

VP15 Use of corn plants as traps to prevent colonization of soybean by phytophagous pentatomids in Argentina. **A. Saluso**¹, asaluso@parana.inta.gov.ar, F. Silva², AR. Panizzi³, ¹INTA, Entre Ríos, Argentina, ²Embrapa Soja, Londrina, Brazil, Embrapa Trigo, Passo Fundo, Brazil

Availability (preferred): Sunday, Nov 13, 2:00 PM - 6:00 PM

VP16 The use of insects to elucidate time of death and suspects association to the scene crime: three cases reported in southeastern Brazil. **E. Martins**¹, emartins2@uol.com.br, ²P. J. Thyssen, ³Public Security Secretariat of the State of São Paulo, Franca, Brazil, ²UFPEL, RS, Pelotas, Brazil

VP17 Native bees from the state of Nuevo Leon: filling information gaps in northeast Mexico. **L. Ramirez-Freire**¹, biolily@gmail.com, GJ. Alanis-Flores¹, R. Ayala², H. Quiroz-Martinez¹ CG. Velazco-Macias³, ¹Universidad Autonoma de Nuevo Leon, Nuevo Leon, Mexico, ²Universidad Nacional Autónoma de México (UNAM), San Patricio, Mexico, ³Parques y Vida Silvestre de Nuevo Leon, Nuevo Leon, Mexico

Availability (preferred): Tuesday, Nov 15, Wednesday Nov 16, 10:00 AM - 12:00 PM

VP18 Impact of short term high temperature and drought periods on wheat aphid *Sitobion avenae* (Fabricius) (Hemiptera: Aphididae) and its natural enemies. **HM. Poehling**, Poehling@ipp.uni-hannover.de, N. Buttelmann, R. Al-Moalem, R. Meyhoefer, Leibniz Universität, Hannover, Hanover, Germany

VP19 Life-history traits related to diapause in *Ypthima multistriata* (Lepidoptera: Satyridae) showing nonclinal geographic variation in voltinism. **S. Noriyuki**, nsuzuki@kais.kyoto-u.ac.jp, Kyoto University, Kyoto, Japan

VP20 The international master in medical and veterinary entomology. **Thierry Baldet**¹, thierry.baldet@ird.fr, Gerard Duvallet², Felix Zoumenou¹, Michel Makoutode³, Catherine Mouli⁴, Martin Akogbeto⁵ and Jean-Marc Hougard⁶, ¹MIVEGEC IRD / CREC, Cotonou, Benin, ²Université Montpellier III, Montpellier, France, ³IRSP, Ouidah, Benin, ⁴UM2, Montpellier, France, ⁵CREC / UAC, Cotonou, Benin, ⁶Institut de Recherche pour le Développement, Marseille, France

VP21 Field risk assessments of transgenic Bt-Cry1Ab rice and its residues on aboveground nontarget arthropod community in postharvest seasons. **Yaoyu Bai**¹, yybai2001@yahoo.com.cn, Ruihong Yan¹, Gong-yin Ye², Fangneng Huang³, David S. Wangila³, Jin-Jun Wang¹ and Jiaan Cheng², ¹College of Plant Protection, Southwest University of China, Beibei, China, ²Institute of Insect Sciences, Zhejiang University, Hangzhou, Zhejiang, China, ³Entomology, Louisiana State University AgCenter, Baton Rouge, LA

VP22 Surviving at sky islands? - Recent study questions ancient theories about the relict status of alpine grasshoppers in Europe (Acrididae, Gomphocerinae, *Podismopsis*). **Brigitte Gottsberger**¹, brigitte.gottsberger@aon.at, and Dirk Berger², ¹Department of Animal Biodiversity, University of Vienna, Vienna, Austria, ²Museum of Zoology, Senckenberg Natural History Collections Dresden, Dresden, Germany

VP23 The impact of food resources on predatory hoverfly *Episyrphus balteatus* fitness. **Michael Kahato**, kahato@ipp.uni-hannover.de, Rainer Meyhofer and HM. Poehling, Entomology, Leibniz Universität, Hannover, Hannover, Germany
Availability (preferred): Monday, Nov 14, 10:00 AM - 3:00 PM

VP24 Molecular identification of blood meals from *Culicoides* species in Northern Europe. **Sandra Boline Lassen**, sala@agrsci.dk, Agroecology, Aarhus University, Slagelse, Denmark

VP25 Importance of thirteen species of *Triatominae* (Hemiptera: Reduviidae) vectors of Chagas disease in Mexico. **Paz María Salazar-Schettino**¹, pazmar@servidor.unam.mx, Gloria Elena Rojas-Wastavino¹, Margarita Cabrera Bravo¹, Mauro Omar Vences-Blanco¹, Martha Irene Bucio-Torres¹, Yolanda Guevara-Gómez¹, Adela Luisa Ruiz-Hernández¹, Elia Torres-Gutiérrez¹, José A. Martínez-Ibarra², María Carlota Monroy Escobar³ and Antonieta Rodas Retana³, ¹Microbiología y Parasitología. Laboratorio de Biología de Parásitos, Universidad Nacional Autónoma de México. Facultad de Medicina, Ciudad de México, México, ²Área de Entomología Médica, Universidad de Guadalajara, Ciudad Guzmán, Jalisco, México, ³Laboratorio de Entomología Aplicada y Parasitología, Universidad de San Carlos de Guatemala, Guatemala, Guatemala

VP26 Diagnostic morphological features of the new species *Colpoclypeus michoacanensis* Sanchez & Figueroa (Hymenoptera: Eulophidae). **José Isaac Figueroa**¹, figueroaji@yahoo.com.mx, Jose Antonio Sanchez², Samuel Pineda², ANA Mabel Martínez², Angel Rebollar³, Ana Celestina Juárez², Ignacio Lopez⁴ and Juana María Coronado⁵, ¹Instituto de Investigaciones Agropecuarias y Forestales, Universidad Michoacana de San Nicolás de Hidalgo,

Tarimbaro, MICHOACAN, Mexico, ²Área de Control biológico, CIIDIR Oaxaca, Instituto Politécnico Nacional, Santa Cruz Xoxocotlán, OAXACA, Mexico, ³Centro Regional Universitario Centro Occidente, Universidad Autónoma Chapingo, Morelia, MICHOACAN, Mexico, ⁴Centro Regional Universitario Centro Occidente, Universidad Autónoma Chapingo, Morelia, Michoacan, Mexico, ⁵Facultad de Ingeniería y Ciencias, Universidad Autónoma de Tamaulipas, Ciudad Victoria, Tamaulipas, Mexico

VP27 Effect of Odonata predators on the feeding behaviour and development of three species of mosquito larvae. **Derek M Roberts**, derekmr@squ.edu.om, Biology, Sultan Qaboos University, Al-Khod, Oman

VP28 Tick infestation surveillance in wild snakes of Western Ghats of India. **Ruta Bandivadekar**, rutz.vet@gmail.com, and Pranav Pandit, ELA Foundation, Pune, Maharashtra, India

VP29 A new species under Genus *Phlebotomus* and subgenus (Gujarat. vaseti) sp. nov. (Diptera: Psychodidae) from Vaseti Panchmahal District, Gujarat, India. **Prakash R Salunkhe**, salunkhepr.niv@gmail.com, Medical Entomology, National Institute of Virology, Pune, India
Availability (preferred): Monday, Nov 14, 7:00 - 8:00 PM

VP30 Male olive fruit fly behavioral responses to environmental cues and female sex pheromone. **Soledad C. Villamil**¹, scvillamil@ucdavis.edu, Edwin E. Lewis¹ and Frank G Zalom², Department of Entomology, University of California, Davis, Davis, CA,

VP31 Larvicidal effects of *Bacillus thuringiensis* and neem extracts on the cabbage head caterpillar *Crociodolomia pavonana* (Fabricius) (Lepidoptera: Crambidae) in laboratory conditions. Jean Marie Latyr Sarr¹, **Dienaba Sall-Sy**², dieynaba_sall_sy@yahoo.fr, Emile Victor Coly², Aboubacry Kane², and Douglas G. Pfeiffer³, ¹Université Cheikh Anta Diop de Dakar (UCAD), Dakar, Senegal, ²Institut Senegalais de Recherches Agricoles (ISRA), Dakar, Senegal, ³Virginia Tech, Blacksburg, VA

VP32 Effects of methoxyfenozide on the development, survival, and reproduction of the beet armyworm, *Spodoptera exigua* (Hübner) (Lepidoptera: Noctuidae). Christian-Luis Rodríguez Enríquez, Instituto de Investigaciones Agropecuarias y Forestales, Universidad Michoacana de San Nicolás de Hidalgo, Morelia, Michoacán, Availability (preferred): Sunday, Nov 13 11:00 AM - 2:00 PM

VP33 The ecdysone agonist methoxyfenozide affect the adult reproductive processes and longevity of beet armyworm. **Samuel Pineda**¹, spineda_us@yahoo.com, Juan Carlos Luna¹, Ana Mabel Martínez¹, José Isaac Figueroa¹, Juan Manuel Chavarrieta¹ and Elisa Viñuela², ¹Instituto de Investigaciones Agropecuarias y Forestales, Universidad Michoacana de San Nicolás de Hidalgo, Tarimbaro, Mexico, ²Proteccion de Cultivos, Universidad Politecnica de Madrid, Madrid, Spain

VP34 Structure of populations of *Myzus persicae* (Hemiptera: Aphididae) developing on oilseed rapes in France and dispersion of resistance genes. **Lisa Roy**¹, lise-stephanie.roy@ac-lyon.fr, Séverine Fontaine¹, Laetitia Caddoux¹, Annie Micoud¹ and Jean-Christophe Simon², ¹Anses – Unité Résistance aux Produits Phytosanitaires, Lyon, France, ²UMR 1099 BiO3P INRA, Université Rennes 1, Le Rheu Cedex, France

VP35 Muga silk worm - *Antheraea assama* Ww (Lep.): habitat, climate change effects and performance in new climate zones. **CJ. Prabhakar**¹, prabhakarcj@gmail.com, B. Choudhury¹, A. Bhattacharya¹, R. Chowdhury¹, HK. Hazarika¹, Tiken Ningthoujam¹, P. Borpuzari¹, RR. Basumatary¹, DP. Paliwal², AK. Paliwal³, CM. Bajpayee⁴, Simon Tshering Lepcha⁵, B. Das¹ and Subha Rani Devi¹, ¹MSSO, Central Silk Board, Guwahati, Assam, India, ²CSB

Research Extension Centre, Bageswer, Uttarakhand, India, ³Botany, Government P.G.College, Bageswer, Uttarakhand, India, ⁴R.O, Central Silk Board, Guwahati, Assam, India, ⁵CSB Research Extension Centre, Rangpoo, Sikkim, India
 Availability (preferred): Any day, 9:00 AM - 11:00

VP36 Plant extracts as alternative botanical insecticides for control the grasshopper *Heteracris littoralis* (Orthoptera: Acrididae) with reference to histological changes on the reproductive system. **Aziza Sharaby**, sharabyaziza@yahoo.com, Pests & Plant Protection, Cairo, Egypt

VP37 A new species under genus *Sergentomyia* and subgenus (*Vijaia*) *barshi* sp.nov. (Diptera: Psychodidae) from Barshi, Sholapur district, Maharashtra State, India with keys to the species. **Prakash R Salunkhe**, salunkhepr.niv@gmail.com, National Institute of Virology, Pune, India

VP38 Some structural observations between two species, *Przhevalskiana silenus* (Brauer, 1858), *Cochliomyia hominivorax* (Coquerel, 1858), infected goats in Saudi Arabia. **Souad M. ALSaqabi**, dr-alsaqabi@hotmail.com, and Sara A. al Jubran, Biology, University of Dammam, Dammam, Saudi Arabia



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Sunday, November 13, 2011, Morning

Virtual Posters
(See page 45)

Program Symposium: Citizen Scientists in Entomology Research

Room A2, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: John Carlson and Mark S. Fox, Tulane Univ., New Orleans, LA

7:45 Welcoming Remarks

7:50 0001 A citizen scientist's contributions to tree cricket taxonomy. **Nancy Collins**, ycnancy2k@hotmail.com, Racine, WI

8:15 0002 Working with EarthWatch volunteers to expand life history data for caterpillar and parasitoid host ranges. **Rebecca F. Hazen**, rhazen@tulane.edu, Tulane Univ., New Orleans, LA

8:35 0003 Examining the diversity of interactions in a tritrophic foodweb sampled by EarthWatch volunteers. **Lee A. Dyer**, nolaclimber@gmail.com, Univ. of Nevada, Reno, Reno, NV

9:00 0004 Monarchs and tachinid flies: the story of 100 citizen scientists and 10,000 monarch eggs and caterpillars. **Karen Oberhauser**, oberh001@umn.edu, Univ. of Minnesota, St. Paul, MN

9:25 0005 Discoveries from the Lost Ladybug Project facilitated by citizen scientists. **John E. Losey**, jel27@cornell.edu, Leslie Allee, Rebecca R. Smyth, James Kopco and Jason Lai, Cornell Univ., Ithaca, NY

9:50 Break

10:05 0006 BeeSpotter: citizen science and pollinator conservation. **May R. Berenbaum**, maybe@uiuc.edu, Univ. of Illinois, Urbana, IL

10:30 0007 Behind the scenes at BugGuide: the community behind half a million submitted specimens. **John VanDyk**, Iowa State Univ., Ames, IA

10:55 0008 Passive surveillance in medical entomology using BugGuide. **John C. Carlson**, jcarlo@tulane.edu, Tulane Univ., New Orleans, LA

11:15 0009 Using internet images for distributional data for a *Caloptilia* species (Lepidoptera: Gracillariidae) specializing on Chinese tallow newly discovered in North America. **Mark S. Fox**, mfox@tulane.edu and Rebecca Hazen, Tulane Univ., New Orleans, LA

11:35 0010 CJAI & citizen science – putting the “public” in publication. **Morgan D. Jackson**, morgandjackson@gmail.com and SA. Marshall, Univ. of Guelph, Guelph, ON, Canada

11:55 Concluding Remarks

P-IE Section Symposium: Identify and Clarify: Regulatory Compliance for the Rearing, Releasing, Shipping, and Studying of Arthropods in Today's World: Part 1: Demystifying the Permit Process-Understanding the Black Box

Room A6, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Colin Stewart¹ and Kevin Hoffman², ¹USDA - APHIS, Riverdale, MD, ²California Dept. of Food and Agriculture, Sacramento, CA

8:00 Introductory Remarks

8:10 0011 Plant pest permitting. Shirley A. Wager-Page and **Michael Firko**, Michael.J.Firko@usda.gov, USDA - APHIS, Riverdale, MD

8:30 0012 The USDA - APHIS permitting process for plant pests and biocontrol agents. **Colin Stewart**, colin.stewart@aphis.usda.gov, USDA - APHIS, Riverdale, MD

8:50 0013 USDA - APHIS containment facilities for high risk arthropods. **Ashima Sengupta**, Ashima.Sengupta@aphis.usda.gov, USDA - APHIS, Riverdale, MD

9:10 Break

9:25 0014 The state review process of the APHIS 526 and state permits: an example from California. **Kevin Hoffman**, khoffman@cdfa.ca.gov, California Dept. of Food and Agriculture, Sacramento, CA

9:45 0015 USDA - APHIS permits for arthropods of veterinary importance. **Thomas Letonja**, thomas.letonja@aphis.usda.gov, USDA - APHIS, Riverdale, MD

10:05 0016 The regulatory process for genetically engineered insects. **Carlos A. Blanco**, carlos.a.blanco@aphis.usda.gov and Patricia K. Beetham, USDA - APHIS, Riverdale, MD

10:25 Break 2

10:40 0017 Shipping issues associated with the importation of arthropods. **Wayne F. Wehling**, wayne.f.wehling@aphis.usda.gov, USDA - APHIS, Riverdale, MD

11:00 0018 Development of a widely prevalent list for phytophagous insects. **J. LaForest**, laforest@uga.edu, Univ. of Georgia, Tifton, GA

11:20 Concluding Remarks

11:30 Panel Discussion and Question and Answer Session

P-IE Section Symposium: Impact of Brown Marmorated Stink Bug in US Agroecosystems

Room D2, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Anne L. Nielsen¹, George C. Hamilton², ¹Michigan State Univ., East Lansing, MI, ²Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

8:00 Introductory Remarks

8:05 0019 Introduction, distribution and spread of BMSB in the United States. **George C. Hamilton**, hamilton@aesop.rutgers.edu, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

8:25 0020 Invasion biology and seasonality of BMSB in Pennsylvania and New Jersey. **Anne L. Nielsen**, anielsen@msu.edu, Michigan State Univ., East Lansing, MI

8:45 0021 Early work with pheromones and potential impacts in the western USA. **Peter W. Shearer**, peter.shearer@oregonstate.edu¹, Jeffrey R. Aldrich² and Ashot Khrimian², ¹Oregon State Univ., Hood River, OR, ²USDA - ARS, Beltsville, MD

9:05 0022 Impact on vegetables and insecticide efficacy research in the mid-Atlantic USA. **TP. Kuhar**, tkuhar@vt.edu, Virginia Polytechnic Institute and State Univ., Painter, VA

9:25 0023 Integrating olfactory and visual stimuli as attractants for BMSB. **Tracy C. Leskey**, tleskey@afars.usda.gov and Starker E. Wright, USDA - ARS, Kearneysville, WV

9:45 Break

10:00 0024 Potential impacts on grapes and small fruits in the mid-Atlantic USA. **Douglas G. Pfeiffer**, dgpfeiff@vt.edu¹, Cesar Rodriguez-Saona² and Joseph Fiola³, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Rutgers, The State Univ. of New Jersey, Chatsworth, NJ, ³Univ. of Maryland, Keedysville, MD

10:20 0025 Impacts on field crops in the mid-Atlantic USA. **Galen P. Dively**, galen@umd.edu, Univ. of Maryland, College Park, MD

10:40 0026 BMSB in ornamentals: unique modes of injury and patterns of host utilization. **Michael J. Raupp**, mraupp@umd.edu, Holly M. Martinson and Paula M. Shrewsbury, Univ. of Maryland, College Park, MD

11:00 0027 Behaviorally based evaluation of insecticides for BMSB: mobility, mortality, and recovery. **Starker E. Wright**, Starker.Wright@ars.usda.gov and Tracy C. Leskey, USDA - ARS, Kearneysville, WV

11:20 0028 Potential for biological control of BMSB. **Kim A. Hoelmer**, khoelmer@udel.edu, USDA - ARS, Newark, DE

11:40 Concluding Remarks

P-IE Section Symposium: Speaking Out on Biofuel Entomology: Identifying the Problem and Clarifying the Goals

Room A5, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Daniel A. Strickman and Kevin Hackett, USDA - ARS, Beltsville, MD

8:00 Introductory Remarks

8:05 0029 The context of biofuels within the national policy framework. **Jeffrey Steiner**, jeffrey.steiner@ars.usda.gov, USDA - ARS, Beltsville, MD

8:25 0030 Lessons for biofuels from the experience with invasive giant reed and its biological control. **John Goolsby**, jgoolsby@weslaco.ars.usda.gov¹, Patrick J. Moran¹, Alex E. Racelis¹, Alan A.

Kirk², Chenghai Yang¹, John J. Adamczyk¹, Matt A. Ciomperlik³, James Manhart⁴, Alan Pepper⁴, Daniel Tarin⁴, Tom Vaughan⁵, Amedeo Rubio⁵, Ron Lacewell⁴, Elena Cortes Mendoza⁶, Mariangeles Marcos-Garcia⁶ and Maricela Martinez Jimenez⁷, ¹USDA - ARS, Weslaco, TX, ²USDA - ARS, Montpellier, Hérault, France, ³USDA - APHIS, Edinburg, TX, ⁴Texas A&M Univ., College Station, TX, ⁵Texas A&M International, Laredo, TX, ⁶Univ. of Alicante, Alicante, Valencia, Spain, ⁷Instituto Mexicano del Tecnología del Agua, Jiutepec, Morelos, Mexico

8:45 0031 The rootworm that roared: *Miscanthus*, maize and biofuel ecology. **Joseph L. Spencer**, spencer1@illinois.edu¹ and S. Raghunath², ¹Univ. of Illinois at Urbana-Champaign, Urbana, IL, ²CSIRO EcoSystem Sciences, Brisbane, Queensland, Australia, Australia

9:05 0032 *Miscanthus* invasion biology. **Adam Davis**, Adam.Davis@ars.usda.gov and David Matlaga, USDA - ARS, Urbana, IL

9:25 0033 Mining the genome of the Formosan subterranean termite for biofuel enzymes. **Alan Lax**, allan.lax@ars.usda.gov, USDA - ARS, New Orleans, LA

9:45 0034 Impacts of biofuel crops on atmospheric volatile organic composition and potential consequences for global climate change. **Saber Miresmailli**, Saber@illinois.edu, Marcelo Zeri, Arthur R. Zangerl, Carl J. Bernacchi, May R. Berenbaum and Evan H. DeLucia, Univ. of Illinois at Urbana-Champaign, Urbana, IL

10:05 Concluding Remarks

MUVE Section Symposium: Predictors of Vector and Disease Dynamics

Room D9, First Floor (Reno-Sparks Convention Center)

Moderator and Organizer: Dina M. Fonseca and Kristen Bartlett-Healy, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

8:00 0035 Opening remarks: real time modeling, a tool for enlightened pest and disease control. **Dina M. Fonseca**, dinafon@rci.rutgers.edu, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

8:10 0036 Historical use of predictive models in an IPM approach to mosquito control. **Sean P. Healy**, shealy@co.monmouth.nj.us, Monmouth County Mosquito Commission, Eatontown, NJ

8:35 0037 Antecedent and real-time measures of arbovirus outbreak risk in California. **William K. Reisen**, arbo123@pacbell.net, Christopher M. Barker, Jennifer L. Kwan and Bborie Park, Univ. of California, Davis, Davis, CA

9:00 0038 Transmission dynamics of vector-borne pathogens: differences between ticks and mosquitoes, and implications for prediction and management. **Howard S. Ginsberg**, hginsberg@usgs.gov, USGS, Patuxent Wildlife Research Center, Kingston, RI

9:25 Break

9:40 0039 Temperature effects on the population dynamics of *Aedes albopictus*: implications for disease risk. **Diego Hernan Ruiz Moreno**, dhr48@cornell.edu, Cornell Univ., Ithaca, NY

10:00 0040 The use of temperature-based models to predict container inhabiting mosquitoes. **Kristen Bartlett-Healy**, krisb@rci.rutgers.edu¹, Dina M. Fonseca¹, Sean P. Healy², Ary Farajollahi³, Taryn Crepeau² and Isik Unlu³, ¹Rutgers, The State Univ. of

New Jersey, New Brunswick, NJ, ²Monmouth County Mosquito Commission, Eatontown, NJ, ³Mercer County Mosquito Control, Trenton, NJ

10:10 0041 Integrated mosquito management: from predictions to proactive control measures. **Ary Farajollahi**, afarajollahi@mercercounty.org¹, Sean P. Healy², Dina M. Fonseca³, Randy Gaugler³, Kristen Bartlett-Healy³, Greg Williams⁴, Scott Crans³, Isik Unlu¹, Taryn Crepeau², Gary G. Clark⁵ and Daniel A. Strickman⁶, ¹Mercer County Mosquito Control, Trenton, NJ, ²Monmouth County Mosquito Commission, Eatontown, NJ, ³Rutgers, The State Univ. of New Jersey, New Brunswick, NJ, ⁴Hudson County Mosquito Control, Jersey City, NJ, ⁵USDA - ARS, Gainesville, FL, ⁶USDA - ARS, Beltsville, MD

10:35 0042 Predicting and responding to the threat of Japanese Encephalitis in the US military. **Will K. Reeves**, will.reeves@wpafb.af.mil, US Air Force School of Aerospace Medicine (USAFSAM/PHR), Wright-Patterson AFB, OH

11:00 0043 Predictions of dengue virus transmission based on human movement and disease severity. **Uriel Kitron**, ukitron@emory.edu¹, Gonzalo M. Vazquez-Prokopec¹, Steven T. Stoddard², Alun L. Lloyd³, Valerie Paz-Soldan⁴, John P. Elder⁵, Amy C. Morrison⁶ and Thomas W. Scott², ¹Emory Univ., Atlanta, GA, ²Univ. of California, Davis, Davis, CA, ³North Carolina State Univ., Raleigh, NC, ⁴Tulane Univ., New Orleans, LA, ⁵San Diego State Univ., San Diego, CA, ⁶Univ. of California, Davis and Naval Medical Research Center Detachment, Davis, CA

11:25 0044 Prediction of Rift Valley fever outbreaks and impact on disease control. **Kenneth J. Linthicum**, Kenneth.Linthicum@ars.usda.gov¹, Assaf Anyamba², Jennifer Small², Seth Britch¹, Edwin Pak² and Compton J. Tucker², ¹USDA - ARS, Gainesville, FL, ²NASA, Greenbelt, MD

11:50 Concluding Remarks

Symposium: Advances in Acarology

Room A11, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Cal Welbourn, Univ. of Florida, Gainesville, FL

8:00 Introductory Remarks

8:05 0045 A preliminary molecular phylogeny of *Amblyomma* (Acari: Ixodida). **Stephanie Dold**, stephanie.dold@gmail.com, The Ohio State Univ., Columbus, OH

8:20 0046 A new species of Nematolycidae (Endeostigmata) from Ohio. **Samuel Bolton**, bolton.69@buckeyemail.osu.edu, The Ohio State Univ., Columbus, OH

8:35 0047 Current status of parasitic bee mites. **Diana Sammataro**, diana.sammataro@ars.usda.gov, Carl Hayden Bee Research Center, Tucson, AZ

8:50 0048 The *Rickettsia* species in *Ixodes pacificus* is transmitted by transovarial and transstadial transmissions. **Jianmin Zhong**, Jianmin.Zhong@humboldt.edu, Humboldt State Univ., Arcata, CA

9:05 0049 Responses of several spider mite species to a non-ionic surfactant: laboratory and field studies. **Raul T. Villanueva**, rtvillanueva@ag.tamu.edu¹, Francisco Garza¹ and Oscar Gonzalez², ¹Texas A&M Univ. - Texas AgriLIFE Extension, Weslaco, TX,

²Universidad Autonoma Agraria Antonio Narro, Saltillo-Coahuila, Mexico

9:20 0050 *Brevipalpus* (Acari: Tenuipalpidae) mites in California citrus. Carl C. Childers¹, Elizabeth E. Grafton-Cardwell², Joseph G. Morse³ and **Jose Carlos V. Rodrigues**, jose_carlos@mac.com⁴, ¹Univ. of Florida, Lake Alfred, FL, ²Univ. of California, Riverside, Parlier, CA, ³Univ. of California, Riverside, CA, ⁴Univ. of Puerto Rico, San Juan, PR

9:35 0051 A preliminary cunaxid (Bdelloidea: Cunaxidae) phylogeny. **Michael Skvarla**, MSkvarla36@gmail.com and Ashley Dowling, Univ. of Arkansas, Fayetteville, AR

9:50 Concluding Remarks

Symposium: Americas Neuropterists Meeting

Room D4, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Atilano Contreras-Ramos¹ and David E. Bowles², ¹Universidad Nacional Autónoma de México (UNAM), Mexico City, DF, Mexico, ²US National Park Service, Republic, MO

8:00 Welcoming Remarks

8:05 0052 The green lacewing genus *Chrysopodes* (Neuroptera: Chrysopidae). **Catherine Tauber**, cat6@cornell.edu, Cornell Univ., Davis, CA

8:20 0053 Influence of temperature on the oviposition potential of *Chrysoperla externa*. **Sérgio de Freitas**, serfre@fcav.unesp.br, São Paulo State Univ., Jaboticabal, Brazil

8:35 0054 Advances and challenges for mass production of *Chrysoperla externa* (Hagen, 1861) (Chrysopidae). **Brígida de Souza**, brgsouza@den.ufla.br, Federal Univ. of Lavras, Lavras, MG, Brazil

8:50 0055 Update on green lacewing pheromone research (Chrysopidae: *Chrysopa* spp.). **Jeffrey Aldrich**, Jeffrey.Aldrich@ars.usda.gov¹, Kamlesh R. Chauhan² and Qing-He Zhang¹, ¹Sterling International, Inc, Spokane, WA, ²USDA - ARS, Beltsville, MD

9:05 0056 Genome size in populations of *Chrysoperla rufilabris*. **Shawn Hanrahan**, shawnhanrahan@tamu.edu, Texas A&M Univ., College Station, TX

9:20 0057 Preliminary analyses on the phylogeny of the antlion genus *Paranthaclisis*, with notes on the taxonomy of the group. **Benjamin Diehl**, b-diehl@tamu.edu, Texas A&M Univ., College Station, TX

9:35 Break

9:50 0058 Neuroptera of San Diego County, California. **David K. Faulkner**, dkfaulkner41@cox.net, Forensic Entomology Services, San Diego, CA

10:05 0059 Studying Coniopterygidae (Neuroptera) using lessons from the Sternorrhyncha (Hemiptera). **Gary Miller**, gary.miller@ars.usda.gov, USDA - ARS, Beltsville, MD

10:20 0060 Current knowledge of the Coniopterygidae of Mexico. **Atilano Contreras-Ramos**, acontreras@ibiologia.unam.mx, Universidad Nacional Autónoma de México (UNAM), Mexico City, DF, Mexico

10:35 0061 Larval Megaloptera of Thailand: a preliminary assessment. **David E. Bowles**, david_bowles@nps.gov, US National Park Service, Republic, MO

10:50 0062 The Lacewing Digital Library: updates and opportunities. **John D. Oswald**, j-oswald@tamu.edu, Texas A&M Univ., College Station, TX

11:05 Discussion

11:35 Concluding Remarks

Symposium: Experiences With Bees, Stamps, Invasive And Beneficial Insects

Room A3, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Kenneth A. Sorensen¹ and Kenneth Pruess², ¹North Carolina State Univ., Raleigh, NC, ²Univ. of Nebraska, Lincoln, NE

8:00 Introductory Remarks

8:05 0063 Bees don't get arthritis. **Kenneth A. Sorensen**, kenneth_sorensen@ncsu.edu, North Carolina State Univ., Raleigh, NC

8:20 0064 A stamp collector's history of beekeeping in the USA. **Kenneth Pruess**, kpruess2@unl.edu, Univ. of Nebraska, Lincoln, NE

8:35 0065 Insect tales and spotted wing *Drosophila*. **James F. Price**, jfprice@ufl.edu, Univ. of Florida, Wimauma, FL

8:50 0066 Invasive and beneficial insects entrance into the USA. **Jay S. Bancroft**, Jay.Bancroft@ars.usda.gov, USDA - ARS, Newark, DE

9:05 Concluding Remarks

9:10 Break

9:20 Open Business Session

Symposium: Extra-curricular Engagements Enrich Entomology Education

Room D5, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Sujaya Rao¹ and Marion D. Ellis², ¹Oregon State Univ., Corvallis, OR, ²Univ. of Nebraska - Lincoln, Lincoln, NE

8:00 0067 Introduction: Why bother? Students don't have time for extra-curricular activities. **Sujaya Rao**, sujaya@oregonstate.edu, Oregon State Univ., Corvallis, OR

8:10 0068 What students learn from Bug Bowl and Science Theatre at Purdue. **Tom Turpin**, turpin@purdue.edu, Purdue Univ., West Lafayette, IN

8:30 0069 Out-of-classroom research and training experiences enhancing undergraduate programs. **Kevin Heinz**, kheinz@ag.tamu.edu, Texas A&M Univ., College Station, TX

8:50 0070 Co-curricular activities can provide entomological

experiences in the absence of an entomology major. **Tiffany Harper**, harperti@onid.orst.edu and Sujaya Rao, Oregon State Univ., Corvallis, OR

9:10 0071 Fostering sustainable graduate student engagement in K-12 education. **Susan J. Weller**, welle008@umn.edu¹, Lesa Covington-Clarkson¹, Kevin Williams² and Karen Oberhauser³, ¹Univ. of Minnesota, Minneapolis, MN, ²Bell Museum of Natural History, Minneapolis, MN, ³Univ. of Minnesota, St. Paul, MN

9:30 Break

9:45 0072 Funding: How do student organizations generate funds for club activities? **Marion Ellis**, mellis3@unl.edu, Univ. of Nebraska, Lincoln, NE

10:05 0073 Learning through internships at the Cincinnati Zoo. **Randy Morgan**, Cincinnati Zoo, Cincinnati, OH

10:25 0074 "Bug Buddies" in Nebraska. **Tiffany Heng-Moss**, thengmoss2@unl.edu¹, Tom Weissling¹, Marion Ellis¹ and Aimee Johns², ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Lincoln Children's Zoo, Lincoln, NE

10:45 0075 Middle school kids aren't as scary as you remember - students engaging students at the U of M Insect Fair. **Karen Oberhauser**¹ and Kevin Williams², ¹Univ. of Minnesota, St. Paul, MN, ²Bell Museum of Natural History, Minneapolis, MN

11:05 0076 What do caterpillars have to do with it? Students, science, and culture. **Jeffrey C. Miller**, jeffrey.miller@oregonstate.edu, Oregon State Univ., Corvallis, OR

11:25 0077 What students learn through engagement in entomological entertainment-related activities. **May R. Berenbaum**, maybe@uiuc.edu, Univ. of Illinois, Urbana, IL

11:45 Concluding Remarks

Symposium: Greenhouse Pest Management: Past, Present, and Future.

Room A12, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Raymond A. Cloyd¹ and Luis A. Cañas², ¹Kansas State Univ., Manhattan, KS, ²The Ohio State Univ., Wooster, OH

8:00 Introductory Remarks

8:05 0078 Effect of Black Pearl pepper pollen on *Orius insidiosus* development and efficacy. **Sarah Wong**, skwong@ncsu.edu and Steven D. Frank, North Carolina State Univ., Raleigh, NC

8:21 0079 Effect of banker plant species on *Aphidius colemani* abundance and efficacy. **Sara Prado**, sara.guiti.prado@gmail.com and Steven D. Frank, North Carolina State Univ., Raleigh, NC

8:37 0080 *Aphidoletes aphidomyza* (Diptera: Cecidomyiidae) for biological control of multiple aphid species in greenhouses. **Sarah Jandricic**, sej48@cornell.edu¹, Stephen P. Wraight² and John P. Sanderson¹, ¹Cornell Univ., Ithaca, NY, ²USDA - ARS, Ithaca, NY

8:53 0081 Habitat and resource management to enhance biological control in greenhouses. **John P. Sanderson**, jps3@cornell.edu¹, Rebecca Loughner², Karen Wentworth² and Jan P. Nyrop², ¹Cornell Univ., Ithaca, NY, ²Cornell Univ., Geneva, NY

9:09 0082 Do non-consumptive impacts of natural enemies enable or hinder thrips management? **Rebecca Loughner**, rll26@cornell.edu¹, Jan P. Nyrop¹, Karen Wentworth¹ and John P. Sanderson², ¹Cornell Univ., Geneva, NY, ²Cornell Univ., Ithaca, NY

9:25 Break

9:40 0083 Effects of sugar and sugar-based compounds against the western flower thrips, *Frankliniella occidentalis*. **Nikki DePaola**, ndepaola@berkeley.edu, Raymond A. Cloyd and Joshua D. Gillespie, Kansas State Univ., Manhattan, KS

9:56 0084 Influence of light intensity on the movement and efficacy of systemic insecticides against the citrus mealybug, *Planococcus citri* and sweet potato whitefly B-biotype, *Bemisia tabaci*. **Raymond A. Cloyd**, rcloyd@ksu.edu¹, Kimberly A. Williams¹, Kenneth Kemp¹ and Frank J. Byrne², ¹Kansas State Univ., Manhattan, KS, ²Univ. of California, Riverside, CA

10:12 0085 Impact of pesticides and plant growth regulators on the rove beetle, *Atheta coriaria*. **Erik R. Echeagaray**, eechegar@ksu.edu and Raymond A. Cloyd, Kansas State Univ., Manhattan, KS

10:28 0086 Western flower thrips response on transgenic and wild petunias. **Claudia H. Kuniyoshi**, kuniyoshi.1@osu.edu and Luis Cañas, The Ohio State Univ., Wooster, OH

10:44 Intermission

10:59 0087 Chemical ecology to advance IPM for fungus gnats, whiteflies and thrips. **Luis Cañas**, canas.4@osu.edu, Claudia H. Kuniyoshi, Karla J. Medina-Ortega and P. Larry Phelan, The Ohio State Univ., Wooster, OH

11:15 0088 Development of a decision support system for the management of insect pests and pathogens in greenhouses and nurseries. **Alfredo Rios**, rios.43@osu.edu¹, Luis A. Cañas¹, Christopher M. Ranger², Michael E. Redding², Randall H. Zondag³ and Heping Zhu², ¹The Ohio State Univ., Wooster, OH, ²USDA - ARS, Wooster, OH, ³The Ohio State Univ., Painesville, OH

11:31 0089 An analysis of the floriculture and nursery industries' struggle with invasive pests. **Michael P. Parrella**, mpparrella@ucdavis.edu, Univ. of California, Davis, Davis, CA

11:47 Concluding Remarks

Symposium: International Branch: Contribution of Chemical Ecology to IPM in the Tropics

Room A1, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Christian Borgemeister¹ and Charles Vincent², ¹International Centre of Insect Physiology and Ecology (ICIPE), Nairobi, Kenya, ²Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Quebec, Canada

8:00 Welcoming Remarks

8:05 0090 Chemical ecology of native systems: lessons for a sustainable use of plant chemical defense. **André Kessler**, ak357@cornell.edu¹, Katja Poveda² and Robert H. Johnson³, ¹Cornell Univ., Ithaca, NY, ²Georg August Univ., Göttingen, Germany, ³Medaille College, Buffalo, NY

8:35 0091 Chemical ecology in IPM of important agricultural and livestock pests in sub-Saharan Africa. **Zeyaur Khan**, zkhan@icipe.org

org, Rajinder Saini, Christian Borgemeister and Baldwyn Torto, International Centre of Insect Physiology and Ecology (ICIPE), Nairobi, Kenya

9:05 Break

9:20 0092 Managing key vegetable and fruit pests in western Nigeria using semiochemicals. **Henry Fadamiro**, fadamhy@auburn.edu¹, Vincent Umeh² and Joseph Anikwe³, ¹Auburn Univ., Auburn, AL, ²National Horticultural Research Institute, Ibadan, Oyo State, Nigeria, ³Cocoa Research Institute of Nigeria, Ibadan, Oyo State, Nigeria

9:50 0093 Synergistic plant-derived volatile mixtures to attract the oriental fruit moth, a warm-adapted frugivorous pest. **Silvia Dorn**, silvia.dorn@ipw.agr.ethz.ch, Adriana Najar-Rodriguez and Jaime C. Pinero, Institute of Agricultural Sciences, ETH Zurich, Zurich, Switzerland

10:20 Concluding Remarks

10:25 International Branch meeting

Symposium: Public Health Pests, from History to Scourge of the 21st Century

Room A4, First Floor (Reno-Sparks Convention Center)

Moderator and Organizer: **Jerry Hatch**, Northwest Exterminating, Marietta, GA

8:00 0094 Introduction and board certification. **Jerry Hatch**, Northwest Exterminating, Marietta, GA

8:10 0095 The big idea: bed bug medicolegal impact. **Stuart Mitchell**, docmitchell@hotmail.com, Springer Pest Solutions, Des Moines, IA

8:50 0096 Cockroach allergens impacting human health. **Shripat T. Kamble**, SKAMBLE1@unl.edu, Univ. of Nebraska - Lincoln, Lincoln, NE

9:30 0097 Military medical entomology: finding new ways to battle old foes. **George Schoeler**, george.schoeler@med.navy.mil, Naval Medical Research Unit - 2 Pacific, Pearl Harbor, HI

10:10 0098 Scabies in the 21st century: a nosocomial tale. **James Cilek**, cilek_j@popmail.firn.edu, Florida A&M Univ., Panama City, FL

10:50 0099 Flies: disease vectors of the air. **James Shaffer**, james.shaffer@pestwest.com, PestWest, Sarasota, FL

Symposium: State-of-the-art Molecular Research of Global Interest

Room A13, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Apurba K. Barman¹, Nandi Nagaraj² and Shripat T. Kamble³, ¹Texas A&M Univ., College Station, TX, ²Dow AgroSciences India, Bangalore, Karnataka, India, ³Univ. of Nebraska - Lincoln, Lincoln, NE

8:00 Introductory Remarks

8:05 0100 Next generation entomology: induction of genes involved in cotton plant defense affects interactions between competing herbivores. **Ada Szczepaniec**, ada.s@tamu.edu and Micky D. Eubanks, Texas A&M Univ., College Station, TX

8:25 0101 High-throughput discovery of pesticidal proteins from microorganisms. **Kimberly Sampson**, kimberly.sampson@bayer.com, Duane Lehtinen, Rebecca Thayer, Ethan Dunn, Jessie Zeigler, Kira Bulazel, Rong Guo, Brian McNulty and Jill Hinson, Bayer CropScience, Morrisville, NC

8:45 0102 Proteomics and genomics of resistance to Bt toxins and transgenic Bt crops. **Juan L. Jurat-Fuentes**, jurat@utk.edu¹, Omaththage P. Perera², Anaïs Castagnola¹, Cris Oppert¹ and Siva R. K. Jukka¹, ¹Univ. of Tennessee, Knoxville, TN, ²USDA - ARS, Stoneville, MS

9:05 0103 Discovery and optimization of hemipteran-active proteins for transgenic plant applications. **James A. Baum**, james.a.baum@monsanto.com, Konasale Anilkumar, David Bowen, Robert S. Brown, Thomas Clark, Michael Pleau, Xiaohong Shi, Uma Sukuru and Andrew Wollacot, Monsanto Company, Chesterfield, MO

9:25 0104 Molecular basis of resistance to Bt toxin Cry1Ac in *Trichoplusia ni*. **Ping Wang**, pw15@cornell.edu, Cornell Univ. NYSAES, Geneva, NY

9:45 Break

10:00 0105 Got resistance? Try modified Bt toxins. **Bruce Tabashnik**, brucet@ag.arizona.edu¹, Fangneng Huang², Mukti Ghimire², B. Rogers Leonard², Blair D. Siegfried³, Murugesan Rangasamy³, Yajun Yang⁴, Yidong Wu¹, David G. Heckel⁵, Alejandra Bravo⁶ and Mario Soberón¹, ¹Univ. of Arizona, Tucson, AZ, ²Louisiana State Univ. AgCenter, Baton Rouge, LA, ³Univ. of Nebraska - Lincoln, Lincoln, NE, ⁴Nanjing Agricultural Univ., Nanjing, China, ⁵Max Planck Institute for Chemical Ecology, Jena, Germany, ⁶Universidad Nacional Autónoma de México (UNAM), Morelos, Mexico

10:20 0106 Use of protein/protein interaction and cell based assays to determine mode of action of novel protein toxins for insect control. **Joel Sheets**, JJSheets@dow.com¹, Tim Hey¹, Alexander E. Lang², Gudula Schmidt² and Klaus Aktories², ¹Dow AgroSciences LLC, Indianapolis, IN, ²Institut für Experimentelle und Klinische Pharmakologie und Toxikologie, Freiburg, Germany

10:40 0107 Developing RNA interference as a tool for target site discovery in western corn rootworms. **Blair D. Siegfried**, bsiegfri@unlnotes.unl.edu, Analiza P. Alves, Murugesan Rangasamy, Haichuan Wang and Hong Chen, Univ. of Nebraska - Lincoln, Lincoln, NE

11:00 0108 Applied genomics for the control of corn insect pests. **Brad S. Coates**, Brad.Coates@ARS.USDA.GOV¹, Richard L. Hellmich¹, Blair D. Siegfried² and Craig A. Abel¹, ¹USDA - ARS, Ames, IA, ²Univ. of Nebraska - Lincoln, Lincoln, NE

11:20 0109 Strategy for the next generation transgenic insect control. **Andre Abad**, andre.abad@pioneer.com and Gusui Wu, Pioneer Hi-Bred International, Inc., Johnston, IA

11:40 Concluding Remarks

Ten-Minute Papers PBT Session 1

**Room D7, First Floor
(Reno-Sparks Convention Center)**

Moderators and Organizers: Jeffrey G. Scott¹, Subba R. Palli², Julian F. Hillyer³ and Jeffrey J. Stuart⁴, ¹Cornell Univ., Ithaca, NY, ²Univ. of Kentucky, Lexington, KY, ³Vanderbilt Univ., Nashville, TN, ⁴Purdue Univ., West Lafayette, IN

9:00 Introductory Remarks

9:05 0110 Effects of compounds bitter-tasting to humans on feeding by codling moth neonates. **Maciej A. Pszczolkowski**, MPszczolkowski@missouristate.edu, Missouri State Univ., Mountain Grove, MO

9:17 0111 Larvicidal and histological effects of *Melia azedarach* extract on *Culex quinquefasciatus* Say larvae (Diptera: Culicidae). **Areej Kareem Al-Khalaf Areej**, Dr_ajkhalaf@hotmail.com, Riyadh, Saudi Arabia

9:29 0112 Toxicity and repellency of extracts from pilot-plant-scale isolation of pea flour against stored-product insects. **Paul Fields**, paul.fields@agr.gc.ca¹, Wes G. Taylor² and Russell Hynes², ¹Agriculture and Agri-Food Canada, Winnipeg, MB, Canada, ²Agriculture and Agri-Food Canada, Saskatoon, SK, Canada

9:41 0113 Poneratoxin: structure and function of the major active component from the venom of the bullet ant, the world's most painful stinging insect. **Justin O. Schmidt**, jschmidt@ag.arizona.edu¹ and Stephen R Johnson², ¹Southwestern Biological Institute, Tucson, AZ, ²Carbon Dynamics Institute, Springfield, IL

9:53 0114 Stick insect chemical defenses: potential for useful chemistry (Order Phasmatodea). **Aaron T. Dossey**, BugoChem@gmail.com¹, Marco Gottardo², Robert Vander Meer¹, Ulrich R. Bernier¹, John M. Whitaker³, Maritta Kunert⁴, Wilhelm Boland⁴ and William R. Roush³, ¹USDA - ARS, Gainesville, FL, ²Univ. of Siena, Siena, Italy, ³Scripps Florida, Jupiter, FL, ⁴Max Planck Institute, Jena, Germany

10:05 0115 Susceptibility of *Megachile rotundata* to insecticides used in wild blueberry production in Atlantic Canada. **Cynthia Scott-Dupree**, cscottdu@uoguelph.ca¹, Angela Gradish¹ and G. Christopher Cutler², ¹Univ. of Guelph, Guelph, ON, Canada, ²Nova Scotia Agricultural College, Truro, NS, Canada

10:17 Intermission

10:32 0116 Novel approach for Bt toxin-based transgenic aphid resistance. Nanasahab Chougule¹, Huarong Li², Sijun Liu¹ and **Bryony Bonning**, bbonning@iastate.edu¹, ¹Iowa State Univ., Ames, IA, ²Dow AgroSciences, Indianapolis, IN

10:44 0117 MRI investigation of the effects of Bt on the gut of *Manduca sexta*. **Walter G. Goodman**, goodman@entomology.wisc.edu¹, Meritxell Pérez-Hedo², Matilde Eizaguirre² and Ian J. Rowland¹, ¹Univ. of Wisconsin - Madison, Madison, WI, ²Univ. of Lleida, Lleida, Spain

10:56 0118 Factors affecting spinosad toxicity to stored grain insects. **Subramanyam Bhadriraju**, sbhadrir@ksu.edu, Dhana Raj Boina, Prasad Telovrolo, Fernanda Lazzari and Kimondo Mutambuki, Kansas State Univ., Manhattan, KS

11:08 0119 Evaluation of insecticides for nursery trees against infestations by the Asian longhorned beetle (*Anoplophora glabripennis*). **Baode Wang**, Baode.Wang@aphis.usda.gov, Phillip A. Lewis and Victor C. Mastro, USDA - APHIS, Buzzards Bay, MA

11:20 0120 Comparative analysis of the immune competencies of the mosquitoes *Aedes aegypti* and *Anopheles gambiae* in response to bacterial infections. **Julian F. Hillyer**, julian.hillyer@vanderbilt.edu, Sarah A. Coggins and Tania Y. Estevez-Lao, Vanderbilt Univ., Nashville, TN

11:32 0121 Temporal and spatial localization of the response of antimicrobial molecules in housefly alimentary canal. **Wesley A. Glover**, wg00824@georgiasouthern.edu, Georgia Southern Univ., Statesboro, GA

11:44 0122 Preferential infectivity of an entomopathogenic nematode in a hymenopteran-parasitized host: Impact of CO₂ and immune response. **George Mbata**¹ and David Shapiro-Ilan², ¹Fort Valley State Univ., Fort Valley, GA, ²USDA - ARS, Byron, GA

11:56 Concluding Remarks

Ten-Minute Papers, MUVE Session 1: Bed Bugs

Room D3, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Douglas E. Norris¹, C. Geden², Dini M. Miller³ and Roger Gold⁴, ¹Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, ²USDA - ARS, Gainesville, FL, ³Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ⁴Texas A&M Univ., College Station, TX

8:00 Introductory Remarks

8:05 0123 Carbon dioxide fumigation for control of bed bugs. **Changlu Wang**, cwang@AESOP.Rutgers.edu, Narinderpal Singh



and Richard Cooper, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

8:17 0124 The response of the bed bug, *Cimex lectularius*, to diatomaceous earth applications in laboratory evaluations. **Molly L. Stedfast**, msted14@vt.edu and Dini Miller, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

8:29 0125 Development of an affordable bed bug monitoring trap. **Narinderpal Singh**, nsingh@aesop.rutgers.edu and Changlu Wang, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

8:41 0126 *Cimex lectularius* in Italy: a review. **Guglielmo Pampiglione**, g.pampiglione@izs.it, Istituto G. Caporale Teramo, Teramo, Italy

8:53 0127 In-vitro rearing of bed bugs (Heteroptera: Cimicidae, *Cimex lectularius*, L.) and challenges encountered. **Ralph Narain**, ralph@huskers.unl.edu¹, Shripat T. Kamble¹ and Joelle F. Olson², ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Univ. of Minnesota, St. Paul, MN

9:05 0128 A novel method for artificially feeding bed bugs, *Cimex lectularius*. **Eva A. Chin-Heady**, echin@dow.com¹, Ronda L. Hamm¹, Joe J. DeMark², Gary Bennett³ and Kurt Saltzman³, ¹Dow AgroSciences, Indianapolis, IN, ²Dow AgroSciences, Fayetteville, AR, ³Purdue Univ., West Lafayette, IN

9:17 0129 Laboratory efficacy assessment of multiple steam treatment durations on bed bugs (*Cimex lectularius*) and house dust mites (*Dermataphagoides farinae*). **Roger Gold**, r-gold@tam.u.edu and Robert T. Puckett, Texas A&M Univ., College Station, TX

9:29 Break

9:44 0130 Pyrethroid resistant bed bugs (*Cimex lectularius* L.): characterization of the cuticle using SEM, GC/MS, and molecular methods. **Reina Koganemaru**, reinak7@vt.edu, Dini M. Miller and Zach N. Adelman, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

9:56 0131 Efficacy of select insecticides as bed bug ovicides. **Susan C. Jones**, jones.1800@osu.edu and Joshua Bryant, The Ohio State Univ., Columbus, OH

10:08 0132 A novel solution for a bed bug bait station. **Joelle F. Olson**, Joelle.Olson@ecolab.com, Ecolab, Eagan, MN

10:20 0133 New FMC technology: a new, active, and serviceable bed bug detector. **Dina Richman**, Dina.Richman@fmc.com¹ and Amelie Riendl², ¹FMC Corporation, Philadelphia, PA, ²FMC Corporation, Ewing, NJ

10:32 0134 Comparison of phagostimulants and bed bug performance on blood from several potential hosts. **Alvaro Romero**, alvaro_romero@ncsu.edu and Coby Schal, North Carolina State Univ., Raleigh, NC

10:44 0135 Evaluation of Nuvan Prostrips, applied at the label rate, for control of bed bugs (*Cimex lectularius*) in plastic bags containing clothing, electronics and other belongings. **Dini M. Miller**, dinim@vt.edu, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

10:56 0136 Bed bugs are not cockroaches! Does differential adsorption of insecticides mean we have to re-assess treatment strategies? **Stephen A. Kells**, kells002@umn.edu, Marc Eaton and Alice M. Kells, Univ. of Minnesota, St. Paul, MN

11:08 Concluding Remarks

Sunday, November 13, 2011, Afternoon

Lunch and Learns
(See Page 10)

Program Symposium: Identifying the Current Status of Women in Entomology, Clarifying Initiatives for Retention, and Speaking Out to Share Experience

Room A3, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Patricia Prasifka¹ and Rayda K. Krell²,
¹Dow AgroSciences, Champaign, IL, ²Rayda K. Krell, LLC, New Canaan, CT

1:30 Introductory Remarks

PART 1: Identifying History and Current Status of Women in Entomology

1:35 0137 Great women in entomology. **Gail E. Kampmeier**,
gkamp@illinois.edu, Univ. of Illinois, Champaign, IL

1:55 0138 Data on women in entomology: you've come a long way, baby! **Laura Higgins**, laura.higgins@pioneer.com, Pioneer Hi-Bred International, Inc., Johnston, IA

2:15 0139 Let's get real: diverse stories of women in entomology. **Carol Pilcher**, coupleofbugs@aol.com, Wentzville, MO

2:35 Break

2:50 0140 Student motherhood and women leaders in entomology: lessons learned in graduate school survival. **Nancy Brill**, nlbrill@ncsu.edu, North Carolina State Univ., Raleigh, NC

3:10 0141 EntoMOMogist: my nontraditional career path. **Rayda K. Krell**, rayda.krell@earthlink.net, Rayda K. Krell, LLC, New Canaan, CT

3:30 0142 EntoMOMogist: having kids and a successful career. **Paula Davis**, paula.davis@pioneer.com, Pioneer Hi-Bred International, Inc., Johnston, IA

3:50 Break 2

PART 2: Clarifying Initiatives for Retaining Women in Entomology: Policies that Support Women in Entomology Careers, Discussion of Workplace Environments and Personal Experiences

4:05 0143 Women in academia. **Sharron Quisenberry**, sharronq@iastate.edu, Iowa State Univ., Ames, IA

4:20 0144 Women in industry. **Michelle S. Smith**, mssmith@dow.com, Dow AgroSciences, Indianapolis, IN

4:35 0145 Women in government. **Dennis Kopp**, dkopp@nifa.usda.gov, USDA, Washington, DC

4:50 0146 Women in the military. **LT Connie Johnson**, crjohns7@ncsu.edu, United States Navy, Other

PART 3: Speaking Out to Share Experiences

5:05 0147 Panel discussion with all speakers. **Patricia Prasifka**, plprasifka@dow.com, Dow AgroSciences, Champaign, IL

5:25 Mixer: Meet the Speakers, Connect with Mentors

Program Symposium: 5,000 Insect Genome Project Workshop (i5K)

Room E1-E3, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Susan Brown¹, Kevin Hackett², Owain R. Edwards³, Gene Robinson⁴ and Stephen Richards⁵, ¹Director of the Center for Genomic Studies on Arthropods Affecting Human Animal and Plant Health, Kansas State Univ., Manhattan, KS, ²USDA - ARS, Beltsville, MD, ³CSIRO Entomology, Wembley, Western Australia, Australia, ⁴Univ. of Illinois at Urbana-Champaign, Urbana, IL, ⁵Baylor College of Medicine, Houston, TX

1:00 0148 Why sequence 5000 arthropod (mostly insect) genomes? **Kevin Hackett**, kevin.hackett@ars.usda.gov¹, Owain R. Edwards² and Gene Robinson³, ¹USDA - ARS, Beltsville, MD, ²CSIRO Entomology, Wembley, Western Australia, Australia, ³Univ. of Illinois at Urbana-Champaign, Urbana, IL

2:00 0149 i5K organization, wiki page, working groups, update on species selection and sequencing efforts, How can I participate? **Susan Brown**, sjbrown@ksu.edu¹ and Stephen Richards², ¹Director of the Center for Genomic Studies on Arthropods Affecting Human Animal and Plant Health, Kansas State Univ., Manhattan, KS, ²Baylor College of Medicine, Houston, TX

3:00 Breakout sessions: discussion and feedback.
Led by Kevin Hackett, Owain Edwards, Gene Robinson, Sue Brown and Stephen Richards

3:45 0150 Summary reports from breakout sessions. **Susan Brown**, sjbrown@ksu.edu, Director of the Center for Genomic Studies on Arthropods affecting Human Animal and Plant Health, Kansas State Univ., Manhattan, KS

4:30 Concluding Remarks

Program Symposium: An Eisnerian View of Nature: a Tribute to the Life and Work of Thomas Eisner

Room D3, First Floor (Reno-Sparks Convention Center)

Moderator and Organizer: May R. Berenbaum, Univ. of Illinois at Urbana-Champaign, Urbana, IL

1:30 Introductory Remarks

1:35 0151 Systems biology meets social behavior: a brain transcriptional regulatory network analysis of division of labor in honey bees. **Gene Robinson**, generobi@uiuc.edu, Univ. of Illinois at Urbana-Champaign, Urbana, IL

2:05 0152 Field tripping with Tom: science, ecoactivism, and citizenship. **James Carrel**, carrelj@missouri.edu, Univ. of Missouri - Columbia, Columbia, MO

2:25 0153 Sound strategies: the bat-moth arms race. **William E. Conner**, conner@wfu.edu, Wake Forest Univ., Winston-Salem, NC

2:55 Break

3:10 0154 For love of insects and plants: serendipitous discoveries from nature. **David E. Dussourd**, dussourd@uca.edu, Univ. of Central Arkansas, Conway, AR

3:40 0155 Hair-borne defense: anointment with tobacco secondary metabolites protects a caterpillar from predation. **Scott R. Smedley**, Scott.Smedley@trincoll.edu, Trinity College, Hartford, CT

4:10 0156 For love of language: Tom Eisner as master storyteller. **May R. Berenbaum**, maybe@illinois.edu, Univ. of Illinois at Urbana-Champaign, Urbana, IL

4:40 Concluding Remarks

Buzz Words

Room C1-C4, First Floor (Reno-Sparks Convention Center)

1:45 Buzz words: the movie; a low cost platform for production of outreach media based on smartphone apps. **Saber Miresmailli**, Saber@illinois.edu, Univ. of Illinois at Urbana-Champaign, Urbana, IL

2:00 Concluding Remarks

Lunch and Learn: Don't get stung by the media! Learn how to masterfully manage reporters and get your message out.

Room D7, First Floor (Reno-Sparks Convention Center)

12:15 Introductory Remarks

12:20 Don't get stung by the media! Learn how to masterfully manage reporters and get your message out. **Ruth Borger**, borgerru@msu.edu, Michigan State Univ., East Lansing, MI

12:40 Panel Discussion

1:15 Concluding Remarks

Lunch and Learn: How to Navigate the Annual Meeting and How to Get the Most out of ESA

Room D6, First Floor (Reno-Sparks Convention Center)

12:15 Introductory Remarks

12:15 A program book overview: highlights and overall schedule. **Rayda K. Krell**, rayda.krell@earthlink.net, Rayda K. Krell, LLC, New Canaan, CT

12:35 Local highlights and attractions: where to eat and how to get around. **Joy L. Newton**, letsgobhcseagles@yahoo.com, Univ. of Nevada, Reno, Reno, NV

12:55 How to get the most out of ESA. **Scott Hutchins**, shhutchins@dow.com, Dow AgroSciences, Indianapolis, IN

1:15 Concluding Remarks

The Cockroach Monologues: I

Room A8, First Floor (Reno-Sparks Convention Center)

1:00 Introductory Remarks

1:05 The Cockroach Monologues: I. **Shelly Clark Geiser**, shellyclark1725@hotmail.com, Omaha, NE

2:00 Concluding Remarks

PBT Section Symposium: Signaling Workshop

Room D10, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Qisheng Song¹, Subba R. Palli², Vincent Henrich³ and David Denlinger⁴, ¹Univ. of Missouri - Columbia, Columbia, MO, ²Univ. of Kentucky, Lexington, KY, ³Univ. of North Carolina at Greensboro, Greensboro, NC, ⁴The Ohio State Univ., Columbus, OH

1:30 Introductory Remarks

1:35 0157 A role for insulin signaling in mosquito diapause regulation. **David L. Denlinger**, The Ohio State Univ., Columbus, OH

2:05 0158 One insulin pathway for many functions in mosquitoes. **Mark R. Brown**, mrbrown@uga.edu, Univ. of Georgia, Athens, GA

2:35 0159 Insulin and amino acid signaling regulates beetle metamorphosis and reproduction. **Ramaseshadri Parthasarathy**, parthasarathy.ramaseshadri@monsanto.com, Monsanto Company, Chesterfield, MO

3:05 0160 Signaling pathways for tick salivary secretion. **Yoonseong Park**, ypark@ksu.edu, Ladislav Simo and Juraj Koci, Kansas State Univ., Manhattan, KS

3:35 Break

3:50 0161 What's new with ecdysone: one hormone activity with many components. **Vincent Henrich**, vincent_henrich@uncg.edu, Univ. of North Carolina at Greensboro, Greensboro, NC

4:10 0162 Bursicon function in cuticle sclerotization and beyond. **Qisheng Song**, songq@missouri.edu, Univ. of Missouri - Columbia, Columbia, MO

4:30 0163 Recent advances in JH research. **Xiao-Fan Zhao**, xifzhao@sdu.edu.cn, Shandong Univ., Jinan, Shandong, China

4:50 0164 Crosstalks between TGF- β , Wnt, and JH signaling pathways in mediating insect metamorphosis. **Jian Wang**, jianwang@umd.edu, Univ. of Maryland, College Park, MD

5:10 Update on signaling research by participants

5:25 Concluding Remarks

P-IE Section Symposium: Host Plant Volatiles: Identifying New Approaches for Insect Pest Management

Room A5, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Ian Kaplan¹ and Cesar Rodriguez-Saona², ¹Purdue Univ., West Lafayette, IN, ²Rutgers, The State Univ. of New Jersey, Chatsworth, NJ

1:30 Welcoming Remarks

1:35 0165 Seasonal fluctuations of host plant volatiles, intra-specific variation in the herbivore's perception, and consequences on pest management. **Silvia Dorn**, silvia.dorn@ipw.agrl.ethz.ch, Jaime C. Piñero and Adriana Najar-Rodriguez, Institute of Agricultural Sciences, ETH Zurich, Zurich, Switzerland

1:55 0166 Manipulating native populations of entomopathogenic nematodes with herbivore-induced plant volatiles to enhance pest control. Jared G. Ali¹, Hans T. Alborn², Raquel Campos-Herrera¹, Fatma Kaplan², Larry W. Duncan¹, Inna Kuzovkina³ and **Lukasz L. Stelinski**, stelinski@ufl.edu¹, ¹Univ. of Florida, Lake Alfred, FL, ²Insect Chemistry Unit, Gainesville, FL, ³Institute of Plant Physiology, Moscow, Russia

2:15 0167 How plant volatile blends, field borders, and crop matrix interactively shape natural enemy communities. **Joseph E. Braasch**, jbraasch@purdue.edu and Ian Kaplan, Purdue Univ., West Lafayette, IN

2:35 0168 Using herbivore-induced plant volatiles to enhance biological control in western apple, pear and walnut orchards. **Vincent P. Jones**, vpton@wsu.edu¹, Nicholas J. Mills², David R. Horton³, Shawn A. Steffen¹, Thomas R. Unruh³ and Peter W. Shearer⁴, ¹Washington State Univ., Wenatchee, WA, ²Univ. of California, Berkeley, Berkeley, CA, ³USDA - ARS, Wapato, WA, ⁴Oregon State Univ., Hood River, OR

2:55 0169 Host plant volatiles to improve detection and management of pepper weevil, *Anthonomus eugenii*, in pepper. **Karla Adesso**, Karla.Adesso@ARS.USDA.GOV¹, Heather J. McAuslane² and Hans T. Alborn³, ¹USDA - ARS, Gainesville, FL, ²Univ. of Florida, Gainesville, FL, ³Insect Chemistry Unit, Gainesville, FL

3:15 Break

3:30 0170 Response of predaceous arthropods to methyl salicylate in agricultural fields. **Cesar Rodriguez-Saona**, crodriguez@aesop.rutgers.edu¹, Ian Kaplan² and Livy Williams³, ¹Rutgers, The State Univ. of New Jersey, Chatsworth, NJ, ²Purdue Univ., West Lafayette, IN, ³USDA - ARS, Montpellier, France

3:50 0171 Using host plant volatiles to improve the trap tree strategy for management of plum curculio. **Starker E. Wright**, Starker.Wright@ars.usda.gov and Tracy C. Leskey, USDA - ARS, Kearneysville, WV

4:10 0172 Host plant volatiles as tools for monitoring and manipulating natural enemies. **Shawn A. Steffan**, shawn_steffan@wsu.edu¹, Vince Jones¹, Callie Baker¹, Eugene Miliczky² and David R. Horton², ¹Washington State Univ., Wenatchee, WA, ²USDA - ARS, Wapato, WA

4:30 0173 Beyond attraction - methyl salicylate in strawberry, spruce and red maple fields. **Jana C. Lee**, jana.lee@ars.usda.gov, USDA - ARS, Corvallis, OR

4:50 0174 Host plant volatile effects on arthropods in cotton fields. **Livy Williams**, lwilliams@ars-ebcl.org¹, Cesar Rodriguez-Saona² and Sandra C. Castle del Conte³, ¹USDA - ARS, Montpellier, France, ²Rutgers, The State Univ. of New Jersey, Chatsworth, NJ, ³Univ. of Idaho, Moscow, ID

5:10 0175 How methyl salicylate evolved from candy to crop protection tool. **David G. James**, david_james@wsu.edu¹, Tanya S. James², Lawrence C. Wright¹, Sandra Castle del Conte¹, Tessa R. Grasswitz³, Vincent R. Hebert⁴, Marja Simpson⁵ and Geoff Gurr⁵, ¹Washington State Univ., Prosser, WA, ²Yakima, WA, ³New Mexico State Univ., Los Lunas, NM, ⁴Washington State Univ., Richland, WA, ⁵Charles Sturt Univ., Orange, NSW, Australia

5:30 Concluding Remarks

P-IE Section Symposium: Identify and Clarify: Regulatory Compliance for the Rearing, Releasing, Shipping, and Studying of Arthropods in Today's World: Part 2: Regulatory Compliance for Rearing, Releasing, Shipping, and Studying Arthropods

Room A6, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Scott W. Myers¹ and Lisa Gail Neven², ¹Scott W. Myers, USDA - APHIS, Buzzards Bay, MA, ²USDA - ARS, Wapato, WA

1:30 Introductory Remarks

1:35 0176 Commercial rearing and shipping of agricultural pests for research. **Gary L. Benzon**, gbenzon@benzonresearch.com, Benzon Research Inc., Carlisle, PA

1:55 0177 Mass rearing and release of sterile fruit flies, a Florida perspective. **David Dean**, david.e.dean@aphis.usda.gov, USDA - APHIS, Sarasota, FL

2:15 0178 Release of foreign biological control agents in an agricultural setting. **Elizabeth A. Boyd**, eaboyd@csuchico.edu, California State Univ., Chico, Chico, CA

2:35 0179 Foreign exploration, importation and release of biological control agents. **David W. Williams**, david.w.williams@aphis.usda.gov, USDA - APHIS, Buzzards Bay, MA

2:55 Break

3:10 0180 Regulation of genetically engineered insects: current status and future prospects. **Camilla Beech**, Camilla.Beech@oxitec.com, Oxitec Ltd., Oxfordshire, United Kingdom

3:30 0181 Insectary experiences in relation to insect permitting. Abhilash Balachandran¹ and **Jon M. Babcock**, jmbabcock@dow.com², ¹Dow AgroSciences, Indianapolis, IN, ²Dow AgroSciences LLC, Indianapolis, IN

3:50 0182 Live insect displays: experiences with permitting, shipping, and rearing. **Nathan Erwin**, ERWINN@si.edu, Smithsonian Institution, Washington, DC

4:10 0183 Importing insects into the United States from around the world. **Michael Weissmann**, askartie@aol.com, Kallima Consultants Inc., Northglenn, CO

4:30 Panel Discussion

4:55 Concluding Remarks

SysEB Section Symposium: An Overlooked Insect Group. Dragonflies and Damselflies (Odonata), Model Organisms for Systematics, Ecology and Evolutionary Biology Studies

Room D4, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Seth M. Bybee¹ and Jessica L. Ware²,
¹Brigham Young Univ., Provo, UT, ²Rutgers, The State Univ. of New Jersey, Newark, NJ

1:00 Welcoming Remarks

1:05 0184 How old are modern dragonflies? **Jessica L. Ware**,
jware42@andromeda.rutgers.edu, Rutgers, The State Univ. of New Jersey, Newark, NJ

1:20 0185 Odonata nymphs: functional morphology in relation to habitat diversity. **Kenneth Tennessen**, ktenessen@centurytel.net, Wautoma, WI

1:35 0186 Ovariole morphology in dragonflies. **Kamilla Koch**,
kochka@uni-mainz.de, Johannes Gutenberg-Univ. Mainz
Becherweg, Mainz Becherweg, Germany

1:50 0187 Odonata in the digital age of entomology. **John C. Abbott**,
jcabbott@mail.utexas.edu, Univ. of Texas at Austin, Austin, TX

2:05 0188 Ongoing research on *Argia* (Odonata: Coenagrionidae), a megadiverse genus of New World damselflies. **Rosser Garrison**,
rosser.garrison@cdfa.ca.gov, California Dept. of Food and Agriculture, Sacramento, CA

2:20 0189 Behavior, biogeography and speciation: the curious case of the *Nesobasis* damselflies of Fiji. **Christopher Beatty**,
beattych@yahoo.com, Santa Clara Univ., Santa Clara, CA

2:35 0190 Phylogeography of Hawaiian damselflies. **Steve Jordan**,
sdjordan@bucknell.edu, Bucknell Univ., Lewisburg, PA

2:50 0191 A brief history of Australian odonate taxonomy. **Gunther Theischinger**,
Gunther.Theischinger@environment.nsw.gov.au, NSW Dept. of Premier and Cabinet, Grays Point, N.S.W., Australia

3:05 0192 Complex origin of the Odonata of the Middle East. **Henri Dumont**,
Henri.Dumont@ugent.be, Ghent Univ., Ghent, Belgium

3:20 Break

3:35 0193 Namibian desert dragons: patterns, traits and processes. **Frank Suhling**,
f.suhling@tu-bs.de, Technische Universität Braunschweig, Braunschweig, Germany

3:50 0194 Why do we use Odonata as study models? Lessons of huge diversity from a modest insect order. **Alex Cordoba**,
acordoba@ecologia.unam.mx, Universidad Nacional Autónoma de México (UNAM), México, D.F., Mexico

4:05 0195 Dragonflies: model organisms for conservation research. **John Simaika**,
simaikaj@sun.ac.za¹ and Michael J. Samways²,
¹Stellenbosch Univ., Matieland, South Africa, ²Univ. of Stellenbosch, Stellenbosch, South Africa

4:20 0196 Climate change and forest fragmentation: changing habitats and biodiversity in Odonata. **Göran Sählen**,
Goran.Sahlen@hh.se, Halmstad Univ., Halmstad, Sweden

4:35 0197 Dragonfly hotheads: sunbathers vs. marathoners. **Michael L. May**,
may@aesop.rutgers.edu, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

4:50 0198 Causes of female color polymorphism in an invasive Hawaiian damselfly. **Eben Gering**,
eben@mail.utexas.edu, Univ. of Texas at Austin, Austin, TX

5:05 0199 Males learn to prefer gynochrome females in a polymorphic damselfly (Odonata: Coenagrionidae). **RA. Sánchez-Guillén**,
DI. Galicia-Mendoza and **Adolfo Cordero-Rivera**,
adolfo.cordero@uvigo.es, Grupo de Ecología Evolutiva e da Conservación, Pontevedra, Spain

5:20 0200 Odonata phylogeny: where are we now and where should we go? **Seth M. Bybee**,
Seth.Bybee@gmail.com, Brigham Young Univ., Provo, UT

SysEB Section Symposium: Hardly Boring: Cerambycid Workers Symposium

Room D1, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Ann M. Ray¹ and Amy Berkov²,
¹Xavier Univ., Cincinnati, OH, ²The City College of New York, New York, NY

1:30 Welcoming Remarks

1:33 0201 Female-produced sex pheromone of *Desmocerus californicus californicus*, a species in the cerambycid subfamily Lepturinae. **Ann M. Ray**,
raya6@xavier.edu¹, Ian Swift², J. Steven McElfresh³, Ronald L. Alten⁴ and Jocelyn G. Millar³,
¹Xavier Univ., Cincinnati, OH, ²California State Collection of Arthropods, Sacramento, CA, ³Univ. of California, Riverside, Riverside, CA, ⁴R.L. Alten Personal Collection, Alta Loma, CA

1:58 0202 Role of volatile semiochemicals in the host- and mate-location behavior of *Mallodon dasystemus* (Coleoptera: Cerambycidae). **Matthew A. Paschen**,
mpaschen@purdue.edu¹, Jocelyn G. Millar², Nathan M. Schiff³ and Matthew D. Ginzl¹,
¹Purdue Univ., West Lafayette, IN, ²Univ. of California, Riverside, Riverside, CA, ³USDA - Forest Service, Stoneville, MS

2:23 0203 Sensory overload: how can twenty species of cerambycids share a single pheromone? **Robert F. Mitchell**,
rmitche3@life.illinois.edu¹, Becca L. Striman¹, Kenneth P. Robinson¹, Elizabeth E. Graham², James D. Barbour³, Jocelyn G. Millar⁴ and Lawrence M. Hanks¹,
¹Univ. of Illinois at Urbana-Champaign, Urbana, IL, ²Michigan State Univ., East Lansing, MI, ³Univ. of Idaho, Parma, ID, ⁴Univ. of California, Riverside, Riverside, CA

2:48 0204 Sampling cerambycid species across a vertical gradient using synthetic pheromone lures. **Elizabeth E. Graham**,
graha139@msu.edu¹, Therese M. Poland², Jocelyn G. Millar³ and Deborah G. McCullough¹,
¹Michigan State Univ., East Lansing, MI, ²USDA - Forest Service, East Lansing, MI, ³Univ. of California, Riverside, Riverside, CA

3:13 0205 Cerambycid symbionts unveiled: cocci in the fat body, rods in the gut. **Olga Calderon**,
ocalderon@lagcc.cuny.edu, The City College of New York, New York, NY

3:38 Break

3:48 0206 Preliminary findings into the morphology and systematics of *Onciderini* (Cerambycidae: Lamiinae). **Eugenio**

H. Nearns, gnearns@unm.edu and Kelly B. Miller, Univ. of New Mexico, Albuquerque, NM

4:13 0207 Panama Canal Amplification: making the best of a clearcut situation. **Amy Berkov**, berkov@sci.ccny.cuny.edu¹ and Sara Pinzon², ¹The City College of New York, New York, NY, ²Balboa, Ancón and Universidad de Panama, Panamá, Panama

4:38 0208 In French Guiana, wood-boring beetles like it wet. **Joyce Fassbender**, jfassbender@ccny.cuny.edu, The City College of New York, New York, NY

5:03 0209 Revealing food-web links with molecular analysis of parasitoid gut contents. **Lin C. Li**, lincarrieli@gmail.com, The City College of New York, New York, NY

5:28 Concluding Remarks

Symposium: Biology, Ecology and Management of Native and Invasive Stink Bugs

**Room D5, First Floor
(Reno-Sparks Convention Center)**

Moderators and Organizers: P. Glynn Tillman¹, Walker A. Jones² and Jeffrey A. Davis³, ¹USDA - ARS, Tifton, GA, ²USDA - ARS, Stoneville, MS, ³Louisiana State Univ. AgCenter, Baton Rouge, LA

1:30 Introductory Remarks

1:40 0210 *Piezodorus guildinii*: top soybean pest in the South. **Joshua H. Temple**, jtemple@agcenter.lsu.edu, Jeffrey A. Davis and B. Rogers Leonard, Louisiana State Univ. AgCenter, Baton Rouge, LA

2:00 0211 *Bagrada hilaris*: new invasion out of Africa. **Darcy A. Reed**, darcy.reed@ucr.edu¹, John C. Palumbo² and Thomas M. Perring¹, ¹Univ. of California, Riverside, Riverside, CA, ²Univ. of Arizona, Yuma, AZ

2:20 0212 *Nezara viridula*, *Euschistus* spp., and *Chinavia hilaris*: native stink bug species in major agronomic crops and vegetables in the southeastern US. **Fred R. Musser**, fmusser@entomology.msstate.edu¹, Phillip M. Roberts² and Jeremy K. Greene³, ¹Mississippi State Univ., Mississippi State, MS, ²Univ. of Georgia, Tifton, GA, ³Clemson Univ., Blackville, SC

2:40 0213 *Megacopta cribraria*: new invasive plataspid on kudzu and soybeans in the southeastern US. **Joe E. Eger**, jeeger@dow.com¹, Dan R. Suiter², Wayne A. Gardner², Tracie M. Jenkins³, Phillip M. Roberts⁴ and Jeremy K. Greene⁵, ¹Dow AgroSciences, Tampa, FL, ²Univ. of Georgia, Griffin, GA, ³Univ. of Georgia, Athens, GA, ⁴Univ. of Georgia, Tifton, GA, ⁵Clemson Univ., Blackville, SC

3:00 0214 Recent studies on feeding and damage by phytophagous stink bugs. **Antônio R. Panizzi**, panizzi@cnpt.embrapa.br, Embrapa Trigo, Passo Fundo, RS, Brazil

3:20 0215 Semiochemical interactions of stink bugs. **Miguel Borges**, mborges@cenargen.embrapa.br¹, Jeffrey R. Aldrich², Jocelyn G. Millar³, Maria C. B. Moraes¹ and Raul A. Laumann¹, ¹Embrapa Recursos Genéticos e Biotecnologia, Brasília, DF, Brazil, ²USDA - ARS, Beltsville, MD, ³Univ. of California, Riverside, Riverside, CA

3:40 Break

3:55 0216 Natural enemies of stink bugs. **John R. Ruberson**, ruberson@uga.edu¹, Dawn M. Olson², Kacie J. Johansen³ and James D. Harwood³, ¹Univ. of Georgia, Tifton, GA, ²USDA - ARS, Tifton, GA, ³Univ. of Kentucky, Lexington, KY

4:15 0217 Seasonal movements of stink bugs and their natural enemies in South Carolina and Georgia. **Francis P.F. Reay-Jones**, freayjo@clemson.edu¹, Michael D. Toews² and P. Glynn Tillman³, ¹Clemson Univ., Florence, SC, ²Univ. of Georgia, Tifton, GA, ³USDA - ARS, Tifton, GA

4:35 0218 Trap cropping for stink bug management. **Jeffrey A. Davis**, JeffDavis@agcenter.lsu.edu, Louisiana State Univ. AgCenter, Baton Rouge, LA

4:55 0219 Opportunities for classical biological control of *Piezodorus*, *Bagrada*, and *Megacopta*. **Walker A. Jones**, walker.jones@ars.usda.gov, USDA - ARS, Stoneville, MS

5:10 0220 Opportunities for conservation and augmentative biological control of *Nezara viridula*, *Euschistus* spp., and *Chinavia hilaris*. **P. Glynn Tillman**, Glynn.Tillman@ars.usda.gov, USDA - ARS, Tifton, GA

Symposium: Evert Lindquist's Approach to the Taxonomic Impediment in Acarology: Diversity in Specialization

**Room A1, First Floor
(Reno-Sparks Convention Center)**

Moderators and Organizers: Fred Beaulieu¹ and Ronald Ochoa², ¹Agriculture and Agri-Food Canada, Ottawa, ON, Canada, ²USDA, Systematic Entomology Laboratory (SEL), Beltsville, MD

1:00 Introductory Remarks

1:10 0221 Mites (Acari) of Arctic polar deserts. **Olga L. Makarova**, ol_makarova@mail.ru, Russian Academy of Sciences, Moscow, Russia

1:30 0222 Tarsonemid mites and insects – an overview of their relationships. **Wojciech Ł. Magowski**, magowski@amu.edu.pl, A. Mickiewicz Univ., Poznań, Poland

1:50 0223 *Aculops lycopersici*: an herbivore with a pathogen lifestyle and its effect on the fitness of a competing mite species. **Joris J. Glas**, j.j.glas@uva.nl, Marije Stoops, Juan M. Alba, Maurice W. Sabelis and Merijn R. Kant, Univ. of Amsterdam, Amsterdam, Netherlands

2:10 0224 The cold-stage SEM captures new structure and ecology of the wheat curl mite. Gary L. Hein¹, Ronald Ochoa², Gary R. Bauman³, Enrico De Lillo⁴, Philipp E. Chetverikov⁵ and **James Amrine**, jamrine@wvu.edu⁶, ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²USDA, Systematic Entomology Laboratory (SEL), Beltsville, MD, ³USDA - ARS, Beltsville, MD, ⁴Univ. of Bari, Bari, MP, Italy, ⁵Saint-Petersburg State Univ., Saint-Petersburg, Russia, ⁶West Virginia Univ., Morgantown, WV

2:30 0225 Decoding Tuckerellidae and Tenuipalpidae. **Ronald Ochoa**, ron.ochoa@ars.usda.gov¹, Jenny Beard² and Gary R. Bauman³, ¹USDA, Systematic Entomology Laboratory (SEL), Beltsville, MD, ²Queensland Museum, South Brisbane, Queensland, Australia, ³USDA - ARS, Beltsville, MD

2:50 Break

3:05 0226 The root of the problem, basal relationships in Parasitiformes. **Hans Klompen**, klompen.1@osu.edu, The Ohio State Univ., Columbus, OH

3:25 0227 Phylogenetics of Dermanyssina and the evolution of parasitism. **Ashley PG. Dowling**, adowling@uark.edu, Univ. of Arkansas, Fayetteville, AR

3:45 0228 Ecology vs. systematics: specialized knowledge in a generalist world. **David E. Walter**, David.Walter@gov.ab.ca, Royal Alberta Museum and Univ. of Alberta, Edmonton, Alberta, Canada

4:05 0229 Adventures with the Gamasina: eureka moments on the path to enlightenment. **Gerald W. Krantz**, krantzg@science.oregonstate.edu, Oregon State Univ., Corvallis, OR

4:25 0230 Convergent evolution in astigmatic mites in relation to physical habitat constraints. **Barry M. O'Connor**, bmoc@umich.edu, University of Michigan, Ann Arbor, MI

4:45 Concluding Remarks

5:00 0231 Comments. **Evert E. Lindquist**, lindquiste@agr.gc.ca, Agriculture and Agri-Food Canada, Ottawa, ON, Canada

Symposium: Identifying, Clarifying, and Communicating Challenges in Stored Products Protection

Room A11, First Floor (Reno-Sparks Convention Center)

Moderator and Organizer: Charles Burks, USDA - ARS, Parlier, CA

1:30 Welcoming Remarks

1:35 0232 Environmental and physiological factors affecting the flight initiation ability of the red flour beetle, *Tribolium castaneum*. **Joel Perez-Mendoza**, joel.perez-mendoza@ars.usda.gov, USDA - ARS, Manhattan, KS

1:55 0233 Influence of temperature and other factors on flight initiation of the cigarette beetle, *Lasioderma serricorne* F. **Mahsa Fardisi**, mfaridisi@purdue.edu and Linda Mason, Purdue Univ., West Lafayette, IN

2:15 0234 Ancient problems, innovative solutions: communicating the challenges and accomplishments in cigarette beetle management. **Rizana M. Mahroof**, rmahroof@scsu.edu¹ and Thomas W. Phillips², ¹South Carolina State Univ., Orangeburg, SC, ²Kansas State Univ., Manhattan, KS

2:35 0235 What generates spatial pattern in *Tribolium castaneum* trap captures in flour mills? **James F. Campbell**, james.campbell@ars.usda.gov¹, Altair A. Semeao², R. Jeff Whitworth² and Phil Sloderbeck³, ¹USDA - ARS, Manhattan, KS, ²Kansas State Univ., Manhattan, KS, ³Kansas State Univ., SWREC, Garden City, KS

2:55 0236 Impact of lesser grain borer, *Rhyzopertha dominica*, infestation on rice milling quality: challenges and pitfalls in data interpretation. **Frank Arthur**, frank.arthur@gmprc.ksu.edu, USDA - ARS, Manhattan, KS

3:15 0237 Sanitation effects on pest movement and implications for stored product pest management. **Scott Williams**, willi324@purdue.edu, Linda Mason and Jeffrey D. Holland, Purdue Univ., West Lafayette, IN

3:35 Break

3:50 0238 Integrated pest management of rice for consumption. **Maria Otilia Carvalho**, motiliac@netcabo.pt¹, Dr. Cornel Adler²,

Frank Arthur³, Christos Athanassiou⁴, Shlomo Navarro⁵, Jordi Riudavets⁶ and Pasquale Trematerra⁷, ¹Sciences Research Institute, Lisbon, Portugal, ²Federal Research Centre for Cultivated Plants – Julius Kühn – Institut, Berlin, Germany, ³USDA - ARS, Manhattan, KS, ⁴Agricultural Univ. of Athens, Athens, Greece, ⁵Food Technology Consultancy, Beit Yehoshua, Israel, ⁶IRTA, Barcelona, Spain, ⁷Univ. of Molise, Campobasso, Italy

4:10 0239 Update on radio frequency treatments for postharvest treatment of tree nuts and dried pulses. **Judy A. Johnson**, judy.johnson@ars.usda.gov, USDA - ARS, Parlier, CA

4:30 0240 Ovicidal efficacy of sulfuryl flouride to postharvest insect pests of California. **David Bellamy**, dave.bellamy@ars.usda.gov, Spenser Walse and Steve Tebbets, USDA - ARS, Parlier, CA

4:50 0241 Efficacy of “Horn” phosphine toward key stored product pests. **Spenser Walse**, spencer.walse@ars.usda.gov, David Bellamy and Steve Tebbets, USDA - ARS, Parlier, CA

5:10 0242 Phosphine resistance in *Tribolium castaneum* and *Rhyzopertha dominica* in wheat. **George Opit**, george.opit@okstate.edu¹, Thomas W. Phillips², Michael J. Aikins² and Mahbub Hasan², ¹Oklahoma State Univ., Stillwater, OK, ²Kansas State Univ., Manhattan, KS

5:30 Concluding Remarks

Symposium: International Society of Hymenopterists

Room D9, First Floor (Reno-Sparks Convention Center)

Moderator and Organizer: Andrew R. Deans and Katja Seltmann, North Carolina State Univ., Raleigh, NC

1:30 Welcoming Remarks

1:35 0243 Highlights in Hymenoptera research from the past year, with updates on recent changes in the International Society of Hymenopterists. **Michael J. Sharkey**, msharkey@uky.edu¹, Andrew R. Deans², Katja Seltmann², Craig M. Brabant³, James B. Woolley⁴ and Stefan Schmidt⁵, ¹Univ. of Kentucky, Lexington, KY, ²North Carolina State Univ., Raleigh, NC, ³Univ. of Wisconsin - Madison, Madison, WI, ⁴Texas A&M Univ., College Station, TX, ⁵Staatliche Naturwissenschaftliche Sammlungen Bayerns, Munich, Munich, Germany

3:35 ISH Business Meeting

4:35 Foraging and Pollination

Symposium: Invasive Species: International Perspectives

Room A4, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Nicolas Desneux¹ and Alberto Urbaneja², ¹Institut National de la Recherche Agronomique (INRA), Sophia-Antipolis, France, ²Instituto Valenciano de Investigaciones Agrarias, Moncada, Valencia, Spain

1:30 Introductory Remarks

1:35 0244 Intracontinental invasions: the domestic side of the USA invasive species problem. **Roy Van Driesche**, vandries@cns.umass.edu¹ and Mark Hoddle², ¹Univ. of Massachusetts, Amherst, MA, ²Univ. of California, Riverside, Riverside, CA

2:00 0245 Invasive bark- and wood-infesting insects worldwide: establishment patterns, international trade, and efforts to slow the flow. **Robert A. Haack**, rhaack@fs.fed.us, USDA - Forest Service, East Lansing, MI

2:25 0246 An invasive species complex, or just one busy fly? Coming to grips with the *Bactrocera dorsalis* complex. **Anthony R. Clarke**, A.Clarke@qut.edu.au, Queensland Univ. of Technology, Brisbane, QLD, Australia

2:45 0247 Recent *Bactrocera* fruit fly area-wide management programs in the Pacific. **Roger I. Vargas**, roger.vargas@ars.usda.gov, USDA - ARS, Hilo, HI

3:05 0248 The invasive South American tomato pinworm (*Tuta absoluta*) in Europe: ongoing spread in Afro-Eurasia and potential management options. **Nicolas Desneux**, nicolas.desneux@sophia.inra.fr¹ and Alberto Urbaneja², ¹Institut National de la Recherche Agronomique (INRA), Sophia-Antipolis, France, ²Instituto Valenciano de Investigaciones Agrarias, Moncada, Valencia, Spain

3:25 Break

3:40 0250 The role of chemical ecology in widening the biosecurity tool kit. **DM. Suckling**, Max.Suckling@plantandfood.co.nz, New Zealand Institute of Plant and Food Research Ltd, Christchurch, New Zealand

4:05 0251 Invasive ant eradication - history, global status and requirements for improvement. **Benjamin D Hoffmann**, Ben.Hoffmann@csiro.au, CSIRO, Winnellie, NT, Australia

4:25 0252 Importance of hemipterans in the establishment and spread of invasive ants. **Jules Silverman**, jules_silverman@ncsu.edu, North Carolina State Univ., Raleigh, NC

4:45 0253 *Tamarixia radiata* as a potential tool for controlling the invasive citrus pest *Diaphorina citri*. **José RP. Parra**, jrpparra@esalq.usp.br¹, Mariuxi LG. Torres¹ and Dori E. Nava², ¹Escola Superior de Agricultura Luiz de Queiroz (ESALQ), Universidade de São Paulo (USP), Piracicaba, SP, Brazil, ²Embrapa Clima Temperado, Pelotas, RS, Brazil

5:05 Concluding Remarks

Symposium: Myths, Misconceptions, and Mental Modifications: Identify, Clarify and Speak Out about Entomology.

Room A13, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Marianne Shockley Robinette¹, Andrine A Shufan² and Martha Rosett Lutz³, ¹Univ. of Georgia, Athens, GA, ²Oklahoma State Univ., Stillwater, OK, ³Bluegrass Community and Technical College, Lexington, KY

1:30 Introductory Remarks

1:35 0254 What people know, think they know, ought to know, and ought to forget about entomology and entomologists! Demystifying entomological myths. **Marianne Shockley Robinette**, entomolo@uga.edu, Univ. of Georgia, Athens, GA

2:00 0255 Shamelessly manipulating the minds of policy-makers and other influential people via a paradigm shift to entomological literacy. **Martha Rosett Lutz**, mlutz0005@kctcs.edu, Bluegrass Community and Technical College, Lexington, KY

2:25 0256 Knee deep in hoopla: demythologizing genetically-engineered crops. **Richard L. Hellmich**, Richard.Hellmich@ARS.USDA.GOV¹ and Patricia Prasifka², ¹USDA - ARS, Ames, IA, ²Dow AgroSciences, Champaign, IL

2:50 Discussion

3:05 0257 Lights, camera, action: how to tell bug stories to the public via television, radio, and print. **Michael J. Raupp**, mraupp@umd.edu¹ and Patti Neger², ¹Univ. of Maryland, College Park, MD, ²ABC, New York, NY

3:30 0258 Making the most of your time in the spotlight: keys to effective communication via media outreach. **Holly Menninger**, hlm65@cornell.edu, Cornell Univ., Ithaca, NY

3:55 0259 How to speak to non-scientists, even the really frightened ones. **Richard Levine**, rlevine@entsoc.org, Entomological Society of America, Lanham, MD

4:20 Mock interview

4:35 Don't be such a scientist!

4:50 Final Discussion

Symposium: Onion Thrips Workshop

Room D8, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: David Ben-Yakir, Agricultural Research Organization, Bet Dagan, Israel

2:30 Introductory Remarks

2:40 0259.1 Characteristics of the migratory flight of the onion thrips (*Thrips tabaci*) and their relevance for pest management. **David Ben-Yakir**, benyak@volcani.agri.gov.il and Michael Chen, Agricultural Research Organization, Bet Dagan, Israel

2:55 0259.2 Which traits of cabbage influence host-plant selection by the onion thrips (*Thrips tabaci*)? **József Fail**, jozsef.fail@uni-corvinus.hu¹ and Anthony M. Shelton², ¹Corvinus Univ. of Budapest, Budapest, Hungary, ²Cornell Univ., Geneva, NY

3:10 0259.3 IPM for onion thrips (*Thrips tabaci*) in onion. **Brian Nault**, ban6@cornell.edu¹ and Anthony M. Shelton², ¹Cornell Univ. NYSAES, Geneva, NY, ²Cornell Univ., Geneva, NY

3:25 Open Discussion: Sampling and Chemical Control

3:50 Break

4:05 0259.4 Chemical control and resistance of the onion thrips (*Thrips tabaci*) in Israel. **Murad Ghanim**, ghanim@agri.gov.il, Galina Lebedev, Fauzi Abu-Moch and David Ben-Yakir, Agricultural Research Organization, Bet Dagan, Israel

4:20 0259.5 Spatial and temporal insecticide resistance in onion thrips (*Thrips tabaci*) populations in onions. **Anthony M. Shelton**, ams5@cornell.edu¹ and Brian Nault², ¹Cornell Univ., Geneva, NY, ²Cornell Univ. NYSAES, Geneva, NY

4:35 0259.7 Changes in the spatial distribution of onion thrips (*Thrips tabaci*) and iris yellow spot virus in onion fields over time. **Cynthia Hsu**, clh33@cornell.edu¹, Christy Hoepfing², Marc Fuchs¹, Anthony M. Shelton¹ and Brian Nault³, ¹Cornell Univ., Geneva, NY, ²Orleans County CCE, Albion, NY, ³Cornell Univ. NYSAES, Geneva, NY

4:50 0259.8 Variation in competency of the onion thrips (*Thrips tabaci*) as a vector of tomato spotted wilt virus: patterns and implications. **Alana L. Jacobson**, aljacob2@yahoo.com and George Kennedy, North Carolina State Univ., Raleigh, NC

5:05 Open Discussion: Alternative Control Methods

Symposium: Recent Advances in Grape Pest Management

Room A12, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Noubar J. Bostanian¹ and Tracy C. Leskey², ¹Agriculture and Agri-Food Canada, St. Jean-sur-Richelieu, QC, Canada, ²USDA - ARS, Kearneysville, WV

1:30 Welcoming Remarks

1:35 0260 Mealybugs and their role in the spread of grape leaf roll associated viruses. **Kent Daane**, daane@uckac.edu, Univ. of California, Berkeley, Berkeley, CA

1:55 0261 Rainfastness characteristics of insecticides for grape pest management, wisejohn@anr.msu.edu. **John C. Wise**, wisejohn@msu.edu, Michigan State Univ., East Lansing, MI

2:15 0262 Semiochemicals in vineyard pest management: understanding interspecific interactions with a focus on the grape berry moth *Paralobesia viteana* (Clemens). **Gregory Loeb**, gme1@cornell.edu, Cornell Univ., Geneva, NY

2:35 0263 Phytoplasma diseases in vineyards. **Phyllis G. Weintraub**, phyllisw@agri.gov.il, Agricultural Research Organization, Gilat Research Center, Israel

2:55 0264 Cultural management of grey field ant and impact on grape mealybug, *Pseudococcus maritimus* (Ehrhorn) infestation in grape. **Walter J. Bentley**, walt@uckac.edu, Univ. of California, Davis, Kearney Agricultural Center, Parlier, CA

3:15 0265 Effects of reduced-risk insecticides' on two species of predatory mites in vineyards. . **Noubar J. Bostanian**, noubar.bostanian@agr.gc.ca, Agriculture and Agri-Food Canada, St. Jean-sur-Richelieu, QC, Canada

3:35 Break

3:50 0266 Tarnished plant bug, *Lygus lineolaris* and cool-climate vineyards. **Charles Vincent**, charles.vincent@agr.gc.ca¹, Dominique Fleury², Jacques Lasnier³, Yves Mauffette⁴ and Noubar J. Bostanian¹, ¹Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Quebec, Canada, ²Ecole d'Ingénieurs de Changins, Nyon, Switzerland, ³Co-Lab R&D, Granby, QC, Canada, ⁴Montréal, QC, Canada

4:10 0267 Management of grape root borer using pheromone-mediated mating disruption. **Douglas G. Pfeiffer**, dgpfeiff@vt.edu, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

4:30 0268 Grape berry moth *Paralobesia viteana* (Clemens) phenology and implications for control. **Michael C. Saunders**, mcs5@psu.edu, Pennsylvania State Univ., Univ. Park, PA

4:50 0269 Enhancing plant diversity in vineyards to optimize biological control of pests. **Miguel A. Altieri**, agroeco3@berkeley.edu, Univ. of California, Berkeley, Berkeley, CA

5:10 0270 Impact of the invasive brown marmorated stink bug in vineyards. **Tracy C. Leskey**, tracy.leskey@ars.usda.gov, USDA - ARS, Kearneysville, WV

Symposium: SOLA Scarab Workers Symposium

Room D6, First Floor (Reno-Sparks Convention Center)

Moderator and Organizer: Andrew BT. Smith, Canadian Museum of Nature, Ottawa, ON, Canada

2:00 Introductory Remarks

2:10 0271 Scarab beetles as "bycatch." **Robert S. Anderson**, RAnderson@mus-nature.ca, Canadian Museum of Nature, Ottawa, ON, Canada

2:30 0272 Bagging big trophies. **Paul Skelley**, Florida State Collection of Arthropods, Gainesville, FL

2:50 0273 Fighting for a meaningful classification of Lucanidae. **M. J. Paulsen**, mpaulsen@unlserve.unl.edu, Univ. of Nebraska, Lincoln, NE

3:10 0274 Clarifying systematics of Scarabaeinae: cybertaxonomy, revision and phylogeny of Oriental deltochiline genera *Cassolus* and *Parachorius* (Coleoptera: Scarabaeidae: Scarabaeinae). **Sergey Tarasov**, sergfx@yandex.ru, Univ. of Copenhagen, Natural History Museum of Denmark, Copenhagen, Denmark

3:30 Break

3:45 0275 A second try - searching for scarabs in Katanga, D.R. Congo. **Bruce Gill**, bruce.gill@inspection.gc.ca, Rancho Uroxys, Woodlawn, ON, Canada

4:05 0276 Cetoniine diversity of the upper Guinean forests and savannas of Ghana. **Alan D. Mudge**, alandm@peak.org, Jefferson, OR

4:25 0277 Scarab collecting: trash or treasure. **Michael G. Klein**, klein.10@osu.edu, The Ohio State Univ., Wooster, OH

4:45 0278 Tiny, obscure, and floral, a preliminary look at the hard-to-pronounce genus *Chnaunanthus*. **William B. Warner**, wbwarner1@cox.net, Chandler, AZ

5:05 0279 The ecology and distribution of two exotic scarab beetles in Chiapas: *Euoniticellus intermedius* and *Digitonthophagus gazella*. **Jorge Leon-Cortes**, jleon@ecosur.mx, Julio Enrique de Coss and Ubaldo Caballero, El Colegio de la Frontera Sur (ECOSUR), San Cristóbal de las Casas, Mexico

5:25 Discussion

Ten-Minute Papers, MUVE Session 2: Termites

Room A20, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Douglas E. Norris¹, C. Geden², Rhonda L. Hamm³ and Thomas Chouvenec⁴, ¹Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, ²USDA - ARS, Gainesville, FL, ³Dow AgroSciences, Tampa, FL, ⁴Univ. of Florida, Davie, FL

1:30 Introductory Remarks

1:35 0280 Effect of aging under irrigated and non-irrigated conditions on termite (*Reticulitermes flavipes*) consumption of a durable bait. **Ronda L. Hamm**, rlhamm@dow.com¹, Joe E. Eger², Eva Chin-Heady¹ and Joe J. DeMark³, ¹Dow AgroSciences, Indianapolis, IN, ²Dow AgroSciences, Tampa, FL, ³Dow AgroSciences, Fayetteville, AR

1:47 0281 Do subterranean termites (Isoptera: Rhinotermitidae) feed on baits with previous feeding by different colonies or species in the field? **Joe E. Eger**, jeeger@dow.com¹, Joe J. DeMark², Ronda Hamm³, Michelle S. Smith³ and Barry P. Yokum⁴, ¹Dow AgroSciences, Tampa, FL, ²Dow AgroSciences, Fayetteville, AR, ³Dow AgroSciences, Indianapolis, IN, ⁴City of New Orleans Mosquito and Termite Control Board, New Orleans, LA

1:59 0282 Task allocation in the tunneling behavior of workers of the Formosan subterranean termite. **Mary Cornelius**, Mary.Cornelius@ars.usda.gov, Erin M. Lathrop and Matthew R. Tarver, USDA - ARS, New Orleans, LA

2:11 0283 Predicting habitat suitability of invasive termites, *Coptotermes formosanus* and *C. gestroi*, with species distribution models. **Hou-Feng Li**, hofeng@ufl.edu, Ikuko Fujisaki and Nan-Yao Su, Univ. of Florida, Davie, FL

2:23 0284 Alate-trap based assessment of Formosan subterranean termite (*Coptotermes formosanus* Shiraki) reproductive phenology and distribution on Galveston Island, TX. **Robert T. Puckett**, rpuck@tamu.edu and Roger Gold, Texas A&M Univ., College Station, TX

2:35 0285 Spatial and temporal factors influencing the invasion of subterranean termites (Isoptera: *Reticulitermes*) into urban landscapes. **Paul S. Botch**, psbz76@mizzou.edu and Richard Houseman, Univ. of Missouri - Columbia, Columbia, MO

2:47 Break

3:02 0286 When subterranean termites change the rules of epizootics. **Thomas Chouvenec**, tomchouv@ufl.edu and Nan-Yao Su, Univ. of Florida, Davie, FL

3:14 0287 Assessment of donor : recipient ratios in laboratory transfer studies with *Reticulitermes virginicus* Banks. **Thomas Shelton**, tshelton@fs.fed.us, USDA - Forest Service, Starkville, MS

3:26 0288 Estimating population sizes and foraging boundaries of large laboratory colonies of the Formosan subterranean termites. **Nan-Yao Su**, nysu@ufl.edu, Univ. of Florida, Davie, FL

3:38 0289 Performance of Recruit[®] HD in field trials against *Coptotermes formosanus* Shiraki and *Reticulitermes flavipes* (Kollar). **Joe J. DeMark**, jjdemark@dow.com¹, Joe E. Eger², Jackie A. Lee³, Mike P. Tolley⁴, Michael D. Lees⁵, Ronda L. Hamm⁴, Michelle S. Smith⁴, Mike W. Melichar⁴ and Ellen M. Thoms⁶, ¹Dow AgroSciences, Fayetteville, AR, ²Dow AgroSciences, Tampa, FL, ³Dow AgroSciences, Lubbock, TX, ⁴Dow AgroSciences, Indianapolis, IN, ⁵Dow AgroSciences, Granite Bay, CA, ⁶Dow AgroSciences, Gainesville, FL

3:50 0290 Altriset™ a new termiticide with novel mode of action, delayed toxicity, nonrepellency, and unique effects on termite behaviors. **Raj K. Saran**, raj.k.saran@usa.dupont.com, Clay Scherer and Mark Coffelt, DuPont Crop Protection, Newark, DE

4:02 0291 Delayed impacts of Altriset termiticide on *Reticulitermes flavipes*. Susan C. Jones, **Joshua Bryant**, bryant.1310@osu.edu and Andrew Hoelmer, The Ohio State Univ., Columbus, OH

4:14 0292 Eradication of the arboreal termite (*Nasutitermes corniger*) from Broward county, Florida: An unprecedented event. **Robert Hickman**, robert.hickman@basf.com¹ and Rudolph H. Scheffrahn², ¹BASF Pest Control Solutions, Maitland, FL, ²Univ. of Florida, Ft. Lauderdale, FL

4:26 Concluding Remarks

Ten-Minute Papers, MUVE Session 3: Vector Biology

Room D2, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: C. Geden¹, Douglas E. Norris², Barry W. Alto³ and Immo A. Hansen⁴, ¹USDA - ARS, Gainesville, FL, ²Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, ³Univ. of Florida, Vero Beach, FL, ⁴New Mexico State Univ., Las Cruces, NM

1:30 Introductory Remarks

1:35 0293 Rapid adaptive evolution of diapause timing during invasion and range expansion of the Asian tiger mosquito, *Aedes albopictus*. **Peter Armbruster**, paa9@georgetown.edu¹, Jennifer M. Urbanski¹ and Motoyoshi Mogi², ¹Georgetown Univ., Washington, DC, ²Mosquito Research Laboratory, Hinode 1-7-13, Saga, Japan

1:47 0294 Relationship between leaf litter identity, expression of cytochrome P450 genes and life history traits of *Aedes aegypti* and *Aedes albopictus*. **Chang-Hyun Kim**, maraychk@illinois.edu, Univ. of Illinois, Champaign, IL

1:59 0295 Characterization of mosquito aquaporins. **Immo A. Hansen**, immoh@nmsu.edu, Lisa L. Drake and Sarah E. Aguirre, New Mexico State Univ., Las Cruces, NM

2:11 0296 Gut microbiota of mosquito *Anopheles gambiae*. **Jiannong Xu**, jxu@nmsu.edu¹, Ying Wang¹, Thomas M. Gilbreath², Phanidhar Kukutla¹, Matthew Steritz¹ and Guiyun Yan², ¹New Mexico State Univ., Las Cruces, NM, ²Univ. of California, Irvine, Irvine, CA

2:23 0297 Bloodfeeding patterns of *Culex*, *Aedes* and *Anopheles* mosquitoes in an oak woodland in Lake County, California. **Tara C. Thiemann**, tcthiemann@ucdavis.edu¹, David L. Woodward², Thiemanna J. Scott² and William K. Reisen¹, ¹Univ. of California, Davis, Davis, CA, ²Lake County Vector Control District, Lakeport, CA

2:35 0298 *Culex molestus* Forskal (Diptera: Culicidae) in Australia: colonisation, stenogamy, autogeny, oviposition and larval development. **Nur Faeza Abu Kassim**, aija81@msn.com, Cameron E. Webb and Richard C. Russell, Univ. of Sydney, Westmead Hospital, Westmead, New South Wales, Australia

2:47 0299 Attraction and discriminative behavior of *Anopheles gambiae* (Diptera: Culicidae) to the odor of some Afrotropical plants. **Mahmood Reza Nikbakhtzadeh**, nik.nikbakht@gmail.com, John W. Terbot and Woodbridge A. Foster, The Ohio State Univ., Columbus, OH

2:59 0300 Mosquitoes (Diptera: Culicidae) in Madre de Dios Department, Peru, with distributional assessment using ecological niche modeling. **Thomas A. Radocy**, tomkans@ku.edu¹, Caroline S. Chaboo² and A. Townsend Peterson², ¹Univ. of Kansas, Mission, KS, ²Univ. of Kansas, Lawrence, KS

3:11 0301 Larval environmental stress and *Aedes aegypti* competence for Sindbis virus. **Ephantus J. Muturi**, emuturi2@illinois.edu¹, Chang-Hyun Kim¹ and Barry W. Alto², ¹Univ. of Illinois at Urbana-Champaign, Champaign, IL, ²Univ. of Florida, Vero Beach, FL

3:23 Break

3:38 0302 Human heterogeneities in dengue virus transmission. **Thomas W. Scott**, twscott@ucdavis.edu¹, Amy Morrison², Steven T. Stoddard¹, Uriel Kitron³, Gonzalo Vazquez-Prokopec³, Valerie Paz-Soldan⁴, John P. Elder⁵, Tadeusz J. Kochel⁶, Eric Halsey⁶, Brett Forshey⁶ and Moises Sihuinchu⁷, ¹Univ. of California, Davis, CA, ²Univ. of California, Davis and Naval Medical Research Center Detachment, Davis, CA, ³Emory Univ., Atlanta, GA, ⁴Tulane Univ., New Orleans, LA, ⁵San Diego State Univ., San Diego, CA, ⁶US Naval Medical Research Center Detachment, Lima, Peru, ⁷Hospital Apoyo, Iquitos, Peru

3:50 0303 Border malaria in the republic of Korea: trends and health implications for US military and civilian populations. Terry A. Klein¹, Heung-Chul Kim², Wonja Lee³, Hee-Choon S. Lee⁴, Leopoldo M. Rueda⁵, Desmond Foley⁵ and **Richard C. Wilkerson**, wilkersonr@si.edu⁵, ¹Regional Emerging Infectious Disease Consultant (Contractor), U.S. Army, Apo, AP, ²168th Multifunctional Medical Battalion, Apo, AP, ³National Institute of Health, Cheongwon-gun, Chungbuk, South Korea, ⁴Force Health Protection and Preventive Medicine, Apo, AP, ⁵Walter Reed Army Institute of Research, Suitland, MD

4:02 0304 West Nile virus infection and environmental temperature alters life history traits of *Culex pipiens quinquefasciatus* (Diptera: Culicidae). **Barry W. Alto**, bwalto@ufl.edu, Sheri Anderson, Stephanie Richards and Cynthia Lord, Univ. of Florida, Vero Beach, FL

4:14 0305 Species-specific fate of bacteria in house flies and impact on vector potential for pathogens. **Dana Nayduch**, dnayduch@GeorgiaSouthern.edu, Naveen Kumar H.V. and Rabecca Chifanzwa, Georgia Southern Univ., Statesboro, GA

4:26 0306 Impact of house fly salivary gland hypertrophy virus (MdSGHV) on stable fly. **C. Geden**, chris.geden@ars.usda.gov¹, A. Garcia-Maruniak², V-U. Lietze², J. Maruniak² and D. Boucias², ¹USDA - ARS, Gainesville, FL, ²Univ. of Florida, Gainesville, FL

4:38 0307 Toward symbiont-based control of *Culicoides* biting midges. **Yuval Gottlieb**, yuvalgd@yahoo.com, Neta Morag, Yonatan Saroya and Eyal Klement, The Hebrew Univ. of Jerusalem, Rehovot, Israel

4:50 0308 Mosquitocidal and anti-malarial activities of *Andogaphis paniculata* against the malarial vector, *Anopheles stephensi* (Diptera: Culicidae). **P. Thiyagarajan**, rajanphd2004@yahoo.com¹ and Kadarkarai Murugan², ¹Bharathiar Univ., Tamil Nadu, India, ²Bharathiar Univ., Coimbatore, India

5:02 0309 Reproductive bioecology of *Anopheles (Nyssorhynchus) darlingi* Root (1926) (Diptera: Culicidae), the main vector of malaria in the Peruvian Amazon Basin. **Victor M. López**, victorlopezsifuentes@gmail.com¹ and Roxanne G. Burrus², ¹US Naval Medical Research Unit #6, Iquitos, Peru, ²US Naval Medical Research Unit #6, Callao 2, Lima, Peru

5:14 0310 Abundance and vertical distribution of the mosquito fauna (Diptera: Culicidae) in the Peruvian Amazon. **Carlos G. Tong-Ríos**, carlostongrios@gmail.com¹, Jhonny D. Ramírez-Fernández², Arturo Acosta², Victor M. López Sifuentes¹, Roberto Fernández³ and Roxanne G. Burrus³, ¹US Naval Medical Research Unit #6, Iquitos, Peru, ²National Univ. of the Peruvian Amazon, Iquitos, Peru, ³US Naval Medical Research Unit #6, Callao 2, Lima, Peru

5:26 Concluding Remarks

Ten-Minute Papers, P-IE Section, Biological Control I

Room A18, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: B. Rogers Leonard¹, Bonnie B. Pendleton² and J. P. Michaud³, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³Kansas State Univ., Hays, KS

1:30 Introductory Remarks

1:35 0311 Realistic variation in predator species richness produces emergent biodiversity effects. **Tobin D. Northfield**, tnorthfield@ucdavis.edu, David W. Crowder, Tadashi Takizawa and William E. Snyder, Washington State Univ., Pullman, WA

1:47 0312 Molecular evidence for a diversified diet of two hemipteran predators in Washington potatoes. **Eric G. Chapman**, eric.chapman@uky.edu¹, Gretchen Beth Snyder², James D. Harwood¹ and William E. Snyder², ¹Univ. of Kentucky, Lexington, KY, ²Washington State Univ., Pullman, WA

1:59 0313 Legacies from mom: cryptic maternal effects on progeny life histories in *Hippodamia convergens*. **J. P. Michaud**, jpmi@ksu.edu¹ and German Vargas², ¹Kansas State Univ., Hays, KS, ²Kansas State Univ., Manhattan, KS

2:11 0314 Non-consumptive predator effect of *Delphastus catalinae* on the reproductive success of whiteflies. **Doo-Hyung Lee**, dl343@cornell.edu¹, Jan P. Nyrop² and John P. Sanderson¹, ¹Cornell Univ., Ithaca, NY, ²Cornell Univ., Geneva, NY

2:23 0315 The influence of sugar availability on aphid consumption by *Coleomegilla maculata*. **Beth Choate**, beth.choate@ars.usda.gov and Jonathan Lundgren, USDA - ARS, Brookings, SD

2:35 0316 Density-independent prey selection in a widely foraging predator determined by molecular gut content analysis. **Jason M. Schmidt**, schmid10@muohio.edu¹, James D. Harwood¹ and Ann L Rypstra², ¹Univ. of Kentucky, Lexington, KY, ²Miami Univ., Hamilton, OH

2:47 0317 Feeding behavior of *Podisus maculiventris* (Say) (Hemiptera: Pentatomidae): implications for mass rearing and biological control. **Sudan Gyawaly**, gyawaly_17@yahoo.com, Yong-Lak Park and Vicki Kondo, West Virginia Univ., Morgantown, WV

2:59 0318 Tissue specific expression of *Mi*-mediated resistance in tomato and its direct negative effect on the generalist predator, *Orius insidiosus*. **Godshen R. Pallipparambil**, godshen@uark.edu¹, Timothy J. Kring¹, Jeffrey P. Shapiro², Jean Thomas² and Fiona L. Goggin¹, ¹Univ. of Arkansas, Fayetteville, AR, ²USDA - ARS, Gainesville, FL

3:11 Break

3:26 0319 Hedgerows enhance beneficial insects on farms in California's Central Valley. **Rachael F. Long**, rflong@ucdavis.edu¹, Lora Morandin² and Les Ehler³, ¹Univ. of California Cooperative Extension, Woodland, CA, ²Univ. of California, Berkeley, CA, ³Univ. of California, Davis, Davis, CA

3:38 0320 Parasitoid bacterial symbionts as markers of within-host competitive outcomes: superparasitoid advantage and sex ratio bias. **Jen A. White**, jenwhite.uk@gmail.com¹, Christa Hurak¹, Jason A. Wulff¹, Martha S. Hunter² and Suzanne Kelly², ¹Univ. of Kentucky, Lexington, KY, ²Univ. of Arizona, Tucson, AZ

3:50 0321 Field release and evaluation of the parasitic wasp *Tamarixia radiata* (Hymenoptera: Eulophidae) against Asian citrus psyllid *Diaphorina citri* (Hemiptera: Psyllidae) in Florida. **Jawwad A. Qureshi**, jawwadq@ufl.edu and Philip A. Stansly, Univ. of Florida, Immokalee, FL

4:02 0322 Biological control of the erythrina gall wasp, *Quadrastichus erythrinae* Kim, in Hawaii. **Leyla V. Kaufman**, leyla@hawaii.edu¹, Juliana A. Yalem² and Mark G. Wright³, ¹Univ. of Hawaii at Manoa, Honolulu, HI, ²Hawaii Dept. of Agriculture, Honolulu, HI, ³Honolulu, HI

4:14 0323 Effects of *Hamiltonella defensa* infection on parasitism of cowpea aphid (*Aphis craccivora*) by aphidiine braconid parasitoids. **Mark K. Asplen**, asple001@umn.edu and George E Heimpel, Univ. of Minnesota, St. Paul, MN

4:26 0324 Parasitoids attacking blueberry gall midge (Diptera: Cecidomyiidae) infesting different types of blueberry buds. **Craig R. Roubos**, roubosc@ufl.edu and Oscar E. Liburd, Univ. of Florida, Gainesville, FL

4:38 0325 The discovery and rearing of a parasitoid (Hymenoptera: Pteromalidae) associated with spotted wing drosophila, *Drosophila suzukii*, in Oregon and British Columbia. **Preston H. Brown**, preston.brown@oregonstate.edu¹, Peter W. Shearer¹, Jeffrey C. Miller² and Howard MA. Thistlewood³, ¹Oregon State Univ., Hood River, OR, ²Oregon State Univ., Corvallis, OR, ³Agriculture and Agri-Food Canada, North Summerland, BC, Canada

4:50 Concluding Remarks

Ten-Minute Papers, P-IE Section, Chemical Control Strategies I

**Room A17, First Floor
(Reno-Sparks Convention Center)**

Moderators and Organizers: B. Rogers Leonard¹, Bonnie B. Pendleton² and Paul Borth³, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³Dow AgroSciences, Indianapolis, IN

1:15 Introductory Remarks

1:20 0326 Spray coverage and insecticide repellency as parts of developing IPM - a case story about psyllids and potatoes. **Kathy Vaughn**, kmvaughn@ag.tamu.edu, Texas AgriLife Research and Extension Center, Lubbock, TX

1:32 0327 Repellency effect of volatile compounds against the potato psyllid, *Bactericera cockerelli* (Sulc). **John Diaz-Montano**, johndiaz@ucr.edu and John T. Trumble, Univ. of California, Riverside, Riverside, CA

1:44 0328 Natural-based commercial pesticides and the management of arthropod pests on specialty crops. **Henry Sintim-O**, hofosuhe@ncat.edu, Louis EN. Jackai and Beatrice N. Dingha, North Carolina A&T State Univ., Greensboro, NC

1:56 0329 A regional evaluation of soybean seed treatments in the midsouthern USA. Kelly V. Tindall¹, **Scott D. Stewart**, sdstewart@utk.edu², Angus Catchot³, Gus Lorenz⁴, B. Rogers Leonard⁵, Don Cook³, Jeff Gore⁶, D. Scott Akin⁴, Jeff Davis⁷, Glenn Studebaker⁴, Ryan Jackson⁸ and Clint Allen⁸, ¹Univ. of Missouri, Portageville, MO, ²Univ. of Tennessee, Jackson, TN, ³Mississippi State Univ., Mississippi State, MS, ⁴Univ. of Arkansas, Lonoke, AR, ⁵Louisiana State Univ. AgCenter, Winnsboro, LA, ⁷Louisiana State Univ. AgCenter, Baton Rouge, LA, ⁸USDA - ARS, Stoneville, MS

2:08 0330 Rainfastness of insecticides to control Japanese beetles (*Popillia japonica*) in blueberries. **Daniel L. Hulbert**, hulberd@msu.edu, Rufus Isaacs, Christine Vandervoort and John C. Wise, Michigan State Univ., East Lansing, MI

2:20 0331 Enhanced phosphine toxicity by oxygen and its implications for postharvest pest control. **Yong-Biao Liu**, yongbiao.liu@ars.usda.gov, USDA - ARS, Salinas, CA

2:32 Break

2:47 0332 Tolfenpyrad: a new, novel, broad spectrum chemistry for pest control in the United States. **James C. Adams**, jadams@nichino.net, Botond Balogh, Allison Walston, Pedro Hernandez, Kenneth Chisholm and Scott Ludwig, Nichino America, Inc., Wilmington, DE

2:59 0333 Managing key pests in tree fruits with tolfenpyrad 15SC insecticide. **Allison Walston**, awalston@nichino.net, James C. Adams, Pedro Hernandez, Botond Balogh and Scott Ludwig, Nichino America, Inc., Wilmington, DE

3:11 0334 Managing key pests of citrus with tolfenpyrad 15SC insecticide.. **Pedro Hernandez**, PHernandez@nichino.net, James C. Adams, Allison Walston, Botond Balogh and Scott Ludwig, Nichino America, Inc, Wilmington, DE

3:23 0335 Managing western flower thrips in floriculture production with tolfenpyrad (Hachi-Hachi™). **Scott W. Ludwig**, sludwig@nichino.net¹, Christi L. Palmer², Todd Bunnell³, James C. Adams⁴, Botond Balogh⁴, Pedro Hernandez⁴ and Allison Walston⁴, ¹Nichino America, Inc., Arp, TX, ²Rutgers, The State Univ. of New Jersey, North Brunswick, NJ, ³SePRO Corporation, Carmel, IN, ⁴Nichino America, Inc., Wilmington, DE

3:35 0336 The influence of various agrochemicals on the oviposition and feeding behavior of potato psyllids (*Bactericera cockerelli*). **Sean M. Prager**, sean.prager@agnet.tamu.edu, Kathy Vaughn, Nicole Henderson, Xavier Martini, Milo Lewis and Christian Nansen, Texas A&M Univ. - Texas AgriLIFE Extension, Lubbock, TX

3:47 0337 Use of reduced-risk insecticides to control mint root borer, *Fumibotys fumalis* Hodges, on mint in California. **Kris Tollerup**, ketollerup@ucdavis.edu¹, Daniel Marcum², Steve Orloff³, Rob Wilson² and Larry Godfrey¹, ¹Univ. of California, Davis, Davis, CA, ²Univ. of California, Davis, CA, ³Univ. of California, Yreka, CA

3:59 0338 Insecticide efficacy and application challenges for control of navel orangeworm (*Amyelois transitella*) in California almonds and pistachios. **Joel Siegel**, joel.siegel@ars.usda.gov¹ and Gary Weinberger², ¹USDA - ARS, Parlier, CA, ²Weinberger & Associates, Hanford, CA

4:11 0339 Chemical management of threecornered alfalfa hopper, *Spissistilus festinus* Say, in the spring for season long management

in alfalfa. **Vonny Barlow**, Vmbarlow@ucdavis.edu, Univ. of California, Blythe, CA

4:23 0340 Impacts of pesticides/chemicals on biodiversity, a developing country's view. **Ahmad Mahdavi**, biomahda@gmail.com, Sustainable agriculture and environment(NGO)/ Univ. of Tehran, Tehran, Iran

4:35 Concluding Remarks

Ten-Minute Papers, P-IE Section, Forest Entomology

Room A16, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: B. Rogers Leonard¹, Bonnie B. Pendleton² and Daniel M. Pavuk³, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³Bowling Green State Univ., Bowling Green, OH

2:00 Introductory Remarks

2:05 0341 Field trapping of European buprestid species in Hungarian oak forests. **Michael Domingue**, mjd29@psu.edu and Thomas C. Baker, Pennsylvania State Univ., Univ. Park, PA

2:17 0342 Phenology of *Sirex noctilio* development and adult emergence in the northeastern United States. **Scott W. Myers**, Scott.W.Myers@aphis.usda.gov¹ and Kelley Zylstra², ¹Scott W. Myers, USDA – APHIS, Buzzards Bay, MA, ²USDA - APHIS, North Syracuse, NY

2:29 0343 Biology and impact of *Nepytia janetae* (Lepidoptera: Geometridae) in southwestern high elevation forests. Ann M. Lynch¹ and **Roberta A. Fitzgibbon**, rfitzgibbon@fs.fed.us², ¹USDA - Forest Service, Tucson, AZ, ²USDA - Forest Service, Flagstaff, AZ

2:41 0344 Effects of habitat fragmentation and invasive shrubs on forest caterpillar (Lepidoptera) community composition. **John O. Stireman**, john.stireman@wright.edu, Hilary Devlin and Annie Doyle, Wright State Univ., Dayton, OH

2:53 0345 Reciprocal interactions between the bark-beetle associated yeast *Ogataea pini* and host plant phytochemistry. **Thomas Seth Davis**, tsd3@nau.edu and Richard Hofstetter, Northern Arizona Univ., Flagstaff, AZ

3:05 Break

3:20 0346 Impact of atmospheric change on insect-mediated ecosystem processes in a northern temperate forest. **John J. Couture**, jjcouture@wisc.edu, Timothy D. Meehan and Richard L. Lindroth, Univ. of Wisconsin - Madison, Madison, WI

3:32 0347 Colony size and initial establishment of hemlock woolly adelgid (*Adelges tsugae*). **Patrick C. Tobin**, pc.tobin@gmail.com, Richard M. Turcotte and Daniel A. Snider, USDA - Forest Service, Morgantown, WV

3:44 0348 Invasive ambrosia beetles, fungal symbiont infidelity, and a bleak future for naïve tree species. **Jiri Hulcr**, jirihulcr@gmail.com¹, Nina R. Rountree¹, Lukasz L. Stelinski² and Rob R. Dunn¹, ¹North Carolina State Univ., Raleigh, NC, ²Univ. of Florida, Lake Alfred, FL

3:56 0349 Spatial dynamics of Dalmatian toadflax (*Linaria dalmatica*) and attack by the stem-mining weevil *Mecinus*

janthinus. **Aaron S. Weed**, asweed@uidaho.edu and Mark Schwarzlaender, Univ. of Idaho, Moscow, ID

4:08 0350 Eruptions of native bark beetles: striving toward mediocrity. **Brian H. Aukema**, BrianAukema@umn.edu, Univ. of Minnesota, St. Paul, MN

4:20 Concluding Remarks

Ten-Minute Papers, P-IE Section, Pollinators I

Room A19, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: B. Rogers Leonard¹, Bonnie B. Pendleton² and Theresa L. Pitts-Singer³, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³USDA - ARS, Logan, UT

1:15 Introductory Remarks

1:20 0351 Impact of the agricultural landscape on pollinator movement: a case study using insect pollinators of alfalfa. **Johanne Brunet**, jbrunet@wisc.edu and Megan Van Etten, USDA - ARS, Madison, WI

1:32 0352 Pollination in the context of land use change due to biomass crop production. **Julianna Tuell**, tuelljul@msu.edu¹, Heidi Liere², Rufus Isaacs¹ and Claudio Gratton³, ¹Michigan State Univ., East Lansing, MI, ²Univ. of Michigan, Ann Arbor, MI, ³Univ. of Wisconsin, Madison, WI

1:44 0353 Pollinator diversity and foraging specialization. **Berry J. Brosi**, bbrosi@emory.edu¹ and Heather Mae Briggs², ¹Emory Univ., Atlanta, GA, ²Univ. of California, Santa Cruz, Santa Cruz, CA

1:56 0354 Pollinators and natural enemies show different preferences for native plant species. **Molly MacLeod**, mmacleod@eden.rutgers.edu and Rachael Winfree, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

2:08 0355 Specialist *Peponapis* bees prevail in pollinating U.S. squash crops. **James H. Cane**, Jim.Cane@ars.usda.gov, USDA - ARS, Logan, UT

2:20 0356 Bees found in watermelon in the Lower Rio Grande Valley of Texas. **Chanda S. Henne**, csbutrfly12@yahoo.com, Eloy Rodriguez and John J. Adamczyk, USDA - ARS, Weslaco, TX

2:32 0357 Nest density and distribution affects bee population returns and nut yield in an almond orchard pollinated with *Osmia lignaria* (Hymenoptera: Megachilidae). **Derek R. Artz**, Derek.Artz@ars.usda.gov and Theresa L. Pitts-Singer, USDA - ARS, Logan, UT

2:44 Break

2:59 0358 Honey bee (*Apis mellifera*) pollination affects onion seed set in California Central Valley. **Sandra Gillespie**, sgillespie@ucdavis.edu¹, Rachael F. Long² and Neal M. Williams¹, ¹Univ. of California, Davis, Davis, CA, ²Univ. of California Cooperative Extension, Woodland, CA

3:11 0359 Pollination biology of the tree jujube (*Ziziphus jujube*) in Hanoi, Vietnam. **Hanh Duc Pham**, hphamduc@uoguelph.ca, Gard W. Otis and Cynthia Scott-Dupree, Univ. of Guelph, Guelph, ON, Canada

3:23 0360 Climate-associated phenological advances in bee

pollinators and bee-pollinated plants. **Ignasi Bartomeus**, nacho.bartomeus@gmail.com¹, Rachael Winfree¹, John S. Ascher², Sheila R Colla³, David L. Wagner⁴, Bryan N. Danforth⁵ and Sarah Kornbluth², ¹Rutgers, The State Univ. of New Jersey, New Brunswick, NJ, ²Division of Invertebrate Zoology, American Museum of Natural History, Central, New York, NY, ³York Univ., Toronto, ON, Canada, ⁴Univ. of Connecticut, Storrs, CT, ⁵Cornell Univ., Ithaca, NY

3:35 0361 Pollen limitation: how common should we expect it to be? **Jay A. Rosenheim**, jarosenheim@ucdavis.edu, Neal M. Williams and Sebastian J. Schreiber, Univ. of California, Davis, Davis, CA

3:47 0362 Are New York apples pollen limited? **Eleanor (EJ) Blitzer**, ejb278@cornell.edu, Mia G. Park and Bryan N. Danforth, Cornell Univ., Ithaca, NY

3:59 0363 Patterns of bee biodiversity across commercial New York apple orchards. **Bryan N. Danforth**, bnd1@cornell.edu, Mia Park, Eleanor (EJ) Blitzer, Jason Gibbs and Michael Orr, Cornell Univ., Ithaca, NY

4:11 0364 Replacing the honey bee: why wait? increasing sustainable agricultural practices and cost-cutting for small-scale farming. **Nicholas G. Stewart**, nstewart@ggc.edu and Mark A. Schlueter, Georgia Gwinnett College, Lawrenceville, GA

4:23 0365 Manipulating soil temperatures to influence brood emergence in the alkali bee, *Nomia melanderi* Cockerell. **Amber C. Vinchesi**, avinches@wsu.edu¹, Douglas B. Walsh¹ and Douglas R.

Cobos², ¹Washington State Univ., Prosser, WA, ²Decagon Devices, Pullman, WA

4:35 Concluding Remarks

Sunday, November 13, 2011, Evening

Opening Plenary Session

Room C1-C4, First Floor (Reno-Sparks Convention Center)

6:00 Introductory Remarks

6:05 Presidential address

6:25 Introduction of keynote speaker

6:30 Keynote address: why so few? **Christianne Corbett**, corbettc@aauw.org, American Association of Univ. Women, Washington DC, DC

7:00 Concluding Remarks

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Monday, November 14, 2011, Morning

Graduate Student Ten-Minute Paper Competition, MUVE-1

Room A1, First Floor (Reno-Sparks Convention Center)

Moderators: Ulrich R. Bernier¹ and Glen A. Scoles², ¹USDA - ARS, Gainesville, FL, ²USDA - ARS, Pullman, WA

8:00 Introductory Remarks

8:03 0366 Ultrastructure and genetic evidence of "*Candidatus Rickettsia andeanae*" within the Gulf Coast tick. **Flavia A. Girao**, girao@cvm.msstate.edu¹, Andrea Varela-Stokes¹, Christopher Paddock² and Jerome Goddard¹, ¹Mississippi State Univ., Mississippi State, MS, ²Centers for Disease Control and Prevention, Atlanta, GA

8:15 0367 Seasonality and disease potential of the black-legged deer tick, *Ixodes scapularis* Say, in Mississippi. **Lauren R. Goltz**, LG478@msstate.edu, Andrea Varela-Stokes and Jerome Goddard, Mississippi State Univ., Mississippi State, MS

8:27 0368 Comparison of the humoral and cellular immune responses between body and head lice following bacterial challenge. **Ju Hyeon Kim**, biomyst5@snu.ac.kr¹, Jee Sun Min¹, Jae Soon Kang¹, Deok Ho Kwon¹, Kyong Sup Yoon², Joseph Strycharz², Young Ho Koh³, Barry R. Pittendrigh⁴, John M. Clark² and Si Hyeock Lee¹, ¹Seoul National Univ., Seoul, South Korea, ²Univ. of Massachusetts, Amherst, MA, ³Hallym Univ., Anyang, South Korea, ⁴Univ. of Illinois at Urbana-Champaign, Urbana, IL

8:39 0369 Transmission of *Rickettsia parkeri* by the gulf coast tick, *Amblyomma maculatum* Koch. **Gail Miriam Moraru**, moraru@cvm.msstate.edu¹, Christopher Paddock², Andrea Varela-Stokes¹ and Jerome Goddard¹, ¹Mississippi State Univ., Mississippi State, MS, ²Centers for Disease Control and Prevention, Atlanta, GA

8:51 0370 Patterns of antibody responses against Rocky Mountain wood tick (*Dermacentor andersoni*) among cattle herds in the northwestern United States. **Cami R. Jones**, cami.jones@email.wsu.edu¹, Glen A. Scoles² and Jeb Owen¹, ¹Washington State Univ., Pullman, WA, ²USDA - ARS, Pullman, WA

9:03 0371 Transport of ticks infected with *Ehrlichia chaffeensis* in the USA by migratory song-birds. **Rachel Truhett**, Rachel.Truhett@eagles.usm.edu, Michael Sellers, Frank Moore and Shahid Karim, Univ. of Southern Mississippi, Hattiesburg, MS

9:15 0372 Nitrogen enrichment and mosquito production: impacts of fertilizer on wetlands. **Jennifer Henke**, jennifer.henke@email.ucr.edu, Univ. of California, Riverside, Riverside, CA

9:27 0373 Investigating the role of the piRNA pathway in transposon control within the human disease vector *Aedes aegypti*. **Jennifer Alicia Wright**, jwrig004@student.ucr.edu, Robert Hice, Peter Arensburger and Peter Atkinson, Univ. of California, Riverside, Riverside, CA

9:39 Break

9:51 0374 Preliminary investigation of aggregation dynamics and mating pheromones associated with *Aedes aegypti* (Diptera: Culicidae). **Emad El-Din Y. Fawaz**, Emadel-din.yehia.eg@namru3.med.navy.mil¹, Sandra A. Allan², Ulrich R. Bernier² and Peter J.

Obenauer³, ¹US Naval Medical Research Unit #3, Cairo, Egypt, ²USDA - ARS, Gainesville, FL, ³Vector Biology Research Program, Cairo, FPO AE, Egypt

10:03 0375 Effect of host-plant experience on plant-volatile choice by *Anopheles gambiae*. **Babak Ebrahimi**, ebrahimi.3@osu.edu, The Ohio State Univ., Columbus, OH

10:15 0376 Melanization in defense against *Plasmodium yoelii* in *Anopheles gambiae*. **Phanidhar Kukutla**, buddycute@gmail.com, Matthew Steritz and Jiannong Xu, New Mexico State Univ., Las Cruces, NM

10:27 0377 Specificity of avian host and mosquito vector infections of avian *Plasmodium* in riparian southwest Fresno County. **Jenny S. Carlson**, jencarlson@ucdavis.edu¹, Rebecca Trout-Fryxell¹, Erika Walther², Ravinder NM. Sehgal² and Anthony J. Cornel¹, ¹Univ. of California, Davis, Davis, CA, ²San Francisco State Univ., San Francisco, CA

10:39 0378 Model development for predicting the movement and concentrations of ultra-low-volume insecticides used for adult mosquito management. **Jerome J. Schleier**, jerome.schleier@msu.montana.edu, Montana State Univ., Bozeman, MT

10:51 0379 Carbohydrate feeding increases male mosquito fitness through multiple mechanisms. **Alexandra Villiard**, a.villiard@gmail.com, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

11:03 0380 Ovipositional responses of mosquitoes to kairomones produced from aquatic taxa in different guilds. **Adena M. Why**, why001@student.ucr.edu and William E. Walton, Univ. of California, Riverside, Riverside, CA

11:15 0381 Differential performance and stable isotopic ratios of three co-occurring container mosquitoes across different detritus ratios. **Nnaemeka Francis Ezeakacha**, kakaluvs@yahoo.com and Donald A. Yee, Univ. of Southern Mississippi, Hattiesburg, MS

11:27 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, MUVE-2

Room A2, First Floor (Reno-Sparks Convention Center)

Moderators: Coby Schal¹ and Shripat T. Kamble², ¹North Carolina State Univ., Raleigh, NC, ²Univ. of Nebraska - Lincoln, Lincoln, NE

8:00 Introductory Remarks

8:03 0382 Life tables of *Cimex lectularius* L. (Heteroptera: Cimicidae): comparing strains, heredity and food sources. **Alexis M. Barbarin**, amb1113@psu.edu and Edwin G. Rajotte, Pennsylvania State Univ., State College, PA

8:15 0383 Insecticide resistance in the bed bug: an evolving story. **Jennifer Gordon**, jgord13@gmail.com, Michael F. Potter and Kenneth F. Haynes, Univ. of Kentucky, Lexington, KY

8:27 0384 Analysis of single nucleotide polymorphisms in the bed bug (*Cimex lectularius*). **Andrew Hoelmer**, Andrew_Hoelmer@mail.msj.edu¹, Omprakash Mittapalli² and Susan C. Jones¹, ¹The Ohio State University, Columbus, OH, ²The Ohio State University, Wooster, OH

8:39 0385 Does group-living affect growth and survivorship of bed bugs? **Virna L. Saenz**, vlsaenz@ncsu.edu, Edward L. Vargo and Coby Schal, North Carolina State Univ., Raleigh, NC

8:51 0386 Evidence for a residual human-host kairomone used by the bed bug, *Cimex lectularius*. **Corey M. McQueen**, mcqu0116@umn.edu and Stephen A. Kells, Univ. of Minnesota, St. Paul, MN

9:03 0387 Out in the cold: bed bug survival profile at extremely low temperatures. **Joelle Olson**, eato0052@umn.edu, Marc Eaton and Alice M. Kells, Univ. of Minnesota, St. Paul, MN

9:15 0388 Microsatellite genotyping of *Reticulitermes flavipes* from Wilderness Park, Lincoln, Nebraska. **Abdul Hafiz Ab Majid**, ahafiz@huskers.unl.edu and Shripat T. Kamble, Univ. of Nebraska - Lincoln, Lincoln, NE

9:27 0389 A genetic study of eastern subterranean termite populations in Wisconsin using amplified fragment length polymorphism. **Rachel Ann Arango**, rarango@fs.fed.us¹, Frederick Green¹, Daniel A. Marschalek², Mark E Berres² and Kenneth Raffa², ¹Forest Products Laboratory, Madison, WI, ²Univ. of Wisconsin - Madison, Madison, WI

9:39 Break

9:51 0390 Survival rate, food consumption and tunneling of the Formosan subterranean termite feeding on Bt and non-Bt maize. **Cai Wang**, howangcai@gmail.com, Gregg Henderson and Fangneng Huang, Louisiana State Univ., Baton Rouge, LA

10:03 0391 Odorous house ants: “drivers” or “passengers” of ecological change? **Adam Salyer**, asalyer@purdue.edu and Grzesiek Buczkowski, Purdue Univ., West Lafayette, IN

10:15 0392 Red imported fire ant (*Solenopsis invicta*) forager sizes and granular ant bait grit size selection of the in the presence of *Pseudacteon* spp. phorid flies. **Janis Reed**, janisreed@tamu.edu, Texas A&M Univ., College Station, TX

10:27 0393 Selection of biting sites on anuran hosts by *Corethrella* species. **Priyanka De Silva**, priyanka.desilva@ttu.edu¹, Ximena Bernal¹ and Cesar Jaramillo², ¹Texas Tech Univ., Lubbock, TX, ²Smithsonian Tropical Research Institute, Gamboa, Panama

10:39 0394 Temporal dispersal behavior of the mold mite *Tryopagus putrescentiae* in relation to relative humidity. **Jessica Anne Freitag**, frei0122@umn.edu and Stephen A. Kells, Univ. of Minnesota, St. Paul, MN

10:51 0395 Evaluating cooperating teachers’ perceptions of pest management curriculum and supports to improve teacher continuation and project sustainability. **Makena Mason**, masonmak@hawaii.edu, Maria Aihara-Sasaki and J. Kenneth Grace, Univ. of Hawaii at Manoa, Honolulu, HI

11:03 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, MUVE-3

Room D5, First Floor (Reno-Sparks Convention Center)

Moderators: Dana Nayduch¹ and Alec Gerry², ¹Georgia Southern Univ., Statesboro, GA, ²Univ. of California, Riverside, Riverside, CA

8:00 Introductory Remarks

8:03 0396 DEET (N,N-Diethyl-meta-toluamide) induced delay of blow fly landing and oviposition rates on treated pig carrion (*Sus scrofa* L.). **Matan Shelomi**, mshelomi@ucdavis.edu, Leia M. Matern, Jenna M. Dinstell, Daren W. Harris and Robert B. Kimsey,

Univ. of California, Davis, Davis, CA

8:15 0397 House fly (*Musca domestica*) response to insect honeydew. **Kim Hung**, kim.hung@ucr.edu and Alec Gerry, Univ. of California, Riverside, Riverside, CA

8:27 0398 Management of host-seeking canyon flies using a barrier trapping system. **Panchali Ekanayake**, panchali.ekanayake@email.ucr.edu and Alec Gerry, Univ. of California, Riverside, Riverside, CA

8:39 0399 Localization of antimicrobial responses in the house fly alimentary canal. **Adam Fleming**, adam_e_fleming@GeorgiaSouthern.edu and Dana Nayduch, Georgia Southern Univ., Statesboro, GA

8:51 0400 Minimum viable weight and critical weight of *Cochliomyia macellaria* (Diptera: Calliphoridae) and consequences for forensic entomology. **Rachel M. Mohr**, rmohr@tamu.edu, Aaron M. Tarone and Jeffery K. Tomberlin, Texas A&M Univ., College Station, TX

9:03 0401 Susceptibility of the vinegar fly (*Drosophila repleta*) to two strains of *Beauveria bassiana* isolated from house flies (*Musca domestica*). **L. M. Guisewite**, lguisew@ncsu.edu, S. S. Denning and D. W. Watson, North Carolina State Univ., Raleigh, NC

9:15 0402 Invertebrate community successional changes resulting from delayed colonization on ephemeral resources. **Jennifer L. Pechal**, jenpechal18@tamu.edu¹, M. Eric Benbow², Tawni L. Crippen³, Aaron M. Tarone¹ and Jeffery K. Tomberlin¹, ¹Texas A&M Univ., College Station, TX, ²Univ. of Dayton, Dayton, OH, ³USDA - ARS, College Station, TX

9:27 Break

9:39 0403 Validation of laboratory reared *Chrysomya rufifacies* (Diptera: Calliphoridae) (Macquart) development data under field conditions. **Micah Flores**, tennis_micah@tamu.edu¹, Aaron M. Tarone², Michael Diaz² and Jeffery K. Tomberlin¹, ¹Texas A&M Univ., College Station, TX, ²California State Univ., Monterey Bay, Marin, CA

9:51 0404 Effects of temporal priority on the life-history traits of two competing blow fly (Diptera: Calliphoridae) species on carrion. **Adrienne L. Brundage**, brundage@forensicentomologist.com¹, Tawni Crippen², Alicia Fonseca³ and Jeffery K. Tomberlin¹, ¹Texas A&M Univ., College Station, TX, ²USDA - ARS, College Station, TX, ³Instituto Politécnico Nacional (IPN), Mexico City, Mexico

10:03 0405 Bacteria regulate attraction and colonization of a resource by the black soldier fly (Diptera: Stratiomyidae). **Meaghan L. Pimsler**, mlpimsler@gmail.com¹, Tawni L. Crippen², Longyu Zheng³, Leslie Holmes⁴, M. Eric Benbow⁵, Aaron M. Tarone¹, Ziniu Yu³, Sherah VanLaerhoven⁴ and Jeffery K. Tomberlin¹, ¹Texas A&M Univ., College Station, TX, ²USDA - ARS, College Station, TX, ³Huazhong Agricultural Univ., Wuhan, Hubei Province, China, ⁴Univ. of Windsor, Windsor, ON, Canada, ⁵Univ. of Dayton, Dayton, OH

10:15 0406 Effect of duration and delay of on-site temperature recording on temperature estimation: implications for forensic entomology. **Jonathan A. Cammack**, jacammac@ncsu.edu, L. M. Guisewite and D. W. Watson, North Carolina State Univ., Raleigh, NC

10:27 0407 The impact of refrigeration on research cadavers during the bloat stage of decay and the potential entomologic and taphonomic implications. **Natalie K. Lindgren**, murphyshsu@gmail.com, Michelle L. Lewis, Alan D. Archambeault, Brent C. Rahlwes, James R. Willett and Sibyl R. Bucheli, Sam Houston State Univ., Huntsville, TX

10:39 0408 Movement of enteric bacteria by *Phormia regina* (Meigen) to plants. **Rebecca C. Pace**, rebecca.pace@okstate.edu, Justin Talley, Udaya DeSilva, Jacque Fletcher and Astri Wayadande, Oklahoma State Univ., Stillwater, OK

10:51 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, P-IE-1

Room A11, First Floor (Reno-Sparks Convention Center)

Moderator: Robert G. Hollingsworth, USDA - ARS, Hilo, HI

8:00 Introductory Remarks

8:03 0409 Changing herbivore and natural enemy community structures with habitat management in cabbage (*Brassica oleracea*). **Alexandria N. Bryant**, bryant30@msu.edu, Daniel Brainard and Zsafia Szendrei, Michigan State Univ., East Lansing, MI

8:15 0410 Hot in the city: scale insects, parasitoids, and the future of warmer urban trees. **Emily K. Meineke**, emily.meineke@gmail.com¹, Steven D. Frank¹, Robert R. Dunn¹ and Joseph O. Sexton², ¹North Carolina State Univ., Raleigh, NC, ²Univ. of Maryland, College Park, MD

8:27 0411 Below ground natural biocontrol services in a post-industrial urban ecosystem. **Priyanka Yadav**, yadav.4@osu.edu, Kathy Duckworth and Parwinder S. Grewal, The Ohio State Univ., Wooster, OH

8:39 0412 Measuring biocontrol services in Michigan apple orchards. **Nathaniel J. Walton**, waltonn2@msu.edu and Matthew Grieshop, Michigan State Univ., East Lansing, MI

8:51 0413 Assessing susceptibility of two hymenopteran parasitoids of the emerald ash borer, *Agilus planipennis* (Col: Buprestidae), to the entomopathogenic fungus *Beauveria bassiana*. **Kimberly Mae Dean**, kmdean01@syrr.edu¹, John D. Vandenberg², Leah S. Bauer³, Michael H. Griggs² and Melissa K. Fierke¹, ¹SUNY College of Environmental Science and Forestry, Syracuse, NY, ²USDA - ARS, Ithaca, NY, ³USDA - Forest Service, East Lansing, MI

9:03 0414 The influence of host plants on parasitism of the invasive light brown apple moth, *Epiphyas postvittana* in California. **Julie V. Hopper**, juliehopper@berkeley.edu and Nicholas J. Mills, Univ. of California, Berkeley, Berkeley, CA

9:15 0415 High temperature tolerance of the light brown apple moth, *Epiphyas postvittana*. **Linda P. Bürgi**, lpbuergi@berkeley.edu and Nicholas J. Mills, Univ. of California, Berkeley, Berkeley, CA

9:27 0416 Potential steps toward *in vitro* rearing of the koinobiont parasitoid, *Toxoneuron nigriceps* (Hymenoptera: Braconidae). **Ruth E. Henderson**, ruthend@tamu.edu, Indira Kuriachan and S. Bradley Vinson, Texas A&M Univ., College Station, TX

9:39 Break

9:51 0417 Interactions between plants, herbivores and omnivorous predators in native CA systems. **WA. Krimmel**, wkrimmel@gmail.com, Univ. of California, Davis, Davis, CA

10:03 0418 Consequences of diversity: comparing pest and natural enemy populations in monocultures and soybean variety mixtures. **Ian M. Grettenberger**, img103@psu.edu and John

Tooker, Pennsylvania State Univ., State College, PA

10:15 0419 Parasitoid-host interactions are influenced by virus-induced changes in plant chemistry. **Kerry Mauck**, kem315@gmail.com, Consuelo M. De Moraes and Mark C. Mescher, Pennsylvania State Univ., State College, PA

10:27 0420 Parasitism and predation of corn earworm (*Helicoverpa zea*) eggs in corn – sunn hemp cropping system and corn monoculture with release of *Trichogramma* in corn. **Roshan Manandhar**, roshanm@hawaii.edu and Mark G. Wright, Univ. of Hawaii, Honolulu, HI

10:39 0421 Functional response of the soybean aphid parasitoid, *Binodoxys communis*. **Megan E. Carter**, carte544@umn.edu, Mark K. Asplen and George E. Heimpel, Univ. of Minnesota, St. Paul, MN

10:51 0422 Evaluating the influence of floral resource provisioning on biological control of *Erythroneura* leafhoppers (Homoptera: Cicadellidae) and *Planococcus* mealybugs (Homoptera: Pseudococcidae) in California vineyards. **Albie F. Miles**, albiemiles@berkeley.edu, Sam Houston Wilson, Kent M. Daane and Miguel A. Altieri, Univ. of California, Berkeley, Berkeley, CA

11:03 0423 Life history and biological control of *Gluphisia septentrionis*. **Alejandro Del Pozo**, adelpozo@wsu.edu, R. Andrew Rodstrom and John J. Brown, Washington State Univ., Pullman, WA

11:15 0424 Floral farmscaping and biological control in broccoli. **Obinna Lebechukwu Aduba**, obinna.aduba@gmail.com¹, John R. Ruberson² and Obinna Lebechukwu Hartel¹, ¹Univ. of Georgia, Athens, GA, ²Univ. of Georgia, Tifton, GA

11:27 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, P-IE-10

Room A17, First Floor (Reno-Sparks Convention Center)

Moderator: Abigail Walter, USDA - ARS, Fort Pierce, FL

8:00 Introductory Remarks

8:03 0425 After the introduction: predicting novel plant-herbivore interaction. **Ian S. Pearse**, ispearse@ucdavis.edu, Univ. of California, Davis, Davis, CA

8:15 0426 Comparison of techniques for modeling mean-proportion relationships with implications for presence-absence sampling. **Jesus R. Lara**, jlara007@ucr.edu and Mark S. Hoddle, Univ. of California, Riverside, Riverside, CA

8:27 0427 Optimizing buffer strips for insect-derived ecosystem services. **Kelly Ann Gill**, kaseman@iastate.edu, Matthew E. O'Neal and Lisa A. Schulte, Iowa State Univ., Ames, IA

8:39 0428 Effect of organic matter source on abundance and diversity of springtails (Collembola). **Jessica Awad**, jessica.awad@uvm.edu, Yolanda H. Chen and DA. Neher, Univ. of Vermont, Burlington, VT

8:51 0429 Can pests combined cause yield reduction and sugar quality losses? **José Antonio de Souza Rossato Junior**, jose.rossato@yahoo.com.br¹, Odair A. Fernandes¹, Márcia Justino Rossini Mutton¹, Leonardo Lucas Madaleno¹ and Leon G. Higley²,

¹Universidade Estadual Paulista, Jaboticabal, São Paulo, Brazil,

²Univ. of Nebraska - Lincoln, Lincoln, NE

9:03 0430 Do groups have a larger cognitive capacity than individuals? **Takao Sasaki**, tsasaki1@asu.edu and Stephen Pratt, Arizona State Univ., Tempe, AZ

9:15 0431 Flower foraging behavior in the nectar-feeding moth *Hemaris* (Lepidoptera: Sphingidae) a mimic of *Bombus* (Hymenoptera: Apidae). **Elena S. Tartaglia**, etartag.rutgers@gmail.com and Steven N. Handel, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

9:27 0432 The indirect effects of ant-hemipteran mutualisms on host plant fitness: comparing the cascading effects of two ant species on coffee production. **Katelyn A. Zemenick**, kzemeni@gmail.com and John Vandermeer, Univ. of Michigan, Ann Arbor, MI

9:39 Break

9:51 0433 Lawn insecticide impact on bumble bee colonies assessed through realistic field exposures. **Jonathan L. Larson**, Univ. of Kentucky, Lexington, KY

10:03 0434 The effect of native prairie management strategies on bee distribution and abundance. **Wayne J. Ohnesorg**, wohnesorg2@unl.edu¹, Marion D. Ellis², Thomas E. Hunt³ and Robert J. Wright², ¹Univ. of Nebraska - Lincoln, Norfolk, NE, ²Univ. of Nebraska - Lincoln, Lincoln, NE, ³Univ. of Nebraska, Concord, NE

10:15 0435 Foraging site selection behavior by a sit-and-wait predator: the role of biotic and abiotic cues. **Kelton D. Welch**, kelton.welch@uky.edu, Kenneth F. Haynes and James D. Harwood, Univ. of Kentucky, Lexington, KY

10:27 0436 Sweet alyssum floral strips and the effects observed on bees and pests in Ohio pumpkin crops. **B. W. Phillips**, phillips.1030@osu.edu and M. M. Gardiner, The Ohio State Univ., OARDC, Wooster, OH

10:39 0437 Spatial and temporal patterns of crop rotations and their impact on squash bee (*Peponapis pruinosa*) abundance in the Sacramento Valley of California. **Katharina Ullmann**, katharina_uk@yahoo.com, Univ. of California, Davis, Davis, CA

10:51 0438 Competitive impacts of an invasive nectar thief on a pollinator community. **Cause Hanna**, channa@berkeley.edu¹, Claire Kremen¹ and David Foote², ¹Univ. of California, Berkeley, Berkeley, CA, ²US Geological Survey, Hawaii National Park, HI

11:03 0439 Change in water infiltration rates created by the ant mound building activities of five ant species in the Tahoe Basin. **Joy L. Newton**, letsghbhseagles@yahoo.com¹, Matthew L. Forister¹ and Patricia N. Manley², ¹Univ. of Nevada, Reno, Reno, NV, ²Institute of Pacific Islands Forestry, Hilo, HI

11:15 0440 Manna from heaven: refuse from the arboreal ant, *Azteca trigona*, connects above- and below-ground processes in a lowland tropical rainforest. **Natalie A. Clay**, naclay@ou.edu¹, Jane Lucas², Michael Kaspari¹ and Adam Davidson Kay², ¹Univ. of Oklahoma, Norman, OK, ²Univ. of St. Thomas, St. Paul, MN

11:27 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, P-IE-11

Room A18, First Floor (Reno-Sparks Convention Center)

Moderator: Charles H. Pickett, California Dept. of Food and Agriculture, Sacramento, CA

8:00 Introductory Remarks

8:03 0441 Two-spotted spider mite dispersal and yield loss in cotton. **Will Scott**, wscott@entomology.msstate.edu¹, Angus Catchot², Jeffrey Gore³, Fred R. Musser¹ and Don Cook³, ¹Mississippi State Univ., Starkville, MS, ²Mississippi State Univ., Mississippi State, MS, ³Mississippi State Univ., Stoneville, MS

8:15 0442 How spider mites select their food sources and perform in corn genotypes grown under different levels of irrigation. **Amelia Jorge Sidumo**, a.sidumo@ttu.edu¹, Christian Nansen², David C. Margolies³, Kathy Vaughn² and Pat Porter², ¹Texas Tech Univ., Lubbock, TX, ²Texas A&M Univ. - Texas AgriLIFE Extension, Lubbock, TX, ³Kansas State Univ., Manhattan, KS

8:27 0443 Contending with an ephemeral resource; transport strategies of phoretic mites in Wisconsin red pine stands. **Jesse A. Pfammatter**, pfammatter@wisc.edu and Kenneth F. Raffa, Univ. of Wisconsin - Madison, Madison, WI

8:39 0444 Differential transmission of *Triticum mosaic virus* and its impact on the biology of the wheat curl mite (*Aceria tosichella* K.). **Anthony J. McMechan**, amcmechan@huskers.unl.edu¹, Gary L. Hein¹, Satyanarayana Tatineni² and Roy French², ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²USDA - ARS, Lincoln, NE

8:51 0445 Predator diversity enhances vector suppression: potential implications for pathogen prevalence. **Elizabeth Y. Long**, eyl75@mail.missouri.edu and Deborah L. Finke, Univ. of Missouri - Columbia, Columbia, MO

9:03 0446 Effect of *Ipomoea* host plants on stylet penetration behavior of *Myzus persicae* (Sulzer). **Everlyne Nafula Wosula**, ewosula@agcenter.lsu.edu¹, Jeffrey A. Davis² and Christopher Clark¹, ¹Louisiana State Univ., Baton Rouge, LA, ²Louisiana State Univ. AgCenter, Baton Rouge, LA

9:15 0447 Putative gut receptors for *Pea enation mosaic virus* in the pea aphid, *Acyrtosiphon pisum*. **Lucas B. Linz**, llinz@iastate.edu, Sijun Liu and Bryony C. Bonning, Iowa State Univ., Ames, IA

9:27 0448 Viruliferous and nonviruliferous bird-cherry oat aphids exhibit differential responses to *Barley yellow dwarf virus*-infected plants. **Laura L. Ingwell**, laura.ingwell@gmail.com, Nilsa A. Bosque-Perez, Lana Unger and Sanford D. Eigenbrode, Univ. of Idaho, Moscow, ID

9:39 Break

9:51 0449 *Barley yellow dwarf virus* in winter wheat: examining the spatial and temporal movement of its aphid vectors. **Katelyn A. Kowles**, katelyn.kowles@uky.edu¹, Douglas W. Johnson² and James D. Harwood³, ¹Univ. of Kentucky, Lexington, KY, ²Univ. of Kentucky, Princeton, KY

10:03 0450 Seasonal flight dynamic of aphid species in occurrence with potato virus Y infection in commercial potato fields. **Natalie Hernandez**, nhernandez@wisc.edu, Groves Russell, Emily Mueller and Amy Charkowski, Univ. of Wisconsin - Madison, Madison, WI

10:15 0451 Effect of Tomato spotted wilt virus infection on settling, oviposition, and feeding preference of *Frankliniella fusca* (Thysanoptera: Thripidae). **Anita Shrestha**, anita25@uga.edu, Rajagopalbabu Srinivasan, David G. Riley and Albert K. Culbreath, Univ. of Georgia, Tifton, GA

10:27 0452 Relationship between stink bugs and *Phomopsis* seed decay in Mississippi soybean production. **Joshua Lunn Jones**, jlj493@msstate.edu, Angus L. Catchot, Fred R. Musser, Maria Thomaso-Peterson, Thomas W. Allen and Jeffrey Gore, Mississippi State Univ., Mississippi State, MS

10:39 0453 Dynamics of *Erwinia tracheiphila* acquisition and retention by its insect vector, *Acalymma vittatum*. **Lori R. Shapiro**, lrs200@psu.edu, Irmgard Seidl-Adams, Consuelo De Moraes, Andrew Stephenson and Mark C. Mescher, Pennsylvania State Univ., State College, PA

10:51 0454 Tracking an invader: the origin and genetic relationships of Asian citrus psyllid (*Diaphorina citri*) in California. **Aviva Goldmann**, agoldmann@gmail.com, Mark S. Hoddle, Paul F. Rugman-Jones and Richard Stouthamer, Univ. of California, Riverside, Riverside, CA

11:03 0455 Assessing thousand cankers disease severity in California. **Stacy Hishinuma**, smhishi@ucdavis.edu¹, Mary Louise Flint¹, Richard M. Bostock¹ and Steven J. Seybold², ¹Univ. of California, Davis, Davis, CA, ²USDA - Forest Service, Davis, CA

11:15 0456 Attraction of walnut twig beetle adults and larvae to the fungus *Geosmithia morbida*. **E. K. Peachey**, emi.pea@hotmail.com, N. Tisserat and Whitney Cranshaw, Colorado State Univ., Fort Collins, CO

11:27 0457 Interactions between an insect and a fungus pest: how American chestnut is impacted by two exotics. **Ignazio Graziosi**, i.graziosi@uky.edu and Lynne Lieske-Kinney, Univ. of Kentucky, Lexington, KY

11:39 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, P-IE-12

Room A3, First Floor (Reno-Sparks Convention Center)

Moderator: Robert Meagher, USDA - ARS, Gainesville, FL

8:00 Introductory Remarks

8:03 0458 Determining reproductive potential of *Amyelois transitella* to improve integrated pest management. **Devin A. Clarke**, dclarke1@mail.csuchico.edu¹, Justin E. Nay², Frank G. Zalom³ and Elizabeth A. Boyd¹, ¹California State Univ., Chico, Chico, CA, ²Integral Ag. Inc., Durham, CA, ³Univ. of California, Davis, Davis, CA

8:15 0459 Re-growth plasticity of cranberry shoots in response to apical meristem injury by a gall-making fly: recovery potential and fitness in the next growing season. **Sunil Tewari**, stewari@psis.umass.edu and Anne Averill, Univ. of Massachusetts, Amherst, Amherst, MA

8:27 0460 Effects of tree condition on oviposition behavior of *Sirex nigricornis* F. (Hymenoptera: Siricidae). **Jessica Hartshorn**, jhartsho825@gmail.com and Fred M. Stephen, Univ. of Arkansas, Fayetteville, AR

8:39 0461 Factors affecting realized fecundity and offspring fitness

of Arkansas *Sirex*. **Ace J. W. Lynn-Miller**, alynnmil@uark.edu and Fred M. Stephen, Univ. of Arkansas, Fayetteville, AR

8:51 0462 Distribution of *Adelges tsugae* (Hemiptera: Adelgidae) within an eastern hemlock tree. **Sunghoon Baek**, shbaek007@hotmail.com¹, Tim Tomon² and Yong-Lak Park¹, ¹West Virginia Univ., Morgantown, WV, ²West Virginia Dept. of Agriculture, Charleston, WV

9:03 0463 Host acceptance by the hemlock woolly adelgid on hemlocks across a spectrum of host resistance. **Lori Nelson**, lori.nelson@uky.edu and Lynne Rieseke, Univ. of Kentucky, Lexington, KY

9:15 0464 Six years of population dynamics of the emerald ash borer beetle (*Agrilus planipennis* Fairmaire) at Point Pelee National Park, Canada. **Shelley-Lynne E. Stewart**, shelley@uoguelph.ca, Gard W. Otis and C. Cody Anderson, Univ. of Guelph, Guelph, ON, Canada

9:27 0465 Legacy of the emerald ash borer invasion: indirect effects of canopy gaps on interactions between prickly ash and giant swallowtail butterfly larvae. **Kevin Rice**, rice.467@osu.edu¹ and Daniel A. Herms², ¹The Ohio State Univ., Columbus, OH, ²The Ohio State Univ., OARDC, Wooster, OH

9:39 Break

9:51 0466 Why did the butterfly cross the road? Ecological effects of roadside mowing on butterflies (Lepidoptera: Hesperioidea and Papilionoidea). **Dale A. Halbritter**, dhalb001@ufl.edu and Jaret C. Daniels, Univ. of Florida, Gainesville, FL

10:03 0467 Selection and genetic analysis of behavioral traits of European corn borer (*Ostrinia nubilalis*), plant abandonment vs. plant establishment. **Michael Allen Rausch**, mrausch@iastate.edu¹, Jeremy Kroemer², Tyasning Kroemer¹, Susan Moser³ and Richard L. Hellmich², ¹Iowa State Univ., Ames, IA, ²USDA - ARS, Ames, IA, ³Pioneer Hi-Bred International, Inc., Johnston, IA

10:15 0468 Western bean cutworm: larval movement and feeding on corn. **S. V. Paula-Moraes**, silvana.moraes@huskers.unl.edu¹, TE. Hunt², RJ. Wright¹, E. Blankenship¹ and Gary Hein¹, ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Univ. of Nebraska - Lincoln, Concord, NE

10:27 0469 Evaluating methoxyfenozide efficacy against regional soybean looper populations. **Sebe Brown**, SBrown@agcenter.lsu.edu¹, Jeffrey A. Davis¹, B. Rogers Leonard², MO. Way³, Kelly V. Tindall⁴, Clint Allen⁵ and Arthur Richter¹, ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²Louisiana State Univ. AgCenter, Winnsboro, LA, ³Texas A&M Univ., Beaumont, TX, ⁴Univ. of Missouri, Portageville, MO, ⁵USDA - ARS, Stoneville, MS

10:39 0470 Mapping disease in the Palouse pea aphid (*Acyrtosiphon pisum* [Harris]) pathosystem. **Damon Husebye**, Univ. of Idaho, Moscow, ID

10:51 0471 Distribution of the bacterial symbiont *Rickettsia* in USA populations of the sweetpotato whitefly, *Bemisia tabaci*. **Bodil N. Cass**, bcass@email.arizona.edu and Martha S. Hunter, Univ. of Arizona, Tucson, AZ

11:03 0472 Seasonal patterns of stored-product insect activity in grain silos as it pertains to temporal differences by cardinal directions. **Matthew J. Sellner**, sellner1@ksu.edu¹, James Campbell², Frank Arthur², Thomas W. Phillips¹ and LT. Wilson³, ¹Kansas State Univ., Manhattan, KS, ²USDA - ARS, Manhattan, KS, ³Texas A&M AgriLife Research & Extension Center at Beaumont, Beaumont, TX

11:15 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, P-IE-2

Room A12, First Floor (Reno-Sparks Convention Center)

Moderator: Sharlene Sing, USDA - Forest Service, Bozeman, MT

8:00 Introductory Remarks

8:03 0473 Pest consumption and niche separation of common immigrant and agrobiont spider species in semi-desert wheat fields. **Itai Opatovsky**, itaiopa@bgu.ac.il¹, Phyllis G. Weintraub², Shai Morin³ and Yael Lubin¹, ¹Ben-Gurion Univ., Midreshet Ben-Gurion, Israel, ²Agricultural Research Organization, Gilat Research Center, Israel, ³The Robert H. Smith Faculty of Agriculture Food and Environment, Rehovot, Israel

8:15 0474 Sublethal effects in predator mite, *Amblyseius fallacis* to insect growth regulator. **Raja Zalinda Raja Jamil**, rajajami@msu.edu and John C. Wise, Michigan State Univ., East Lansing, MI

8:27 0475 The dynamics of reproductive allocation in *Hippodamia convergens* as a function of female age and body size. **German Vargas**, gavargas@ksu.edu¹, JP. Michaud² and James Nechols¹, ¹Kansas State Univ., Manhattan, KS, ²Kansas State Univ., Hays, KS

8:39 0476 Evidence refuting the interference competition hypothesis for native lady beetle decline. **Chelsea Smith**, csmith9717@gmail.com and MM. Gardiner, The Ohio State Univ., OARDC, Wooster, OH

8:51 0477 Comparison of coccinellid community assemblages between agricultural grass-dominated habitats and natural tallgrass prairies. **Lauren M. Hart**, lmhd74@mizzou.edu and Deborah L. Finke, Univ. of Missouri - Columbia, Columbia, MO

9:03 0478 Direct and indirect effects of a novel neonicotinoid seed treatment on a soybean predator. **Madeline Ivy Spigler**, mspigler@purdue.edu and Christian Krupke, Purdue Univ., West Lafayette, IN

9:15 0479 Field cage studies of *Laricobius osakensis* Montgomery & Shiyake (Coleoptera: Derodontidae), a predator of hemlock woolly adelgid, *Adelges tsugae* Annand (Hemiptera: Adelgidae). **Ligia Cota Vieira**, lvieira@vt.edu, Scott M. Salom and Loke T. Kok, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

9:27 0480 Detection of facultative intraguild predation events by *Monochamus titillator* on the southern pine beetle guild using molecular gut analyses. **Erich Schoeller**, eschoeller@agcenter.lsu.edu, Jeremy Allison and Claudia Husseneder, Louisiana State Univ., Baton Rouge, LA

9:39 Break

9:51 0481 Toxic slugs? Neonicotinoid seed treatments in tri-trophic perspective. **Maggie Douglas**, mrd276@psu.edu and John Tooker, Pennsylvania State Univ., State College, PA

10:03 0482 The role of non-prey food resources in generalist predator food webs. **Julie A. Peterson**, julie.peterson@uky.edu, Kacie J. Johansen, Eric G. Chapman and James D. Harwood, Univ. of Kentucky, Lexington, KY

10:15 0483 The contribution of predator phenology and diversity to secondary pest suppression in alfalfa. **Erica P. Stephens**, erica.stephens@aggiemail.usu.edu and Ricardo A. Ramirez, Utah State Univ., Logan, UT

10:27 0484 Do reconstructed prairies affect predation rates of soybean aphids (*Aphis glycines*) at the watershed scale? **Rachael A. Ohde**, racox@iastate.edu and Matthew E. O'Neal, Iowa State Univ., Ames, IA

10:39 0485 Intraguild predation of the parasitoid wasp, *Aphelinus mali* (Haldeman) by the syrphid predator *Heringia calcarata* (Loew). **Sean DM. Gresham**, sgresham@vt.edu¹ and J. Christopher Bergh², ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, New Zealand, ²Virginia Polytechnic Institute and State Univ., Winchester, VA

10:51 0486 Direct effects of pesticides and plant growth regulators on the rove beetle, *Atheta coriaria*. **Erik R. Echegaray**, eechegar@ksu.edu and Raymond A. Cloyd, Kansas State Univ., Manhattan, KS

11:03 0487 Manipulation of *Myzus persicae*, green peach aphid, and *Leptinotarsa decemlineata*, Colorado potato beetle, in potatoes to determine predator food preference. **Christine Ann Lynch**, christine1@wsu.edu¹, W. E. Snyder¹, Eric G. Chapman² and James D. Harwood², ¹Washington State Univ., Pullman, WA, ²Univ. of Kentucky, Lexington, KY

11:15 0488 How do hemipteran generalist predators induce anti-herbivory resistance in tomato? **Hélène M. Quaghebeur**, hmq1@psu.edu and Gary W. Felton, Pennsylvania State Univ., State College, PA

11:27 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, P-IE-3

Room A13, First Floor (Reno-Sparks Convention Center)

Moderator: Eric J. Rebeck, Oklahoma State Univ., Stillwater, OK

8:00 Introductory Remarks

8:03 0489 Integrating chemical and biological control in gerbera production. **Cheri M. Abraham**, cherimabraham@gmail.com, S. Kristine Braman and Ron D. Oetting, Univ. of Georgia, Griffin, GA

8:15 0490 Prevalence of natural enemies of *Popillia japonica* in Arkansas. **BM. Petty**, bmpetty@uark.edu, DT. Johnson and DC. Steinkraus, Univ. of Arkansas, Fayetteville, AR

8:27 0491 Combining stable isotopes analyses with next generation sequencing to disentangle trophic links in banana agroecosystem. **Grégory Mollot**, gregory.mollot@cirad.fr¹, Philippe Tixier¹, Françoise Lescourret², Safia Guénifi¹, Jean François Martin³ and Pierre-François Duyck¹, ¹CIRAD-PRAM, Le Lamentin Cedex 2, Martinique, ²Institut National de la Recherche Agronomique (INRA), Avignon, France, ³Institut National de la Recherche Agronomique (INRA), Montferrier sur Lez, France

8:39 0492 Determining the efficacy of *Larinus minutus* (Coleoptera: Curculionidae) in reducing spotted knapweed populations in Arkansas. **C. R. Minteer**, cminteer@uark.edu, T.J. Kring, Y. J. Shen and R. N. Wiedenmann, Univ. of Arkansas, Fayetteville, AR

8:51 0493 Identification and impact of natural enemies of *Bactericera cockerelli* in southern California. **Casey D. Butler**, cbutl001@student.ucr.edu and John T. Trumble, Univ. of California, Riverside, Riverside, CA

9:03 0494 Efficacy of entomopathogenic fungi and *Heterorhabditis bacteriophora* against masked chafer, (Coleoptera: Scarabaeidae), white grubs. **Shaohui Wu**, shaohuiw@vt.edu, Roger R. Youngman, Loke T. Kok and Laub A. Curt, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

9:15 0495 Influence of landscape heterogeneity on biological control of the western grape leafhopper (*Erythroneura elegantula* Osborn) in northern California vineyards. **Houston Wilson**, houston@berkeley.edu, Albie F. Miles, Kent M. Daane and Miguel A. Altieri, Univ. of California, Berkeley, Berkeley, CA

9:27 0496 Exploitation of microbial bioagents for the management of podborer complex in pigeonpea. **G. Senthilraja**, senthilt@yaho.co.in, T. Anand, S. Mohankumar, C. Durairaj, T. Raguchander and R. Samiyappan, Tamil Nadu Agricultural Univ., Coimbatore, Tamil Nadu, India

9:39 Break

9:51 0497 Optimizing soil applications of entomopathogenic fungi and nematodes to enhance efficacy against plum curculio larvae in upper midwest tree fruit production. **Peter Nelson**, nelsonp8@msu.edu and Mark E. Whalon, Michigan State Univ., East Lansing, MI

10:03 0498 Characterization of secondary metabolites from an Arizona native entomopathogenic bacterium, *Photorhabdus luminescens sonorensis*, and their use in biological control. **Rousel A Orozco**, rouselo@email.arizona.edu and S. Patricia Stock, Univ. of Arizona, Tucson, AZ

10:15 0499 Do ambush and cruise foraging entomopathogenic nematodes disperse differently in the absence of hosts? **Harit K. Bal**, bal.9@osu.edu, Robin A. J. Taylor and P. S. Grewal, The Ohio State Univ., Wooster, OH

10:27 0500 Evaluating the relative impacts of plant quality and natural enemies on mortality of *Bemisia tabaci* in cotton. **Peter Asimwe**, pasiimwe@ag.arizona.edu¹, Steven Naranjo² and Peter C. Ellsworth³, ¹Univ. of Arizona, Tucson, AZ, ²USDA - ARS, Maricopa, AZ, ³Univ. of Arizona, Maricopa, AZ

10:39 0501 Field application of three entomopathogenic nematodes in the biological control of the larger black flour beetle (*Cynaues angustus*) in cotton gin trash. **Bryan C. Stokes**, bryan.c.stokes@gmail.com¹, Christian Nansen², Terry Wheeler², Pat Porter³ and Kathy Vaughn², ¹Texas Tech Univ., Texas Agrilife, Lubbock, TX, ²Texas A&M Univ. - Texas AgriLIFE Extension, Lubbock, TX, ³Texas Cooperative Extension, TAMU Ag Research & Extension Center, Lubbock, TX

10:51 0502 Can habitat partitioning of thrips natural enemies reduce intraguild predation in greenhouses? **Emily Pochubay**, pochubay@msu.edu and Matthew Grieshop, Michigan State Univ., East Lansing, MI

11:03 0503 Assessing olfactory and visual cues in host selection behavior to improve pre-release host range prediction of *Mogulones borraginis* (Coleoptera: Curculionidae) for houndstongue, *Cynoglossum officinale* (Boraginaceae). **Ikju Park**, park0563@vandals.uidaho.edu, Mark Schwarzlaender and Sanford Eigenbrode, Univ. of Idaho, Moscow, ID

11:15 0504 Plant, ants and herbivores: untangling the complexities of ant attraction in non-mymecophilous plants. **Collin Cutrone McMichael**, cmcmichael@tamu.edu, Andrea Walker and MD. Eubanks, Texas A&M Univ., College Station, TX

11:27 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, P-IE-4

**Room A19, First Floor
(Reno-Sparks Convention Center)**

Moderator: John C. Reese, Kansas State Univ., Manhattan, KS

8:00 Introductory Remarks

8:03 0505 Evaluation of large raspberry aphid (*Amphorophora agathonica*) feeding behavior on susceptible and resistant red raspberry. **Danielle Lightle**, danielle.lightle@gmail.com¹ and Jana C. Lee², ¹Oregon State Univ., Corvallis, OR, ²USDA - ARS, Corvallis, OR

8:15 0506 Leaf orientation and biomechanical properties do not explain western flower thrips (*Franliniella occidentalis*) preference for feeding on the undersides of leaves. **Justin Fiene**, jfiene@neo.tamu.edu, Lauren Kalns, Julio Bernal and Christian Nansen, Texas A&M Univ., College Station, TX

8:27 0507 The independent and interacting effects of predators and plant resistance on aphid movement and performance. **Monica F. Kersch-Becker**, mf464@cornell.edu and Jennifer S. Thaler, Cornell Univ., Ithaca, NY

8:39 0508 A comparison of tobacco budworm (*Heliothis virescens*) performance and preference of three tobacco species. **Thomas Bentley**, tgb134@psu.edu, Mark C. Mescher and Consuelo M. De Moraes, Pennsylvania State Univ., State College, PA

8:51 0509 Just can't resist: resistant host succumbs to virus when vector feeds on reproductive host tissue. **Jessica L. Houle**, jlhoule@ncsu.edu and George G. Kennedy, North Carolina State Univ., Raleigh, NC

9:03 0510 Transcriptome-wide gene expression analysis of three ash species using RNA-Seq. **Loren Rivera-Vega**, lrivervavega@gmail.com¹, Xiaodong Bai¹, Praveen Mamidala¹, Pierluigi Bonello², Daniel A. Herms¹, Jennifer Koch³, Mary E. Mason¹ and Omprakash Mittapalli¹, ¹The Ohio State Univ., OARDC, Wooster, OH, ²The Ohio State Univ., Columbus, OH, ³USDA - Forest Service, Delaware, OH

9:15 0511 Expression profiles of antioxidant genes in the emerald ash borer (*Agrilus planipennis*). **Swapna Priya Rajarapu**, rajarapu.1@buckeyemail.osu.edu¹, Praveen Mamidala¹, Daniel A. Herms¹, Pierluigi Bonello² and Omprakash Mittapalli¹, ¹The Ohio State Univ., OARDC, Wooster, OH, ²The Ohio State Univ., Columbus, OH

9:27 0512 Beauty and the beast: mechanisms of host-plant resistance to hemlock woolly adelgid (*Adelges tsugae*). **Kelly LF. Oten**, klfelder@ncsu.edu, Allen C. Cohen, Robert M. Jetton and Fred P. Hain, North Carolina State Univ., Raleigh, NC

9:39 Break

9:51 0513 Molecular marker profiles of soybean aphids (*Aphis glycine*) collected from aphid-resistant and aphid-susceptible soybean (*Glycine max*). **T. Michael Kates**, katestho@msu.edu¹, Lucia C. Orantes², Andrew Michel², Christina DiFonzo¹ and Dechun Wang¹, ¹Michigan State Univ., East Lansing, MI, ²The Ohio State Univ., OARDC, Wooster, OH

10:03 0514 Molecular and mechanistic role of *Arabidopsis* PAD4 protein in defense against the green peach aphid. **Joe Louis**, joelouis@gmail.com¹, Jane E. Parker² and Jyoti Shah¹, ¹Univ. of North Texas, Denton, TX, ²Max-Planck Institute for Plant Breeding Research, Cologne, Germany

10:15 0515 The effects of Rag1 soybean on settlement behavior

and distribution of the soybean aphid. **Rebecca Whalen**, Rebecca.Whalen@my.ndsu.edu and Jason Harmon, North Dakota State Univ., Fargo, ND

10:27 0516 Preference and performance of two lepidopteran species on *Rag1* cultivars. **Robert F. Bruner**, rfburner@iastate.edu, Aaron J. Gassmann, Erin W. Hodgson and Matthew E. O'Neal, Iowa State Univ., Ames, IA

10:39 0517 The effects of pulsed plant stress on herbivore abundance and plant defense. **Warren B. Sconiers**, wsconier@tamu.edu¹, Diane L. Rowland² and M. D. Eubanks¹, ¹Texas A&M Univ., College Station, TX, ²Univ. of Florida, Gainesville, FL

10:51 0518 Feeding responses of potato aphid (*Macrosiphum euphorbiae*) and the beet armyworm (*Spodoptera exigua*) on tomato foliage with altered defense mechanisms. **Kevin Durden**, kpdurden@uark.edu¹, Carlos Avila¹, Jorigtoo Chen¹, Harry J. Klee², Denise Tieman² and Fiona L. Goggin¹, ¹Univ. of Arkansas, Fayetteville, AR, ²Univ. of Florida, Gainesville, FL

11:03 0519 The impact of ethylene-mediated induced plant defenses in cotton on herbivore performance. **Loriann C. Garcia**, garcia_lc@tamu.edu, M. D. Eubanks and Scott A. Finlayson, Texas A&M Univ., College Station, TX

11:15 0520 Feeding and oviposition performances of corn leafhopper (*Dalbulus maidis*) along maize's evolutionary and domestication gradients. **Edwin Bellota**, ebellota25@tamu.edu and Julio S. Bernal, Texas A&M Univ., College Station, TX

11:27 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, P-IE-5

Room A16, First Floor (Reno-Sparks Convention Center)

Moderator: Sean E. Walker, California State Univ., Fullerton, Fullerton, CA

8:00 Introductory Remarks

8:03 0521 Tritrophic chemical transfer of piperidine alkaloids: characterizing the epigeal and foliar food webs on invasive poison hemlock (*Conium maculatum* L.). **Christine D. Allen**, christine.allen.ent@uky.edu, Kenneth F. Haynes, John J. Obrycki and James D. Harwood, Univ. of Kentucky, Lexington, KY

8:15 0522 Simulation model for studying the effect of transgenic plants expressing a maturation-delaying compound on the cowpea weevil and western corn rootworm. **Jung Koo Kang**, jungkoo.kang@gmail.com, Barry Pittendrigh and David Onstad, Univ. of Illinois at Urbana-Champaign, Urbana, IL

8:27 0523 Evaluating susceptibility of the western corn rootworm (*Diabrotica virgifera virgifera* LeConte) to Bt corn through application of an F1 screen. **Ryan S. Keweshan**, keweshan@iastate.edu¹, Graham P. Head² and Aaron J. Gassmann¹, ¹Iowa State Univ., Ames, IA, ²Monsanto Company, St. Louis, MO

8:39 0524 Fitness costs of Bt resistance in western corn rootworm. **Amanda M. Hoffmann**, iahoff17@gmail.com¹, B. Wade French² and Aaron J. Gassmann¹, ¹Iowa State Univ., Ames, IA, ²USDA - ARS, Brookings, SD

8:51 0525 Comparing block and blended refuge strategies for

managing resistance of western corn rootworm to Bt corn. **Michael Dunbar**, dunbar17@gmail.com and Aaron J. Gassmann, Iowa State Univ., Ames, IA

9:03 0526 Home sweet home: induced plant preference in minute pirate bugs (*Orius tristicolor*). **Meredith Cenzler**, mlcenzler@ucdavis.edu, Univ. of California, Davis, Davis, CA

9:15 0527 Occurrence and larval movement of sugarcane borer, *Diatraea saccharalis* (F.) in mixed plantings of corn expressing pyramided Cry proteins. **David Sindani Wangila**, DWangila@agcenter.lsu.edu¹, B. Rogers Leonard², Mukti N. Ghimire¹, Karla D. Emfinger², Liping Zhang¹, Yaoyu Bai³, Fei Yang¹, Graham Head⁴ and Fangneng Huang¹, ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²Louisiana State Univ. AgCenter, Winnsboro, LA, ³Southwest Univ. of China, Beibei, China, ⁴Monsanto Company, St. Louis, MO

9:27 0528 Inducible Bt tolerance in *Helicoverpa armigera* (Lepidoptera: Noctuidae) and its effects on egg production and subsequent parasitism by *Trichogramma pretiosum* (Hymenoptera: Trichogrammatidae). **Kay Anantanawat**, kay.anantanawat@adelaide.edu.au¹, Richard V. Glatz² and Mike Keller³, ¹Univ. of Adelaide, Glen Osmond, South Australia, Australia, ²South Australian Research and Development Institute, Adelaide, South Australia, Australia, ³Univ. of Adelaide, Adelaide, Australia

9:39 Break

9:51 0529 Reduced foliage herbivory in Bt cotton benefits phloem-feeding insects. **Steffen Hagenbucher**, steffen.hagenbucher@art.admin.ch, Agroscope Reckenholz-Tänikon Research Station ART, Zürich, Switzerland

10:03 0530 Behavioral evidence for a female-produced sex attractant in the peach bark beetle (*Phloeotribus liminaris*). **Nicole R. VanDerLaan-Hannon**, nvanbd00@purdue.edu, Purdue Univ., Lafayette, IN

10:15 0531 Evidence for the stratification of hydrocarbons in the epicuticular wax layer of female *Megacyllene robiniae* (Coleoptera: Cerambycidae). **Gabriel P. Hughes**, ghughes@purdue.edu, Annie Spikes, Jeffrey D. Holland and Matthew D. Ginzler, Purdue Univ., West Lafayette, IN

10:27 0532 Interactions between *Lygus* bugs and *Erigeron annuus*: applications toward a trap crop system for the tarnished plant bug. **Sean T. Halloran**, sth150@psu.edu and James Tumlinson, Pennsylvania State Univ., State College, PA

10:39 0533 The galling parasite *Daktulosphaira vitifoliae* induces novel morphological change in *Vitis*. **Paul Nabity**, pnabity2@illinois.edu, May R. Berenbaum and Evan DeLucia, Univ. of Illinois at Urbana-Champaign, Urbana, IL

10:51 0534 The determination of arsenic accumulation in *Chironomus riparius* Meigen (Diptera: Chironomidae) and its significance. **Christina Loraine Mogren**, christina.mogren@email.ucr.edu, Guntram R. von Kiparski, David R. Parker and John T. Trumble, Univ. of California, Riverside, Riverside, CA

11:03 0535 Plant-herbivore interaction of ethylene-insensitive petunia flowers and western flower thrips. **Claudia H. Kuniyoshi**, kuniyoshi.1@osu.edu, Karla J. Medina-Ortega and Luis Cañas, The Ohio State Univ., Wooster, OH

11:15 0536 Incidence of mycotoxins in Bt and conventional corn hybrids in relation to insect pest abundance. **Rosemary Gutierrez**, Rosemary.Gutierrez@sdstate.edu, Billy Fuller and Bradley McManus, South Dakota State Univ., Brookings, SD

11:27 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, P-IE-6

Room A4, First Floor (Reno-Sparks Convention Center)

Moderator: Cory A. Vorel, Utah State Univ., Logan, UT

8:00 Introductory Remarks

8:03 0537 Population structuring and genetic diversity of bumble bees from the central United States. **Amber D. Tripodi**, atripodi@uark.edu and Allen L. Szalanski, Univ. of Arkansas, Fayetteville, AR

8:15 0538 Pollination by *Apis* and non-*Apis* bees in North Carolina blueberry agroecosystems. **Shelley R. Rogers**, srrogers@ncsu.edu, David R. Tapy and Hannah J. Burrack, North Carolina State Univ., Raleigh, NC

8:27 0539 Effects of honey bee (*Apis mellifera*) intracolony genetic diversity on nutrition processing and colony health. **Bruce Eckholm**, beckholm@ag.arizona.edu¹, Kirk E. Anderson², Ming Huang¹ and Gloria DeGrandi-Hoffman², ¹Univ. of Arizona, Tucson, AZ, ²USDA - ARS, Tucson, AZ

8:39 0540 Pollinator diversity and pollination services provided to urban garden and turf-based vacant lot ecosystems. **Scott P. Prajzner**, prajzner.1@osu.edu and Mary M. Gardiner, The Ohio State Univ., OARDC, Wooster, OH

8:51 0541 How does wildflower planting size affect insect pollinators and their delivery of pollination ecosystem services? **Brett R. Blaauw**, blaauwb1@msu.edu and Rufus Isaacs, Michigan State Univ., East Lansing, MI

9:03 0542 Israeli acute paralysis virus (IAPV) affects commercially-managed non-*Apis* pollinators. **Rajwinder Singh**, rus169@psu.edu¹, Rosalind James², Diana Cox-Foster¹ and Edwin Rajotte¹, ¹Pennsylvania State Univ., State College, PA, ²USDA - ARS, Logan, UT

9:15 0543 Chalkbrood co-infections of leafcutting bees (*Megachile rotundata*): Understanding the arms race between obligate, facultative, and non-pathogenic fungal species. **Ellen Klinger**, Ellen.Klinger@ars.usda.gov and Rosalind James, USDA - ARS, Logan, UT

9:27 Break

9:39 0544 Balancing pest and pollinator management in cucurbit production systems. **Logan M. Minter**, log_mint@yahoo.com, Ric Bessin, Timothy Coolong and Mark A. Williams, Univ. of Kentucky, Lexington, KY

9:51 0545 Impact of a late summer crop on the pollen foraging behavior of native bumble bees. **Kimberly Skyrms**, kimberly.skyrms@oregonstate.edu, Sujaya Rao and William Stephen, Oregon State Univ., Corvallis, OR

10:03 0546 The conservation status of *Bombus moderatus* and *B. occidentalis* (Hymenoptera: Apidae) in Alaska, U.S.A. **Jonathan Koch**, kochj@biology.usu.edu¹ and James Strange², ¹Utah State Univ., Logan, UT, ²USDA - ARS, Logan, UT

10:15 0547 Male bumble bees as pollinators of a late season plant. **Jane E. Ogilvie**, jane.ogilvie@utoronto.ca and James D. Thomson, Univ. of Toronto, Toronto, Ontario, Canada

10:27 0548 Pollination ecology in a selenium-accumulating plant: impacts on visitation and survival of the honey bee. **Kristen R. Hladun**, kristen.hladun@email.ucr.edu and John T. Trumble, Univ. of California, Riverside, Riverside, CA

10:39 0549 The effect of habitat restoration on plant-pollinator network structure through changes in floral richness. **Sarah Cusser**, cusser.1@osu.edu¹ and Karen Goodell², ¹The Ohio State University, Columbus, OH, ²The Ohio State Univ., Newark, OH

10:51 0550 Nesting ecology of *Osmia cornifrons* in an urban environment. **Matthew I. McKinney**, mm.entomology@gmail.com and Yong-Lak Park, West Virginia Univ., Morgantown, WV

11:03 0551 Post wildfire survival of native bees in sagebrush steppe. **Byron Love**, blove@biology.usu.edu, Utah State Univ., Logan, UT

11:15 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, P-IE-7

Room A5, First Floor (Reno-Sparks Convention Center)

Moderator: Boris A. Castro, Dow AgroSciences, Fresno, CA

8:00 Introductory Remarks

8:03 0552 Developing a degree-day model to improve asparagus miner (Diptera: Agromyzidae) management in Michigan. **William R. Morrison**, morri362@msu.edu and Zsofia Szendrei, Michigan State Univ., East Lansing, MI

8:15 0553 Trunk injection: a new and innovative technique for insecticide delivery in tree fruits. Anthony Hale VanWoerkom, **George Sundin**, sundin@msu.edu, Christine Vandervoort and John C. Wise, Michigan State Univ., East Lansing, MI

8:27 0554 Laboratory and field evaluations of tolfepryrad on Colorado potato beetle (*Leptinotarsa decemlineata* Say). **Adam Wimer**, awimer@vt.edu¹, TP. Kuhar² and James C. Adams³, ¹Virginia Polytechnic Institute and State Univ., Painter, VA, ²Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ³Nichino America, Inc., Wilmington, DE

8:39 0555 Yeast associations of spotted wing drosophila (*Drosophila suzukii*) in raspberries. **Kelly Hamby**, kahamby@ucdavis.edu, Kyria Boundy-Mills and Frank G. Zalom, Univ. of California, Davis, CA

8:51 0556 Petal-feeding behavior of *Liriomyza trifolii* in gerbera cut-flower production. **Andrew Merwin**, acmerwin@ucdavis.edu, Univ. of California, Davis, Davis, CA

9:03 0557 Life cycle and development of red bay ambrosia beetle (*Xyleborus glabratus* Eichhoff) in the natural hosts avocado, red bay and swamp bay. **Gurpreet Brar**, gpsbrar@ufl.edu¹, Jorge E. Peña² and John Capinera¹, ¹Univ. of Florida, Gainesville, FL, ²Univ. of Florida, Homestead, FL

9:15 0558 Improvements in trap cropping to manage harlequin bug (*Murgantia histrionica*), pest of cole crops. **Anna K. Wallingford**, awalling@vt.edu¹, T. P. Kuhar¹ and Peter B. Schultz², ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Virginia Polytechnic Institute and State Univ., Virginia Beach, VA

9:27 0559 Identification of candidate pheromone receptors from the light brown apple moth (*Epiphyas postvittana*). **Jacob A. Corcoran**, jacob.corcoran@plantandfood.co.nz¹, Doreen S. Begum², Melissa D. Jordan² and Richard D. Newcomb², ¹Univ. of Auckland, Auckland, New Zealand, ²The New Zealand Institute for Plant & Food Research Limited, Auckland, New Zealand

9:39 Break

9:51 0560 The effects of field-edge habitat and different management procedures on insect-mediated ecosystem services in the Maine lowbush blueberry (*Vaccinium angustifolium*) agro-ecosystem. **Matthew S. Jones**, matthew_s._jones@umit.maine.edu, Univ. of Maine, Orono, ME

10:03 0561 Biology, monitoring and economic impact of blueberry gall midge (*Dasineura oxycoccana*) in Michigan blueberries. **Noel Hahn**, nghahn@gmail.com and Rufus Isaacs, Michigan State Univ., East Lansing, MI

10:15 0562 Insect pests in high tunnel vegetable production. **Sarah L. Thompson**, slthomps@purdue.edu and Rick Foster, Purdue Univ., West Lafayette, IN

10:27 0563 Real-time monitoring of adult plum curculio (*Conotrachelus nenuphar*) activity in fruit orchards. **Roger Duncan Selby**, selbyrog@msu.edu, Michigan State Univ., East Lansing, MI

10:39 0564 Predicting oviposition by corn earworm (*H. zea*) in sweet corn with pheromone traps. **Jonathan M. Nixon**, jmnixon.45@gmail.com, Purdue Univ., West Lafayette, IN

10:51 0565 Cold tolerance of overwintering third instar *Plectris aliena* (Coleoptera: Scarabaeidae) larvae. **Nancy Brill**, nlbrill@ncsu.edu and Mark R. Abney, North Carolina State Univ., Raleigh, NC

11:03 0566 Effect of pruning transplants and re-using synthetic mulch on arthropod populations and marketable yields of strawberries. **Teresia Nyoike**, nyoiket@ufl.edu and Oscar E. Liburd, Univ. of Florida, Gainesville, FL

11:15 0567 Post-harvest grazing of hogs in cherry, apple, and pear orchards for insect pest management. **Krista Buehrer**, buehrerk@msu.edu and Matthew Grieshop, Michigan State Univ., East Lansing, MI

11:27 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, P-IE-8

Room A6, First Floor (Reno-Sparks Convention Center)

Moderator: Jarrod T. Hardke, Pioneer Hi-Bred International, Inc., Union City, TN

8:00 Introductory Remarks

8:03 0568 Integrated control strategies for management of tarnished plant bug (*Lygus lineolaris*) in cotton. **Brian P. Adams**, bpa31@msstate.edu¹, Jeffrey Gore², Angus Catchot¹, Fred R. Musser¹ and Don Cook², ¹Mississippi State Univ., Mississippi State, MS, ²Mississippi State Univ., Stoneville, MS

8:15 0569 To sweep or to vacuum: a comparison of lygus bug (*Lygus hesperus* Knight) populations in two varieties of dry beans. **Mohammad-Amir Aghaee**, maghaee@ucdavis.edu, Evan Goldman, Steve Temple and Larry D. Godfrey, Univ. of California, Davis, Davis, CA

8:27 0570 Monitoring for stink bugs in blackberries using traps and pheromones. **Sara A. Brennan**, sbrennan@ufl.edu and Oscar E. Liburd, Univ. of Florida, Gainesville, FL

8:39 0571 Assessing rice stink bug, *Oebalus pugnax* (F.)

(Heteroptera: Pentatomidae), damage in rice. **George Awuni**, gaa48@msstate.edu¹, Jeffrey Gore², Fred R. Musser¹ and Don Cook², ¹Mississippi State Univ., Starkville, MS, ²Mississippi State Univ., Stoneville, MS

8:51 0572 Intercrop movement of stink bugs (Hemiptera: Pentatomidae) in Georgia. **Ta-i Huang**, dai7030@uga.edu and MD. Toews, Univ. of Georgia, Tifton, GA

9:03 0573 Spatial and temporal dynamics of stink bugs (Hemiptera: Pentatomidae) in southeastern farmscapes. **Grant L. Pilkay**, gpilkay@clemson.edu¹, Francis P.F. Reay-Jones², Michael D. Toews³ and Jeremy K. Greene⁴, ¹Clemson Univ., Clemson, SC, ²Clemson Univ., Florence, SC, ³Univ. of Georgia, Tifton, GA, ⁴Clemson Univ., Blackville, SC

9:15 0574 Assessing stink bug-induced injury on soybean seed. **Jessica Moore-Parker**, jmoore@agcenter.lsu.edu¹, Joshua H. Temple¹ and B. Rogers Leonard², ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²Louisiana State Univ. AgCenter, Winnsboro, LA

9:27 0575 Quantify damage of redbanded stink bug (*Piezodorus guildinii*) to soybeans and plant response to this damage. **Suhas Vyavhare**, suhas.vyavhare@yahoo.com¹ and M. O. Way², ¹Texas A&M Univ., Beaumont, TX, ²Texas A&M AgriLife Research & Extension Center, Beaumont, TX

9:39 0576 Residual efficacy of selected insecticides on stink bugs (Heteroptera: Pentatomidae). **James Wesley McPherson**, jwm177@msstate.edu¹, Angus Catchot¹, Fred R. Musser¹, Don Cook² and Clint Allen³, ¹Mississippi State Univ., Mississippi State, MS, ²Mississippi State Univ., Stoneville, MS, ³USDA - ARS, Stoneville, MS

9:51 Break

10:03 0577 Managing soybean aphids with selective insecticides results in a bioresidual. **Adam J. Varenhorst**, ajv@iastate.edu and Matthew E. O'Neal, Iowa State Univ., Ames, IA

10:15 0578 Interactions between a nematode, fungus and aphid: implications for soybean management. **Michael T. McCarville**, mikemcc@iastate.edu, Matthew E. O'Neal, Gregory L. Tylka and Gustavo C. MacIntosh, Iowa State Univ., Ames, IA

10:27 0579 A comparative field study of commercially-available rhizobial inoculants on soybean aphid density (*Aphis glycines*). **Samantha M. Brunner**, samantha.brunner@ndsu.edu, Deirdre A. Prischmann-Voldseth and R. Jay Goos, North Dakota State Univ., Fargo, ND

10:39 0580 Effects of local overwintering host density on patterns of field infestation by soybean aphid (*Aphis glycines*). **Jacob Alexander Wenger**, wenger.93@osu.edu, The Ohio State Univ., Wooster, OH

10:51 0581 Movement inducing stimuli inducing of the Asian citrus psyllid (*Diaphorina citri*). **Scott D. Croxton**, croxtsd@ufl.edu and Philip A. Stansly, Univ. of Florida, Immokalee, FL

11:03 0582 Effect of photoperiod and gender on the feeding behavior of Asian citrus psyllid (*Diaphorina citri* Kuwayama). **Rosana H. Serikawa**, rserikawa@ufl.edu¹, Daniela M. Okuma¹, Elaine Backus² and Michael E. Rogers¹, ¹Univ. of Florida, Lake Alfred, FL, ²USDA - ARS, Parlier, CA

11:15 0583 Validation of coloured sticky traps with LUREM-TR attractants for effective monitoring of thrips dynamics on French beans in Kenya **Muvea**, muvealex@yahoo.com¹, S. Subramanian², L. H. Kutima¹, M. Waiganjo³, Z. L. Osiero⁴, W. J. De Kogel⁴ and Daj. Teulon⁵, ¹Jomo Kenyatta Univ. of Agriculture

and Technology, Nairobi, Kenya, ²International Centre of Insect Physiology and Ecology (ICIPE), Nairobi, Kenya, ³Kenya Agricultural Research Institute, Nairobi, Kenya, ⁴Plant Research International, Wageningen, Netherlands, ⁵Crop and Food Research, Christchurch, Canterbury, New Zealand

11:27 0584 Livestock grazing directs locust outbreaks by altering host plant nitrogen status. **Arianne J. Cease**, acease@asu.edu¹, Jon Harrison¹, Shuguang Hao², Le Kang² and James Elser¹, ¹Arizona State Univ., Tempe, AZ, ²Chinese Academy of Sciences, Beijing, China

11:39 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, P-IE-9

Room A10, First Floor (Reno-Sparks Convention Center)

Moderator: Jon M. Babcock, Dow AgroSciences LLC, Indianapolis, IN

8:00 Introductory Remarks

8:03 0585 Going too far? Trap crop distance and flea beetle control. **Joyce E. Parker**, Jeparker@wsu.edu¹, William E. Snyder¹ and Sanford D. Eigenbrode², ¹Washington State Univ., Pullman, WA, ²Univ. of Idaho, Moscow, ID

8:15 0586 Life history of *Colaspis crinicornis* Schaeffer (Coleoptera: Chrysomelidae) in Nebraska. **Kentaro Miwa**, kmiwa@huskers.unl.edu and Lance J. Meinke, Univ. of Nebraska - Lincoln, Lincoln, NE

8:27 0587 Wireworms in Irish potato: understanding the biology of a cryptic soil pest. **Kevin W. Langdon**, kevin_langdon@ncsu.edu and Mark R. Abney, North Carolina State Univ., Raleigh, NC

8:39 0588 Wireworm population in a till and no-till small grain systems in central Montana. **Anuar Morales-Rodriguez**, a.moralesrodriguez@montana.edu and Kewin W. Wanner, Montana State Univ., Bozeman, MT

8:51 0589 Phenology and degree day requirements of *Cerotoma trifurcata* (Coleoptera: Chrysomelidae) in Ontario. **Cara M. McCreary**, cmccrear@uoguelph.ca¹, Jocelyn L. Smith², Tracey Baute³, Greg Boland¹, Arthur W. Schaafsma² and Rebecca H. Hallett¹, ¹Univ. of Guelph, Guelph, ON, Canada, ²Univ. of Guelph, Ridgetown, ON, Canada, ³Ontario Ministry of Agriculture, Food and Rural Affairs, Ridgetown, Ridgetown, Canada

9:03 0590 The why, where, and when of cereal leaf beetle (*Oulema melanopus* L.). **Christopher R. Philips**, crp@vt.edu¹, D. Ames Herbert², T. P. Kuhar³, Dominic Reisig⁴ and Sean Malone², ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Virginia Polytechnic Institute and State Univ., Suffolk, VA, ³Virginia Polytechnic Institute and State Univ., Painter, VA, ⁴North Carolina State Univ., Plymouth, NC

9:15 0591 Examining potential differences between rotation-resistant and rotation-susceptible populations of the western corn rootworm. **Nicholas A. Tinsley**, tinsley@illinois.edu¹, Michael E. Gray¹, Joseph L. Spencer¹, Ronald E. Estes¹ and Thomas E. Hunt², ¹Univ. of Illinois at Urbana-Champaign, Urbana, IL, ²Univ. of Nebraska, Concord, NE

9:27 0592 Does feeding location on roots influences the western corn rootworm development? **Vianney OM. Willot**, vwillot@purdue.edu and Christian Krupke, Purdue Univ., West Lafayette, IN

9:39 Break

9:51 0593 Evaluating yield losses from simulated insect defoliation in soybean. **Lucas N. Owen**, lno9@msstate.edu, Mississippi State Univ., Mississippi State, MS

10:03 0594 Efficacy of insecticidal seed treatments against rice water weevil. **Andrew Adams**, aadams@entomology.msstate.edu, Mississippi State Univ., Mississippi State, MS

10:15 0595 Residual assays with thiamethoxam as seed treatment agent against rice water weevil (*Lissorhoptus oryzophilus*) at distinct stages of rice (*Oryza sativa*). **Srinivas K. Lanka**, slanka1@tigers.lsu.edu and Michael J. Stout, Louisiana State Univ., Baton Rouge, LA

10:27 0596 Monitoring bean leaf beetle (*Cerotoma trifurcata*) response to thiamethoxam soybean seed treatments. **Chelsea L. Piitz**, chelsea.piitz@huskers.unl.edu¹, Thomas E. Hunt², Blair D. Siegfried¹ and Tiffany M. Heng-Moss¹, ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Univ. of Nebraska, Concord, NE

10:39 0597 Alternative application techniques of pesticides to control above and below ground herbivory of *Polydrusus impressifrons* in hybrid poplar cuttings. **R. Andrew Rodstrom**, andrewrodstrom1@yahoo.com, Alejandro Del Pozo and John J. Brown, Washington State Univ., Pullman, WA

10:51 0598 Negative effect of Phostrol on Colorado potato beetles (*Leptinotarsa decemlineata* (Say)). **Megan L. Patterson**, megan.patterson@maine.edu, Univ. of Maine, Orono, ME

11:03 0599 European corn borer populations in Pennsylvania and the value of Bt corn. **Eric Bohnenblust**, ewb14@psu.edu, Gregory Roth and John Tooker, Pennsylvania State Univ., State College, PA

11:15 0600 Characterizing variation in resistance among commonly grown rice cultivars in Louisiana against sugarcane borer, *Diatraea saccharalis*. **Jaspreet K. Sidhu**, jsidhu1@tigers.lsu.edu, M. J. Stout and Natalie A. Hummel, Louisiana State Univ. AgCenter, Baton Rouge, LA

11:27 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, PBT-1

Room D8, First Floor (Reno-Sparks Convention Center)

Moderators: Michael Scharf¹ and Vincent Henrich², ¹Purdue Univ., West Lafayette, IN, ²Univ. of North Carolina at Greensboro, Greensboro, NC

8:30 Introductory Remarks

8:33 0601 Sequencing and characterizing the olfactory receptors of *Megacyllene caryae* (Coleoptera: Cerambycidae). **Robert F. Mitchell**, rmitche3@life.illinois.edu¹, David T. Hughes², Charles W. Luetje², Jocelyn G. Millar³, Hugh M. Robertson¹ and Lawrence M. Hanks¹, ¹Univ. of Illinois at Urbana-Champaign, Urbana, IL, ²Univ. of Miami, Miami, FL, ³Univ. of California, Riverside, Riverside, CA

8:45 0602 Searching for natriuretic peptide receptors in insects. **Chong Tang**, leochong718@gmail.com and David Schooley, Univ. of Nevada, Reno, NV

8:57 0603 Responses from antennal receptors in female and male of a specialist parasitoid, *Microplitis croceipes* (Hymenoptera):

Braconidae) to host-related volatiles. **Prithwiraj Das**, pdd0002@auburn.edu and Henry Fadamiro, Auburn Univ., Auburn, AL

9:09 0604 Olfactory receptors for human odor in mosquitoes. **Genevieve Tauxe**, genevieve.tauxe@email.ucr.edu and Anandasankar Ray, Univ. of California, Riverside, Riverside, CA

9:21 0605 RNA interference screening in *Drosophila* S2 cells identifies transmembrane genes involved in juvenile hormone signaling. **Joliene R. Lindholm**, jlindholm@entomology.wisc.edu and Walter Goodman, Univ. of Wisconsin - Madison, Madison, WI

9:33 0606 Maternal RNAi-mediated knockdown of *maleless* gene expression in the codling moth *Cydia pomonella*. Douglas Knipple¹, **Liuqi Gu**, lg356@cornell.edu¹ and Stephen F. Garczynski², ¹Cornell Univ., Geneva, NY, ²USDA - ARS, Wapato, WA

9:45 Break

9:57 0607 A whole transcriptome approach to investigate the genes involved in permethrin resistance in the Southern house mosquito *Culex quinquefasciatus*. **William R. Reid**, wzr0005@auburn.edu and Nannan Liu, Auburn Univ., Auburn, AL

10:09 0608 Small RNAs of soybean aphid, *Aphis glycines* Matsumura. **Diveena Vijayendran**, diveena@iastate.edu, Sijun Liu and Bryony C. Bonning, Iowa State Univ., Ames, IA

10:21 0609 Functional metagenomic profiling of Asian longhorned beetle (*Anoplophora glabripennis*) microbiota reveals important contributions to digestive physiology. **Erin D. Scully**, eds14@psu.edu¹, Scott Geib², John Carlson¹, Ming Tien¹ and Kelli Hoover¹, ¹Pennsylvania State Univ., State College, PA, ²USDA - ARS, Hilo, HI

10:33 0610 Expanding molecular resources for the insect vector, *Graminella nigrifrons*. **Yuting Chen**, chen.1684@buckeyemail.osu.edu, Xiaodong Bai, Margaret G. Redinbaugh and Andrew Michel, The Ohio State Univ., OARDC, Wooster, OH

10:45 0611 Isolation and characterization of eight microsatellite loci from *Lycorma delicatula* (White) (Hemiptera: Fulgoridae) for population genetic analysis in South Korea. **Marana Park**, marana@snu.ac.kr, Joon-Ho Lee and Kyung Seok Kim, Seoul National Univ., Seoul, South Korea

10:57 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, PBT-2

Room D9, First Floor (Reno-Sparks Convention Center)

Moderators: Qisheng Song¹ and Walter Leal², ¹Univ. of Missouri - Columbia, Columbia, MO, ²Univ. of California, Davis, Davis, CA

8:30 Introductory Remarks

8:33 0612 Identification of larval caste and the regulation of queen development in colonies of the ant *Harpegnathos saltator*. **Clint A. Penick**, clint.penick@asu.edu and Juergen Liebig, Arizona State Univ., Tempe, AZ

8:45 0613 Cold hardiness of emerald ash borer parasitoids *Spathius agrili* and *Tetrastichus planipennis*. **Anthony A. Hanson**, hans4022@umn.edu¹, Robert C. Venette² and William D. Hutchison¹, ¹Univ. of Minnesota, St. Paul, MN, ²USDA - Forest Service, St. Paul, MN

8:57 0614 Cellular cold-sensing in the goldenrod gall fly, *Eurosta solidaginis*, involves a calcium/calmodulin signaling axis. **Nicholas M. Teets**, teets.23@osu.edu and David L. Denlinger, The Ohio State Univ., Columbus, OH

9:09 0615 Using species distribution models and thermal tolerance traits to investigate niche conservatism in an invasive mite. **Matthew P. Hill**, m.hill2@pgrad.unimelb.edu.au¹, Paul Umina¹, Sarina MacFadyen² and Ary A. Hoffmann³, ¹Univ. of Melbourne, Parkville, Victoria, Australia, ²CSIRO, Canberra, ACT, Australia, ³Univ. of Melbourne, Parkville, Australia

9:21 0616 Breakdown of division of labor in queenless honey bee colonies. **Nicholas Naeger**, nnaeger2@illinois.edu¹, Naila Even², Marianne Peso², Andrew B. Barron² and Gene Robinson¹, ¹Univ. of Illinois at Urbana-Champaign, Urbana, IL, ²Macquarie Univ., Sydney, NSW, Australia

9:33 0617 Photoperiod is an important cue that entrains and synchronizes main events in the life cycle of the temperate bumble bee *Bombus impatiens*. **Edgar Javier Hernandez**, ejh983@umsl.edu, Univ. of Missouri - St. Louis, St. Louis, MO

9:45 Break

9:57 0618 Rapid phagocytic response and sessile phagocytic foci formation by mosquito hemocytes following infection. **Jonas G. King**, jonas.g.king@Vanderbilt.Edu and Julian F. Hillyer, Vanderbilt Univ., Nashville, TN

10:09 0619 Influence of enkephalins on gonad development in eastern lubber grasshopper, *Romalea microptera* (Orthoptera: Romaleidae). **Sandeep Kumar**, skumar@knights.ucf.edu, Purna Chandra Nagaraju Ganji, Hojun Song, Laurence vonKalm and David Borst, Univ. of Central Florida, Orlando, FL

10:21 0620 Cloning, immunolocalization and functional analysis of calcitonin receptor-like receptor 1 (AaegGPCAL1; Diuretic Hormone 31 (DH₃₁) receptor) in females of mosquito *Aedes aegypti* (Diptera: Culicidae). **Hyeogsun Kwon**, microb7@tamu.edu and Patricia V. Pietrantonio, Texas A&M Univ., College Station, TX

10:33 0621 Intestinal stem cell proliferation as an indicator of honey bee (*Apis Mellifera*) health. **Cordelia Sackey-Mensah**, c_sackey@uncg.edu, Univ. of North Carolina at Greensboro, Greensboro, NC

10:45 0622 An aminoacylase in the gut lumen of lepidopteran larvae hydrolyzes fatty acid amino acid conjugates, elicitors of plant defense. **Emily H. Kuhns**, emilykuhns@ufl.edu¹, Irmgard Seidl-Adams² and James Tumlinson², ¹Univ. of Florida, Lake Alfred, FL, ²Pennsylvania State Univ., State College, PA

10:57 0623 Investigation of glucose absorption capabilities within the digestive tract of the lower termite *Reticulitermes flavipes* using two different approaches. **Zachary Karl**, zkarl@purdue.edu and Michael Scharf, Purdue Univ., West Lafayette, IN

11:09 0624 Preliminary identification and function of queen pheromones in *Reticulitermes* subterranean termites. **Colin Funaro**, cffunaro@ncsu.edu, Katalin Boroczky, Coby Schal and Edward L. Vargo, North Carolina State Univ., Raleigh, NC

11:21 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, PBT-3

**Room D10, First Floor
(Reno-Sparks Convention Center)**

Moderators: Michael Roe¹ and Shahid Karim², ¹North Carolina State Univ., Raleigh, NC, ²Univ. of Southern Mississippi, Hattiesburg, MS

8:30 Introductory Remarks

8:33 0625 Histopathological damage to the external gills and midgut epithelial tissues spreading damselfly nymphs (Odonata: Lestidae) in response to the cyanobacterial toxin, microcystin.

Nathan Baker, baker.1782@osu.edu, The Ohio State Univ., Fredericktown, OH

8:45 0626 Activity of aromatic terpenoids at the House fly (*Musca domestica*) nicotinic acetylcholine receptor. **Aaron D. Gross**, adgross@iastate.edu, Michael J. Kimber and Joel R. Coats, Iowa State Univ., Ames, IA

8:57 0627 A closer look at organophosphate toxicity in honey bee (*Apis mellifera* L.) workers and queens. **Lizette Dahlgren**, lizette.dahlgren@gmail.com, Reed M. Johnson, Marion D. Ellis and Blair D. Siegfried, Univ. of Nebraska - Lincoln, Lincoln, NE

9:09 0628 Do agricultural spray adjuvants adversely affect the learning ability of honey bees (*Apis mellifera*)? **Tim Ciarlo**, tjc273@psu.edu, Chris Mullin and Jim Frazier, Pennsylvania State Univ., State College, PA

9:21 0629 Venom sac proteins of red imported fire ant queens (*Solenopsis invicta*): characterization, expression and function. **Stephanie Lockwood**, stephanie.horne@ttu.edu and Richard Deslippe, Texas Tech Univ., Lubbock, TX

9:33 0630 Efficacy of pesticide mixtures on the western flower thrips (*Frankliniella occidentalis*). **Amy L. Willmott**, awillmot@ksu.edu, Raymond A. Cloyd and Kun Yan Zhu, Kansas State Univ., Manhattan, KS

9:45 Break

9:57 0631 Exposure route and life stage influence pesticide toxicity for an important biological control agent (*Hippodamia convergens*). Lisa Fernandez, Anne Luong and **Nicholas J. Mills**, nmills@nature.berkeley.edu, Univ. of California, Berkeley, Berkeley, CA

10:09 0632 Is resistance to *Bacillus thuringiensis* toxin Cry2Ab associated with mutations of Cry1Ac-receptor genes in *Trichoplusia ni*? **Xiaozhao Song**, xs39@cornell.edu and Ping Wang, Cornell Univ. NYSAES, Geneva, NY

10:21 0633 Effects of parasitism on a defensive symbiosis. **Adam J. Martinez**, adamjmtz@uga.edu and Kerry M. Oliver, Univ. of Georgia, Athens, GA

10:33 0634 Characterization and estimation of Cry1F resistance in fall armyworm, *Spodoptera frugiperda* (J. E. Smith). **Ana Maria Velez**, anamaria.velez@gmail.com¹, Terence A. Spencer¹, Analiza P. Alves² and Blair D. Siegfried¹, ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Pioneer Hi-Bred International, Inc., Johnston, IA

10:45 0635 Ecological importance of a bacteriophage to the pea aphid, *Acyrtosiphon pisum*. **Stephanie Weldon**, srweldon@uga.edu and Kerry M. Oliver, Univ. of Georgia, Athens, GA

10:57 0636 Intraspecific variability of the midgut protease complement in Colorado potato beetle larvae fed different plant diets. **Asieh Rasoolizadeh**, asieh.rasoolizadeh.1@ulaval.ca¹, Marie-Claire Goulet¹, Dominique Michaud¹ and Conrad Cloutier², ¹Universite Laval, Québec (Québec), QC, Canada, ²Universite Laval, Québec, QC, Canada

11:09 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, SysEB-1

Room D1, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Torsten Dikow¹, Nate B. Hardy² and Jason R. Cryan³, ¹Field Museum of Natural History, Chicago, IL, ²Univ. of New Mexico, Albuquerque, NM, ³New York State Museum, Albany, NY

8:00 Introductory Remarks

8:03 0637 Phylogenetic relationships of the Neotropical family Polythoridae (Odonata). **Melissa Sanchez-Herrera**, melsanc@gmail.com, Rutgers, The State Univ. of New Jersey, Newark, Newark, NJ

8:15 0638 A molecular phylogeny of the family Tettigoniidae (Orthoptera: Ensifera). **Joseph D. Mugleston**, jmugleston@hotmail.com¹, Hojun Song² and Michael F. Whiting¹, ¹Brigham Young Univ., Provo, UT, ²Univ. of Central Florida, Orlando, FL

8:27 0639 A phylogenetic study of beta-glucosidases from higher termites. **Nurmastini Sufina Bujang**, sufina@ufl.edu, Nigel A. Harrison and Nan-Yao Su, Univ. of Florida, Davie, FL

8:39 0640 Why thrips are thrilling: phylogenetic relationships among major groups and the evolution of the mitochondrial genome. **Rebecca S. Buckman**, rsbuckman@byu.edu and Michael F. Whiting, Brigham Young Univ., Provo, UT

8:51 0641 A phylogeny of the treehopper subfamily Heteronotinae (Hemiptera: Auchenorrhyncha: Membracidae) reveals lineage-specific trends in extreme morphological plasticity. **Olivia Evangelista**, olivia_evangelista@yahoo.com.br¹, Jason R. Cryan² and Albino M. Sakakibara¹, ¹Universidade Federal do Paraná, Curitiba, Paraná, Brazil, ²New York State Museum, Albany, NY

9:03 0642 A comprehensive phylogeny of the spittlebugs (Hemiptera: Auchenorrhyncha: Cercopoidea): using molecular data to revise familial, tribal, and generic classifications. **Adam J. Bell**, abell@mail.nysed.gov and Jason R. Cryan, New York State Museum, Albany, NY

9:15 0643 New perspectives on the classification of Neotropical spittlebugs (Hemiptera: Cercopidae: Tomaspidae) based on a combined molecular and morphological phylogenetic analysis. **Andressa Paladini**, andri.paladini@gmail.com¹, Gervásio Silva Carvalho², Rodney R. Cavichioli¹ and Jason R. Cryan³, ¹Universidade Federal do Paraná, Curitiba, Paraná, Brazil, ²Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brazil, ³New York State Museum, Albany, NY

9:27 0644 Madagascar's millipede assassin bugs (Hemiptera: Reduviidae: Ectrichodiinae): taxonomy, phylogenetics, and sexual dimorphism. **Michael Forthman**, mfort001@ucr.edu and Christiane Weirauch, Univ. of California, Riverside, Riverside, CA

9:39 Break

9:51 0645 A phylogeny of the Tanypodinae (Diptera: Chironomidae). **Scott McCluen**, srmclue@ucdavis.edu, Univ. of California, Davis, Davis, CA

10:03 0646 Evolution of nesting behavior in Ageniellini spider wasps (Hymenoptera: Pompilidae). **Cecilia Waichert**, cwaichert@gmail.com, James P. Pitts and Carol D. von Dohlen, Utah State Univ., Logan, UT

10:15 0647 Phylogenetic studies of *Dasymutilla* and their relatives shed light on mimicry, biodiversity, and biogeography (Hymenoptera: Mutillidae). **Kevin A. Williams**, kevin.williams@usu.edu, Carol D. von Dohlen and James P. Pitts, Utah State Univ., Hyde Park, UT

10:27 0648 A phylogenetic analysis of North American Mordellini (Mordellidae: Mordellinae). **Brent C. Rahlwes**, STDBCR16@SHSU.EDU, Jerry L. Cook and Sibyl, R. Bucheli, Sam Houston State Univ., Huntsville, TX

10:39 0649 Molecules versus morphology: do five genetic loci tell the same story about checkered beetles (Coleoptera: Cleridae) as morphology? **John Moeller Leavengood**, tokay@ufl.edu, Michael J. Sharkey and Eric G. Chapman, Univ. of Kentucky, Lexington, KY

10:51 0650 Seeking sense out of sameness: a genus-level phylogeny of Phalacridae, and revision of the New World Eustilbini (Coleoptera: Cucujoidea). **Matthew L. Gimmel**, phalacrid@gmail.com, Louisiana State Univ., Baton Rouge, LA

11:03 0651 Phylogenetics of wing color evolution and its role in mimicry in Melitaeini butterflies. **Elizabeth C. Long**, eelong@ucdavis.edu and Brian R. Moore, Univ. of California, Davis, Davis, CA

11:15 0652 A preliminary phylogeny of the lichen moth tribe Lithosiini (Lepidoptera: Erebiidae: Arctiinae) with an assessment of the subtribal relationships using molecular data. **Clare H. Scott**, scottch7@ufl.edu¹, Elizabeth Phillippi², Pablo Chialvo¹, Jennifer Zaspel³, Susan J. Weller⁴ and Marc A. Branham¹, ¹Univ. of Florida, Gainesville, FL, ²Valparaiso Univ., Valparaiso, IN, ³Univ. of Wisconsin - Oshkosh, Oshkosh, WI, ⁴Univ. of Minnesota, Minneapolis, MN

11:27 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, SysEB-2

Room E1, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Stephen P Yanoviak¹ and Jason R. Cryan², ¹Univ. of Arkansas at Little Rock, Little Rock, AR, ²New York State Museum, Albany, NY

8:00 Introductory Remarks

8:03 0653 DNA barcoding economically important wireworm species (Coleoptera: Elateridae) of Montana. **Frank E. Etzler**, fetzler@montana.edu, Michael A. Ivie, Anuar Morales Rodriguez and Kevin Wanner, Montana State Univ., Bozeman, MT

8:15 0654 Is the 'blue-ghost' really blue? Spectral analysis of *Phausis reticulata*'s bioluminescence (Coleoptera: Lampyridae). **Alicia M. Hodson**, amhodson@ufl.edu and Marc A. Branham, Univ. of Florida, Gainesville, FL

8:27 0655 An investigation of the opsin gene complex in scorpionflies (Mecoptera: Panorpidae). **Katherine Fager**,

katiefager@gmail.com, Seth M. Bybee and Michael F. Whiting, Brigham Young Univ., Provo, UT

8:39 0656 The evolutionary macroecology of exotic host use by Lepidoptera. **Joshua P. Jahner**, jpjahner@msn.com¹, Melvin M. Bonilla¹, Kevin J. Badik¹, Arthur M. Shapiro² and Matthew L. Forister¹, ¹Univ. of Nevada, Reno, Reno, NV, ²Univ. of California, Davis, Davis, CA

8:51 0657 Ontogenetic shifts in efficacy of antipredator mechanisms in a top aquatic predator, *Anax junius*. **Gareth R. Hopkins**, gareth.r.hopkins@gmail.com, Brian G. Gall and Edmund D. Brodie Jr., Utah State Univ., Logan, UT

9:03 0658 The search of low levels of Africanization in honey bees (*Apis mellifera*) in the United States. **Katherine Darger**, dargerke@udel.edu and Deborah A. Delaney, Univ. of Delaware, Newark, DE

9:15 0659 Tortricids of agricultural importance. **Todd M. Gilligan**, tgilliga@gmail.com¹ and Marc Epstein², ¹Colorado State Univ., Fort Collins, CO, ²California Dept. of Food and Agriculture, Sacramento, CA

9:27 0660 Do aphid soldiers sequester secondary plant compounds to combat natural enemies? **Sarah P. Lawson**, sarah.p.guilinger@vanderbilt.edu and Patrick Abbot, Vanderbilt Univ., Nashville, TN

9:39 Break

9:51 0661 Interactions between the invasive hemlock woolly adelgid, eastern hemlock, and benthic macroinvertebrates: cascading effects of foundation species mortality in headwater stream riparian zones. **Joshua K. Adkins**, joshadkins@uky.edu and Lynne Rieske, Univ. of Kentucky, Lexington, KY

10:03 0662 Seasonal variation of defensive symbionts of the pea aphid, *Acyrtosiphon pisum*. **Andrew H. Smith**, ahs55@drexel.edu and Jacob A. Russell, Drexel Univ., Philadelphia, PA

10:15 0663 Role of bacterial endosymbionts in asexual reproduction of two bark lice species, *Echmepteryx hageni* and *Peripsocus subfasciatus* (Psocoptera). **Scott M. Shreve**, smshre@illinois.edu¹ and Kevin P. Johnson², ¹Univ. of Illinois at Urbana-Champaign, Urbana, IL, ²Illinois Natural History Survey, Champaign, IL

10:27 0664 Pest genetic resources: leveraging diversity patterns across agricultural landscapes. **Samuel N. Crane**, scrane@amnh.org, American Museum of Natural History, New York, NY

10:39 0665 Predicted gustatory receptor genes in *Trissolcus basalis* (Hymenoptera: Platygasteridae). **Elijah Talamas**, talamas.1@osu.edu and Norman Johnson, The Ohio State Univ., Columbus, OH

10:51 0666 Associations between oviposition responses and larval survival for two tire-inhabiting mosquito (Diptera: Culicidae) species in an organic chemical blend. **David W. Allgood**, david.allgood@eagles.usm.edu and Donald A. Yee, Univ. of Southern Mississippi, Hattiesburg, MS

11:03 0667 Potential impacts of emerald ash borer (*Agilus planipennis* Fairmaire) on the native insect fauna of ash in eastern North Dakota. **James Samuel Walker**, James.S.Walker@ndsu.edu, North Dakota State Univ., Fargo, ND

11:15 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, SysEB-3

Room D6, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Bryan N. Danforth¹, Jessica L. Ware² and Jason R. Cryan³, ¹Cornell Univ., Ithaca, NY, ²Rutgers, The State Univ. of New Jersey, Newark, NJ, ³New York State Museum, Albany, NY

8:00 Introductory Remarks

8:03 0668 Phylogenetics of *Cremnops* (Braconidae: Agathidinae). **Erika Tucker**, erika.tucker@uky.edu and Michael J. Sharkey, Univ. of Kentucky, Lexington, KY

8:15 0669 Phylogeny and semantic revision of *Evaniscus Szépligeti* (Hymenoptera: Eviiniidae). **Patricia Mullins**, Plmullin@ncsu.edu¹, Ricardo Kawada² and Andrew R. Deans¹, ¹North Carolina State Univ., Raleigh, NC, ²Museu de Zoologia da Universidade de São Paulo, São Paulo-SP, Brazil, Brazil

8:27 0670 Phylogenetic analysis of the velvet ant genus *Tallium* André (Hymenoptera: Mutillidae) using morphological and molecular data. **Craig M. Brabant**, brabant@entomology.wisc.edu, Daniel K. Young and Mark E. Berres, Univ. of Wisconsin - Madison, Madison, WI

8:39 0671 Phylogeny of *Aphaenogaster* species (Hymenoptera: Formicidae) reconstructed with morphological and DNA data. **Bernice B. DeMarco**, demarc10@msu.edu and Anthony Cognato, Michigan State Univ., East Lansing, MI

8:51 0672 Using DNA sequence data for *Dohrniphora* Dahl (Diptera: Phoridae) phylogeny and associating males and females of sexually dimorphic species. **John M. Hash**, jhash001@ucr.edu¹, Brian V. Brown² and Paul T. Smith³, ¹Univ. of California, Riverside, Riverside, CA, ²Natural History Museum of Los Angeles County, Los Angeles, CA, ³California State Univ., Bakersfield, Bakersfield, CA

9:03 0673 Systematics of the genus *Bactrocera* (Diptera: Tephritidae) based on mitochondrial and nuclear genes. **Michael San Jose**, mdsjose@hawaii.edu, Luc Leblanc and Dan Rubinoff, Univ. of Hawaii at Manoa, Honolulu, HI

9:15 0674 Modelling mechanisms of asymmetric hybridization between *Rhagoletis* sibling species. **John Huddleston**, john.huddleston@wwu.edu and Dietmar Schwarz, Western Washington Univ., Bellingham, WA

9:27 0675 Genetic population structure of *Gnathium minimum* (Coleoptera: Meloidae): core and peripheral populations. **Daniel A. Marschalek**, marschalek@wisc.edu, Daniel K. Young and Mark E. Berres, Univ. of Wisconsin - Madison, Madison, WI

9:39 0676 Genetic variation among geographic populations of the Colorado potato beetle, *Leptinotarsa decemlineata*. **Victor Izzo**, vizzo@uvm.edu and Yolanda H. Chen, Univ. of Vermont, Burlington, VT

9:51 Break

10:03 0677 Phylogeny of south-temperate Pronopholina (Nymphalidae: Satyrinae). **J. E. Matz**, jem3h@mtmail.mtsu.edu, Middle Tennessee State Univ., Murfreesboro, TN

10:15 0678 Buckeye butterfly (*Junonia coenia*) seasonal wing color polyphenism varies dramatically between populations in different climatic zones. **Emily Vanessa Daniels**, edaniels@uci.edu, Univ. of California, Irvine, Irvine, CA

10:27 0679 Population genetic structure of cotton fleahopper, *Pseudatomoscelis seriatus* (Hemiptera: Miridae). **Apurba K. Barman**, apurbabarman@tamu.edu¹, Megha N. Parajulee², Christopher G. Sansone³ and Raul F. Medina¹, ¹Texas A&M Univ., College Station, TX, ²Texas AgriLife Research and Extension Center, Lubbock, TX, ³Texas AgriLife Research and Extension Center, San Angelo, TX

10:39 0680 Evaluation of hybridization between *Laricobius osakensis* and *Laricobius nigrinus*, predators of hemlock woolly adelgid, (Adelgidae). **Melissa J. Fischer**, mjf43@vt.edu¹, Scott M. Salom¹, Loke T. Kok¹, Nathan Havill², Carlyle C. Brewster¹ and Brent Opell¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²USDA - Forest Service, Hamden, CT

10:51 0681 Using microsatellite markers and single nucleotide polymorphisms to identify the source of soybean aphid (*Aphis glycines*) populations in Pennsylvania. **Amanda Bachmann**, acb220@psu.edu¹, Andrew Michel² and Shelby Fleischer¹, ¹Pennsylvania State Univ., State College, PA, ²The Ohio State Univ., OARDC, Wooster, OH

11:03 0682 Phylogeographic relationships of regional ecotypes in *Schistocerca lineata*. **Tyler Raszick**, tjrassick@gmail.com and Hojun Song, Univ. of Central Florida, Orlando, FL

11:15 0683 *Macromia illinoensis georgina*: subspecies or hybrid? **Elizabeth F. Ballare**, BallareE@pegasus.rutgers.edu, Rutgers, The State Univ. of New Jersey, Newark, NJ

11:27 0684 Gene flow begets gene flow? Testing the hybrid bridge hypothesis and its role in ecological speciation. **Julie Byrd Hébert**, julie.b.hebert@gmail.com¹, Sonja Scheffer² and David J. Hawthorne¹, ¹Univ. of Maryland, College Park, MD, ²USDA - ARS, Beltsville, MD

11:39 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, SysEB-4

Room D2, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Ashley PG. Dowling¹, Alejandro A. Valerio² and Jason R. Cryan³, ¹Univ. of Arkansas, Fayetteville, AR, ²The Ohio State Univ., Columbus, OH, ³New York State Museum, Albany, NY

8:00 Introductory Remarks

8:03 0685 Evolution of the weevil rostrum (Coleoptera: Curculionoidea): internal structure and evolutionary trends. **Steven Ray Davis**, steved@ku.edu, Univ. of Kansas, Lawrence, KS

8:15 0686 An overlooked structure: the praying mantid egg case and its functional diversity (Insecta: Mantodea). **Julio Rivera**, julior@rom.on.ca, Univ. of Toronto, Toronto, ON, Canada

8:27 0687 Description of the ovipositor muscles and skeletal structures of Ceraphronoidea (Hymenoptera) using laser scanning microscopy for visualization. **Andrew F. Ernst**, afernst@ncsu.edu, István Mikó and Andrew R. Deans, North Carolina State Univ., Raleigh, NC

8:39 0688 Evolution of diet and correlated mouthpart morphology in the Hoplandriini (Coleoptera: Staphylinidae: Aleocharinae). **K. Taro Eldredge**, taroeldredge@ku.edu, Univ. of Kansas, Lawrence, KS

8:51 0689 Approximation to classification and diversity of *Glyptapanteles* (Braconidae: Microgasterinae) from the neotropics based on material from northwestern Costa Rica. **Diana Carolina Arias Penna**, ariaspe1@life.illinois.edu and James B. Whitfield, Univ. of Illinois at Urbana-Champaign, Urbana, IL

9:03 0690 Predicting occurrence of the American burying beetle (*Nicrophorus americanus*) in Nebraska's Sandhills region. **Jessica D. Jurzenski**, jurzenskij@alumni.unk.edu¹, W. Wyatt Hoback², Andy Bishop³ and Roger Grosse³, ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Univ. of Nebraska - Kearney, Kearney, NE, ³US Fish and Wildlife Service, Grand Island, NE

9:15 0691 Historical biogeography of the cosmopolitan spider wasp genus *Ceropales* (Hymenoptera: Pompilidae). **Juanita Rodriguez**, juanitarodrigueza@gmail.com, James P. Pitts and Carol D. von Dohlen, Utah State Univ., Logan, UT

9:27 0692 Non-congruent colonizations of remote islands by a specialized pollinating seed-predation mutualism (Phyllanthaceae: Glochidion; Lepidoptera: Gracillariidae: *Epicephala*). **David Hembry**, hembry@berkeley.edu¹, Atsushi Kawakita², Neil E. Gurr³, Mark Schmaedick³, Bruce Baldwin¹ and Rosemary Gillespie¹, ¹Univ. of California, Berkeley, Berkeley, CA, ²Kyoto Univ., Otsu, Shiga, Japan, ³American Samoa Community College, Pago Pago, American Samoa

9:39 Break

9:51 0693 Climate change and invasions: the wood-boring pest (*Anoplophora glabripennis*) opportunities to invade North America. **C. Bellard**, celine.bellard@u-psud.fr¹ and Franck Courchamp², ¹Univ. Paris Sud XI, Orsay, Paris, France, ²CNRS - Université Paris Sud XI, Orsay, France

10:03 0694 Profiler of the bad guys: what are the characteristics of invasive ants? **Cleo Bertelsmeier**, cleo.bertelsmeier@u-psud.fr¹, Gloria M. Luque¹ and Franck Courchamp², ¹Univ. Paris Sud XI, Orsay, France, ²CNRS - Université Paris Sud XI, Orsay, France

10:15 0695 Origin, diversity, and diversification of the native Hawaiian leafhoppers (Hemiptera: Cicadellidae: *Nesophrosyne*). **Gordon Bennett**, gbennett@berkeley.edu and Patrick M. O'Grady, Univ. of California, Berkeley, Berkeley, CA

10:27 0696 Changes in carabid (Coleoptera: Carabidae) diversity and community structure in age structured forests. **Kathryn Riley**, rilekn8@wfu.edu and Robert A. Browne, Wake Forest Univ., Winston-Salem, NC

10:39 0697 Diversity of saproxylic Coleoptera in Great Smoky Mountains National Park. **Michael L. Ferro**, spongymesophyll@gmail.com and Christopher E. Carlton, Louisiana State Univ., Baton Rouge, LA

10:51 0698 Arthropod abundance and community structure in contrasting Amazonian forests. **Greg PA. Lamarre**, greglamarre973@gmail.com¹, Paul VA. Fine² and Christopher Baraloto¹, ¹Institut National de la Recherche Agronomique (INRA), Kourou, French Guiana, ²Univ. of California, Berkeley, CA

11:03 0699 Biodiversity of arthropods associated with a mat of *Salvinia minima*. **Katherine A. Parys**, liquidanbar@gmail.com and Seth J. Johnson, Louisiana State Univ. AgCenter, Baton Rouge, LA

11:15 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, SysEB-5

Room D7, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Clifford Keil¹, John W. Dooley² and Jason R. Cryan³, ¹Pontifical Catholic Univ. of Ecuador, Quito, Ecuador, ²USDA, South San Francisco, CA, ³New York State Museum, Albany, NY

8:00 Introductory Remarks

8:03 0700 Bees in a box: collective decision-making by the ant *Temnothorax rugatulus* during foraging. **Zachary Shaffer**, zshaffe@asu.edu and Stephen Pratt, Arizona State Univ., Tempe, AZ

8:15 0701 Influence of genetic variation on colony-level foraging behavior of the red imported fire ant (*Solenopsis invicta*). **Alison A. Bockoven**, abockoven@tamu.edu, Craig J. Coates and MD. Eubanks, Texas A&M Univ., College Station, TX

8:27 0702 The digging behavior of the red imported fire ant *Solenopsis invicta* in relation to body size. **Jason R. Carbaugh**, jcarbaugh@tamu.edu and S. Bradleigh Vinson, Texas A&M Univ., College Station, TX

8:39 0703 The benefit of being a social butterfly. **Susan D. Finkbeiner**, sfinkbei@uci.edu, Adriana D. Briscoe and Robert D. Reed, Univ. of California, Irvine, Irvine, CA

8:51 0704 Gene flow patterns and parentage in a burying beetle: using molecular genetics to study cryptic behaviors. **Susan B. Parsons**, parssusa@isu.edu, Idaho State Univ., Pocatello, ID

9:03 0705 Cues in context: differential behavioral responses of termites to the same stimuli. **Paul Bardunias**, paulmb@ufl.edu and Nan-Yao Su, Univ. of Florida, Davie, FL

9:15 0706 Undertaking behavior and its molecular basis in termites. **Qian Sun**, sunqian2006@gmail.com, Xiangrui Li, Li Tian and Xuguo Zhou, Univ. of Kentucky, Lexington, KY

9:27 0707 Genetic understanding of aggression behavior in the lower termite *Reticulitermes flavipes*. **Li Tian**, litian617@uky.edu, Xiangrui Li, Qian Sun and Xuguo "Joe" Zhou, Univ. of Kentucky, Lexington, KY

9:39 Break

9:51 0708 The mating behavior of two congeneric coccinellids, *Coccinella novemnotata* and *Coccinella septempunctata*: is hybridization possible? **Leo Stellwag**, lms296@cornell.edu and John E. Losey, Cornell Univ., Ithaca, NY

10:03 0709 Behavioral resistance of the western corn rootworm (*Diabrotica virgifera virgifera*) to Bt corn. **Stephanie L. Gorski**, slgorski@ncsu.edu¹, Jen Anderson² and Yasmin Cardoza¹, ¹North Carolina State Univ., Raleigh, NC, ²Pioneer Hi-Bred International, Inc, Ankeny, IA

10:15 0710 Lethal and non-lethal effects of the predator *Erythemis simplicicollis* on *Culex quinquefasciatus*. **Amanda Jean Meadows**, amanda.meadows@email.wsu.edu, Washington State Univ., Pullman, WA

10:27 0711 An inclusive approach to agricultural food webs. **Chad Alden Andrews**, chadaldenandrews@gmail.com, Univ. of Arkansas, Fayetteville, AR

10:39 0712 Impacts of land-use change on bee community distributions and ecology. **Misha Leong**, mishaleong@berkeley.edu, Univ. of California, Berkeley, Berkeley, CA

10:51 0713 Evolutionary implications of spatial variation in sexual traits in the *Satyrium fuliginosa/semiluna* complex (Lycaenidae). **Erik B. Runquist**, ebrunquist@ucdavis.edu, Univ. of California, Davis, CA

11:03 0714 Urbanization impacts aquatic and terrestrial stages of caddisflies (Trichoptera) to reduce richness of larval assemblages headwater streams. **Robert F. Smith**, rsmith9@umd.edu and William O. Lamp, Univ. of Maryland, College Park, MD

11:15 0715 Some ecological issues and their impact on termites (Insecta: Isoptera) occurrence in Haryana state (India). **Sachin Kumar**, sk29jan@gmail.com, Indian Agricultural Research Institute, New Delhi, New Delhi, India

11:27 Concluding Remarks

Graduate Student Ten-Minute Paper Competition, SysEB-6

Room D3, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: David Wagner¹, David Furth² and Jason R. Cryan³, ¹Univ. of Connecticut, Storrs, CT, ²Smithsonian Institution, ³New York State Museum, Albany, NY

8:00 Introductory Remarks

8:03 0716 Beetles with wet feet: studies on Venezuelan Larainae (Coleoptera: Elmidae). **Crystal A. Maier**, crystal.maier@gmail.com, Univ. of Kansas, Lawrence, KS

8:15 0717 Preliminary revision of the charismatic whirligig beetle genus *Porrhorhynchus* Castelnau (Coleoptera: Gyrinidae). **Grey Gustafson**, gtgustafson@gmail.com, Univ. of New Mexico, Albuquerque, NM

8:27 0718 How to classify mega-diversity: insight from Onthophagini dung beetles phylogeny (Coleoptera: Scarabaeidae: Scarabaeinae). **Sergey Tarasov**, sergxf@yandex.ru, Kaluga State Univ., Kaluga, Russia

8:39 0719 Preliminary systematics of the ant-like leaf beetles (Tenebrionoidea: Aderidae) and the evolution of sexual dimorphism. **Traci L. Grzymala**, mala@berkeley.edu, Univ. of California, Berkeley, Berkeley, CA

8:51 0720 Untangling the spider beetle web: redefining generic groups based on morphology. **Glené Mynhardt**, mynhardt.1@buckeyemail.osu.edu¹ and Keith Philips², ¹The Ohio State Univ., Columbus, OH, ²Western Kentucky Univ., Bowling Green, KY

9:03 0721 *Bellopius* (Braconidae) parasitoids of fruit-infesting Tephritidae (Diptera). **Lauren A. Ward**, lashley@tamu.edu, Robert Wharton and Thomas J. DeWitt, Texas A&M Univ., College Station, TX

9:15 0722 Generic revision of dorylomorph ants. **Marek L. Borowiec**, mlborowiec@ucdavis.edu, Univ. of California, Davis, CA

9:27 0723 Rediscovery and reconsideration of the bizarre Cretaceous ant *Haidomyrmex*. **Phillip M. Barden**, pbarden@amnh.org and David Grimaldi, American Museum of Natural History, New York, NY

9:39 0724 Only a single origin of morphological castes in a bee subfamily despite ancient origins of preadaptations to eusociality. **Sandra M. Rehan**, sandra.rehan@gmail.com, Flinders Univ., Adelaide, South Australia, Australia

9:51 Break

10:03 0725 Ten new species of *Meteorus* (Hymenoptera: Braconidae) from Ecuador reared at the Yanayacu Biological Center for Creative Studies. **Guinevere Z. Jones**, gjones9@uwyo.edu and Scott R. Shaw, Univ. of Wyoming, Laramie, WY

10:15 0726 A revision of *Caenodelphax* (Hemiptera: Fulgoroidea: Delphacidae) to include species misallocated to the polyphyletic genus *Delphacodes*. **Ashley C. Kennedy**, kennedy@udel.edu and Charles Bartlett, Univ. of Delaware, Newark, DE

10:27 0727 Systematics of a more broadly interpreted *Chionomus* Fennah (Hemiptera: Fulgoroidea: Delphacidae). **Kathryn Weglarz**, kweglarz@udel.edu and Charles Bartlett, Univ. of Delaware, Newark, DE

10:39 0728 A revision of the Neotropical tribe Zammarini (Hemiptera, Cicadidae) lumping or splitting? **Geert Goemans**, ggoemans@gmail.com, Univ. of Connecticut, Storrs, CT

10:51 0729 The austral horse fly genus *Scaptia* (Diptera: Tabanidae): monophyletic clade or taxonomic dumping ground? **Bryan D. Lessard**, bryan.lessard@csiro.au¹, John Trueman², Stephen Cameron¹ and David K. Yeates¹, ¹CSIRO Ecosystem Sciences, Acton, ACT, Australia, ²Australian National Univ., Canberra, ACT, Australia

11:03 0730 Description of puparia of *Glyphidops flavifrons* (Bigot) (Diptera: Neriidae). **Charity G. Owings**, charitygrace@neo.tamu.edu, Texas A&M Univ., College Station, TX

11:15 0731 A revision of *Arenivaga* (Rehn) (Blattodea: Polyphagidae: Polyphaginae). **Heidi E. Hopkins**, hhopkins@unm.edu, Univ. of New Mexico, Albuquerque, NM

11:27 0732 Systematics of the Erythraeina (Acari: Parasitengona): a story of parasitism, long legs, and polka dots. **Ray Fisher**, JRFisher@uark.edu and Ashley PG. Dowling, Univ. of Arkansas, Fayetteville, AR

11:39 Concluding Remarks

Undergraduate Student Ten-Minute Paper Competition, P-IE

Room A20, First Floor (Reno-Sparks Convention Center)

Moderator: Laura A. Erlandson, SUNY Institute of Technology, Utica, NY

8:30 Introductory Remarks

8:33 0733 Impacts of externally applied salicylic acid on the vulnerability of wheat seedlings to Hessian fly (*Mayetiola destructor*) larvae. **John Glenn Moch**, jgmoch01@broncos.unctsu.edu¹, Lieceng Zhu¹ and Ming-Shun Chen², ¹Fayetteville State Univ., Fayetteville, NC, ²Kansas State Univ., Manhattan, KS

8:45 0734 Taking the bait: intercepting cucurbit pests using kairomonal semiochemicals for use in narrow spectrum biorational management. **Camron T. Clark**, clarkc3@mymail.shawnee.edu¹,

Logan M. Minter², Ric Bessin² and Robert Deal¹, ¹Shawnee State Univ., Portsmouth, OH, ²Univ. of Kentucky, Lexington, KY

8:57 0735 Seasonal movements of *Drosophila suzukii* (Diptera: Drosophilidae) in a multi-crop setting. **Heather E. Wilson**, hewilson@ucdavis.edu, Kelly A. Hamby and Frank G. Zalom, Univ. of California, Davis, Davis, CA

9:09 0736 Tracking the annual cycle of *Pheidole morrisi* by casting their nests in wax. **Tyler Murdock**, tmurdock@bio.fsu.edu and Walter R. Tschinkel, Florida State Univ., Tallahassee, FL

9:21 0737 Seeds moved by the four most abundant *Formica* spp. in the Tahoe Basin. **Sarah Restori**, sje.restori@gmail.com, Joy L. Newton and Matthew L. Forister, Univ. of Nevada, Reno, Reno, NV

9:33 0738 Abundance of mite parasites on the five most abundant aerator ant species in the Tahoe Basin. **Rachel Clayson**, clayson.re@gmail.com, Joy L. Newton and Matthew L. Forister, Univ. of Nevada, Reno, Reno, NV

9:45 Break

9:57 0739 Field testing *Isaria fumosorosea* for establishment, infectivity, and persistence for pest management in commercial citrus production. **David A. Pick**, dpick@fau.edu¹, Pasco B. Avery², Charles Powell² and David G. Hall³, ¹Florida Atlantic Univ., Jupiter, FL, ²Univ. of Florida, Fort Pierce, FL, ³USDA - ARS, Fort Pierce, FL

10:09 0741 Effect of different compost treatments on recruitment and retention of generalist predators in agricultural systems.

Monica Nicole Beers, mnbeers@gmail.com, D. A. Neher, S. Levins and Yolanda H. Chen, Univ. of Vermont, Burlington, VT

10:21 0742 What's on the menu? A predator gut content assay for identifying active predation from scavenging. **Gabriel Zilnik**, gabriel.zilnik@asu.edu¹ and James Hagler², ¹Arizona State Univ., Tempe, AZ, ²USDA - ARS, Maricopa, AZ

10:33 Concluding Remarks

Undergraduate Student Ten-Minute Paper Competition, SysEB/MUVE

Room D4, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Jason R. Cryan¹ and John D. Oswald², ¹New York State Museum, Albany, NY, ²Texas A&M Univ., College Station, TX

8:30 Introductory Remarks

8:33 0743 Are past phallic phylogenies of Acridoidea fallacies? **James R. Leavitt**, faradayman@ymail.com¹, Kevin D. Hiatt¹, Hojun Song² and Michael F. Whiting¹, ¹Brigham Young Univ., Provo, UT, ²Univ. of Central Florida, Orlando, FL

8:45 0744 Highly flexible patterns of eye development in *Incisitermes minor*. **Taylor Rose**, taylrorose@apu.edu, Jurgen Ziesmann and Joshua Morris, Azusa Pacific Univ., Azusa, CA

8:57 0745 The evolution of color vision in dragonflies and damselflies (Odonata). **Kelsy K. Johnson**, kaihilei@gmail.com, Seth M. Bybee and Michael F. Whiting, Brigham Young Univ., Provo, UT

9:09 0746 Insects of Capitol Reef National Park. **Matthew**

Ethington, splaticon@gmail.com and T. Heath Ogden, Utah Valley Univ., Orem, UT

9:21 0747 The Buckeye Lady Beetle Blitz: using a citizen science program to investigate the influence of habitat composition on native and exotic coccinellid populations in Ohio. **Bethany Hunt**, bethany.hunt@yousq.net¹ and Mary M. Gardiner², ¹Univ. of Kentucky, Lexington, KY, ²The Ohio State Univ., OARDC, Wooster, OH

9:33 0748 Density-dependent phenotypic plasticity in *Schistocerca americana* (Orthoptera: Acrididae). **Steve Gotham**, sgothamjr@knights.ucf.edu and Hojun Song, Univ. of Central Florida, Orlando, FL

9:45 Break

10:00 0749 The effect of *Pseudomonas aeruginosa* ingestion on antimicrobial peptide (AMP) and lysozyme expression in the common housefly (*Musca domestica* L.). **Chester Joyner**, cj00734@georgiasouthern.edu, Mary Mills, Christopher Evett and Dana Nayduch, Georgia Southern Univ., Statesboro, GA

10:12 0750 Using predator/prey population dynamics to assess disease risk along an urbanizing gradient in Baltimore County, MD. **Kristin E. Sloyer**, kesloyer@gmail.com¹, Shannon L. LaDeau² and John R. Wallace¹, ¹Millersville Univ., Millersville, PA, ²Cary Institute of Ecosystem Studies, Millbrook, NY

10:24 0751 Can larval rearing temperature alter the outcome of intraspecific competition in mosquitoes? **James D. Ricci**, ricci1@illinois.edu and Ephantus J. Muturi, Univ. of Illinois at Urbana-Champaign, Champaign, IL

10:36 Concluding Remarks



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Monday, November 14, 2011, Afternoon

Lunch and Learn: Why So Few?

Room C1-C4, First Floor (Reno-Sparks Convention Center)

12:45 **Introductory Remarks:** Ernest S. Delfosse, ESA President

12:50 **Why so few?** Christianne Corbett, corbettc@aauw.org, American Association of Univ. Women, Washington DC, DC

1:45 **Concluding Remarks:** Ernest S. Delfosse, ESA President

Second Plenary with Vice-President's Remarks, Founders' Memorial and Awards

Room C1-C4, First Floor (Reno-Sparks Convention Center)

5:00 - 6:30

PBT Section Symposium: PBT Section Networking Meeting

Room D7, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Jeffrey G. Scott, Cornell Univ., Ithaca, NY

1:30 **0752** Synergism of collaborative work on pheromone and hydrocarbon production in insects. **Gary J. Blomquist**, garyb@cabnr.unr.edu, Univ. of Nevada, Reno, Reno, NV

2:15 **Business Meeting**

3:05 **Break**

3:15 **0753** Fighting malaria with engineered bacteria and fungi. **Marcelo Jacobs-Lorena**, mlorena@jhspk.edu, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD

4:00 **Reception**

5:00 **Adjourn**

P-IE Section Symposium: P-IE Section Symposium and Networking Meeting

Room A2-A5, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: B. Rogers Leonard, Louisiana State Univ. AgCenter, Winnsboro, LA

1:30 **0754** Welcome to the 2011 P-IE Section Symposia and Networking Afternoon. **B. Rogers Leonard**, rleonard@agcenter.lsu.edu, Louisiana State Univ. AgCenter, Winnsboro, LA

Symposium Topic: Recognizing Opportunities and Limitations in

Entomological Research, Technology Transfer, and Teaching

1:45 **0755** Perspectives from USDA-ARS. **Kevin Hackett**, kevin.hackett@ars.usda.gov, USDA - ARS, Beltsville, MD

2:00 **0756** Perspectives from USDA-APHIS. **Michael Firko**, Michael.J.Firko@usda.gov, USDA - APHIS, Riverdale, MD

2:15 **0757** Perspectives from the US-EPA. **Lois Rossi**, rossi.lois@epa.gov, US Environmental Protection Agency, Office of Pesticide Programs, Washington, DC

2:30 **0758** Perspectives from a land-grant institution. **Sharron Quisenberry**, sharronq@iastate.edu, Iowa State Univ., Ames, IA

2:45 **Panel Discussion**

2:55 **Break**

3:10 **Year 4, P-IE awards and business affairs**, B. R. Leonard and B. Pendleton

4:10 **P-IE Section reception and networking: pie, drinks and more!**

4:40 **Concluding Remarks**

MUVE Section Symposium: MUVE Highlights, Reception and Section Meeting: Medical, Urban and Veterinary Entomology

Room D3, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Douglas E. Norris¹ and Christopher Geden², ¹Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, ²USDA - ARS, Gainesville, FL

1:30 **Welcoming Remarks**

1:35 **Introduction: Veterinary Highlights**

1:40 **0759** Highlights of veterinary entomology. **Jeffery K. Tomberlin**, jktomberlin@tamu.edu, Texas A&M Univ., College Station, TX

2:15 **Introduction: Medical Highlights**

2:20 **0760** Highlights of medical entomology. **Brian D. Foy**, brian.foy@colostate.edu, Colorado State Univ., Fort Collins, CO

2:55 **Introduction: Urban Highlights**

3:00 **0761** Highlights of urban entomology. **Steven M. Valles**, steven.valles@ars.usda.gov, USDA - ARS, Gainesville, FL

3:35 **Reception**

4:05 **MUVE Preliminary Business Meeting**

SysEB Section Symposium: SysEB Section Networking Meeting

Room D1, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Jason Cryan, New York State Museum, Albany, NY

1:30 Introductory Remarks

1:35 0762 Systematics funding and program news from the National Science Foundation. **Marc Branham**, marcbran@ufl.edu, Univ. of Florida, Gainesville, FL

1:55 SysEB Student Travel Award Recipients

2:15 0763 Preliminary business meeting. **Jason R. Cryan**, jcryan@mail.nysed.gov, New York State Museum, Albany, NY

2:55 0764 Treasurer's report. **M. Alma Solis**, asolis@sel.barc.usda.gov, USDA - ARS, Washington, DC

3:15 Break

3:20 0765 Integrating behavioral and ecological data into a systematic framework. **John Wenzel**, WenzelJ@CarnegieMNH.Org, Carnegie Museum of Natural History, Rector, PA

3:55 Concluding Remarks

Graduate Student Poster Display Competition, MUVE-1

**Exhibit Hall 3, First Floor
(Reno-Sparks Convention Center)**

D0001 Evaluation methods for red palm weevil *Rhynchophorus ferrugineus* Oliv. (Coleoptera; Curculionidae) control in Egypt during 1992-2010. **Mohamed Kamal Abbas**, mohamed.kmal55@yahoo.com, Plant Protection Research Institute, ARC, Giza, Egypt

D0002 In a desert city, parks are an oasis for ant diversity and abundance. **Javier G. Miguelena**, javierm@email.arizona.edu and Paul B. Baker, Univ. of Arizona, Tucson, AZ

D0003 Relative humidity preference and survival of starved Formosan subterranean termites (Isoptera: Rhinotermitidae) at various temperature and relative humidity conditions. **Bal K. Gautam**, bgauta3@tigers.lsu.edu and Gregg Henderson, Louisiana State Univ., Baton Rouge, LA

D0004 Impact of tunnel network construction by *Coptotermes formosanus* and *Coptotermes gestroi* on food location. **Nirmala Hapukotuwa**, nirmala@hawaii.edu and J. Kenneth Grace, Univ. of Hawaii at Manoa, Honolulu, HI

D0005 Effect of two chitinase inhibitor treated diets on the eastern subterranean termite, *Reticulitermes flavipes* (Kollar). **Timothy J. Husen**, timhusen5@yahoo.com and Shripat T. Kamble, Univ. of Nebraska - Lincoln, Lincoln, NE

D0006 Rhinotermitidae swarming flights in Alabama. **Charles DR. Stephen**, charles.stephen@auburn.edu and Xing P Hu, Auburn Univ., Auburn Univ., AL

D0007 Tactile stimulation accelerates reproduction in German cockroach (*Blattella germanica*) females. **Adrienn Uzsak**, auzsak@ncsu.edu and Coby Schal, North Carolina State Univ., Raleigh, NC

D0008 Maggot respiration rates for three forensically important species: *Lucilia sericata*, *Cochliomyia macellaria*, and *Sarcophaga bullata*. **Amanda Fujikawa**, amanda.roe@hotmail.com¹, Leon G. Higley² and W. Wyatt Hoback³, ¹Univ. of Nebraska, Lincoln, NE, ²Univ. of Nebraska - Lincoln, Lincoln, NE, ³Univ. of Nebraska - Kearney, Kearney, NE

D0009 Repellents and locomotor stimulants for bed bugs: the behavioral context makes a difference. **Kyle Michael Loughlin**, kyle.loughlin@uky.edu, Michael F. Potter and Kenneth F. Haynes, Univ. of Kentucky, Lexington, KY

D0010 Relative frequency of two entomopathogenic fungi, *Beauveria* and *Metarhizium* (Hypocreales: Clavicipitaceae), from soils of forested and urban habitats. **Tamra Reall**, TRFY9F@mail.mizzou.edu and Richard M. Houseman, Univ. of Missouri, Columbia, MO

D0011 Attraction of Ixodes species *Amblyomma americanum* and *Dermacentor variabilis* to hematophagous insect stimulatory chemicals and chemical combinations. **Ann Louise Carr**, alcarr2@ncsu.edu¹, C. S. Apperson¹, R. M. Roe¹, C. Schal¹ and Daniel E. Sonenshine², ¹North Carolina State Univ., Raleigh, NC, ²Old Dominion Univ., Norfolk, VA

Graduate Student Poster Display Competition, MUVE-2

D0012 Trichomycete fungi associated with mosquito larvae in northeastern Arkansas. **Jason P. Gaspar**, jason.gaspar@smail.astate.edu, Tanja McKay and Martin J. Huss, Arkansas State Univ., State Univ., AR

D0013 Volatiles associated with entomopathogenic fungal spores attract female *Anopheles stephensi* mosquitoes (Diptera: Culicidae). **Justin George**, jxg984@psu.edu, Nina Jenkins and Thomas C. Baker, Pennsylvania State Univ., Univ. Park, PA

D0014 A preliminary survey of the *Anopheles* spp. mosquitoes (Diptera: Culicidae) in South Texas. **Norma Hermelinda Martinez**, normahmtz@aol.com and Christopher Vitek, Univ. of Texas - Pan American, Edinburg, TX

D0015 Attracted to the enemy: *Aedes aegypti* prefers oviposition sites with predator-killed conspecifics. **Daniel Simões Albeny**, danielalbeny@gmail.com¹, Mateus Ramos Andrade¹, Eraldo Rodrigues Lima¹, Simon Luke Elliot¹, S. A. Juliano² and Evaldo Ferreira Vilela¹, ¹Federal Univ. of Viçosa, Viçosa, Minas Gerais, Brazil, ²Illinois State Univ., Normal, IL

D0016 Reproductive fitness of *Aedes aegypti* males, raised under different nutritional regimens. **Stacy D. Rodriguez**, stacyr@nmsu.edu, David P. Price, Alexander Tchourbanov and Immo A. Hansen, New Mexico State Univ., Las Cruces, NM

D0017 Nutrient accumulation and metabolism in *Aedes aegypti*, the yellow fever mosquito. **David P. Price**, dave.p.price@gmail.com, Wayne Van Voorhies and Immo A. Hansen, New Mexico State Univ., Las Cruces, NM

D0018 Larval *Aedes japonicus* and *Aedes triseriatus* alter biofilm dynamics in water-filled container habitats. **Amanda R. Lorenz**, lorenzam@msu.edu, Edward D. Walker and Michael G. Kaufman, Michigan State Univ., East Lansing, MI

D0019 Characterization and inhibitory effect of *Pythium* sp. in *Aedes triseriatus* larval rearing containers. **Rebecca J. Morningstar**, rmorning@msu.edu, Michael G. Kaufman and Edward D. Walker, Michigan State Univ., East Lansing, MI

D0020 Comparison of mosquito communities trapped at rural livestock holding locations. **M. L. Mire**, mirem@lincolnu.edu and J. R. Benne, Lincoln Univ., Jefferson City, MO

D0021 Mapping the distribution of *Culicoides sonorensis* (Diptera:

Ceratopogonidae) in southern Alberta (Canada) and Montana (U.S.A.). **Anna Zuliani**, azuliani@ucalgary.ca¹, Timothy J. Lysyk², Gregory Johnson³, Alessandro Massolo¹, Regula Waeckerlin¹, Allison Cully¹ and Susan Cork¹, ¹Univ. of Calgary, Calgary, AB, Canada, ²Agriculture and Agri-Food Canada, Lethbridge, AB, Canada, ³Montana State Univ., Bozeman, MT

D0022 A revised look at insecticide resistance in Florida horn fly populations. **Chris J. Holderman**, chrish2@ufl.edu¹, Phillip E. Kaufman¹, Christopher Geden² and Jeffrey R. Bloomquist¹, ¹Univ. of Florida, Gainesville, FL, ²USDA - ARS, Gainesville, FL

Graduate Student Poster Display Competition, P-IE-1

D0023 Spillover of agricultural pests into adjacent desert habitats. **Valeria Hochman Adler**, valeriah@bgu.ac.il¹, Yael Lubin¹ and Moshe Coll², ¹Ben-Gurion Univ., Midreshet Ben-Gurion, Israel, ²Hebrew Univ. of Jerusalem, Rehovot, Israel

D0024 Variation in life history parameters in geographically isolated populations of the Colorado potato beetle. **Jie Chen**, jie.chen@umit.maine.edu¹, Andrei Alyokhin¹, David Mota-Sanchez², Mitchell Baker³ and Mark E. Whalon², ¹Univ. of Maine, Orono, ME, ²Michigan State Univ., East Lansing, MI, ³The City Univ. of New York - Queens College, Flushing, NY

D0025 The interspecific competition between invasive *Drosophila suzukii* and endemic *Drosophila melanogaster* on fruit hosts. **Auriel-Robert Vilaire**, a.vilaire@email.wsu.edu¹, Dr. Laura Corley Lavine¹ and Dr. Douglas B. Walsh², ¹Washington State Univ., Pullman, WA, ²Washington State Univ., Prosser, WA

D0026 Field evaluation of pesticides of differing mode of action against brown marmorated stink bug, *Halyomorpha halys* (Stål) (Heteroptera: Pentatomidae) in primocane-bearing caneberries. **Sanjay Basnet**, sanjayvt@vt.edu, Douglas G. Pfeiffer and Curt A. Laub, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

D0027 Effects of emerald ash borer (*Agrilus planipennis*) induced ash mortality on forest soil microenvironments. **Kayla I. Perry**, perry.1864@osu.edu and Daniel A. Herms, The Ohio State Univ., OARDC, Wooster, OH

D0028 The cascading impact of emerald ash borer: effects of ash mortality on breeding bird communities in fragmented midwestern forests. **Lawrence C. Long**, long.643@osu.edu¹ and Daniel A. Herms², ¹The Ohio State Univ., OARDC, Wooster, OH, ²The Ohio State Univ., OARDC, Wooster, OH

D0029 The future of green ash behind, within, and ahead of the advancing front of emerald ash borer. **Stephen Burr**, burrstep@msu.edu and Deborah G. McCullough, Michigan State Univ., East Lansing, MI

D0030 Comparison of beech bark disease distribution and impacts in Michigan from 2002 to 2011. **James B. Wieferich**, wiefer10@msu.edu and Deborah G. McCullough, Michigan State Univ., East Lansing, MI

D0031 Does the distribution of common buckthorn (*Rhamnus cathartica*) influence the distribution and abundance of soybean aphid (*Aphis glycines*) and multi-colored Asian ladybeetle (*Harmonia axyridis*)? **Ian M. McIlvaine**, mcilvaine.ian@gmail.com and Mary M. Gardiner, The Ohio State Univ., OARDC, Wooster, OH

D0032 Effect of cogon grass (*Imperata cylindrica*) management strategies on the abundance and diversity of arthropod natural

enemies in longleaf pine stands. **Sallie Martin**, martis3@auburn.edu, David Held, Stephen Enloe, Lori Eckhardt and Nancy Loewenstein, Auburn Univ., Auburn, AL

D0033 Distribution, diversity, and abundance of hymenopterans in urban habitats. **Klaire E. Freeman**, klaire.freeman@gmail.com¹, B. Michael Walton¹ and Thomas Pucci², ¹Cleveland State Univ., Cleveland, OH, ²Cleveland Museum of Natural History, Cleveland, OH

D0034 Instars of laboratory reared *Epiphyas postvittana* (Lepidoptera: Tortricidae): a new perspective. **Lindsey D. E. Christianson**, chri1203@umn.edu¹, Robert Venette², William D. Hutchison¹ and Robert L. Koch³, ¹Univ. of Minnesota, St. Paul, MN, ²USDA - Forest Service, St. Paul, MN, ³Minnesota Dept. of Agriculture, Saint Paul, MN

Graduate Student Poster Display Competition, P-IE-2

D0035 Larvae in your ears: does western bean cutworm feeding damage encourage *Gibberella* ear rot development? **Nicole S. Parker**, parker77@purdue.edu, Purdue Univ., West Lafayette, IN

D0036 Biology of western bean cutworm (*Loxagrotis albicosta*). **Megan M. Chludzinski**, chludzi2@msu.edu and Christina DiFonzo, Michigan State Univ., East Lansing, MI

D0037 Preference of the silverleaf whitefly, *Bemisia tabaci* B biotype, on zucchini squash and buckwheat and the effect of *Delphastus catalinae* on whitefly populations. **Janine Razze**, jrazze@ufl.edu and Oscar E. Liburd, Univ. of Florida, Gainesville, FL

D0038 Developing parasitoid enhancement as a component of cole crop management. **Emily K. Linkous**, linkous.20@osu.edu and Celeste Welty, The Ohio State Univ., Columbus, OH

D0039 Within-plant distribution impacts cabbage aphid (*Brevicoryne brassicae*) reproductive potential on winter canola. **Ximena Cibils Stewart**, xcibils@k-state.edu and Brian P. McCornack, Kansas State Univ., Manhattan, KS

D0040 Pupal exuviae sampling versus pheromone trapping to assess grape root borer infestations in Virginia vineyards. **Jhalendra P. Rijal**, jrjial@vt.edu and J. Christopher Bergh, Virginia Polytechnic Institute and State Univ., Winchester, VA

D0041 Reevaluating the economic threshold of the potato leafhopper (*Empoasca fabae*) in alfalfa. **Elissa M. Chasen**, emchasen@wisc.edu and Eileen M. Cullen, Univ. of Wisconsin, Madison, WI

D0042 Impact of cover crops on sweet potato insects. Arun Babu¹, Fred R. Musser¹, **Jack T. Reed**, JReed@entomology.msstate.edu¹ and Ramon A. Arancibia², ¹Mississippi State Univ., Starkville, MS, ²Mississippi State Univ., Pontotoc, MS

D0043 Assessment of prey-mediated effects of transgenic *Bt* rice on non-target spiders. Sue Yeon Lee¹, **Seung-Tae Kim**, stkim2000@hanmail.net¹, Jong-Kook Jung² and Joon-Ho Lee¹, ¹Seoul National Univ., Seoul, South Korea, ²Seoul National Univ., Seoul, Gwanak-gu, South Korea

D0044 Host recognition responses and the role of feeding behavior in resistance of western corn rootworm larvae to Bt corn. **Sarah N. Zukoff**, snztz7@mail.missouri.edu¹ and Bruce E. Hibbard², ¹Univ. of Missouri, Columbia, MO, ²USDA - ARS, Columbia, MO

D0045 Interaction of maize, drought stress, and western corn rootworm on plant and insect growth in B73 x Mo17. **Mervat A. B. Mahmoud**, mampr7@mail.missouri.edu¹, Robert E. Sharp¹, Melvin J. Oliver¹ and Bruce Hibbard², ¹Univ. of Missouri, Columbia, MO, ²USDA - ARS, Columbia, MO

Graduate Student Poster Display Competition, P-IE-3

D0046 Effect of CATTs post-harvest treatment on 'Fuji' apple fruit qualities. **Yerim Son**, yerim86@naver.com and Younggyun Kim, Andong National Univ., Andong, Gyeongbuk, South Korea

D0047 Community structure and biomass of rice field arthropods depend on the farming methods in Korea. **Sue Yeon Lee**, hongdan@snu.ac.kr, Seung-Tae Kim, Jong-Kook Jung and Joon-Ho Lee, Seoul National Univ., Seoul, South Korea

D0048 The effects of variable larval and adult nutrition on the fecundity and longevity of *Vanessa cardui* L. (Lepidoptera: Nymphalidae). **Dustin VanOverbeke**, dustin.vanoverbeke@email.ucr.edu¹, Richard A. Redak² and S. Nelson Thompson¹, ¹Univ. of California, Riverside, CA, ²Univ. of California, Riverside, Riverside, CA

D0049 Inoculation order affects the outcome of interactions between *Pandora blunckii* and *Zoophthora radicans* in *Plutella xylostella* larvae. **Erika J. Zamora-Macorra**, erikazam@gmail.com¹, J. Alberto Sandoval-Aguilar¹, Santo Morales-Vidal¹, Judith K. Pell², Raquel Alatorre-Rosas¹ and Ariel W. Guzman-Franco¹, ¹Colegio de Postgraduados, Texcoco, Estado de Mexico, Mexico, ²Rothamsted Research, Harpenden, Hertfordshire, United Kingdom

D0050 Effects of temperature and host on the development of *Lysiphlebus testaceipes*. **Allison Dehnel**, adehnel@wisc.edu and David B. Hogg, Univ. of Wisconsin - Madison, Madison, WI

D0051 Definition and linkage of parasitoid guilds for aphids in potatoes and rabbitbrush. **Erin N. Hollingbery**, erin.eakin@email.wsu.edu, Keith S. Pike and George Graf, Washington State Univ., Prosser, WA

D0052 Varying impacts with elevation from a parasitoid guild of a montane moth, the sagebrush defoliator (*Aroga websteri*). **Virginia L.J. Bolshakova**, virginia.bolshakova@usu.edu and Edward W. Evans, Utah State Univ., Logan, UT

D0053 Correlation between parasitoid wasp diversity and vegetation diversity and structure in a degraded dry forest in Puerto Rico. **Jessica López Mejía**, jessicasak@gmail.com¹, Nico Franz², Jarrod M. Thaxton¹ and Stephanie Whitmire¹, ¹Univ. of Puerto Rico, Mayagüez, PR, ²Univ. of Puerto Rico, Mayagüez, Puerto Rico

D0054 Effects of organic and conventional agriculture on entomopathogenic fungi. **Eric H. Clifton**, eclifton@iastate.edu¹, Erin W. Hodgson¹, Stefan Jaronksi² and Aaron J. Gassmann¹, ¹Iowa State Univ., Ames, IA, ²USDA - ARS, Sidney, MT

D0055 Interaction between the entomopathogenic nematode *Heterorhabditis sonorensis* and the soilborne fungus *Fusarium oxysporum* f. sp. *asparagi*: effects on two different insect hosts. **Patricia D. Navarro**, Pnavarro@email.arizona.edu and S. Patricia Stock, Univ. of Arizona, Tucson, AZ

D0056 Predatory performance evaluations of wild- and laboratory colonized-populations of *Sasajiscymnus tsugae*, an introduced predator of hemlock woolly adelgid. **Jonathan G. Decker**, jdecker@utk.edu¹, Ashley B. Lamb¹, Jerome F. Grant¹ and Albert E. Mayfield

¹Univ. of Tennessee, Knoxville, TN, ²USDA - Forest Service, Asheville, NC

D0057 Comparative assessment of mortality of eastern hemlock in biologically-treated areas using spatial analyses. **Abdul Hakeem**, ahakeem@utk.edu¹, Jerome Grant¹, Greg Wiggins¹, Rusty Rhea², Paris Lambdin³, David Buckley¹, Frank A. Hale⁴ and Thomas Colson⁵, ¹Univ. of Tennessee, Knoxville, TN, ²USDA - Forest Service, Asheville, NC, ³Univ. of Tennessee, Knoxville, TN, ⁴Univ. of Tennessee, Nashville, TN, ⁵Great Smoky Mountains National Park, Gatlinburg, TN

D0058 Where do conifer insects come from? **Patrick Scott Gorring**, psg7@cornell.edu and Brian D. Farrell, Harvard Univ., Cambridge, MA

Graduate Student Poster Display Competition, P-IE-4

D0059 Sublethal effects of low temperature on the light brown apple moth, *Epiphyas postvittana* (Walker). **Amy C. Morey**, morey041@umn.edu¹, Robert C. Venette² and William D. Hutchison¹, ¹Univ. of Minnesota, St. Paul, MN, ²USDA - Forest Service, St. Paul, MN

D0060 An egg-hatch model for codling moth, *Cydia pomonella* (L.) for Pennsylvania apple orchards. **Neelendra K. Joshi**, nkj105@psu.edu¹, Larry A. Hull², Edwin G. Rajotte¹ and Greg Krawczyk², ¹Pennsylvania State Univ., Univ. Park, PA, ²Pennsylvania State Univ., Fruit Research & Extension Center, Biglerville, PA

D0061 Best use practices of managing commercialized colonies of *Bombus impatiens* on strawberry, watermelon, and pickling cucumber crops in Delaware. **Jl. Marchese**, marchese@udel.edu, Univ. of Delaware, Newark, DE

D0062 Identifying color differences in blackberries that direct rednecked cane borer to primocanes. **Soo-Hoon Samuel Kim**, sskim@uark.edu, Clint E. Trammel, Barbara Lewis and Donn T. Johnson, Univ. of Arkansas, Fayetteville, AR

D0063 Movement behavior of mid-development European corn borer (*Ostrinia nubilalis*) larvae on Bt corn using plant specific genetic markers. **Holly Lynn Johnson**, hollylyn83@gmail.com and Charles Mason, Univ. of Delaware, Newark, DE

D0064 Laboratory and field comparison of pheromone lures from different manufacturers for monitoring grape berry moth (Lepidoptera: Tortricidae) in vineyards. **Timothy A. Jordan**, tajordan@vt.edu¹, Aijun Zhang² and Douglas G. Pfeiffer¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²USDA - ARS, Beltsville, MD

D0065 Foraging behavior of *Scaptotrigona* bees in forested and open habitats: the importance of semiochemicals and visual cues. **Laura Avila**, lavila@ufl.edu, Univ. of Florida, Gainesville, FL

D0066 The role of chemoreception in host plant selection by the lesser chestnut weevil, *Curculio sayi*. **Ian W. Keeseey**, keeseeyi@missouri.edu, Bruce A. Barrett and William Terrell Stamps, Univ. of Missouri, Columbia, MO

D0067 Alternative pesticide application strategies for spotted wing Drosophila (*Drosophila suzukii*) management. **Jimmy Klick**, klikkj@hort.oregonstate.edu¹, Vaughn M. Walton¹ and Denny Bruck², ¹Oregon State Univ., Corvallis, OR, ²USDA - ARS, Corvallis, OR

D0068 Effects of neonicotinyl insecticides on overwintering success

and spring nesting of bumblebee queens (*Bombus impatiens*).
Judy Y. Wu, judyyuwu@yahoo.com, Vera Krischik and Marla Spivak,
 Univ. of Minnesota, St. Paul, MN

D0069 Impact of insecticides on *Pityophthorus juglandis* infestations on *Juglans nigra* in east Tennessee. **Katheryne Nix**, kavery3@utk.edu¹, Paris Lambdin¹, Jerome Grant¹, Mark Windham¹, Albert E. Mayfield² and Joseph Docola³, ¹Univ. of Tennessee, Knoxville, TN, ²USDA - Forest Service, Asheville, NC, ³Arborjet, Inc, Woburn, MA

D0070 Absence of *Popillia japonica* (Coleoptera: Scarabaeidae) larvae in golf course putting greens. **Glen R. Obear**, obear@wisc.edu, Patrick Liesch and Robert Chris Williamson, Univ. of Wisconsin - Madison, Madison, WI

Graduate Student Poster Display Competition, P-IE-5

D0071 Comparison of ant community composition at Savanna River Site, SC from 1976 to present. **Hannah J. McKenrick**, h.mckenrick@gmail.com¹ and Julian Resasco², ¹Univ. of Kentucky, Lexington, KY, ²Univ. of Florida, Gainesville, FL

D0072 Five *Fraxinus* species against one *Agrilus* beetle: adult emerald ash borer survival and host response to feeding. **Sara R. Tanis**, tanissar@msu.edu and Deborah G. McCullough, Michigan State Univ., East Lansing, MI

D0073 Characterization of western chinch bug, *Blissus occiduus*, salivary glands. **Crystal M. Ramm**, crystal.ramm2@huskers.unl.edu¹, Tiffany Heng-Moss¹, Frederick Baxendale¹, Lisa Baird² and James Walston², ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ³Univ. of San Diego, San Diego, CA

D0074 Characterizing plant resistance to piercing-sucking insects on switchgrass. **Kyle G. Koch**, kylegkoch@gmail.com¹, Jeff Bradshaw¹ and Tiffany Heng-Moss², ¹Univ. of Nebraska - Lincoln, Scottsbluff, NE, ²Univ. of Nebraska - Lincoln, Lincoln, NE

D0075 The impact of host plant resistance and tillage management on the sugar beet root aphid, *Pemphigus betae*, and its terrestrial predators. **RJ. Pretorius**, rjpretor@cut.ac.za¹, Jeff Bradshaw² and Gary Hein¹, ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Univ. of Nebraska - Lincoln, Scottsbluff, NE

D0076 Resistance characterization of the genotype KS4202 to *Aphis glycines* Matsumura (Hemiptera: Aphididae). **Lia S. Marchi**, lsmarchi1@gmail.com¹, Travis J. Prochaska¹, Tiffany Heng-Moss¹, Thomas E. Hunt² and John C. Reese³, ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Univ. of Nebraska, Concord, NE, ³Kansas State Univ., Manhattan, KS

D0077 Molecular insights into the tolerance response of KS4202 to the soybean aphid, *Aphis glycines* Matsumura (Hemiptera: Aphididae). **Travis J. Prochaska**, Travis.Prochaska@huskers.unl.edu¹, Lia S. Marchi¹, Tiffany M. Heng-Moss¹, Thomas E. Hunt², John Reese³, Nathan Palmer¹, Yuannan Xia¹, Jean-Jack Riethoven¹ and Paul Twigg⁴, ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Univ. of Nebraska, Concord, NE, ³Kansas State Univ., Manhattan, KS, ⁴Univ. of Nebraska - Kearney, Kearney, NE

D0078 The phenology of aphid alatae as potential vectors of non-persistent virus in midwestern pumpkins. **Gina M. Angelella**, GAngelel@purdue.edu¹, Ian Kaplan¹, Doris Lagos² and David Voegtlin³, ¹Purdue Univ., West Lafayette, IN, ²Univ. of Illinois, Urbana, IL, ³Univ. of Illinois, Champaign, IL

D0079 Transmission of *Banana bunchy top virus* (BBTV) by multiple clones of *Pentalonia nigronervosa* Coquerel and *Pentalonia caladii* van der Goot. **April M. Greenwell**, aprilg@hawaii.edu and Alberto Bressan, Univ. of Hawaii at Manoa, Honolulu, HI

D0080 Metagenomic analysis of the glassy-winged sharpshooter (*Homalodisca vitripennis*). **Elwyn Wayne Welch**, ewelch88@peoplepc.com¹, Blake R. Bextine¹ and Scot E. Dowd², ¹Univ. of Texas at Tyler, Tyler, TX, ²Research and Testing Laboratories, Lubbock, TX

D0081 Detection of *Xylella fastidiosa* in xylem-feeding insects using immunocapture-PCR. **Lisa M. Overall**, lisa.overall@okstate.edu and Eric J. Rebeck, Oklahoma State Univ., Stillwater, OK

D0082 Diagnostic analysis of phytoplasma in plants and insects using 454 pyrosequencing. **Adam L. Booth**, abooth@patriots.utt Tyler, TX, ²Florida Dept. of Agriculture and Consumer Services, Gainesville, FL

Graduate Student Poster Display Competition, PBT-1

D0083 Multiple copies of each CpBV segment on host genome reflect their unequal replication in an endoparasitoid wasp, *Cotesia plutellae*. **Bokri Park**, hotpenpbr@hanmail.net and Yonggyun Kim, Andong National Univ., Andong, Gyeongbuk, South Korea

D0084 Chemical identification of two entomopathogenic bacterial metabolites and their immunosuppressive activities by inhibiting eicosanoid biosynthesis. **Sam-Yeol Seo**, helios85@nate.com and Yonggyun Kim, Andong National Univ., Andong, Gyeongbuk, South Korea

D0085 Boosting understanding of Bt-Booster™: modes of action of cadherin-based synergism of *Bacillus thuringiensis* Cry toxins. **Khalidur Rahman**, reben@uga.edu¹, Mohd Amir F. Abdullah², Suresh Ambati², Milton D. Taylor³ and Michael J. Adang¹, ¹Univ. of Georgia, Athens, GA, ²InsectiGen, Inc, Athens, GA, ³USDA, Washington, DC

D0086 Too much work, not enough tarsi: effect of group size on *Bombus impatiens* queen-less worker reproduction. **Angela Gradish**, agradish@uoguelph.ca, Cynthia Scott-Dupree, Andrew McFarlane and Andrew Frewin, Univ. of Guelph, Guelph, ON, Canada

D0087 From subtle to substantial: a stage-structured matrix population model for predicting combined roles of nutrition and pesticides on honey bee colony health. **Wanyi Zhu**, wxz124@psu.edu, Tim Reluga and Jim Frazier, Pennsylvania State Univ., State College, PA

D0088 The Asian longhorned beetle's (*Anoplophora glabripennis*) association with nitrogen fixing bacteria. **Paul Akwetey Ayayee**, paa141@psu.edu, Pennsylvania State Univ., State College, PA

D0089 The effects of a cypovirus on the parasitoid wasp *Campoletis sonorensis* and its host *Heliothis virescens*. **Juliane Deacutis**, jdeac2@uky.edu, Philip L. Houtz and Bruce Webb, Univ. of Kentucky, Lexington, KY

D0090 Parasitism by *Cotesia flavipes* alters the hemocyte population and humoral immunity of the sugarcane borer, *Diatraea saccharalis*. **Ali MA. Mahmoud**, alialimh@yahoo.com, Erick De Luna Santillana, Guo Xian and Mario Rodríguez-Pérez A., Instituto Politecnico Nacional (IPN), Reynosa, Mexico

Graduate Student Poster Display Competition, PBT-2

D0091 Effects of caste on the constitutive and induced expression of genes associated with immunity and detoxification in Formosan subterranean termites. **Dawn Simms**, dsimms@lsu.edu and Claudia Husseneder, Louisiana State Univ. AgCenter, Baton Rouge, LA

D0092 Antimetamorphosis by parasitization in *Plutella xylostella* is induced by inhibition of broad gene expression due to a polydnavirus infection. **Jiwan Kim**, konandoi36@naver.com and Yonggyun Kim, Andong National Univ., Andong, Gyeongbuk, South Korea

D0093 Insect insulin receptors: insights from sequence and caste expression analyses of two cloned hymenopteran insulin receptor cDNAs from the fire ant. **Hsiao-Ling Lu**, nancyu0311@tamu.edu and Patricia V. Pietranonio, Texas A&M Univ., College Station, TX

D0094 A rhodopsin-like G-protein coupled receptor in insecticide resistance of mosquitoes, *Culex quinquefasciatus*. **Ting Li**, tzl0001@auburn.edu and Nannan Liu, Auburn Univ., Auburn, AL

D0095 Comparative analysis of amino acid transporters in aphids and mealybugs in the context of the maintenance of intracellular symbiosis. **Rebecca P. Duncan**, rduncan@bio.miami.edu and Alex C.C. Wilson, Univ. of Miami, Coral Gables, FL

D0096 A Spatzle/Toll pathway in *Manduca sexta*. **Xue Zhong**, xzd23@mail.umkc.edu, Univ. Missouri-Kansas City, Kansas City, MO

D0097 Thermosensory-transient receptor potential channels and thermal avoidance behavior in the red flour beetle, *Tribolium castaneum*. **Hong Geun Kim**, hgkim@ksu.edu, David C. Margolies and Yoonseong Park, Kansas State Univ., Manhattan, KS

D0098 Fungal infection activates PLA₂ via Toll signal pathway, which in turn induces oenocytoid lysis to release prophenoloxidase. **Jungah Park**, topi626@hanmail.net and Younggyun Kim, Andong National Univ., Andong, Gyeongbuk, South Korea

D0099 RNA interference of *laccase2* gene in a new model beetle superworm, *Zophobas atratus* Fab. . **Krissana Ruang-Rit**, krissana@ksu.edu and Yoonseong Park, Kansas State Univ., Manhattan, KS

D0100 The effects of acetophenone compounds on the red imported fire ant, *Solenopsis invicta*, as a possible means of population control. **Richard H. Lewis**, Rlewis@shsu.edu, Sibyl Bucheli, Todd Primm and Jerry L. Cook, Sam Houston State Univ., Huntsville, TX

Graduate Student Poster Display Competition, SysEB-1

D0101 Evolution of host-use among the Scolytini (Coleoptera: Curculionidae: Scolytinae). **Sarah M. Smith**, smith462@msu.edu and Anthony I. Cognato, Michigan State Univ., East Lansing, MI

D0102 A revision of the New Zealand genus *Stenosagola* Broun (Staphylinidae: Pselaphinae: Faronitae). **Jong-Seok Park**, jpark16@tigers.lsu.edu and Christopher E. Carlton, Louisiana State Univ., Baton Rouge, LA

D0103 Statistical biodiversity: analyses of carrion-feeding insects as a function of local climate and stage of decomposition. **Michelle L. Lewis**, mlewis@SHSU.EDU, Natalie K. Lindgren and Sibyl Bucheli, Sam Houston State Univ., Huntsville, TX

D0104 Coupling scanning electron microscopy with DNA barcoding for morphological and molecular identification of thrips. **Vivek Kumar**, vivekiari@ufl.edu¹, Dakshina R. Seal¹, Lance Osborne² and Cindy L. McKenzie³, ¹Univ. of Florida, Homestead, FL, ²Univ. of Florida, Apopka, FL, ³USDA - ARS, Fort Pierce, FL

D0105 Effects of elevation and proximity to forest fragments on Hymenoptera diversity and production yield in a Costa Rican coffee agro-ecosystem. **Lisa M. Hannon**, lhannon@u.washington.edu, Univ. of Washington, Seattle, WA

D0106 Systematics of new world *Exaeretia* with special attention to host-plant evolution. **Melissa S. Sisson**, MSS005@SHSU.EDU and Sibyl R. Bucheli, Sam Houston State Univ., Huntsville, TX

D0107 Systematic studies of the genus *Coccobius* (Hymenoptera: Aphelinidae), parasitoids of hard scales. **Jason Mottern**, jmott002@student.ucr.edu and John Heraty, Univ. of California, Riverside, Riverside, CA

D0108 Patterns of diversity, occupancy and abundance of ants on jack pine dominated sand hills. **James RN. Glasier**, jglasier@ualberta.ca, Univ. of Alberta, Edmonton, AB, Canada

D0109 Updates in distribution and taxonomic records of the family Signiphoridae (Hymenoptera: Chalcidoidea). **Ana Dal Molin**, adalmolin@tamu.edu and James B. Woolley, Texas A&M Univ., College Station, TX

D0110 Utilizing DNA fingerprinting to identify turfgrass pest species of sod webworm in central Ohio. **Devon A Rogers**, rogers.781@osu.edu, The Ohio State Univ., Columbus, OH

Graduate Student Poster Display Competition, SysEB-2

D0111 Halictine bees of the south west Pacific: implications of a recent and rapid radiation. **Scott VC Groom**, scott.groom@flinders.edu.au¹, Mark I. Stevens² and Michael P. Schwarz¹, ¹Flinders Univ., Bedford Park, Adelaide, Australia, ²South Australian Museum, North Terrace, Adelaide, Australia

D0112 Description and phylogenetic implications of novel meso- and metabasitarsal glands of the dracula ants (Hymenoptera: Formicidae: Amblyoponinae). **Brendon E. Boudinot**, boubre18@evergreen.edu, The Evergreen State College, Olympia, WA

D0113 Resolving the relationships of apid bees (Hymenoptera: Apoidea) through the simultaneous analysis of molecular, morphological, and behavioral characters. **Ansel Payne**, apayne@amnh.org, American Museum of Natural History, New York, NY

D0114 Phylogeography of the pinyon pine engraver beetle *Ips confusus* (Curculionidae: Scolytinae). **Liu Yang**, yangliu3@msu.edu, Michigan State Univ., East Lansing, MI

D0115 Phylogenetic relationships of the insect order Odonata using COI, 16S rRNA, 28S rRNA and EF1- α sequences. **Min Jee Kim**, minjeekim@jnu.ac.kr¹, Kwang Soo Jung², Ah Rha Wang¹, Jeong Sun Park¹ and Iksoo Kim¹, ¹Chonnam National Univ., Gwangju, South Korea, ²Andong National Univ., Andong, South Korea

D0116 A preliminary phylogeny of nearctic *Virbia* Walker (Lepidoptera: Erebidae: Arctiinae) based on molecular data. **Kendra Casanova**, casank25@uwosh.edu¹, Stacey Coy¹, Jennifer Zaspel¹ and Chris Schmidt², ¹Univ. of Wisconsin - Oshkosh, Oshkosh, WI, ²Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, Canada, Canada

D0117 Molecular data indicate that Telenominae is not monophyletic (Hymenoptera: Platygasteridae). **Charuwat Taekul**, taekul.1@osu.edu, Norman F. Johnson, Alejandro A. Valerio and Hans Klompen, The Ohio State Univ., Columbus, OH

D0118 South American “jewel acrolepiids”: a molecular phylogeny based on eight genes reveals they represent a novel lineage of Argresthiidae (Lepidoptera: Yponomeutoidea). **Jae-Cheon Sohn**, jsohn@umd.edu, Charles Mitter and Jerome C. Regier, Univ. of Maryland, College Park, MD

D0119 Phylogenetic reassessment of *Cyclanthura*, a neotropical genus of Acalyptini associated with arum and cyclanth inflorescences (Coleoptera: Curculionidae: Curculioninae). **Juliana Cardona-Duque**, jcardonad@gmail.com¹, Laura Gómez-Murrillo¹ and Nico Franz², ¹Univ. of Antioquia, Medellín, Antioquia, Colombia, ²Univ. of Puerto Rico, Mayagüez, PR

D0120 Revision and phylogeny of neotropical velvet cockroaches (Dictyoptera: Blattellidae: Nyctiborinae). **Andrés H. Vélez-Bravo**, avelez82@gmail.com and Nico Franz, Univ. of Puerto Rico, Mayagüez, PR

D0121 Eucharitidae (Hymenoptera): phylogeny, biogeography, and host ant associations. **Elizabeth Murray**, emurr001@ucr.edu and John Heraty, Univ. of California, Riverside, Riverside, CA

D0122 Phylogenetics of Tachinidae (Diptera) with an emphasis on sub-family structure. **Daniel Davis**, davis.471@wright.edu, Wright State Univ., Dayton, OH

Graduate Student Poster Display Competition, SysEB-3

D0123 The singers and the stingers: nesting birds and the wasps that protect them. **Christopher G. Earley**, cearley@uoguelph.ca, Univ. of Guelph, Guelph, ON, Canada

D0124 Environmental and dietary predictors of microbial symbiosis in the ant *Paraponera clavata*. **Hannah K. Larson**, larson.hk@gmail.com¹, Terrence P. McGlynn¹ and Shana K. Goffredi², ¹California State Univ., Dominguez Hills, Carson, CA, ²Occidental College, Los Angeles, CA

D0125 Description of uncovered diversity in pine scales *Chionopsis* spp. (Hemiptera: Coccoidea: Diaspididae) endemic of North America. **Isabelle M. Veá**, ivea@amnh.org¹, Rodger Gwiazdowski² and Benjamin B. Normark², ¹Richard Gilder Graduate School at the American Museum of Natural History, New York, NY, ²Univ. of Massachusetts, Amherst, MA

D0126 Niche partitioning of wood- and bark-boring beetles in French Guiana. **Joyce Fassbender**, jfassbender@ccny.cuny.edu, Alec Baxt, Ali Raza, Aruna Woods, Christina Lee and Amy Berkov, The City College of New York, New York, NY

D0127 Identification and functional characterization of a larval cuticle protein in the lower termite *Reticulitermes flavipes*. **Xiangrui Li**, xiangruili@uky.edu, Zhen Li, Qian Sun, Li Tian and Xuguo “Joe” Zhou, Univ. of Kentucky, Lexington, KY

D0128 The community structure of spiders and their prey in the urban ecosystem of Cleveland, OH. **Caitlin E. Burkman**, burkman.7@osu.edu and Mary M. Gardiner, The Ohio State Univ., OARDC, Wooster, OH

D0129 Mating strategies used by male Macoun’s arctic butterflies (*Oeneis macounii*) in Riding Mountain National Park, Manitoba.

Laura Burns, lburns01@uoguelph.ca, Fiona Le Taro and Gard W. Otis, Univ. of Guelph, Guelph, ON, Canada

D0130 Association between *B. insularis* population densities and St. Augustine grass health in home lawns. **Navneet Kaur**, nkaur8@ufl.edu, Jennifer Gillett-Kaufman and Eileen A. Buss, Univ. of Florida, Gainesville, FL

D0131 Assessing the diversity and stability of gut bacteria in *Cephalotes varians*. **Yi Hu**, yh332@drexel.edu¹, Corrie S. Moreau² and Jacob Russell¹, ¹Drexel Univ., Philadelphia, PA, ²Field Museum of Natural History, Chicago, IL

D0132 Profile of ecoregion and management practices impacts on abundance and diversity of native entomopathogenic nematodes in Oklahoma. **Kyle Risser**, kyle.risser@okstate.edu, Carmen Greenwood and Xandra Robideau, Oklahoma State Univ., Stillwater, OK

D0133 Modelling the distribution of *Ornidia obesa* Fabricius, 1775 (Diptera: Syrphidae) in the neotropical region. **Augusto L Montoya**, guto_spider@yahoo.com and Nico Franz, Univ. of Puerto Rico, Mayagüez, PR

D0134 All aboard! Myrmecophilous phoretic mite richness and host specificity. **Kaitlin A. Uppstrom**, uppstrka@muohio.edu, Miami Univ., Oxford, OH

D0135 Phenology and temporal species turnover in an arctic Diptera assemblage. **Anna M. Solecki**, anna.solecki@mail.mcgill.ca, Amélie Grégoire Taillefer, Meagan S. Blair, Sabrina Rochefort and Terry A. Wheeler, McGill Univ., Ste-Anne-de-Bellevue, QC, Canada

Undergraduate Student Poster Display Competition, MUVE

D0136 Housekeeping via defecation: not your average scrubbing bubbles. **Kerry Michelle Mead**, mead.k@husky.neu.edu, Northeastern Univ., Boston, MA

D0137 Characterization of Lsd2 in the yellow fever mosquito, *Aedes aegypti*. **Alyson J. Banegas**, ajbanega@nmsu.edu and Immo A. Hansen, New Mexico State Univ., Las Cruces, NM

D0138 Characterization of aquaporins in *Culex pipiens quinquefasciatus*. **Sarah E. Aguirre**, sea890@nmsu.edu and Immo A. Hansen, New Mexico State Univ., Las Cruces, NM

D0139 Adult reproductive *Latrodectus geometricus*, Araneae: Theridiidae (Koch), succumbing to a zygomycetous fungus. **Christopher Stephen Bibbs**, chrisfish89@ufl.edu, Univ. of Florida, Gainesville, FL

D0140 The complete mitochondrial genome of four *Liriomyza* species (Diptera: Agromyzidae). **Fei Yang**, yf_edu@yahoo.cn¹, Yuzhou Du², Jingman Cao² and Fangneng Huang¹, ¹Louisiana State Univ., Baton Rouge, LA, ²Yangzhou Univ., Yangzhou, Jiangsu, China

D0141 The eclosion of three phorid flies from the carcass of an emperor scorpion preserved in alcohol. **James R. Willett**, jrwo23@SHSU.EDU, Natalie K. Lindgren and Sibyl R. Bucheli, Sam Houston State Univ., Huntsville, TX

Undergraduate Student Poster Display Competition, P-IE

D0142 Does social feeding mitigate larval starvation in two spotted lady beetles (*Adalia bipunctata*)? **Thomas Edward Dantas Whitney**, thomas.whitney@uky.edu¹, Michael Moore², Charles Burt², Steve Hastings³ and Gary Chang², ¹Univ. of Kentucky, Lexington, KY, ²Gonzaga Univ., Spokane, WA, ³Sterling International, Inc., Spokane, WA

D0143 Taking on popeye of the arthropods: a novel approach to managing garden symphylan (*Scutigera immaculata*) in hoop-houses. **Michael Scott Crossley**, mcrossley@wisc.edu and Eileen M Cullen, Univ. of Wisconsin - Madison, Madison, WI

D0144 Efficacy of four traps in capturing male *Helicoverpa* moths in north Florida. **Sarahlyne Condono Guerrero**, slynn89@ufl.edu¹, Robert Meagher² and Julieta Brambila³, ¹Univ. of Florida, Gainesville, FL, ²USDA - ARS, Gainesville, FL, ³USDA - APHIS, Gainesville, FL

D0145 Comparison of lures for *Drosophila suzukii* in northern Utah. **Merril D. Longmore**, messil.longnose@gmail.com, Clark Evans and Cory A. Stanley, Utah State Univ., Logan, UT

D0146 Microclimate effects on and fruit preference of (*Drosophila suzukii*) populations in northern Utah. **Clark Evans**, og.evans@gmail.com, Merrill D. Longmore and Cory A. Stanley, Utah State Univ., Logan, UT

D0147 Effect of potato psyllid (*Bactericera cockerelli*) herbivory on host plant preference and fitness of green peach aphid (*Myzus persicae*). **Arima Claypool**, arimac@email.unc.edu, Punya Nachappa and Cecilia Tamborindeguay, Texas A&M Univ., College Station, TX

D0148 Analysis of *Candidatus liberibacter* within potato psyllid tissue cell culture. **Janet Arras**, jarras@patriots.uttler.edu¹, Chelsea Swatsell¹, Wayne B. Hunter² and Blake R. Bextine¹, ¹Univ. of Texas at Tyler, Tyler, TX, ²USDA - ARS, Ft. Pierce, FL

D0149 The role of honey hydrogen peroxide (H₂O₂) as a natural defense mechanism against small hive beetle (*Aethina tumida*) infestations. **Lydia L. McCormick**, lmccor2@emory.edu and Berry J. Brosi, Emory Univ., Atlanta, GA

D0150 Assessing the attractiveness of alternative floral resources for wild bees in Kentucky agroecosystems. **Amanda Skidmore**, amanda.skidmore@gmail.com, Logan M. Minter and Ric Bessin, Univ. of Kentucky, Lexington, KY

D0151 Can you use floral traits to predict pollinators? Ruben Alarcón and **Cassidy Adlof**, cassidyadlof@sbcglobal.net, California State Univ., Channel Islands, Camarillo, CA

D0152 Secondary pollen transfer by honey bee (*Apis mellifera*) & native bee pollinators in watermelon (*Citrullus lanatus*). **D. Michael Ramos**, dmramos@ucdavis.edu, Jacob M. Cecala and Joan M. Leong, California State Polytechnic Univ., Pomona, Pomona, CA

D0153 Flower preference and visit duration of European honey bees (*Apis mellifera*) on watermelon (*Citrullus lanatus*). **Jacob M. Cecala**, jmcecala@csupomona.edu and Joan M. Leong, California State Polytechnic Univ., Pomona, Pomona, CA

D0154 A two-year comparison of native pollinators under strikingly different seasonal conditions in north Georgia. **Nicholas G. Stewart**, nstewart@ggc.edu and Mark A. Schlueter, Georgia Gwinnett College, Lawrenceville, GA

D0155 The effect of timing and duration of flooding on the survival and hatch pattern of western corn rootworm eggs. **Stephen**

Mychal Losey, entwebpage@unl.edu and Lance J. Meinke, Univ. of Nebraska - Lincoln, Lincoln, NE

Undergraduate Student Poster Display Competition, PBT

D0156 Anti-oxidative enzyme activity and virus acquisition in *Bemisia tabaci* (Hemiptera: Aleyrodidae) under stress conditions. **Adeel Faruki**, faruki@stthom.edu¹, Duc Lam¹, Mudassar A. Khan¹, Niloufar Aghakasiri¹, Isioma Agboli¹, Cindy L. McKenzie², Robert Shatters² and Rosemarie C. Rosell¹, ¹Univ. of St. Thomas, Houston, TX, ²USDA - ARS, Fort Pierce, FL

D0157 Influence of queen presence or absence and worker behavior on honey bee worker longevity. **Luke R. Dixon**, lrdixon@uncg.edu, Tara McCray, Olav Rueppell and Ryan D. Kuster, Univ. of North Carolina at Greensboro, Greensboro, NC

D0158 Cypovirus infection of embryonic *Heliothis virescens* cells. **Philip L. Houtz**, plhout2@uky.edu, Juliane Deacutis and Bruce Webb, Univ. of Kentucky, Lexington, KY

D0159 Influence of SIN-V on insecticide-treated red imported fire ant. **Chris M. Powell**, cpowell8@patriots.uttler.edu and Blake R. Bextine, Univ. of Texas at Tyler, Tyler, TX

D0160 The repellency of pinenes against the house fly, *Musca domestica*. **Eric Werner**, n01772564@newpaltz.edu, Jacob Kuruvilla, Preeti Dhar and Aaron Haselton, SUNY at New Paltz, New Paltz, NY

D0161 Characterization of wing development genes in the potato psyllid (*Bactericera cockerelli*) for RNAi-based management program. **Erin Brooke Ragsdell**, eragsdell@yahoo.com¹, Daymon Hail¹, Wayne B. Hunter² and Blake R. Bextine¹, ¹Univ. of Texas at Tyler, Tyler, TX, ²USDA - ARS, Ft. Pierce, FL

D0162 Development of IL-60 system in potato reduces zebra chip symptoms. **Juan Francisco Macias**, chisco1389@yahoo.com and Blake R. Bextine, Univ. of Texas at Tyler, Tyler, TX

D0163 Investigation of imidacloprid resistance in blackmargined aphids (*Monellia caryella*). **Amanda N. Peel**, mandy_22@nmsu.edu, Brad Lewis, Frank Solano, Steve Hanson and Bryan Fontes, New Mexico State Univ., Las Cruces, NM

D0164 Impact of pesticides on honey bee colonies in Virginia. **Jennifer Williams**, jdub12@vt.edu, Richard D. Fell and Troy D. Anderson, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

Undergraduate Student Poster Display Competition, SysEB-1

D0165 Biology and identification resources for *Hydrochus spangleri* Hellman, an endangered aquatic beetle from the Delmarva Peninsula (Coleoptera: Hydrophilidae). **Clay E. McIntosh**, cmcintoshIV@ku.edu and Andrew Short, Univ. of Kansas, Lawrence, KS

D0166 Spiny crawlers on trees: phylogeny of Ephemerellidae (Ephemeroptera). **Louis Eubank**, louisreubank@gmail.com, Samantha Talarroja and T. Heath Ogden, Utah Valley Univ., Orem, UT

D0167 Rock outcrops and aquatic beetles: genetic structuring in a fragmented Guiana Shield habitat using mtDNA. **Ian F. Graham**, iang@ku.edu and Andrew Short, Univ. of Kansas, Lawrence, KS

D0168 Complete mitochondrial genome sequence of the erisilkworm, *Samia cynthia ricini* (Lepidoptera: Saturniidae). Jong Sun

Kim¹, **Jeong Sun Park**, jungsun5009@naver.com², Min Jee Kim² and Iksoo Kim², ¹Jeonnam Agricultural Research & Extension Service, Jangseong, Jeollanamdo, South Korea, ²Chonnam National Univ., Gwangju, South Korea

D0169 Elucidating ectoparasitic earwig evolution. **Michael A. Naegle**, michael.naegle@gmail.com and Michael F. Whiting, Brigham Young Univ., Provo, UT

D0170 Molecular evolution of the visual system in a blind cave beetle (*Glacivicola bathysciodes*). **Gavin J. Martin**, gmartin33@live.com¹, John Zenger¹, Seth M. Bybee² and Michael F. Whiting², ¹Brigham Young Univ. Idaho, Rexburg, ID, ²Brigham Young Univ., Provo, UT

D0171 A comparative survey of mouthpart morphology in tiger moths (Lepidoptera: Erebiidae: Arctiinae). Stacey L Coy, **Katherine A. Habanek**, habank51@uwosh.edu and Jennifer Zaspel, Univ. of Wisconsin - Oshkosh, Oshkosh, WI

D0172 Morphology of the head and associated structures in New World Cryptocephalini (Coleoptera: Chrysomelidae: Cryptocephalinae). **Anthony Deczynski**, adeczyn@udel.edu¹, Maria Lourdes Chamorro² and Alexander S. Konstantinov², ¹Smithsonian Institution, Washington, DC, ²USDA, Systematic Entomology Laboratory (SEL), Washington, DC

D0173 Phylogeography of Colorado potato beetle (*Leptinotarsa decemlineata*): inferring the history of an agricultural pest. **Joseph T. Labrum**, jlabrum@uvm.edu, Victor Izzo and Yolanda H. Chen, Univ. of Vermont, Burlington, VT

Undergraduate Student Poster Display Competition, SysEB-2

D0174 To Baetidae or not to Baetidae: comprehensive phylogeny of baetid mayflies. **Tyler Smith**, tylerasmith173@gmail.com, Albert Zylstra and T. Heath Ogden, Utah Valley Univ., Orem, UT

D0175 A taxonomic review of the North American band-winged

grasshopper genus, *Encoptolophus* (Orthoptera: Acrididae: Oedipodinae). **Roberto Antonio Gomez**, ragomez@unm.edu, William C. Edelman, David C. Lightfoot and Kelly B. Miller, Univ. of New Mexico, Albuquerque, NM

D0176 Explorations into the amazing diversity of *Pseudomezium*: an endemic and enigmatic genus from South Africa. **Michelle E. Smiley**, michelle.smiley623@topper.wku.edu and T. Keith Philips, Western Kentucky Univ., Bowling Green, KY

D0177 Temporal and geographic patterns of the great arctic butterfly (*Oeneis nevadensis*). **Fiona Le Taro**, fionalt@hotmail.com and Gard W. Otis, Univ. of Guelph, Guelph, ON, Canada

D0178 Seasonal abundance of carrion beetles (Coleoptera) as a potential forensic tool. **Araceli Rosillo**, axr018@shsu.edu and Sibyl R. Bucheli, Sam Houston State Univ., Huntsville, TX

D0179 The Taber-Keller trap: a modification of the Berlese funnel to entrap flying insects. **Oliver Keller**, okeller@svsu.edu and Stephen W. Taber, Saginaw Valley State Univ., Univ. Center, MI

D0180 The origins of posteruptive insect populations on the Aleutian Island of Kasatochi. **Sayde Ridling**, bugsruletheuniverse@hotmail.com and Derek S. Sikes, Univ. of Alaska, Fairbanks, AK

D0181 A preliminary phylogenetic analysis of the lichen moth genus *Lycomorpha* (Lepidoptera: Erebiidae: Arctiinae: Lithosiini) using molecular data. **Pablo Chialvo**, pchialvo@ufl.edu, Clare H. Scott and Marc Branham, Univ. of Florida, Gainesville, FL

D0182 The eye of *Incisitermes minor*: structure, functionality, and development. **Kristen Schweigert**, jziesmann@apu.edu, Emily Ediger, Nathan McClane, Joy Lehman-Schletewitz, Jessica DeWitt, Taylor Rose, Joshua Morris and Jurgen Ziesmann, Azusa Pacific Univ., Azusa, CA

D0183 What's for dinner? How novel phenotypes can influence prey selection in assassin bugs (Hemiptera: Reduviidae). **Julia Hope Potocnjak**, jhpococnjak@gmail.com and Christopher Vitek, Univ. of Texas - Pan American, Edinburg, TX

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Sharing Insect Science Globally

Tuesday, November 15, 2011, Morning

Program Symposium: Basic Science to Application for Management of Bed Bug Populations I

Room E1-E3, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Kenneth F. Haynes, Subba R. Palli, Michael F. Potter and James D Harwood, Univ. of Kentucky, Lexington, KY

8:00 Welcoming Remarks

8:05 0766 Bed bug biology: identifying targets for manipulation. **Kenneth F. Haynes**, khaynes@uky.edu, Univ. of Kentucky, Lexington, KY

8:25 0767 Traumatic insemination and female evolutionary responses. **Michael T. Siva-Jothy**, m.siva-jothy@sheffield.ac.uk, Univ. of Sheffield, Sheffield, United Kingdom

8:55 0768 Identifying an aggregation lure for bed bug monitoring and control. **Mary Cameron**, Mary.Cameron@lshtm.ac.uk, London School of Hygiene and Tropical Medicine, London, United Kingdom

9:25 0769 Smelling the way out of sexual assault: alarm pheromone use in male and nymph bed bugs. **Vincent Harraca**, vincent.harraca@sugar.org.za, Univ. of KwaZulu Natal, Mount Edgecombe, South Africa

9:55 0770 The role of endosymbionts in bed bugs. **Mark H. Goodman**, mark.goodman@uky.edu, Univ. of Kentucky, Lexington, KY

10:10 Break

10:25 0771 Molecular analysis of insecticide resistance in bed bugs. **Subba R. Palli**, rpalli@email.uky.edu, Univ. of Kentucky, Lexington, KY

10:55 0772 Transcriptomics of the bed bug (*Cimex lectularius*). **Omprakash Mittapalli**, mittapalli.1@osu.edu, The Ohio State Univ., Wooster, OH

11:25 0773 Molecular analysis of mRNA transcripts identifies and implicates several cuticle protein genes in resistance to pyrethroid insecticides in bed bugs. **Zach N. Adelman**, zachadel@vt.edu, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

11:55 Session will be continued after lunch

Program Symposium: Bee Declines. I. Identification, Clarification, and Communication of the Real Truths

Room A2, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Rosalind James¹, Jeff Pettis², Theresa L. Pitts-Singer¹ and James Strange¹, ¹USDA - ARS, Logan, UT, ²Bee Research Laboratory, Beltsville, MD

8:00 Welcoming Remarks

8:05 0774 From Madagascar forests to California agriculture: communicating conservation research to the public. **Claire Kremen**, Univ. of California, Berkeley, Berkeley, CA

8:25 0775 The impact of land use decisions on wild bee communities. **Rachael Winfree**, rwinfree@rci.rutgers.edu, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

8:45 0776 Bumble bee declines in the headlines: the fact and the fiction. **James Strange**, James.Strange@ars.usda.gov, USDA - ARS, Logan, UT

9:05 0777 Bumble bee conservation: the role of zoo specialists. **Edward Spevak**, spevak@stlzoo.org, Saint Louis Zoo, Saint Louis City, MO

9:25 Break

9:40 0778 U.S. declines in honey bees and responding to the public. **Jeff Pettis**, pettisj@ba.ars.usda.gov, Bee Research Laboratory, Beltsville, MD

10:00 0779 Honey bee declines in Europe. **Elke Genersch**, elke.gensch@rz.hu-berlin.de, Länderinstitut für Bienenkunde, Hohen Neuendorf, Germany

10:20 0780 Global declines in native pollinators: the data and the European response. **Stuart Roberts**, s.p.m.roberts@reading.ac.uk, Reading Univ., Reading, United Kingdom

10:40 Discussion

Program Symposium: Identify, Clarify, Speak Out: Turning Young People onto Science Through Insects and Ensuring a Future for Entomology!

Room A4, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Sharron Quisenberry¹ and Thomas A. Green², ¹Iowa State Univ., Ames, IA, ²IPM Institute of North America, Inc., Madison, WI

8:00 Introductory Remarks

8:05 0781 Sharing science and insects with young readers. **Loree Griffin Burns**, loreegriffinburns@yahoo.com, West Boylston, MA

8:45 0782 Identifying the need and opportunity to turn young people onto science and entomology through insects. **Tom Turpin**, turpin@purdue.edu, Purdue Univ., West Lafayette, IN

9:15 0783 Clarifying the role of the Entomological Foundation in building a collaborative future for entomology. **Sharron Quisenberry**, sharronq@iastate.edu, Iowa State Univ., Ames, IA

9:35 Break

9:50 0784 Speaking out to K-12 students through insects. **April Gower**, april@entfdn.org, Entomological Foundation, Lanham, MD

10:30 0785 Speaking out to young people through INSEKT: Insect Science Education Kit. **Brad Vinson**, bvinson@ag.tamu.edu, Texas A&M Univ., College Station, TX

10:50 Concluding Remarks

Program Symposium: Impacts of the March 2011 Japanese Earthquake and Tsunami on Entomologists, Research, and Society.

**Room D4, First Floor
(Reno-Sparks Convention Center)**

Moderators and Organizers: Yukie Kajita¹ and Reina Koganemaru²,
¹Univ. of Kentucky, Lexington, KY, ²Virginia Polytechnic Institute and State Univ., Blacksburg, VA

8:00 Introductory Remarks

8:05 0786 Overview of the quake's effects on the Entomological Society in Japan. **Osamu Tadauchi**, tadauchi@agr.kyushu-u.ac.jp, Kyushu Univ., Fukuoka, Japan

8:25 0787 The impact of the Japan earthquake on the worldwide citrus industry. **Ted Batkin**, ted@citrusresearch.org, Citrus Research Board, Visalia, CA

8:45 0788 Impact of the quake and its effects on students and their families both in Japan and abroad. **Reina Koganemaru**, reinak7@vt.edu, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

9:05 0789 Entomology in Hawaii and assistance to Japan. **Arnold H. Hara**, arnold@hawaii.edu, Univ. of Hawaii at Manoa, Hilo, HI

9:25 Break

9:40 0790 Radioactive contaminants and impacts on wildlife: lessons from Chernobyl at 25 years. **Timothy A. Mousseau**, mousseau@sc.edu, Univ. of South Carolina, Columbia, SC

10:20 0791 Impact of the Japan disaster on U.S. agricultural exports: hay in question. **Victoria Y. Yokoyama**, victoria.yokoyama@ars.usda.gov, USDA - ARS, Parlier, CA

10:40 0792 Effects on agriculture, research facilities, and universities in Tohoku region. **Satoru Sato**, satorus@tds1.tr.yamagata-u.ac.jp¹, Ken Tabuchi² and Yukie Kajita³, ¹Yamagata Univ., Yamagata, Japan, ²National Agricultural Research Center for Tohoku Region, Morioka, Iwate, Japan, ³Univ. of Kentucky, Lexington, KY

11:00 Concluding Remarks

PBT Section Symposium: Biology, Biochemistry and Genomics of Pine Bark Beetles

**Room D2, First Floor
(Reno-Sparks Convention Center)**

Moderators and Organizers: Gary J. Blomquist¹, Claus Tittiger¹ and Christopher I. Keeling², ¹Univ. of Nevada, Reno, Reno, NV, ²Univ. of British Columbia, Vancouver, BC, Canada

8:00 Introductory Remarks

8:05 0793 Bark beetles and climate change: from microbes to landscapes. **Diana Six**, diana.six@cfc.umt.edu, College of Forestry and Conservation, Missoula, MT

8:35 0794 The (un)frozen assets of the mountain pine beetle. **Dezene PW. Huber**, huber@unbc.ca, Univ. of Northern British Columbia, Prince George, BC, Canada

9:05 0795 Genomics and post-genomics of *Ips pini* pheromone production. **Gary J. Blomquist**, garyb@cabnr.unr.edu, Univ. of Nevada, Reno, Reno, NV

9:35 0796 Functional genomics of olfaction and pheromone biosynthesis of the mountain pine beetle. **Christopher Keeling**, Univ. of British Columbia, Vancouver, BC, Canada

10:05 Break

10:20 0797 Terminal steps in mountain pine beetle pheromone component production. **Claus Tittiger**, crt@unr.edu, Univ. of Nevada, Reno, Reno, NV

10:50 0798 Darned if you do, etc.: functional classification of bark beetle pheromones. **Brian T. Sullivan**, USDA - Forest Service, Pineville, LA

11:20 0799 Comparative SNP analysis of mountain and southern pine beetle EST libraries. **Scott Kelley**, skelley@sciences.sdsu.edu, San Diego State Univ., San Diego, CA

11:50 Concluding Remarks

P-IE Section Symposium: New Approaches to Mass Production and Augmentation Biological Control

**Room A6, First Floor
(Reno-Sparks Convention Center)**

Moderators and Organizers: Walker Jones¹, Sasha M. Greenberg² and Norman C. Leppla³, ¹USDA - ARS, Stoneville, MS, ²USDA - ARS, Weslaco, TX, ³Univ. of Florida, Gainesville, FL

8:00 Welcoming Remarks

8:01 Introductory Remarks

8:05 0800 Application of proteomics and gene expression to improve beneficial agents. **Thomas A. Coudron**, tom.coudron@ars.usda.gov, Holly JR. Popham, Kent S. Shelby and David W. Stanley, USDA - ARS, Columbia, MO

8:20 0801 New approaches to using factitious foods and artificial diets for predators. **Eric W. Riddick**, eric.riddick@ars.usda.gov and M. Guadalupe Rojas, USDA - ARS, Stoneville, MS

8:35 0802 Requirements for technical support in the adoption of augmentation biological control. **Norman C. Leppla**, ncl@ifas.ufl.edu¹, J. Howard Frank¹ and Al Clarke², ¹Univ. of Florida, Gainesville, FL, ²Becker Underwood, Inc., Longwood, FL

8:50 0803 Tephritid fruit fly parasitoid mass rearing and release: challenges and achievements. **John Sivinski**, john.sivinski@ars.usda.gov, USDA, Gainesville, FL

9:05 0804 Mass production and augmentation of natural enemies in China: the past, present and future. **TX. Liu**, tongxianliu@yahoo.com, Northwest A&F Univ., Yangling, Shaanxi, China

9:20 Break

9:35 0805 A global biological control index for *Trichogramma* and other beneficials in mass-rearing. **Shoil Greenburg**, sgreenberg@weslaco.ars.usda.gov, USDA - ARS, Weslaco, TX

9:50 0806 Current and future research projects on augmentation

biological control at the National Biological Control Laboratory. **Walker Jones**, walker.jones@ars.usda.gov, USDA - ARS, Stoneville, MS

10:05 0807 Recent improvements in commercial augmentation biological control in the U.S. **Lynn M. LeBeck**, lebeckanbp@comcast.net, Association of Natural Biocontrol Producers, Clovis, CA

10:20 0808 Insect diets: science and technology. **Allen C. Cohen**, accohen@ncsu.edu, North Carolina State Univ., Raleigh, NC

10:35 0809 Conservation of natural enemies used in augmentation. **John Ruberson**, ruberson@uga.edu, Univ. of Georgia, Tifton, GA

10:50 Concluding Remarks

P-IE Section Symposium: The Larry L. Larson Symposium: 20 Years of Research on New Insecticide Modes of Action, Its Implication on Insect Control and Insecticide Resistance Management.

Room A5, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Luis E. Gomez and Mike P. Tolley, Dow AgroSciences, Indianapolis, IN

8:00 Introductory Remarks

8:15 0810 IRAC overview of insecticide modes of action and their use for insect control and resistance management. **Thomas C. Sparks**, tcsparks@dow.com, Dow AgroSciences LLC, Indianapolis, IN

8:35 0811 Neonicotinoid insecticides. **Ralf Nauen**, ralf.nauen@bayer.com, Bayer CropScience Aktiengesellschaft, Monheim, Germany

8:55 0812 Sulfoxaflor: mode of action and basis for efficacy on resistant insects. **Thomas C. Sparks**, tcsparks@dow.com¹, Gerald B. Watson², Gerrit J. DeBoer¹, James M. Hasler¹, Michael R. Loso¹, Jon M. Babcock¹ and Trent Perry², ¹Dow AgroSciences LLC, Indianapolis, IN, ²Univ. of Melbourne, Melbourne, Australia

9:15 0813 The tetronic and tetramic acid derivatives. **John W. Bell**, john.bell@bayer.com, Bayer CropScience LP, Research Triangle Park, NC

9:35 0814 Resistant insects as tools for mode of action determination: the spinosyns. **Gerald B. Watson**, GBWatson@dow.com, Thomas C. Sparks, Chaoxian Geng, James M. Hasler and James E. Dripps, Dow AgroSciences LLC, Indianapolis, IN

9:55 Break

10:10 0815 Bisacylhydrazine insecticides. **Tarlochan S. Dhadialla**, TDhadialla@dow.com, Dow AgroSciences LLC, Indianapolis, IN

10:30 0816 Diamide insecticides: global efforts to address stewardship challenges. **Luis Teixeira**, Luis.A.Teixeira@USA.DuPont.com and John Andaloro, DuPont Crop Protection, Newark, DE

10:50 0817 Bt traits and other insecticidal traits. **Dirk Benson**, dirk.benson@syngenta.com, Syngenta Seeds, Raleigh, NC

11:10 0818 Nealta™: biological attributes of a new and novel acrylonitrile acaricide from BASF. **Will Fletcher**, william.fletcher@basf.com, Paul Neese, Venkat Pedibhotla, David Terry and Renee Westich, BASF Corporation, Research Triangle Park, NC

11:30 0819 Nealta™: field performance of BASF's acaricide in the US crop protection market. **Venkat Pedibhotla**, venkat.pedibhotla@basf.com, Sanjeev Bangarwa, John Frihauf, David Mann, Larry Newsom, John O'Barr, Joe Stout, Sam Willingham and Tommy Wofford, BASF Corporation, Research Triangle Park, NC

11:50 Concluding Remarks

MUVE Section Symposium: Identify and Clarify Current Arthropod Repellent Research

Room D3, First Floor (Reno-Sparks Convention Center)

Moderator and Organizer: Mustapha Debboun, US Army Medical Dept. Center & School, Fort Sam Houston, TX

7:55 Introductory Remarks

8:00 0820 In vitro screening of commercial repellents against *Aedes aegypti*. **John P. Smith**, Florida A&M Univ., Panama City, FL

8:20 0821 Pushing mosquitoes around the right way: evaluation techniques for repellents in push and pull systems. **Ulla Obermayr**, ulla.obermayr@biogents.com, Univ. of Regensburg, Regensburg, Germany

8:40 0822 Green chemistry for repelling insect pests. **Joel Coats**, jcoats@iastate.edu, Iowa State Univ., Ames, IA

9:00 0823 Evaluation of terpene and pyrethrum combinations for use as mosquito repellents and insecticide synergists. **Gretchen Paluch**, gpaluch@ecosmart.com, EcoSMART Technologies, Ames, IA

9:20 0824 The efficacy of C8910, a natural insect repellent, against *Culicoides* biting midges and ticks. **William Reifenrath**, wgr@stratacor-inc.com, Stratacor, Inc., Richmond, CA

9:40 Break

9:55 0825 The role of repellents for malaria prevention in Africa. **Sarah Moore**, smooore@ihi.ortz, Ifakara Health Institute, London, None, United Kingdom

10:15 0826 Protection from bed bugs while you sleep: further results from a surrogate, in vivo method for testing impregnated fabrics. **Robin Todd**, rtodd@ICRlab.com, ICR Laboratories, Baltimore, MD

10:35 0827 Mosquito bite protection of factory-level permethrin treated United States military combat uniforms. **Uli Bernier**, uli.bernier@ars.usda.gov, USDA - ARS, Gainesville, FL

10:55 0828 Do we need to develop topical repellents anymore? **Kamlesh R. Chauhan**, Kamal.Chauhan@ars.usda.gov, USDA - ARS, Beltsville, MD

11:15 0829 Repellents and the future: consumer product or silver bullet. **Daniel A. Strickman**, daniel.strickman@ars.usda.gov, USDA - ARS, Beltsville, MD

11:35 Concluding Remarks

SysEB Section Symposium: Web-Based Digital Insect Identification: Our Progress, Challenges, and Opportunities

**Room D1, First Floor
(Reno-Sparks Convention Center)**

Moderators and Organizers: Muhammad Haseeb¹, Terrence W. Walters² and Moses Kairo¹, ¹Florida A&M Univ., Tallahassee, FL, ²USDA - APHIS, Colorado

8:00 Introductory Remarks

8:05 0830 Guidelines for creating web-based digital identification tools for plant protection and quarantine. **Terrence Walters**, terrence.w.walters@aphis.usda.gov, USDA - APHIS, Fort Collins, CO

8:25 0831 Digital identification and diagnostics using the platforms of SPDN/NPDN/CPDN: progress and opportunities. **Amanda C. Hodges**, achodges@ufl.edu, Univ. of Florida, Gainesville, FL

8:45 0832 Ant identification in the cyberspace: tools, applications and challenges. **Eli Sarnat**, ndemik@yahoo.com, Univ. of Illinois, Urbana, IL

9:05 0833 Importance of web-based insect identification tools for the 21st century in Ecuador. **Clifford Keil**, keil617@yahoo.com, Pontifical Catholic Univ. of Ecuador, Quito, Ecuador

9:25 Break

9:40 0834 Design and development of web-based identification tools for wood boring beetles: a case study. **Eugenio H. Nearns**, gino@nearns.com, Nathan P. Lord and Kelly B. Miller, Univ. of New Mexico, Albuquerque, NM

10:00 0835 A traditional taxonomists view on modern web-based insect identification. **Charles O'Brien**, cobrien6@cox.net, Univ. of Arizona, Tucson, AZ

10:20 0836 Phylogenetic and ontology-related obstacles to identifying higher-level insect groups. **Nico Franz**, nico.franz@upr.edu, Univ. of Puerto Rico, Mayagüez, PR

10:40 0837 New approaches and possibilities for invasive pest identification using web-based tools. **Muhammad Haseeb**, Muhammad.Haseeb@FAMU.EDU, Florida A&M Univ., Tallahassee, FL

11:00 Concluding Remarks

Symposium: Can Entomologists Stop The Threat of Invasive Palm Weevils, (*Rhynchophorus* spp.)?

**Room A1, First Floor
(Reno-Sparks Convention Center)**

Moderators and Organizers: Aziz Ajlan and Khalid Alhudaib, King Faisal Univ., Hofuf, Al-Hassa, Saudi Arabia

8:00 Introductory Remarks

8:05 0838 Pharmacological action of integument extracts of the red palm weevil, *Rhynchophorus ferrugineus*, on albino mice. **Mona M. Al-Dosary**, wisdom1425@yahoo.com¹ and Kamal H. El-Tahir², ¹Al Kharj Univ., Al Kharj, Saudi Arabia, ²King Saud Univ., Riyadh, Saudi Arabia

8:20 0839 Global spread of red palm weevil, *Rhynchophorus ferrugineus* Olivier: historical perspectives and control measures. **Abdulrahman Saad Aldawood**, aldawood@ksu.edu.sa¹, Khawaja Ghulam Rasool¹, Qaiser Iftikhar Sheikh² and Muhammad Mukhtar³, ¹Kind Saud Univ., Riyadh, Saudi Arabia, ²Univ. of Sheffield, Sheffield, United Kingdom, ³The Islamia Univ. of Bahawalpur, Bahawalpur, Pakistan

8:35 0840 Highly effective pheromone mediated management of palm weevils using SPLAT attract & kill to control and SMART traps to monitor populations. **Agner Mafra Neto**, president@iscatech.com, ISCA Technologies, Riverside, CA

8:50 0841 Rectification of current erroneous biological and technical conceptions to succeed the control of the red palm weevil in urban environment. **Michel Ferry**, m.ferry@telefonica.net¹ and Susi Gómez², ¹Phoenix Research Station, Elche, Spain, ²Institut National de la Recherche Agronomique (INRA), Elche, Spain

9:05 0842 Endotherapy in palms: study of the efficacy and persistence of thiametoxam in preventive treatments against the red palm weevil. **Susi Gómez**, susigomez@telefonica.net¹, Alejandro Estévez¹ and Michel Ferry², ¹Institut National de la Recherche Agronomique (INRA), Elche, Spain, ²Phoenix Research Station, Elche, Spain

9:20 0843 Evaluation of pheromone traps, entomopathogenic nematodes and the fungus, *Beauveria bassiana* as control agents for RPW. **Mohamed Samir Abbas**, mstabbas@hotmail.com, Plant Protection Research Institute, Cairo, Egypt

9:35 0844 Evaluation methods for red palm weevil control in Egypt during 1992-2010. **Mohamed Kamal Abbas**, mohamed.kmal55@yahoo.com, Plant Protection Research Institute, ARC, Giza, Egypt

9:50 Break

10:05 0845 Increasing the longevity of palm weevil traps. **Cam Oehlschlager**, cam@pheroshop.com, ChemTica Internacional, San Jose, Costa Rica

10:20 0846 A quarantine protocol against the red palm weevil, *Rhynchophorus ferrugineus* (Olivier) in date palm. Abdul Moneim Al-Shawaf¹, Abdullah Al-Shagag¹, Monsour Al-Bagshi¹, Sami Al-Saraj¹, Salim Al-Badr¹, Abdel Moneim Al-Dandan¹ and **Abdallah Ben Abdallah**, abdallah.benabdallah@fao.org², ¹National Date Palm Research Centre, Al Hassa, Saudi Arabia, ²CTA, FAO Project, Al Hassa, Saudi Arabia

10:35 0847 Phylogenetic relationship between *Rhynchophorus ferrugineus* (Olivier) population from India and Saudi Arabia. **Khalid Alhudaib**, alhudaib@kfu.edu.sa¹, Aziz Ajlan¹ and JR. Faleiro², ¹King Faisal Univ., Hofuf, Al-Hassa, Saudi Arabia, ²Goa, India

10:50 0848 www.redpalmweevil.com. **Aziz Ajlan**, aajlan@hotmail.com¹, Khalid Alhudaib¹ and JR. Faleiro², ¹King Faisal Univ., Hofuf, Al-Hassa, Saudi Arabia, ²Goa, India

11:05 0849 Comparative study on the red palm weevil conventional control measures and the Italy endotherapeutic injection method. **Ahmed Zietoun**, ahmedzietoun@hotmail.com, Alexandria, Egypt

11:20 0850 Toxicity evaluation of certain insecticides against the red palm weevil, *Rhynchophorus ferrugineus* (Olivier), under laboratory conditions. **M. M. Abo-El-Saad**, maboelsaad@gmail.com¹, H. A. Elshafie¹, J. R. Faleiro² and I. A. Bou-Khowh¹, ¹King Faisal Univ., Al-Hassa, Saudi Arabia, ²Goa, India

11:35 Concluding Remarks

Symposium: Communicating Challenges in Turfgrass & Ornamental Pest Management

Room A10, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Amy C. Murillo and Diane E. Silcox, North Carolina State Univ., Raleigh, NC

7:45 Welcoming Remarks

7:48 0851 BMSB smackdown: the use of woody plants in designing a new alien out of the residential landscape. **Holly M. Martinson**, hmartins@umd.edu, Paula M. Shrewsbury and Michael J. Raupp, Univ. of Maryland, College Park, MD

8:03 0852 Ants, what foragers are doing in ornamental production greenhouses. **David L. Cox**, david.cox@syngenta.com, Syngenta, Madera, CA

8:18 0853 Challenges in greenhouse gerbera IPM. **Cheri M. Abraham**, cherimabraham@gmail.com, S. Kristine Braman and Ron D. Oetting, Univ. of Georgia, Griffin, GA

8:33 0854 Best management practices in California nurseries for invasive species, with an emphasis on biological control. **Andrea Wagner**, anwagner@ucdavis.edu, Univ. of California, Davis, Davis, CA

8:48 0855 Using banker plants in Florida greenhouses. **Lance S. Osborne**, losborne@ufl.edu and Yingfang Xiao, Univ. of Florida, Apopka, FL

9:03 0856 Bedding plant IPM in California: successful IPM in a short-term crop. **Christine Casey**, cacasey@ucdavis.edu, Univ. of California, Davis, Davis, CA

9:18 0857 Entomopathogenic nematode survival on the leaf surface: a novel gel application. **Danica Maxwell**, dfmaxwell@ucdavis.edu, Univ. of California, Davis, CA

9:33 Break

9:43 0858 Growing grub-tolerant home lawns. **David R. Smitley**, smitley@msu.edu, Michigan State Univ., East Lansing, MI

9:58 0859 Winning the shell game: amber snail management in nurseries. **Robin Rosetta**, robin.rosetta@oregonstate.edu¹ and James Coupland², ¹Oregon State Univ., Aurora, OR, ²Forest Farm LLC, Almonte, Ontario, Canada

10:13 0860 Characterization of biopores in soil by mole crickets (*Scapteriscus* spp.). **David Bailey**, bailed1@tigermail.auburn.edu, Auburn Univ., Auburn, AL

10:28 0861 Annual bluegrass weevil IPM: plant resistance/tolerance and semiochemicals for monitoring and management. **Olga Kostromytska**, kolgaent@rci.rutgers.edu and Albrecht Köppenhöfer, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

10:43 0862 Does the presence of prey reduce damage to turfgrass by mole crickets (*Orthoptera: Gryllotalpidae*)? **Yao Xu**, bigantbrl@hotmail.com and David Held, Auburn Univ., Auburn, AL

10:58 0863 90-year old mystery solved: determining the phytochemical basis for geranium-induced paralysis of the

Japanese beetle. **Chris Ranger**, ranger.1@osu.edu¹, Rudolph Winter², Ajay P. Singh³, James Locke⁴, Jonathan Frantz⁴, Pablo Jourdan⁵, Susan Stieve⁵, Gill Scott⁶ and Michael E. Reding¹, ¹USDA - ARS, Wooster, OH, ²Univ. of Missouri - St. Louis, St. Louis, MO, ³Rutgers, The State Univ. of New Jersey, New Brunswick, NJ, ⁴USDA - ARS, Toledo, OH, ⁵The Ohio State Univ., Columbus, OH, ⁶Univ. of Cape Town, Western Cape, South Africa

11:13 0864 Biological control of southern chinch bugs. **Ronald Cherry**, Pinesnpets@aol.com, Univ. of Florida, Belle Glade, FL

11:28 0865 Thresholds and leaf domatia are keys to conservation biological control of maple spider mites in nursery production systems. **Julia Prado**, jpradobe@purdue.edu, Purdue Univ., West Lafayette, IN

11:43 0866 Caterpillar pests of creeping bentgrass in southeast. **Seung Cheon Hong**, seunghong@wisc.edu¹, D. W. Held² and R. Williamson¹, ¹Univ. of Wisconsin - Madison, Madison, WI, ²Auburn Univ., Auburn, AL

11:58 Business Meeting

Symposium: Communicating Sociality: Evolutionary Developments In Social Insect Communication Systems

Room A13, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Mark J Carroll¹ and Adrian Duehl², ¹USDA - ARS, Tucson, AZ, ²USDA - ARS, Gainesville, FL

7:50 Introductory Remarks

7:55 0867 Cuticular hydrocarbons as fertility signals in social insects: patterns and predictions. **Juergen Liebig**, juergen.liebig@asu.edu, Arizona State Univ., Tempe, AZ

8:15 0868 Modulatory negative feedback communication in honey bees. **James C. Nieh**, jnieh@ucsd.edu, Univ. of California, San Diego, La Jolla, CA

8:35 0869 Dissecting the factors affecting honey bee queen (*Apis mellifera* L.) pheromone production and queen-worker interactions. **Elina L. Niño**, elastro@psu.edu, Pennsylvania State Univ., State College, PA

8:55 0870 Genomics and evolution of responses to queen pheromone. **Christina Grozinger**, cmgrozinger@psu.edu, Pennsylvania State Univ., State College, PA

9:15 Break

9:30 0871 Chemical and transcriptomic signatures of dominance in paper wasps. **Amy Toth**, amytoth@iastate.edu, Iowa State Univ., Ames, IA

9:50 0872 Soldier influences on candidate primer pheromone levels, gene expression and caste differentiation in workers of *R. flavipes* termites. **Matthew R. Tarver**, matt.tarver@ars.usda.gov¹ and Michael E. Scharf², ¹USDA - ARS, New Orleans, LA, ²Purdue Univ., West Lafayette, IN

10:10 0873 Effects of honey bee brood pheromone on colony physiology, foraging and growth. **Ramesh R. Sagili**, sagilir@hort.oregonstate.edu, Oregon State Univ., Corvallis, OR

10:30 Intermission

10:45 0874 Small hive beetle volatile attraction and the evolution of a colony parasite. **Adrian Duehl**, adrian.duehl@ars.usda.gov, USDA - ARS, Gainesville, FL

11:05 0875 Novel semiochemical roles for honey bee brood volatiles. **Mark J. Carroll**, Mark.Carroll@ars.usda.gov, USDA - ARS, Tucson, AZ

11:20 0876 Honey bee brood volatiles associated with symbiotic bacteria and parasitic fungi. **Svjetlana Vojvodic**, vojvodic.sv@gmail.com, Univ. of Arizona, Tucson, AZ

11:35 0877 Using social insect systems for scientific outreach. **Reed M. Johnson**, rmjohns1@gmail.com, Univ. of Nebraska - Lincoln, Lincoln, NE

Symposium: Endurance Lessons from International Students Trained in the US Departments of Entomology: Genuine Success Histories

Room D9, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Françoise Djibode Favi¹, Ky-Phuong Luong², Livy Williams³ and Françoise Djibode Favi¹, ¹Virginia Polytechnic Institute and State Univ., Petersburg, VA, ²Univ. of California, Riverside, Riverside, CA, ³USDA - ARS, Montpellier, France

8:00 Introductory Remarks

8:15 0878 Enjoy the difference. **Jian Chen**, Jian.chen@ars.usda.gov, USDA - ARS, Stoneville, MS

8:40 0879 Needed talent in graduate school and beyond: communication skill. **Françoise Djibode Favi**, Ffavi@vsu.edu, Virginia Polytechnic Institute and State Univ., Petersburg, VA

9:05 0880 From political turmoil to scientific tranquility. **Raul F Medina**, rfmedina@ag.tamu.edu, Texas A&M Univ., College Station, TX

9:30 0881 Persistence and hard work will get you there: from academia to industry to government. **Carlos A. Blanco**, carlos.a.blanco@aphis.usda.gov, USDA - APHIS, Riverdale, MD

9:55 Break

10:10 0882 Roles of international students: entomological and cultural ambassadors. **Yong-Lak Park**, yong-lak.park@mail.wvu.edu, West Virginia Univ., Morgantown, WV

10:35 0883 Helping international students navigate American life & higher education. **Marianne Shockley Robinette**, entomolo@uga.edu, Univ. of Georgia, Athens, GA

11:00 0884 Setting up an extension program in the Pacific Northwest: do knowledge prevail over cultural and ethnic drawbacks? **Silvia I. Rondon**, silvia.rondon@oregonstate.edu, Hermiston Agricultural Research and Extension Center, Hermiston, OR

11:25 0885 Insect vector of *Xylella fastidiosa* in Brazil and California mediate the transmission of an entomologist to the

northern hemisphere. **Rodrigo Krugner**, rodrigo.krugner@ars.usda.gov, USDA - ARS, Parlier, CA

11:50 Concluding Remarks

Symposium: Identifying And Clarifying Emerging Technologies For Entomological Research: From Molecules To Landscapes

Room A11, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Nicholas M Teets¹ and Cheri Abraham², ¹The Ohio State Univ., Columbus, OH, ²Univ. of Georgia, Griffin, GA

8:00 Introductory Remarks

8:05 0886 From fly ligation to DNA ligation: evolution of insect diapause research. **David L. Denlinger**, denlinger.1@osu.edu, The Ohio State Univ., Columbus, OH

8:25 0887 Next-generation sequencing and transcriptomics: recent developments and practical considerations. **Dan Hahn**, dahahn@ufl.edu, Univ. of Florida, Gainesville, FL

8:45 0888 Adaptation genomics of insects: the search for selected genes in natural populations. **Andrew Michel**, michel.70@osu.edu, The Ohio State Univ., OARDC, Wooster, OH

9:05 0889 Application of proteomic techniques in entomology. **Marta Guarna**, martag@msl.ubc.ca, Aquinox Pharmaceuticals Inc., Vancouver, BC, Canada

9:25 0890 Development of potent insect peptide agonists and antagonists for pest control: the diapause hormone example. **Qirui Zhang**, zhang.571@osu.edu, The Ohio State Univ., Columbus, OH

9:45 Break

10:00 0891 New technologies in electrical penetration graph (EPG) monitors of insect feeding and their applications for 21st century entomology. **Elaine Backus**, elaine.backus@ars.usda.gov, USDA - ARS, Parlier, CA

10:20 0892 Exploring the effects of behavior on the spread and impact of invasive insects. **David W. Crowder**, dcrowder@wsu.edu, Washington State Univ., Pullman, WA

10:40 0893 Emergence chambers: simple ways to collect from difficult habitats. **Michael L. Ferro**, spongymesophyll@gmail.com, Louisiana State Univ., Baton Rouge, LA

11:00 0894 Collecting hydro- and hygrophilous arthropods associated with wetland vegetation. **Katherine A. Parys**, liquidanbar@gmail.com, Louisiana State Univ. AgCenter, Baton Rouge, LA

11:20 0895 Online delivery of extension educational programs via multiple channels. **Anna Meszaros**, ameszaros@agcenter.lsu.edu and Natalie A. Hummel, Louisiana State Univ. AgCenter, Baton Rouge, LA

11:40 Concluding Remarks

Symposium: Insect Demography: Emerging Concepts and Applications

**Room A17, First Floor
(Reno-Sparks Convention Center)**

Moderator and Organizer: James R. Carey, Univ. of California, Davis, Davis, CA

8:00 Introductory Remarks

8:05 0896 Estimating fitness variation within insect populations: how much and why. **Shripad Tuljapurkar**, tulja@stanford.edu, Stanford Univ., Stanford, CA

8:25 0897 Estimating medfly population age structure using the death distributions of live captures. **James R. Carey**, jrcarey@ucdavis.edu, Univ. of California, Davis, Davis, CA

8:45 0898 Measuring alterations of age structure in mosquito vector populations following public health interventions. **Andrew Read**, a.read@psu.edu, Pennsylvania State Univ., State College, PA

9:05 0899 Competing risk in insect mortality analysis: rethinking efficacy in biological control. **Robert K. D. Peterson**, bpeterson@montana.edu, Montana State Univ., Bozeman, MT

9:25 Break

9:40 0900 Are age-structure estimates in populations of univoltine insects useful? Case study of the checkerspot butterfly. **Carol L. Boggs**, cboggs@stanford.edu, Stanford Univ., Stanford, CA

10:00 0901 Social dimensions of aging in honey bee workers. **Olav Rueppell**, olav_rueppell@uncg.edu, Univ. of North Carolina at Greensboro, Greensboro, NC

10:20 0902 Seasonal worker demography shapes colony-level labor allocation in the Florida harvester ant (*Pogonomyrmex badius*). **Christina Kwapich**, ckwapich@bio.fsu.edu and Walter R. Tschinkel, Florida State Univ., Tallahassee, FL

10:40 0903 Towards a demographic framework in forensic entomology. **Robert B. Kimsey**, rbkimsey@ucdavis.edu, Univ. of California, Davis, Davis, CA

11:00 Concluding Remarks

Ten Minute Papers, P-IE Section, Horticultural Entomology I

**Room A18, First Floor
(Reno-Sparks Convention Center)**

Organizers and Moderators: B. Rogers Leonard¹, Bonnie B. Pendleton², Gregg S. Nuessly³ and Harsimran Gill⁴, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³Univ. of Florida, Belle Glade, FL, ⁴Univ. of Florida, Lake Alfred, FL

8:00 Introductory Remarks

8:05 0904 The salivary glands of the psyllid vector *Diaphorina citri* may act as a transmission barrier to *Candidatus Liberibacter asiaticus* associated with citrus huanglongbing disease. **El-Desouky Ammar**, eldammar@hotmail.com, Robert G. Shatters and David G. Hall, USDA - ARS, Fort Pierce, FL

8:17 0905 A novel dispenser for dissemination of *Isaria fumosorosea* and infection of *Diaphorina citri* in residential and organic citrus. **Andrew Chow**, Andrew.Chow@ars.usda.gov¹, Christopher Dunlap², Daniel Flores³, Mark A. Jackson², Patrick J. Moran¹, William Meikle¹ and Joseph Patt¹, ¹USDA - ARS, Weslaco, TX, ²USDA - ARS, Peoria, IL, ³USDA - APHIS, Edinburg, TX

8:29 0906 Impact of vector-expressed insecticidal peptides on the brown citrus aphid, *Toxoptera citricidus*. **Gaurav Goyal**, goyalgau@ufl.edu, Harsimran Gill, Siddarama Gowda, William Dawson and Kirsten P Stelinski, Univ. of Florida, Lake Alfred, FL

8:41 0907 Toxicity of insecticidal soap to Asian citrus psyllid (*Diaphorina citri*). **David G. Hall**, david.hall@ars.usda.gov, USDA - ARS, Fort Pierce, FL

8:53 0908 Phenology and management of the citrus leafminer *Phyllocnistis citrella* (Lepidoptera: Gracillariidae) in southwest Florida citrus. **Moneen Jones**, mmjones2@ufl.edu¹ and Philip A. Stansly², ¹Southwest Florida Research and Education Center, Immokalee, FL, ²Univ. of Florida, Immokalee, FL

9:05 0909 Volatile differences between *Candidatus Liberibacter asiaticus* infected and non-infected citrus plants influence *Diaphorina citri* Kuwayama (Hemiptera: Psyllidae) behavior. **Jared G. Ali**, jgali@ufl.edu, Rajinder S. Mann, Siddarth Tiwari, Kirsten S. Pelz-Stelinski, Sara Lynn Hermann and Lukasz L. Stelinski, Univ. of Florida, Lake Alfred, FL

9:17 0910 Thresholds for vector control in young citrus treated for symptoms of HLB with a nutrient/SAR package. **Cesar Monzo**, cmonzo@ufl.edu¹ and Philip A. Stansly², ¹Univ. of Florida, Southwest Florida Research and Education Center, Immokalee, FL, ²Univ. of Florida, Immokalee, FL

9:29 0911 Asian citrus psyllid, *Diaphorina citri*, transmits the causal agent of huanglongbing between citrus and the alternate host *Murraya paniculata* at low rates. **Abigail Walter**, Abigail.Walter@ars.usda.gov¹, David G. Hall¹ and YongPing Duan², ¹USDA - ARS, Fort Pierce, FL, ²Subtropical Plant Pathology Research Unit, Fort Pierce, FL

9:41 Break

9:56 0912 Effectiveness ranking for insecticides against Asian citrus psyllid, *Diaphorina citri*. **Philip A. Stansly**, pstansly@ufl.edu¹, Moneen Jones², Jawwad A. Qureshi² and Barry C. Kostyk², ¹Univ. of Florida, Immokalee, FL, ²Southwest Florida Research and Education Center, Immokalee, FL

10:08 0913 Beauty with benefits: insect management and conservation in Washington viticulture. **David G. James**, david_james@wsu.edu, Geraldine L. Lauby and Lorraine M. Seymour, Washington State Univ., Prosser, WA

10:20 0914 First year experiences with spotted wing drosophila in Michigan blueberries. **Rufus Isaacs**, isaacsr@msu.edu, Noel Hahn, Keith Mason and Steven Van Timmeren, Michigan State Univ., East Lansing, MI

10:32 0915 Biological performance of the grape berry moth on red and white vine cultivars. Fatiha Bensadia¹, **Charles Vincent**, charles.vincent@agr.gc.ca² and Yves Mauffette¹, ¹Univ. du Québec à Montréal, Montreal, QC, Canada, ²Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Quebec, Canada

10:44 0916 Seasonality and management of apple flea weevil (*Orchestes pallicornis*) in organic apples. **Anne L. Nielsen**, anielsen@msu.edu and Matthew Grieshop, Michigan State Univ., East Lansing, MI

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10:56 0917 Incidence of brown marmorated stink bug feeding injury in eastern tree fruits: temporal effects. **Shimat V. Joseph**, shimat@vt.edu¹, J. Christopher Bergh¹ and Tracy C. Leskey², ¹Virginia Polytechnic Institute and State Univ., Winchester, VA, ²USDA - ARS, Kearneysville, WV

11:08 0918 Challenges with controlling brown marmorated stink bug (*Halyomorpha halys*) in a fruit system. **Greg Krawczyk**, gkx13@psu.edu and Larry A. Hull, Pennsylvania State Univ., Fruit Research & Extension Center, Biglerville, PA

11:20 0919 News from the front: brown marmorated stink bug management in Virginia tree fruit orchards. **Christopher Bergh**, cbergh@vt.edu and Shimat Joseph, Virginia Polytechnic Institute and State Univ., Winchester, VA

11:32 0920 Citizen assisted survey of the invasive brown marmorated stink bug (*Halyomorpha halys* Stål) in NY State. Peter J. Jentsch¹ and **Mike J. Fargione**, mjf22@cornell.edu², ¹Cornell Univ. - Hudson Valley Laboratory, Highland, NY, ²Cornell Cooperative Extension, Highland, NY

11:44 Concluding Remarks

Ten-Minute Papers, P-IE Section, Biology and Ecology

Room A12, First Floor (Reno-Sparks Convention Center)

Organizers and Moderators: B. Rogers Leonard¹, Bonnie B. Pendleton², Brian P. McCornack³ and Joy L. Newton⁴, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³Kansas State Univ., Manhattan, KS, ⁴Univ. of Nevada, Reno, Reno, NV

8:00 Introductory Remarks

8:05 0921 Microbial odors mediate host finding in insect herbivores. **Peter Witzgall**, peter.witzgall@ice3.se, Paul Becher and Marie Bengtsson, SLU, Alnarp, Sweden

8:17 0922 Invasional meltdown: invasive exotic plants facilitate light brown apple moth (*Epiphyas postvittana*) invasion. **Tim Engelkes**, tengelkes@berkeley.edu and Nicholas J. Mills, Univ. of California, Berkeley, Berkeley, CA

8:29 0923 Functional genomics of host-specific larval fitness trade-offs in apple maggot (*Rhagoletis pomonella*) and snowberry maggot flies (*R. zephyria*). **Dietmar Schwarz**, dietmar.schwarz@www.edu¹, John Huddleston¹, Gregory Ragland² and Daniel A. Hahn², ¹Western Washington Univ., Bellingham, WA, ²Univ. of Florida, Gainesville, FL

8:41 0924 Interactions between phloem-feeding insects and phloem sieve element sealing response. **Gregory P. Walker**, gregory.walker@ucr.edu, Univ. of California, Riverside, Riverside, CA

8:53 0925 Fine-tuning egg stacking: plasticity in a protective parental behavior. **Joseph Deas**, jbdas@email.arizona.edu and Martha S. Hunter, Univ. of Arizona, Tucson, AZ

9:05 0926 Do desert locusts gregarize by watching a video? **Seiji Tanaka**, stanaka@affrc.go.jp, National Institute of Agro-biological Sciences at Ohwashi, Tsukuba, Japan

9:17 0927 Effect of mating on sex attraction in *Bactericera*

cockerelli. **Christelle Guédot**, christelle.guedot@ars.usda.gov, David R. Horton, Peter J. Landolt and Joseph E. Munyaneza, USDA - ARS, Wapato, WA

9:29 0928 Competitive interactions and host sharing by three species of aphids. **Andrei Alyokhin**, andrei.alyokhin@umit.maine.edu¹ and Gary Sewell², ¹Univ. of Maine, Orono, ME, ²Univ. of Maine, Presque Isle, ME

9:41 0929 Behavioral and genetic mechanisms of adaptation to pea in the diamondback moth (*Plutella xylostella*). **Lisa M. Knolhoff**, lknolhoff@ice.mpg.de and David G. Heckel, Max Planck Institute for Chemical Ecology, Jena, Germany

9:53 Break

10:05 0930 Basic biology and identification of the sex pheromone of the invasive scale species *Acutaspis albopicta* (Hemiptera: Diaspididae). **Rebecca A. Waterworth**, rebecca.waterworth@ucr.edu, J. Steven McElfresh, Lindsay J. Robinson, Satya Chinta, Joseph G. Morse and Jocelyn G. Millar, Univ. of California, Riverside, Riverside, CA

10:17 0931 Life-history plasticity in a detritivore determines ecosystem response to climate warming. **Jes Hines**, jessica.hines@eawag.ch¹ and Mark O. Gessner², ¹EAWAG: Swiss Federal Institute of Aquatic Science and Technology, Dübendorf, Zurich, Switzerland, ²Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Stechlin, Germany

10:29 0932 Interactions between the invasive Argentine ant and coast barrel cactus: multifaceted disruption of a protection mutualism. **David Holway**, dholway@ucsd.edu, Univ. of California, San Diego, La Jolla, CA

10:41 0933 Seasonal patterns in sex ratio and abdominal color in *Diaphorina citri* (Hemiptera: Psyllidae). **Timothy Ebert**, tebert@ufl.edu and Michael Rogers, Univ. of Florida, Lake Alfred, FL

10:53 0934 Relative humidity and pupal survival of fruit flies - a comparison of six tephritid species. **Rachid Hanna**, r.hanna@cgjar.org¹, Jeanette Winsou² and Desire Gnanvossou², ¹International Institute of Tropical Agriculture (IITA), Yaounde, Cameroon, ²IITA-Benin, Cotonou, Benin

11:05 0935 Effect of antibiotic, temperature curing of *Wolbachia* and seasonal variation on the reproductive fitness of the uzifly *Exorista sorbillans* (Diptera: Tachinidae). **H. P. Puttaraju**, puttarajuhp@hotmail.com and NM. Guruprasad, Bangalore Univ., Bangalore, India

11:17 0936 Effect of temperature on the feeding behavior of the potato psyllid (*Bactericera cockerelli*). **Cole Pearson**, cole.pearson@email.wsu.edu¹, John J. Brown¹, Elaine Backus² and Joseph E. Munyaneza³, ¹Washington State Univ., Pullman, WA, ²USDA - ARS, Parlier, CA, ³USDA - ARS, Wapato, WA

11:29 0937 Effect of oxygen concentration in the reproduction factor of *S. carpocapsae* cultured in an airlift reactor. Raymundo Molina Aguilar¹, Raquel Alatorre Rosas² and **Josefina Barrera-Cortés**, jbarra@cinvestav.mx¹, ¹Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, México, D.F., Mexico, ²Colegio de Postgraduados, Estado de México, Estado de México, Mexico

11:41 0938 Ovipositional strategy of *Dineulophus phtorimaeae* de Santis (Hymenoptera: Eulophidae), a natural enemy of the tomato moth *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae). Vivina Savino¹, Maria Gabriela Luna² and **Carlos Eduardo Coviella**, carlosecoviella@yahoo.com¹, ¹Universidad Nacional de Lujan,

Lujan, Buenos Aires, Argentina, ²Universidad Nacional de La Plata, La Plata, Buenos Aires, Argentina

11:53 Concluding Remarks

Ten-Minute Papers, P-IE Section, Field Crop Entomology

Room A19, First Floor (Reno-Sparks Convention Center)

Organizers and Moderators: B. Rogers Leonard¹, Bonnie B. Pendleton² and Julien M. Beuzelin³, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³Louisiana State Univ. AgCenter, Baton Rouge, LA

8:15 Introductory Remarks

8:20 0939 *Diabrotica* spp. adult activity and oviposition in switchgrass and *Miscanthus*. **Jarrad Prasifka**, jarrad.prasifka@ars.usda.gov¹, Nicholas A. Tinsley², Joseph L. Spencer³, Ronald E. Estes² and Michael Gray³, ¹USDA - ARS, Fargo, ND, ²Univ. of Illinois at Urbana-Champaign, Urbana, IL, ³Univ. of Illinois at Urbana-Champaign, Urbana, IL

8:32 0940 Assessment of Iowa soybean growers on IPM practices. **Erin W. Hodgson**, ewh@iastate.edu, Mari Kemis and Brandi Geisinger, Iowa State Univ., Ames, IA

8:44 0941 Host plants of the *Heliothis/Helicoverpa* complex in central Colombia. **Guy J. Hallman**, Guy.Hallman@ars.usda.gov, USDA - ARS, Weslaco, TX

8:56 0942 Population dynamics of stored-product insects at a rice mill in northeast Arkansas. Amanda L. White¹, **Tanja McKay**, tmckay@astate.edu², James F. Campbell³ and Frank Arthur³, ¹Arkansas State Univ., State Univ., AR, ²Arkansas State Univ., Jonesboro, AR, ³USDA - ARS, Manhattan, KS

9:08 0943 Spatial and temporal patterns of insect damage and aflatoxin contamination in corn at pre-harvest. **Xinzhi Ni**, xinzhi.ni@ars.usda.gov and Jeffrey P. Wilson, USDA - ARS, Tifton, GA

9:20 0944 Ecological interactions between spider mites and thrips in cotton fields. **Xavier Martini**, XPMartini@ag.tamu.edu¹, Natalie Kincy² and Christian Nansen¹, ¹Texas A&M Univ. - Texas AgriLIFE Extension, Lubbock, TX, ²Texas Tech Univ., Lubbock, TX

9:32 0945 Rearing the brown stink bug (*Euschistus servus*): maintaining a continuous colony. **John Herbert**, johnherb@uga.edu and MD. Toews, Univ. of Georgia, Tifton, GA

9:44 0946 Genetic diversity of spatial and temporally distributed populations of soybean aphid (*Aphis glycines*) in the Midwest. Lucia C. Orantes and **Andrew P. Michel**, michel.70@osu.edu, The Ohio State Univ., OARDC, Wooster, OH

9:56 Break

10:11 0947 Potato leafhopper (*Empoasca fabae*) interferes with nitrogen fixation by alfalfa. **William O. Lamp**, lamp@umd.edu, Univ. of Maryland, College Park, MD

10:23 0948 Preliminary study of cotton yield response to *Lygus hesperus* infestation. **Dale W. Spurgeon**, dale.spurgeon@ars.usda.gov and William R. Cooper, USDA - ARS, Shafter, CA

10:35 0949 Weed flora and their role as reservoirs of thrips

and inoculum sources of tomato spotted wilt virus in peanut farmscape. **Rajagopalbabu Srinivasan**, babusri@uga.edu, David G. Riley and Albert K. Culbreath, Univ. of Georgia, Tifton, GA

10:47 0950 Impact of rice harvest height and ratoon cropping on late season and overwintering stem borer (Lepidoptera: Crambidae) infestations. **J. M. Beuzelin**, jbeuzelin@agcenter.lsu.edu¹, A. Meszaros¹, M. O. Way² and T. E. Reagan¹, ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²Texas A&M AgriLife Research & Extension Center at Beaumont, Beaumont, TX

10:59 0951 Effects of elevation on herbivore induced plant defense strategies in *Solanum peruvianum*. **Mark Sarvary**, mas245@cornell.edu, Rayko Halitschke and Andre Kessler, Cornell Univ., Ithaca, NY

11:11 0952 Aphid responses to pathogen-resistant alfalfa and feeding by alfalfa stem nematode. **Ricardo A. Ramirez**, ricardo.ramirez@usu.edu, Utah State Univ., Logan, UT

11:23 0953 Injury induced by native and exotic stink bugs in mid Atlantic soybeans. **David Owens**, downen123@vt.edu¹, D. A. Herbert¹, T. P. Kuhar², Dominic Reisig³, G. P. Dively⁴ and Joanne Whalen⁵, ¹Virginia Polytechnic Institute and State Univ., Suffolk, VA, ²Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ³North Carolina State Univ., Plymouth, NC, ⁴Univ. of Maryland, College Park Maryland, MD, ⁵Univ. of Delaware, Newark, DE

11:35 0954 Regional distribution studies to improve cereal leaf beetle management in southeastern wheat. **Dominic Reisig**, dominic_reisig@ncsu.edu¹, Jack Bachelor², D. A. Herbert³, Randy Weisz² and Francis P. F. Reay-Jones⁴, ¹North Carolina State Univ., Plymouth, NC, ²North Carolina State Univ., Raleigh, NC, ³Virginia Polytechnic Institute and State Univ., Suffolk, VA, ⁴Clemson Univ., Florence, SC

11:47 Concluding Remarks

Ten-Minute Papers, P-IE Section, Plant Resistance

Room A16, First Floor (Reno-Sparks Convention Center)

Organizers and Moderators: B. Rogers Leonard¹, Bonnie B. Pendleton² and Paula Davis³, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³Pioneer Hi-Bred International, Inc., Johnston, IA

8:15 Introductory Remarks

8:20 0955 Can almond and pistachio orchard volatile emissions help control the navel orangeworm (*Amyelois transitella*)? **John J. Beck**, john.beck@ars.usda.gov¹, Bradley S. Higbee², Wai S. Gee¹ and Jennifer M. Hayashi¹, ¹USDA - ARS, Albany, CA, ²Paramount Farming Co., Bakersfield, CA

8:32 0956 Consequences of lignin modification in biofuel poplar for insect pest susceptibility: do we have a green light? **Michael S. Crossley**, mcrossley3@gmail.com, Christine Buhl and Richard Lindroth, Univ. of Wisconsin - Madison, Madison, WI

8:44 0957 Oxidative response in tetraploid switchgrasses to greenbug (*Schizaphis graminum*) feeding. **Rachael Fithian**, rachaelafithian@msn.com¹, Tiffany Heng-Moss¹ and Gautam Sarath², ¹Univ. of Nebraska, Lincoln, NE, ²USDA - ARS, Lincoln, NE

8:56 0958 β -amino-butyric acid systemically induces resistance to Asian citrus psyllid, *Diaphorina citri*, in citrus. **Siddharth Tiwari**,

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stiwari@ufl.edu, Jared G. Ali, Rajinder S. Mann, Wendy L. Meyer and Lukasz L. Stelinski, Univ. of Florida, Lake Alfred, FL

9:08 0959 Antixenotic resistance of cabbage to onion thrips (*Thrips tabaci* Lindeman). **József Fail**, jozsef.fail@uni-corvinus.hu¹, Kelly R. Patel², Mark Deutschlander² and Anthony M. Shelton³, ¹Corvinus Univ. of Budapest, Budapest, Hungary, ²Hobart and William Smith Colleges, Geneva, NY, ³Cornell Univ., Geneva, NY

9:20 0960 Host plant resistance in citrus germplasm to the Asian citrus psyllid, *Diaphorina citri*. **Matthew L. Richardson**, matthew.richardson@ars.usda.gov, Catherine J. Westbrook and David G. Hall, USDA - ARS, Ft Pierce, FL

9:32 Break

9:47 0961 Characterization of mechanisms of host plant resistance against Asian citrus psyllid (ACP), *Diaphorina citri* (Hemiptera: Psyllidae). **Rajinder S. Mann**, mannrs@ufl.edu, Kirsten P Stelinski, Siddharth Tiwari and Lukasz L. Stelinski, Univ. of Florida, Lake Alfred, FL

9:59 0962 Genetic mapping of maize resistance to the corn leaf aphid (*Rhopalosiphum maidis* [Fitch]). **Lisa N. Meihls**, lnm2m9@mail.mizzou.edu, Boyce Thompson Institute for Plant Research, Ithaca, NY

10:11 0963 Assessing resistance to *Piezodorus guildinii* (Westwood) in six soybean cultivars. **Jeffrey A. Davis**, JeffDavis@agcenter.lsu.edu¹, Sebe Brown¹, Arthur Richter¹ and Katherine Kamminga², ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²Virginia Polytechnic Institute and State Univ., Blacksburg, VA

10:23 0964 Effect of combining host plant resistance and soybean seed treatment on a soybean aphid fungal pathogen. **Karrie A. Koch**, kochx141@umn.edu¹ and David W. Ragsdale², ¹Univ. of Minnesota, St. Paul, MN, ²Texas A&M Univ., College Station, TX

10:35 0965 Differential response in foliar chemistry of three ash species to emerald ash borer adult feeding. **Yigen Chen**, ygchen@msu.edu¹, Justin G. A. Whitehill², Pierluigi Bonello² and Therese M. Poland³, ¹Michigan State Univ., East Lansing, MI, ²The Ohio State Univ., Columbus, OH, ³USDA - Forest Service, East Lansing, MI

10:47 0966 Grapevine cultivar susceptibility to *Xylella fastidiosa* does not predict vector transmission success. **Arash Rashed**, arashed@berkeley.edu¹, Matt Daugherty² and Rodrigo P. P. Almeida¹, ¹Univ. of California, Berkeley, Berkeley, CA, ²Univ. of California, Riverside, Riverside, CA

10:59 0967 Planthopper “adaptation” to resistant rice varieties: changes in amino acid metabolism over time. Yolanda H. Chen¹, Carmencita C. Bernal², Jing Tan², **Finbarr G. Horgan**, F. Horgan@cgjar.org² and Melissa A. Fitzgerald², ¹Univ. of Vermont, Burlington, VT, ²International Rice Research Institute (IRRI), Metro Manila, Philippines

11:11 0968 Effects of variety and planting date on insect economic damage to sweet sorghum for biofuel production in Florida. **Gregg S. Nuessly**, gnuesly@ufl.edu, Ronald H. Cherry, Yueguang Wang and N. Larsen, Univ. of Florida, Belle Glade, FL

11:23 Concluding Remarks

Ten-Minute Papers, PBT Session 2

Room D7, First Floor (Reno-Sparks Convention Center)

Organizers and Moderators: Jeffrey G. Scott¹, Subba R. Palli², Kevin Wanner³ and Nannan Liu⁴, ¹Cornell Univ., Ithaca, NY, ²Univ. of Kentucky, Lexington, KY, ³Montana State Univ., Bozeman, MT, ⁴Auburn Univ., Auburn, AL

8:00 Introductory Remarks

8:05 0969 Evolution of sex pheromone detection in *Ostrinia* moths. **Kevin W. Wanner**, kwanner@montana.edu¹, Jean E. Allen¹, Peggy Bunger¹ and Greg Leary², ¹Montana State Univ., Bozeman, MT, ²Univ. of Montana, Missoula, MT

8:17 0970 Identification and characterization of the *Lygus hesperus* sex peptide receptor. **Joe Hull**, joe.hull@ars.usda.gov, USDA - ARS, Maricopa, AZ

8:29 0971 Approaches towards understanding insect odorant receptor structure and function. **Richard D. Newcomb**, Richard.Newcomb@plantandfood.co.nz¹, Selene van der Poole¹, Pablo German¹, Andy Law², Colm Carraher¹, Andrew Kralicek¹ and David Christie², ¹The New Zealand Institute for Plant & Food Research Limited, Auckland, New Zealand, ²Univ. of Auckland, Auckland, New Zealand

8:41 0972 Identification of three general odorant binding proteins expressed in codling moth antennae. **Stephen F. Garczynski**, steve.garczynski@ars.usda.gov, USDA - ARS, Wapato, WA

8:53 0973 Interactions between pheromone binding proteins (PBPs) and the dendritic membrane. **Thomas Dykstra**, dykstralabs@yahoo.com and Drew Swaggerty, Dykstra Laboratories, Inc., Gainesville, FL

9:05 0974 Acoustic and pheromone trap surveys of red palm weevil (*Rhynchophorus ferrugineus*) in Curaçao. **Richard W. Mankin**, Richard.Mankin@ars.usda.gov¹, K. K. Fiaboe², Amy L. Roda³ and Moses T. K. Kairo², ¹USDA - ARS, Gainesville, FL, ²Florida A&M Univ., Tallahassee, FL, ³USDA - APHIS, Miami, FL

9:17 Break

9:32 0975 Group size, patterns of interactions, and chemical recognition cues inform the collective organization of pavement ant (*Tetramorium caespitum*) wars. **Michael Greene**, michael.greene@cudenver.edu, Univ. of Colorado, Denver, CO

9:44 0976 Anatomical localization and stereoisomeric composition of *Tribolium castaneum* aggregation pheromones. **Thomas W. Phillips**, twp1@ksu.edu¹, Yujie Lu¹, Richard W. Beeman², James F. Campbell², Yoonseong Park¹, Michael J. Aikins¹, Kenji Mori³, Kazuaki Akasaka⁴ and Shigeyuki Tamogami⁵, ¹Kansas State Univ., Manhattan, KS, ²USDA - ARS, Manhattan, KS, ³Univ. of Tokyo, Tokyo, Japan, ⁴Shokei Gakuin Univ., Miyagi, Japan, ⁵Technical Research Institute Nakahara-ku, Kanagawa, Japan

9:56 0977 Exploring the genetic basis for movement behavior in *Ostrinia nubilalis*: insights into the molecular mechanisms of behavioral transition in the European corn borer. **Jeremy A. Kroemer**, Jeremy.Kroemer@ARS.USDA.GOV¹, Michael A. Rausch², Tyasning Kroemer², Susan E. Moser³, Elizabeth A. Schrum¹ and Richard L. Hellmich¹, ¹USDA - ARS, Ames, IA, ²Iowa State Univ., Ames, IA, ³Pioneer Hi-Bred International, Inc., Johnston, IA

10:08 0978 Geographic variation in the Colorado potato beetle resistance to imidacloprid. **David Mota-Sanchez**, motasanc@

msu.edu¹, Mark E. Whalon¹, Andrei Alyokhin², Mitchell Baker³ and Robert M. Hollingworth¹, ¹Michigan State Univ., East Lansing, MI, ²Univ. of Maine, Orono, ME, ³The City Univ. of New York - Queens College, Flushing, NY

10:20 0979 Exploring genes involved in the insecticide resistance of the Colorado potato beetle (Coleoptera: Chrysomelidae). **Diana Karime Londoño**, londono@msu.edu and Zsofia Szendrei, Michigan State Univ., East Lansing, MI

10:32 0980 Evolutionary adaptation of the amino acid and codon usage of the mosquito sodium channel following permethrin selection. **Nannan Liu**, liunann@auburn.edu, Qiang Xu, Lee Zhang, Land Zhang and Ting Li, Auburn Univ., Auburn, AL

10:44 0981 Insecticide resistance and gene regulation in the tarnished plant bug. **Yu Cheng Zhu**, YC.Zhu@ARS.USDA.GOV, Zibiao Guo and Randall Luttrell, USDA - ARS, Stoneville, MS

10:56 0982 Differential gene expression of soybean aphid on resistant and susceptible isolines of soybean. **Raman Bansal**, bansal.67@osu.edu¹, MA. Rouf Mian², Omprakash Mittapalli¹, Xiaodong Bai¹ and Andrew Michel¹, ¹The Ohio State Univ., OARDC, Wooster, OH, ²USDA - ARS, Wooster, OH

11:08 0983 Transcriptomics of tick reproduction. **S. M. Khalil**, sayem_97@yahoo.com¹, Kevin V. Donohue¹, Brooke W. Bissinger¹, N. Egekwu², Daniel E. Sonenshine² and R. Michael Roe¹, ¹North Carolina State Univ., Raleigh, NC, ²Old Dominion Univ., Norfolk, VA

11:20 0984 Diet associated metagene expression in the gut of the termite *Reticulitermes flavipes*. **Rhitoban Raychoudhury**, rhitoban@purdue.com¹, Ruchira Sen¹, Drion G. Boucias², Verena-Ulrike Lietze² and Michael Scharf¹, ¹Purdue Univ., West Lafayette, IN, ²Univ. of Florida, Gainesville, FL

11:32 Concluding Remarks

Ten-Minute Papers, SysEB: Population Genetics and Biogeography

Room A20, First Floor (Reno-Sparks Convention Center)

Organizers and Moderators: Jason R. Cryan¹, Paul Z. Goldstein² and Jessica D. Jurzenski³, ¹New York State Museum, Albany, NY, ²Smithsonian Institution, Washington, DC, ³Univ. of Nebraska - Lincoln, Lincoln, NE

7:40 Introductory Remarks

7:45 0985 Evolutionary mechanisms of insecticide resistance in the Mediterranean fruit fly *Ceratitis capitata* (Wiedmann). **Samia Elfékih**, s.elfekih@nhm.ac.uk and Alfried Vogler, Imperial College London and The Natural History Museum, London, United Kingdom

7:57 0986 Microsatellites reveal a strong subdivision of genetic structure in Chinese populations of the spider mite *Tetranychus urticae* Koch (Acari: Tetranychidae). **Xiao-Yue Hong**, xyhong@njau.edu.cn¹, Jing-Tao Sun¹ and Chunlan Lian², ¹Nanjing Agricultural Univ., Nanjing, Jiangsu Province, China, ²Univ. of Tokyo, Tokyo, Japan

8:09 0987 Consequences of genetic diversity on host preference in the seed beetle *Callosobruchus maculatus*. **Kevin Burls**, kburls@unr.edu, Matthew L. Forister, Guy Hoelzer and Jake Shapiro, Univ. of Nevada, Reno, Reno, NV

8:21 0988 Population genetic structure of sugarcane borer (*Diatraea saccharalis*) and its parasitoids on native and introduced host plants. **Andrea L. Joyce**, ajoyce2@ucmerced.edu, Univ. of California, Merced, Merced, CA

8:33 0989 Genetic differentiation and diversity within and among populations of the bed bug (*Cimex lectularius*) across the United States and Canada. **Warren Booth**, Warren_Booth@ncsu.edu, Coby Schal and Edward L. Vargo, North Carolina State Univ., Raleigh, NC

8:45 0990 Genetic differentiation and reduced reproductive compatibility between Californian populations of bean thrips, *Caliothrips fasciatus* (Pergande) (Thysanoptera: Thripidae). **Paul Rugman-Jones**, paulrj@ucr.edu, Mark S. Hoddle and Richard Stouthamer, Univ. of California, Riverside, Riverside, CA

8:57 0991 Biogeography of Southern Hemisphere arthropods: a comparative molecular phylogenetic approach. **Nate B. Hardy**, nbhardy@gmail.com¹ and Lyn Cook², ¹Univ. of New Mexico, Albuquerque, NM, ²Univ. of Queensland, Brisbane, Queensland, Australia

9:09 0992 Terrestrial arthropods of pre- and posteruption Kasatochi Island, Alaska: a test of the heterotrophs first hypothesis. **Derek S. Sikes**, dssikes@alaska.edu¹, Diane O'Brien² and Andrew Baltensperger³, ¹Univ. of Alaska, Fairbanks, AK, ²Institute of Arctic Biology, Fairbanks, AK, ³Fairbanks, AK

9:21 0993 Diversity in a sensitive Arctic environment: comparing communities of Ichneumonidae on Ellesmere Island over five decades. **Laura L. Timms**, laura.timms@mail.mcgill.ca¹, Andrew M. R. Bennett², Christopher M. Buddle¹ and Terry A. Wheeler¹, ¹McGill Univ., Macdonald Campus, Ste-Anne-de-Bellevue, QC, Canada, ²Agriculture and Agri-Food Canada, Ottawa, ON, Canada

9:33 Break

9:43 0994 Flower power. **Robert Wharton**, rawbaw2@tamu.edu, Lauren A. Ward, Catherine Saenz, Lauren K. Harrell and Christopher Wilson, Texas A&M Univ., College Station, TX

9:55 0995 Butterflies as bioindicators of primary rain forest and oil palm plantation habitats in Papua New Guinea. **Donald G. Miller**, dgmiller@csuchico.edu, California State Univ., Chico, Chico, CA

10:07 0996 10,000 bees later: an intensive inventory of native pollinators on Martha's Vineyard Island (Dukes County, Massachusetts). **Paul Z. Goldstein**, drpzgoldstein@gmail.com¹, John S. Ascher² and Russell Hopping³, ¹Smithsonian Institution, Washington, DC, ²Division of Invertebrate Zoology, American Museum of Natural History, Central, New York, NY, ³The Trustees of Reservations, North Andover, MA

10:19 0997 *Lachnopus curvipes* Fabricius 1787 and its radiation in the Caribbean region (Coleoptera: Curculionidae: Entiminae). **Jennifer C. Girón**, entiminae@gmail.com and Nico Franz, Univ. of Puerto Rico, Mayagüez, PR

10:31 0998 Encyclopedia of Life version 2: a vision for a global collaborative project. **Katja S. Schulz**, SchulzK@si.edu, Smithsonian Institution, National Museum of Natural History, Washington, DC

10:43 0999 Hotspots within hotspots: distribution patterns of staphylinid beetles (Coleoptera, Staphylinidae) in the African Eastern Arc Mountains. **Vladimir Gusarov**, vladimir.gusarov@nhm.uio.no, Univ. of Oslo, Natural History Museum, Oslo, Norway

10:55 1000 Diversity of tiger moths (Lepidoptera: Noctuidae: Arctiinae) along a tropical elevational gradient. **David Wagner**, dwagner@uconnvm.uconn.edu¹, Jadranka Rota² and Bernardo A.

Espinoza³, ¹Univ. of Connecticut, Storrs, CT, ²Univ. of Copenhagen, Copenhagen Ø, Copenhagen, Denmark, ³Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica

11:07 1001 Elaterid beetles in the tropical rainforests of peninsular Malaysia. **Fauziah Abdullah**, q5fauzi@yahoo.com and Suwati Mat Isa, Univ. Malaya, Kuala Lumpur, Selangor, Malaysia

11:19 1002 A review of the aquatic Hymenoptera of the world. **Andrew M. R. Bennett**, andrew.bennett@agr.gc.ca, Agriculture and Agri-Food Canada, Ottawa, ON, Canada

11:31 Concluding Remarks

Ten-Minute Papers, SysEB: Systematics I

Room A3, First Floor (Reno-Sparks Convention Center)

Organizers and Moderators: Jason R. Cryan¹, Anthony I. Cognato² and Scott Gordon³, ¹New York State Museum, Albany, NY, ²Michigan State Univ., East Lansing, MI, ³US Army Medical Research Unit - Kenya, Silver Spring, MD

8:00 Introductory Remarks

8:05 1003 What can morphology offer in the era of molecular phylogenetics? Assembling the beetle tree of life using morphological data. John F. Lawrence, Adam Slipinski and **Ainsley E. Seago**, ainsley.seago@csiro.au, CSIRO Entomology, Canberra, ACT, Australia

8:17 1004 Systematics and fossils: an Early Cretaceous cross-section through phylogeny of derived rove beetles (Coleoptera: Staphylinidae). **Alexey Solodovnikov**, asolodovnikov@snm.ku.dk, Univ. of Copenhagen, Zoological Museum, Copenhagen, Denmark

8:29 1005 A broad scale morphological phylogeny for the rove beetle subfamily Euaesthetinae (Coleoptera: Staphylinidae). **Dave J. Clarke**, dclarke@fieldmuseum.org, The Field Museum, Chicago, IL

8:41 1006 How many undescribed tropical beetles are out there: an insight from two obscure neotropical taxa (Histeridae: Exosternini and Haeteriinae). **Alexey K. Tishechkin**, atishechkin@sbnature2.org and Michael S. Caterino, Santa Barbara Museum of Natural History, Santa Barbara, CA

8:53 1007 DNA identification of bark beetles (Coleoptera: Curculionidae: Scolytinae). **Anthony I. Cognato**, cognato@msu.edu¹, Rachel L. O'Donnell Olson¹, Sarah M. Smith¹ and Bjarte Jordal², ¹Michigan State Univ., East Lansing, MI, ²Univ. of Bergen, Bergen, Norway

9:05 1008 Systematics and biology of the invasive *Agrilus planipennis* Fairmaire (emerald ash borer) and its relatives. **Maria Lourdes Chamorro**, lourdes.chamorro@gmail.com¹, Steve W. Lingafelter¹, Robert A. Haack², Therese M. Poland², Mark G. Volkovitch³, Eduard Jendek⁴, Vasily Grebennikov⁴, Alexander S Konstantinov¹, Toby R. Petrice², Ying Zhang⁵, Hongyin Chen⁵, Darcy Nelson⁶, Yang Song⁷, Norman E Woodley¹, Hui Ye⁸ and Runzhi Zhang⁹, ¹USDA, Systematic Entomology Laboratory (SEL), Washington, DC, ²USDA - Forest Service, East Lansing, MI, ³Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia, ⁴Canadian Food Inspection Agency, Ottawa, ON, Canada, ⁵Sino-American Biological Control Laboratory, Beijing, China, ⁶USDA - Forest Service, Washington, DC, ⁷Southwest Forestry Univ., Kunming, Yunnan, China, ⁸Kunming, Yunnan, China, ⁹Institute of Zoology, Chinese Academy of Sciences, Beijing, China

9:17 1009 Hobby collections as a threat to rare species: the example of stag beetles in Japan. **Franck Courchamp**, franck.courchamp@u-psud.fr¹, Pierline Tournant², Liana N. Joseph³ and Koichi Goka⁴, ¹CNRS - Univ. Paris Sud XI, Orsay, France, ²Univ. Franche-Comté, Besançon, France, ³Wildlife Conservation Society, The Bronx, NY, ⁴National Institute for Environmental Studies, Ibaraki, Japan

9:29 1010 Some bionomics of jumping bristletails (Microcoryphia) and discussion of a new species (*Hypomachilodes forthaysi*) from Kansas. **Richard J. Packauskas**, rpackaus@fhsu.edu and Ryan M. Shofner, Fort Hays State Univ., Hays, KS

9:41 1011 Enhancing identification of the genus *Melanagromyza* from California (Diptera: Agromyzidae). **Li Shi**, lishilauxaniid@gmail.com and Stephen D. Gaimari, Plant Pest Diagnostics Branch, Sacramento, CA

9:53 Break

10:03 1012 Systematic relationships of *Hyposmocoma*, Hawaii's most ecologically diverse lineage. **Daniel Rubinoff**, rubinoff@hawaii.edu and Akito Kawahara, Univ. of Hawaii, Honolulu, HI

10:15 1013 An extraordinary radiation of Hawaiian fancy-cased caterpillars (Lepidoptera: Cosmopterigidae: *Hyposmocoma*) with an emphasis on the purse-shaped cases. **Akito Y. Kawahara**, ak43@hawaii.edu and Daniel Rubinoff, Univ. of Hawaii, Honolulu, HI

10:27 1014 Supermatrix - supertree analysis of the bee (Hymenoptera) phylogeny. **Sml. Patiny**, patiny.s@gmail.com, UMONS, Mons, Belgium

10:39 1015 What is *Lyracus* (Hymenoptera: Pteromalidae)? **Gary A. P. Gibson**, Gary.Gibson@agr.gc.ca, Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, ON, Canada

10:51 1016 From low to high or high to low: an investigation into the evolutionary history of Mesoamerican *Stenamma* (Hymenoptera: Formicidae). **Michael G. Branstetter**, mgbranstetter@ucdavis.edu, Univ. of California, Davis, Davis, CA

11:03 1017 A broad-scale survey of nuclear mitochondrial pseudogenes in Orthoptera (Insecta). **Hojun Song**, song@ucf.edu¹, Matthew J. Moulton² and Michael Whiting², ¹Univ. of Central Florida, Orlando, FL, ²Brigham Young Univ., Provo, UT

11:15 1018 A molecular phylogeny for Yponomeutoidea (Lepidoptera: Ditrysia): new light on phylogenetic relationships and insect-plant interactions in basal ditrysian Lepidoptera. **Jaecheon Sohn**, jsohn@umd.edu¹, Don Davis², Charles Mitter¹, Jerome C. Regier¹ and Michael Cummings¹, ¹Univ. of Maryland, College Park, MD, ²National Museum of Natural History, Smithsonian, Washington, DC

11:27 1019 Darwin's error: implications for insect taxonomy. **K. G. Andrew Hamilton**, Andy.Hamilton@AGR.GC.CA, Agriculture and Agri-Food Canada Biodiversity, Ottawa, ON, Canada

11:39 1020 The Paleoptera problem revisited. **T. Heath Ogden**, heath.ogden@uvu.edu and Michael Simons, Utah Valley Univ., Orem, UT

11:51 Concluding Remarks

Tuesday, November 15, 2011, Afternoon

Lunch and Learn: International Entomological Society Presidents Forum

Room D2/D3, First Floor (Reno-Sparks Convention Center)

12:15 - 1:15

Lunch and Learn: Interviewing Strategies

Room D6, First Floor (Reno-Sparks Convention Center)

12:15 Introductory Remarks

12:20 Interviewing strategies. **Scott Hutchins**, shhutchins@dow.com, Dow AgroSciences, Indianapolis, IN

1:15 Concluding Remarks

Program Symposium: Basic Science to Application for Management of Bed Bug Populations II

Room E1-E3, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Kenneth F. Haynes, Subba R. Palli, Michael F. Potter and James D. Harwood, Univ. of Kentucky, Lexington, KY

1:30 **1021** Patterns of spread and dispersal of bed bugs as revealed by two classes of molecular genetic markers. **Edward L. Vargo**, Ed_Vargo@ncsu.edu, North Carolina State Univ., Raleigh, NC

2:00 **1022** Update on medical consequences of bed bug biting. **Jerome Goddard**, jgoddard@entomology.msstate.edu, Mississippi State Univ., Mississippi State, MS

2:30 **1023** Research needs of the pest control industry. **Richard Cooper**, richard.cooper@cooperpest.com, Rutgers, The State Univ. of New Jersey, New Brunswick, NJ

3:00 Break

3:15 **1024** Business of bed bugs. **Kevin Pass**, kevinp@actionpest.com, Action Pest Control, Evansville, IN

3:45 **1025** Bed bugs: perfect opportunity or perfect storm? **Michael F. Potter**, mpotter@uky.edu, Univ. of Kentucky, Lexington, KY

4:15 **1026** Public health fallouts of bed bug infestation. **Stephane Perron**, sperron@santepub-mtl.qc.ca, Universite de Montreal, Outremont, QC, Canada

4:45 Session continues with posters and reception

Program Symposium: Basic Science to Application for Management of Bed Bug Populations III (Posters and Reception)

Moderators and Organizers: Kenneth F. Haynes, Subba R. Palli, Michael F. Potter and James D. Harwood, Univ. of Kentucky, Lexington, KY

D0184 Effects of ozone on the common bed bug (*Cimex lectularius*). James Feston, Marissa McDonough, Linda Mason, Timothy Gibb and **Kurt Saltzman**, saltzman@purdue.edu, Purdue Univ., West Lafayette, IN

D0185 "Repellents" for bed bugs. **Kyle Michael Loughlin**, kyle.loughlin@uky.edu, Michael F. Potter and Kenneth F. Haynes, Univ. of Kentucky, Lexington, KY

D0186 Potential of entomopathogenic fungi as bed bug control agents. **Alexis M. Barbarin**, amb1113@psu.edu¹, Nina Jenkins², Naworaj Acharya², Edwin G. Rajotte¹ and Matt Thomas², ¹Pennsylvania State Univ., State College, PA, ²Pennsylvania State Univ., Univ. Park, PA

D0187 *Cimex lectularius* in Italy. **Guglielmo Pampiglione**, g.pampiglione@izs.it, Istituto G. Caporale Teramo, Teramo, Italy

D0188 Optimization of an in vitro system for rearing bed bugs. **Alvaro Romero**, alvaro_romero@ncsu.edu, Richard G Santangelo and Coby Schal, North Carolina State Univ., Raleigh, NC

D0189 Insecticide resistance in the bed bug in the laboratory. **Jennifer Gordon**, jgord13@gmail.com, Michael F. Potter and Kenneth F. Haynes, Univ. of Kentucky, Lexington, KY

D0190 Rearing of bed bugs (*Cimex lectularius* L., Heteroptera: Cimicidae) on reconstituted human blood. **Ralph Narain**, ralph@huskers.unl.edu¹, Shripat T. Kamble¹ and Joelle F. Olson², ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Univ. of Minnesota, St. Paul, MN

D0191 Can we smell bed bugs? Developing a novel detection technique for the common bed bug, *Cimex lectularius*. **Dong-Hwan Choe**, dchoe003@berkeley.edu and Neil Tsutsui, Univ. of California, Berkeley, Berkeley, CA

D019 Active monitoring of bed bugs in an apartment complex -- a comparative study. **Susan C. Jones**, jones.1800@osu.edu¹, Joshua Bryant¹, Dina Richman², Lonnie Alonzo³, Robert Albright⁴ and Ken Hutto², ¹The Ohio State Univ., Columbus, OH, ²FMC Corporation, Philadelphia, PA, ³Columbus Pest Control, Columbus, OH, ⁴FMC Corporation, Ewing, NJ

D0193 Impact of high temperatures on residual insecticides used for bed bug treatments. **Margie Lehnert**, melehne@clemsun.edu, Eric Benson and Patricia Zungoli, Clemson Univ., Clemson, SC

D0194 Bed bug (*Cimex lectularius* L.) response to different formulations of DDVP. **Dini M. Miller**, dinim@vt.edu and Tim C. McCoy, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

D0195 Active monitoring of bed bugs: lessons learned from laboratory and field trials. **Philip G. Koehler**, pgk@ufl.edu¹, Roberto M. Pereira¹ and Dina Richman², ¹Univ. of Florida, Gainesville, FL, ²FMC Corporation, Philadelphia, PA

D0196 Using scanning electron microscopy to determine if the bed bug (*Cimex lectularius* L.) cuticle is a potential contributor to pyrethroid resistance. **Reina Koganemaru**, reinak7@vt.edu, Dini M. Miller, Michelle A. E. Anderson and Zach N. Adelman, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

D0197 Bed bug survivorship at high temperatures. **Molly L. Stedfast**, msted14@vt.edu and Dini M. Miller, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

glimpse into vespidae epigenetics. **Susan Weiner**, sweiner@iastate.edu and Amy L. Toth, Iowa State Univ., Ames, IA

PBT Section Symposium: Epigenetics, Phenotypic Plasticity, and Insect Evolution: First Insights from an Emerging Field

Room D10, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Amy L. Toth¹ and Jennifer Brisson²,
¹Iowa State Univ., Ames, IA, ²Univ. of Nebraska - Lincoln, Lincoln, NE

1:30 Introductory Remarks

1:40 1027 DNA methylation, phenotypic plasticity, and environmental adaptation in the pea aphid, *Acyrtosiphon pisum*. **Owain R. Edwards**, Owain.Edwards@csiro.au, CSIRO Entomology, Wembley, Western Australia, Australia

2:05 1028 The role of DNA methylation in the female wing polyphenism of pea aphids. **Jennifer A. Brisson**, jbrisson2@unl.edu, Univ. of Nebraska, Lincoln, NE

2:30 1029 The epigenetics of nutritional plasticity: methylation in dung beetles. **Emilie C. Snell-Rood**, emilies@umn.edu, Univ. of Minnesota, St. Paul, MN

2:55 1030 The nature of nurture in development and evolution of horned beetles. **Sophie Valena**, svalena@indiana.edu and Armin P. Moczek, Indiana Univ., Bloomington, IN

3:20 Break

3:35 1031 Patterns of DNA methylation in insects. **Michael A. D. Goodisman**, michael.goodisman@biology.gatech.edu, Georgia Institute of Technology, Atlanta, GA

4:00 1032 Dynamics of DNA methylation in honeybee development. **Assaf Zemach**, assafz@berkeley.edu, Univ. of California, Berkeley, Berkeley, CA

4:25 1033 Allele-specific gene expression and epigenetics in the honey bee brain. **Jennifer M. Tsuruda**, jtsuruda@purdue.edu¹, Miguel E. Arechavaleta-Velasco², Sarah D. Kocher³, Phillip San Miguel¹, Rick Westerman¹, Carlos A. Robles-Rios², Christina Grozinger⁴ and Greg J. Hunt¹, ¹Purdue Univ., West Lafayette, IN, ²INIFAP, Ajuchitlan, Queretaro, Mexico, ³Harvard Univ., Cambridge, MA, ⁴Pennsylvania State Univ., State College, PA

4:50 1034 Genetics and epigenetics of major characteristics of sociality in the two ant species, *Camponotus floridanus* and *Harpegnathos saltator*. **Juergen Liebig**, juergen.liebig@asu.edu¹, Chaoyang Ye², Roberto Bonasio³, Daniel F. Simola², Navdeep Mutti¹, Guojie Zhang⁴, Steven Chen³, Gregory Donahue², Hua Yan³, Kaustubh Gokhale¹, Shelley Berger² and Danny Reinberg³, ¹Arizona State Univ., Tempe, AZ, ²Univ. of Pennsylvania, Philadelphia, PA, ³New York Univ. School of Medicine, New York, NY, ⁴BGI-Shenzhen, Shenzhen, China

5:15 1035 DNA methylation and caste in social wasps: a first

P-IE Section Symposium: Bee Declines. II. Causes, Solutions, and Activating the Public

Room A2, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Rosalind James¹, Jeff Pettis², Theresa L. Pitts-Singer¹ and James Strange¹, ¹USDA - ARS, Logan, UT, ²Bee Research Laboratory, Beltsville, MD

1:30 Introductory Remarks

1:35 1036 Pesticides and CCD: the evolving story. **Jim Frazier**, jff2@psu.edu¹, Chris Mullin¹ and Maryann Frazier², ¹Pennsylvania State Univ., State College, PA, ²Pennsylvania State Univ., Univ. Park, PA

1:55 1037 Pathogens in pollinator declines? The debates and evidence raging over who, what, and when. **Diana Cox-Foster**, dxc12@psu.edu, Pennsylvania State Univ., Univ. Park, PA

2:15 1038 Is *Nosema bombi* responsible for native bumble bee declines? **Leellen Solter**, lsolter@uiuc.edu, Illinois Natural History Survey, Urbana, IL

2:35 1039 Habitat manipulation to support integrated crop pollination. **Rufus Isaacs**, isaacsr@msu.edu, Michigan State Univ., East Lansing, MI

2:55 Break

3:10 1040 Can agricultural landscapes enhance native pollinators? The Oregon experience. **Sujaya Rao**, sujaya@oregonstate.edu and William P. Stephen, Oregon State Univ., Corvallis, OR

3:30 1041 Modifying orchard practices to better accommodate pollinators. **David J. Biddinger**, djb124@psu.edu, Pennsylvania State Univ., Fruit Research & Extension Center, Biglerville, PA

3:50 1042 Identifying additional pollinators for U.S. agriculture: utilizing blue orchard bees in California almond orchards. **Theresa L. Pitts-Singer**, Theresa.Pitts-Singer@ars.usda.gov, USDA - ARS, Logan, UT

4:10 1043 Communicating the need for conserving bees on public and private lands. **Mace Vaughan**, mace@xerces.org, The Xerces Society, Portland, OR

4:30 Discussion

P-IE Section Symposium: Biological Control of Invasive Wood Borers: Feasibility, Potential, Progress and Challenges

Room A17, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Jian J. Duan¹ and Juli Gould², ¹USDA - ARS, Newark, DE, ²USDA - APHIS, Buzzards Bay, MA

1:30 1044 Overview: biocontrol of woodborers. **Jian J. Duan**, jian.duan@ars.usda.gov, USDA - ARS, Newark, DE

1:35 1045 Slowly boring through the bark: progress toward a mass-rearing strategy for emerald ash borer and its biological control agents. **Jonathan Lelito**, jonathan.lelito@aphis.usda.gov¹, Juli Gould² and Leah S. Bauer³, ¹USDA - APHIS, Brighton, MI, ²USDA - APHIS, Buzzards Bay, MA, ³USDA - Forest Service, East Lansing, MI

1:55 1046 Biocontrol of emerald ash borer: parasitoid release, recovery, and establishment. **Juli Gould**, Juli.R.Gould@aphis.usda.gov¹, Leah S. Bauer² and Jian J. Duan³, ¹USDA - APHIS, Buzzards Bay, MA, ²USDA - Forest Service, East Lansing, MI, ³USDA - ARS, Newark, DE

2:15 1047 Sampling methods to assess establishment and prevalence of emerald ash borer parasitoids. **Leah S. Bauer**, lbauer@fs.fed.us¹, Jason Hansen¹, Jian J. Duan² and Juli Gould³, ¹USDA - Forest Service, East Lansing, MI, ²USDA - ARS, Newark, DE, ³USDA - APHIS, Buzzards Bay, MA

2:35 1048 A comparison of the impact of EAB natural enemies between the pest's native range and the newly invaded region. **Jian J. Duan**, jian.duan@ars.usda.gov¹, Juli Gould², Leah S. Bauer³ and Roy Van Driesche⁴, ¹USDA - ARS, Newark, DE, ²USDA - APHIS, Buzzards Bay, MA, ³USDA - Forest Service, East Lansing, MI, ⁴Univ. of Massachusetts, Amherst, MA

2:55 1049 Feasibility and potential for biological control of gold spotted oak borer. **Vanessa Lopez**, vlope006@ucr.edu¹, Mark Hoddle¹ and Tom W. Coleman², ¹Univ. of California, Riverside, Riverside, CA, ²USDA - Forest Service, San Bernardino, CA

3:15 Break

3:30 1050 As the worm turns: biological control of *Sirex* woodwasps with an exotic nematode. **David W. Williams**, david.w.williams@aphis.usda.gov, USDA - APHIS, Buzzards Bay, MA

3:50 1051 Biological control of eucalyptus longhorned borers in California. **Timothy D. Paine**, timothy.paine@ucr.edu and Jocelyn G. Millar, Univ. of California, Riverside, Riverside, CA

4:10 1052 Exploration and evaluation of natural enemies for biological control of *Anoplophora* spp. **Michael T. Smith**, michael.smith@ars.usda.gov¹ and Franck Herard², ¹USDA - ARS, Newark, DE, ²USDA - ARS, Montpellier, France

4:30 1053 Control of Asian longhorned beetles using microbes. **Ann E. Hajek**, aeh4@cornell.edu¹, Leellen Solter² and Todd Ugone¹, ¹Cornell Univ., Ithaca, NY, ²Illinois Natural History Survey, Urbana, IL

4:50 1054 Potential for microbial control of Asian ambrosia beetles in the genus *Xylosandrus*. **John D. Vandenberg**, john.vandenberg@ars.usda.gov¹, Louela A. Castrillo² and Michael H. Griggs¹, ¹USDA - ARS, Ithaca, NY, ²Cornell Univ., Ithaca, NY

5:10 Concluding Remarks

P-IE Section Symposium: Chemical Signaling, Defense and Counter-Defense between Insect Herbivores and Their Hosts

Room A4, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Godshen R. Pallipparambil¹ and Joe Louis², ¹Univ. of Arkansas, Fayetteville, AR, ²Univ. of North Texas, Denton, TX

1:30 Introductory Remarks

1:35 1055 Revisiting the gene-for-gene hypothesis in the Hessian fly. **Jeffrey J. Stuart**, stuartjj@purdue.edu, Purdue Univ., West Lafayette, IN

2:00 1056 Consequences of direct defenses induced by cactus-derived VOCs for the invasive cactus borer, *Cactoblastis cactorum* (Lepidoptera: Pyralidae). **Travis Marsico**, tmarsico@astate.edu, Arkansas State Univ., Jonesboro, AR

2:25 1057 Host-derived fatty acids in plant-insect interactions. **Fiona L. Goggin**, fgoggin@uark.edu, Univ. of Arkansas, Fayetteville, AR

2:50 1058 Effectors that modulate plant insect interactions. **Saskia A. Hogenhout**, saskia.hogenhout@bbsrc.ac.uk, The John Innes Centre, Norwich, United Kingdom

3:15 1059 Mechanisms of insect counter-defense regulation. **Keyan Zhu-Salzman**, ksalzman@tamu.edu, Texas A&M Univ., College Station, TX

3:40 Break

3:50 1060 Molecular basis for plant susceptibility and resistance. **Ming-Shun Chen**, mchen@ksu.edu, Kansas State Univ., Manhattan, KS

4:15 1061 It's about time: opposing rates of plant, insect, and microbial processes determine life or death in conifer - bark beetle interactions. **Kenneth F. Raffa**, raffa@entomology.wisc.edu, Univ. of Wisconsin - Madison, Madison, WI

4:40 1062 Ecological aspects of the production of herbivore-induced plant volatiles: effects of plant development stage and ecological context. **J. Daniel Hare**, daniel.hare@ucr.edu, Univ. of California, Riverside, Riverside, CA

5:05 1063 Caterpillar salivary proteins mediate plant defense responses. Gary W. Felton and **Michelle Peiffer**, mlk101@psu.edu, Pennsylvania State Univ., State College, PA

5:30 Concluding Remarks

MUVE Section Symposium: *Culicoides* Biting Midges (Diptera: Ceratopogonidae) Vectors Of Economically Important Arboviral Diseases Of Livestock: Vector Status, Biology And Control

Room A6, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Eva Veronesi¹ and Gert Venter², ¹Institute for Animal Health, Pirbright Laboratories, Pirbright, United Kingdom, ²Agricultural Research Council-Onderstepoort Veterinary Institute (ARC-OVI), Onderstepoort, South Africa

1:30 Welcoming Remarks

1:40 1064 The genus *Culicoides*, biting midge vectors of orbiviruses, in the Palaearctic region a comprehensive review in relation to their implications in arboviral transmission. **Bruno Mathieu**, bmathieu@unistra.fr, Universite' de Strasbourg, Strasbourg Cedex, France

1:55 1065 The entomological surveillance for bluetongue: the Italian experience. **Maria Goffredo**, m.goffredo@izs.it, Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise, Teramo, Italy

2:10 1066 Past, present and future of the monitoring of *Culicoides* spp. in Spain. **Miguel Angel Miranda Chueca**, ma.miranda@uib.es, UIB-IUNICS Univ. of the Balearic Islands, Valldemossa, Spain

2:25 1067 *Culicoides* (Diptera: Ceratopogonidae) and bluetongue virus in India. **Simon T Carpenter**, simon.carpenter@bbsrc.ac.uk, Institute for Animal Health, Pirbright - Woking, United Kingdom

2:40 1068 *Culicoides* (Diptera: Ceratopogonidae) surveillance in Australia. **Glenn Bellis**, Glenn.Bellis@aqis.gov.au, Australian Quarantine and Inspection Service, Canberra City, Australia

2:55 1069 Ecology and control of *Culicoides* (Diptera: Ceratopogonidae) immatures: groping our way around the black box. **Bradley A. Mullens**, mullens@mail.ucr.edu, Univ. of California, Riverside, Riverside, CA

3:10 Break

3:25 1070 Comparison of bait animals and artificial lures for assessing *Culicoides* activity. **Alec Gerry**, alec.gerry@ucr.edu, Univ. of California, Riverside, Riverside, CA

3:40 1071 Long distance dispersal of *Culicoides* biting midges (Diptera: Ceratopogonidae). **Dr Christopher Sanders**, christopher.sanders@bbsrc.ac.uk, Institute for Animal Health, Pirbright - Woking, United Kingdom

3:55 1072 Vector competence and evaluation of the trapping methods of livestock associated *Culicoides* (Diptera: Ceratopogonidae) midges in South Africa. **Gert Venter**, venterg@arc.agric.za, Agricultural Research Council-Onderstepoort Veterinary Institute (ARC-OVI), Onderstepoort, South Africa

4:10 1073 Variation in vectorial capacity for bluetongue in Alberta. **Tim Lysyk**, Tim.Lysyk@agr.gc.ca, Lethbridge Research Centre, Lethbridge, AB, Canada

4:25 1074 Comparison of Bluetongue virus dissemination among two *Culicoides* vectors: *C. imicola* and *C. sonorensis*. **Eva Veronesi**, eva.veronesi@bbsrc.ac.uk, Institute for Animal Health, Pirbright laboratories, Pirbright, United Kingdom

4:40 1075 Bluetongue virus transmission and the influence of *Culicoides* (Diptera: Ceratopogonidae) saliva proteins. **Karin E Darpel**, karin.darpel@bbsrc.ac.uk, Institute for Animal Health, Pirbright - Woking, United Kingdom

4:55 Concluding Remarks

SysEB Section Symposium: Illuminating the Phenome: the Future of Morphology in Entomology

Room D1, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Katja Seltmann, Matthew J. Yoder and Andrew R. Deans, North Carolina State Univ., Raleigh, NC

1:30 1076 Introduction. **Andrew R. Deans**, andy_deans@ncsu.edu, North Carolina State Univ., Raleigh, NC

1:35 1077 Changing the way we describe biodiversity. **Andrew R. Deans**, andy_deans@ncsu.edu, Katja Seltmann, Matthew Bertone, István Mikó and Matthew J. Yoder, North Carolina State Univ., Raleigh, NC

1:57 1078 Biodiversity and bioinformatics: toward a 21st century approach to comparative morphology. **Andrew Hamilton**, andrew.l.hamilton@asu.edu, Arizona State Univ., Tempe, AZ

2:19 1079 Application and leverage of emerging data standards in taxonomic software applications. **Norman Johnson**, johnson.2@osu.edu, The Ohio State Univ., Columbus, OH

2:41 1080 Developing a beetle anatomy ontology based on the HAO model - lessons for inter-ordinal ontology integration. **Nico Franz**, nico.franz@upr.edu¹, Aaron D. Smith² and Jiri Hulcr³, ¹Univ. of Puerto Rico, Mayagüez, PR, ²Arizona State Univ., Tempe, AZ, ³North Carolina State Univ., Raleigh, NC

3:03 1081 μ -CT, CLSM and 3D models - bringing morphology into the 21st century. **Benjamin Wipfler**, bwipfle@gwdg.de and Rolf Beutel, Institut für Spezielle Zoologie und Evolutionsbiologie, Jena, Germany

3:25 1082 Modern imaging techniques in the study of fossil spiders. **Paul A. Selden**, selden@ku.edu, Univ. of Kansas, Lawrence, KS

3:47 1083 Functional morphology in descriptive taxonomy: leave the muscle on! **István Mikó**, istvan.miko@gmail.com, Matthew J. Yoder, Katja Seltmann, Matthew Bertone and Andrew R. Deans, North Carolina State Univ., Raleigh, NC

4:09 1084 Antennal structures used in communication by egg parasitoids. **Roberto Romani**, rromani@unipg.it¹ and Nunzio Isidoro², ¹Perugia, Italy, ²Marche Polytechnic Univ., Ancona, Marche, Italy

4:31 1085 Evolutionary hypothesis testing in Heteroptera: morphology as a framework. **Christiane Weirauch**, Christiane.Weirauch@ucr.edu, Univ. of California, Riverside, Riverside, CA

4:53 1086 The aerodynamics of tiny insect flight with bristled wings. **Laura Miller**, lam9@unc.edu¹, Arvind Santhanakrishnan², Lauren Cooper¹ and Ty Hedrick¹, ¹Univ. of North Carolina, Chapel Hill, NC, ²Georgia Institute of Technology, Atlanta, GA

5:15 1087 Conclusion and discussion.

Symposium: Celebrating the Career of Pedro Barbosa: A Passion for Insects and Plants

Room A11, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Karen M. Kester¹, Eric W. Riddick² and Raul F. Medina³, ¹Virginia Commonwealth Univ., Richmond, VA, ²USDA - ARS, Stoneville, MS, ³Texas A&M Univ., College Station, TX

1:30 Introductory Remarks

1:35 1088 If you build It, they will come. **Deborah K. Letourneau**, dletour@ucsc.edu, Univ. of California, Santa Cruz, Santa Cruz, CA

1:55 1089 Species abundance distributions in caterpillar communities: 'physics envy' and ecological rules. **Eric Lind**, elind@umn.edu, Univ. of Minnesota, St. Paul, MN

2:10 1090 Toward a mechanistic understanding of interactions in phytophagous insect communities. **Ian Kaplan**, ikaplan@purdue.edu, Purdue Univ., West Lafayette, IN

2:30 1091 The push that started a domino effect of researchable topics for a weed biological control practitioner. **Stephen Hight**,

stephen.hight@ars.usda.gov, USDA - ARS, Tallahassee, FL

2:45 1092 The role of plants in the generation of insect diversity. **Raul F. Medina**, rfmedina@tamu.edu, Texas A&M Univ., College Station, TX

3:05 1093 Of wasps, worms and plants: from local adaptation to speciation. **Karen M. Kester**, kmkester@vcu.edu, Virginia Commonwealth Univ., Richmond, VA

3:25 Break

3:40 1094 Trade-offs between indirect defense and pollination in wild populations of lima bean. **Betty Benrey**, betty.benrey@unine.ch, Univ. of Neuchatel, Neuchatel, Switzerland

4:00 1095 Trophic interactions between lima bean, spider mites, and lady beetles. **Eric W. Riddick**, eric.riddick@ars.usda.gov, USDA - ARS, Stoneville, MS

4:20 1096 How plants get *Tiphia* wasps on the go. **Ana Legrand**, ana.legrand@uconn.edu, Univ. of Connecticut, Storrs, CT

4:35 1097 A Florida perspective on multi-trophic interactions between strawberries, spider mites and their predators. **Oscar Liburd**, oeliburd@ifas.ufl.edu, Univ. of Florida, Gainesville, FL

4:50 1098 A warm soup of plants, predators, parasitoids and whiteflies. **Alvin M. Simmons**, alvin.simmons@ars.usda.gov, USDA - ARS, Charleston, SC

5:05 1099 Global change and chemically mediated tritrophic interactions. **Lee A. Dyer**, nolaclimber@gmail.com, Univ. of Nevada, Reno, Reno, NV

5:25 Concluding Remarks

Symposium: Entomopathogenic Nematodes: Their Biology, Ecology, and Application. A Tribute to the Dynamic Career of Harry K. Kaya.

Room A12, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Lynn M. LeBeck¹, Ed Lewis², David Shapiro-Ilan³ and Michael G. Klein⁴, ¹Association of Natural Biocontrol Producers, Clovis, CA, ²Univ. of California, Davis, Davis, CA, ³USDA - ARS, Byron, GA, ⁴The Ohio State Univ., Wooster, OH

1:30 Welcoming Remarks

1:40 1100 Utilization of advanced molecular tools for exploration of stress tolerance mechanisms in entomopathogenic nematodes. **Itamar Glazer**, glazerit@agri.gov.il, Agricultural Research Organization, Bet Dagan, Israel

2:00 1101 Cooperative endurance and pathogenesis: a story of the nematode and bacteria partnership. **Parwinder Grewal**, grewal.4@osu.edu and Ruisheng An, The Ohio State Univ., Wooster, OH

2:20 1102 Top down islands in a bottom up foodweb sea: native EPNs and rootfeeders of lupine. **Don Strong**, drstrong@ucdavis.edu, University of California, Davis, Davis, CA

2:40 1103 Hunter and hunted: entomopathogenic nematodes in the soil food web. **Mary Barbercheck**, meb34@psu.edu, Pennsylvania State Univ., State College, PA

3:00 1104 Ecology and conservation of entomopathogenic nematodes in Florida citrus groves. **Larry W. Duncan**, lwduncan@ufl.edu, Univ. of Florida, Lake Alfred, FL

3:20 Break

3:35 1105 Putting the worms to work: application technology for entomopathogenic nematodes. **David Shapiro-Ilan**, David.Shapiro@ARS.USDA.GOV¹ and Edwin E. Lewis², ¹USDA - ARS, Byron, GA, ²Univ. of California, Davis, Davis, CA

3:55 1106 Entomopathogenic nematode application in tropical countries: utopia vs. reality. **Claudia Dolinski**, claudia.dolinski@censanet.com.br, Univ. Estadual do Norte Fluminense/CCTA/LEF, Campos dos Goytacazes, R.J., Brazil

4:15 1107 Practical use of entomopathogenic nematodes against greenhouse insect pests. **Ho Yul Choo**, hychoo@gnu.ac.kr, Southern Forest Research Center, Jinju, Gyeongnam, South Korea

4:35 1108 Commercialization of entomopathogenic nematodes: an industry perspective. **Ramon Georgis**, ramon.georgis@brandt.co, Brandt, Springfield, IL

4:55 Concluding Remarks

5:05 A reception in honor of Dr. Kaya will immediately follow the presentations

Symposium: Forest Entomology: Reflection on a Decade of Change

Room D5, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: John T. Nowak¹, Christopher J. Fettig² and David R. Coyle³, ¹USDA - Forest Service, Asheville, NC, ²USDA - Forest Service, Davis, CA, ³Univ. of Georgia, Athens, GA

1:30 Introductory Remarks

1:35 1109 Forest entomology, building on a strong tradition: identify, clarify, adapt. **Darrell W. Ross**, darrell.ross@oregonstate.edu, Oregon State Univ., Corvallis, OR

1:55 1110 Colleagues, collaborators and clients, ten years in forest health protection. **Steve Munson**, smunson@fs.fed.us, USDA - Forest Service, Ogden, UT

2:15 1111 Paradigms in eastern spruce budworm population ecology. **Deepa S. Pureswaran**, Deepa.Pureswaran@NRCan-RNCan.gc.ca, Natural Resources Canada, Canadian Forest Service, Quebec City, QC, Canada

2:35 1112 Interacting forces that constrain forest insect populations: why outbreaks are rare, and why some may be becoming more common. **Kenneth F. Raffa**, kfraffa@wisc.edu, Univ. of Wisconsin - Madison, Madison, WI

2:55 Break

3:10 1113 Inundative release of flea beetles as a "biological herbicide" on riparian leafy spurge. **Robert A. Progar**, rprogar@fs.fed.us, USDA - Forest Service, Corvallis, OR

3:30 1114 Early detection of non-native bark beetles in the United States: lessons learned & future directions. **Don Duerr**, dduerr@fs.fed.us, USDA - Forest Service, Atlanta, GA

3:50 1115 The critical role of web-based systems in disseminating forest pest management information: assessment of current and emerging uses. **Scott M. Salom**, salom@vt.edu, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

4:10 Break 2

4:25 1116 Innocuous native wood borer goes rogue: causes and consequences of a red oak borer outbreak in Arkansas. **Fred M. Stephen**, fstephen@uark.edu, Univ. of Arkansas, Fayetteville, AR

4:45 1117 Yet another exotic? Persistence of American chestnut in the wake of successive invasions. **Lynne Rieseke**, lrieske@email.uky.edu, Univ. of Kentucky, Lexington, KY

Symposium: Getting Wet and Making Friends: Aquatic Entomology's Role Outside Academia

Room A13, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Jennifer Henke¹, Robert F. Smith², M. Eric Benbow³, Christopher J. Patrick⁴ and Jen M. Lang³, ¹Univ. of California, Riverside, Riverside, CA, ²Univ. of Maryland, College Park, MD, ³Univ. of Dayton, Dayton, OH, ⁴Univ. of Notre Dame, Notre Dame, IN

1:30 Introductory Remarks

1:35 1118 Going against the flow: pursuing a career outside academia. **Holly Menninger**, hlm65@cornell.edu, Cornell Univ., Ithaca, NY

1:55 1119 Upending a water quality paradigm: using aquatic entomology to transform the management of freshwater resources. **Peter Ode**, pode@ospr.dfg.ca.gov, California Dept. of Fish and Game, Rancho Cordova, CA

2:15 1120 Monitoring ecosystem health in Great Lakes coastal wetlands: a basin-wide effort at the intersection of ecology and management. **Matthew J. Cooper**, mcooper3@nd.edu¹, Gary A. Lamberti¹ and Donald G. Uzarski², ¹Univ. of Notre Dame, Notre Dame, IN, ²Central Michigan Univ., Mount Pleasant, MI

2:35 1121 Identifying aquatic insects in Indochina: problems and solutions. **Robert W. Sites**, sitesr@missouri.edu, Univ. of Missouri - Columbia, Columbia, MO

2:55 1122 The role of aquatic insects in a historic water rights contested case hearing in Hawaii: reflections of a scientific expert witness. **M. Eric Benbow**, benbowme@notes.udayton.edu, Univ. of Dayton, Dayton, OH

3:15 Break

3:30 1123 Modeling Illinois stonefly (Plecoptera) distributions: implications for conservation and climate related distribution changes. **R. Edward DeWalt**, edewalt@inhs.uiuc.edu, Yong Cao, Tari Tweddle and Leon Hinz, Univ. of Illinois, Champaign, IL

3:50 1124 Aquatic insect systematists: liaisons for biodiversity. **Andrew Short**, aezshort@ku.edu, Univ. of Kansas, Lawrence, KS

4:10 1125 Genetics? DNA sequences? But I'm an aquatic entomologist! **Erik M. Pilgrim**, pilgrim.erik@epamail.epa.gov, US Environmental Protection Agency, Cincinnati, OH

4:30 1126 Who cares if aquatic insects are in agricultural ditches? Interactions and ecosystem services. **William O. Lamp**, lamp@umd.edu and Alan Leslie, Univ. of Maryland, College Park, MD

4:50 1127 *An Introduction to the Aquatic Insects of North America*: how one book has impacted the world beyond academia. **John R. Wallace**, John.Wallace@millersville.edu¹, Richard Merritt², Kenneth W. Cummins³ and Martin B. Berg⁴, ¹Millersville Univ., Millersville, PA, ²Michigan State Univ., East Lansing, MI, ³Humboldt State Univ., Arcata, CA, ⁴Loyola Univ., Chicago, IL

5:10 Discussion

Symposium: Invasion of Palm Ecosystems by Red Palm Weevil and its Management

Room D4, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: PSPV Vidyasagar, King Saud Univ., Riyadh, Saudi Arabia

1:30 Welcoming Remarks

1:35 1128 Role of date palm cultivation practices in the management of red palm weevil in Saudi Arabia. **Saleh A. Aldosari**, aldosari95@hotmail.com, King Saud Univ., Riyadh, Saudi Arabia

1:55 1129 Chemoecological approaches for red palm weevil management in India. **Kesavan Subaharan**, subaharan_70@yahoo.com, Central Plantation Crops Research Institute, (ICAR), Kasaragod, India

2:15 1130 The red palm weevil, *Rhynchophorus ferrugineus* a newly introduced pest in the Caribbean. **Moses T. K. Kairo**, mooses.kairo@famu.edu¹, Amy L. Roda², Teophilo Damian³, Facundo Franken³, Kenneth Heidweiller⁴ and Clinton Johans⁴, ¹Florida A&M Univ., Tallahassee, FL, ²USDA - APHIS, Miami, FL, ³Oranjestad, Aruba, ⁴Willemstad, Curacao

2:35 1131 Feasibility of a SIT program to control the red palm weevil in Italy. **Massimo Cristofaro**, massimo.cristofaro.cas@enea.it¹, Silvia Arnone¹, Sergio Musmeci¹, Raffaele Sasso¹, Alessandra La Marca², Silvia Belvedere³ and Alessio De Biase³, ¹ENEA CR Casaccia UTAGRI ECO, Rome, Italy, ²BBCA-onlus, Rome, Italy, ³Univ. of Rome, Rome, Italy

2:55 Intermission

3:10 1132 Studies on different date palm genotypes and their preference to red date palm weevil oviposition. **Hassan Y. Al-Ayied**, alayedh@kacst.edu.sa, King Abdulaziz City for Science & Tech. (KACST), Riyadh, Saudi Arabia

3:30 1133 Responses to the discovery of *Rhynchophorus* palm weevils in California. **Kevin Hoffman**, khoffman@cdfa.ca.gov, California Dept. of Food and Agriculture, Sacramento, CA

3:50 1134 Invasion of red palm weevil from South Asia to Middle East, Europe and beyond and its impact on palm cultivation. **Pspv Vidyasagar**, vidyasagar49@yahoo.com, King Saud Univ., Riyadh, Saudi Arabia

4:10 Concluding Remarks

Symposium: Nepal Overseas Entomologists Conference

Room A10, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Raju R. Pandey¹ and Megha N. Parajulee², ¹Univ. of California, Riverside, Riverside, CA, ²Texas AgriLife Research and Extension Center, Lubbock, TX

1:30 Introductory remarks - R. Pandey

1:35 1135 ACP suppression techniques for small farm situation in Nepal. **Raju R. Pandey**, pandeyr@ucr.edu, Univ. of California, Riverside, Riverside, CA

2:00 1136 Experiences in Nepal on plant protection and IPM on the melon fly. **Kenneth A. Sorensen**, kenneth_sorensen@ncsu.edu, North Carolina State Univ., Raleigh, NC

2:25 1137 Rice entomology research at Nanjing Agricultural University: collaborative research between China and Nepal. **Fa-Jun Chen**, fajunchen@njau.edu.cn¹ and Megha N. Parajulee², ¹Nanjing Agricultural Univ., Nanjing, China, ²Texas AgriLife Research and Extension Center, Lubbock, TX

2:55 Break

3:05 1138 Farmer's field school (FFS) based integrated pest management and agriculture extension system of Nepal. **Jhalendra P Rijal**, jrijal@vt.edu, Virginia Polytechnic Institute and State Univ., Winchester, VA

3:30 1139 *Helicoverpa* Management: problems and prospects in Nepal. **Roshan Manandhar**, roshanm@hawaii.edu¹ and Raju R. Pandey², ¹Honolulu, HI, ²Univ. of California, Riverside, Riverside, CA

3:55 1140 Immunological approach to characterize the intercrop movement behavior of arthropods: implications in ecological pest management. **Ram B. Shrestha**, RShrestha@ag.tamu.edu and Megha N. Parajulee, Texas AgriLife Research and Extension Center, Lubbock, TX

4:25 Session conclusion and business meeting - R. Pandey

Symposium: Overseas Chinese Entomologists Association

Room D8, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Jian Chen¹, Shiyu Li² and Haobo Jiang³, ¹USDA - ARS, Stoneville, MS, ²Natural Resources Canada, Canadian Forest Service, Ottawa, ON, Canada, ³Oklahoma State Univ., Stillwater, OK

1:30 1141 Welcome remarks. **Jian Chen**, USDA - ARS, Stoneville, MS

1:40 1142 Effect of global warming on the major pest insects in northern China. **Chunsen Ma**, ma_chunsen@cjac.org.cn, Institute of Environment and Sustainable Development in Agriculture (IEDA), Beijing, China

2:00 1143 Insecticide development in China. **Guo-Nian Zhu**, zhugn@zju.edu.cn, Zhejiang Univ., Hangzhou, Zhejiang, China

2:20 1144 Status of invasive pest insects in Guangdong Province, China. **Lihua Lu**, lihu@gdppri.com, Plant Protection Research Institute, Guangzhou, Guangdong, China

2:40 1145 Highlights of year 2010. **Shiyu Li**, sli@nrccan.gc.ca, Natural Resources Canada, Canadian Forest Service, Ottawa, ON, Canada

3:00 1146 OCEA student paper competition and awards. **Jian Chen**, USDA - ARS, Stoneville, MS

3:10 1147 OCEA 2011 financial report. **Haobo Jiang**, haobo.jiang@okstate.edu, Oklahoma State Univ., Stillwater, OK

Symposium: Progress Toward Insecticide Resistance Management for Thrips

Room D9, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: James E. Dripps¹, Stuart Reitz² and Anthony Weiss³, ¹Dow AgroSciences, Indianapolis, IN, ²USDA - ARS, Tallahassee, FL, ³Dow AgroSciences, Brandon, FL

1:30 Welcoming Remarks

1:35 1148 Emerging developments in thrips resistance management. **Stuart Reitz**, stuart.reitz@ars.usda.gov, USDA - ARS, Tallahassee, FL

2:00 1149 Thrips resistance management in California ornamentals. **James A. Bethke**, jabethke@udavis.edu¹, Bryan Vander Mey¹ and Michael D. Lees², ¹Univ. of California Cooperative Extension, San Diego County, San Marcos, CA, ²Dow AgroSciences, Granite Bay, CA

2:25 1150 Thrips IRM in Texas ornamentals. **Scott W. Ludwig**, sludwig@nichino.net, Nichino America, Inc., Arp, TX

2:50 1151 Development of the thrips management program for ornamental horticulture. **Lance Osborne**, lososborn@ufl.edu¹, Christi L. Palmer² and Scott W. Ludwig³, ¹Univ. of Florida, Apopka, FL, ²Rutgers, The State Univ. of New Jersey, North Brunswick, NJ, ³Nichino America, Inc., Arp, TX

3:15 Break

3:30 1152 Thrips IRM in onions. **Brian Nault**, ban6@cornell.edu, Cornell Univ. NYSAES, Geneva, NY

3:55 1153 Western flower thrips resistance management in Spain. **Pablo Bielza**, pablo.bielza@upct.es, Universidad Politécnica de Cartagena, Cartagena, Spain

4:20 1154 Spinosyn resistance management for thrips: learning from experience. **James E. Dripps**, jedripps@dow.com¹, Luis E. Gomez², James P. Mueller², Michael D. Lees³, Maria, M. Torne⁴ and Anthony Weiss⁵, ¹Dow AgroSciences LLC, Indianapolis, IN, ²Dow AgroSciences, Brentwood, CA, ³Dow AgroSciences, Granite Bay, CA, ⁴Dow AgroSciences LLC, Madrid, Spain, ⁵Dow AgroSciences, Brandon, FL

4:45 1155 Practical outcomes of thrips IRM in vegetables. **Joe Funderburk**, jef@ufl.edu, Univ. of Florida, Quincy, FL

5:10 Discussion

Symposium: Speak Out – Interaction and Education in a Brave New World of Social Media and Online Resources

Room A1, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Natalie A. Hummel¹, Blake R. Bextine² and Buyung Asmara Ratna Hadi³, ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²Univ. of Texas at Tyler, Tyler, TX, ³South Dakota State Univ., Brookings, SD

1:30 Introductory Remarks

1:35 1156 Pecan ipmPIPE Producer Network: accessing data input and delivering output in near real-time to meet extension and research needs. **Marvin K. Harris**, m-harris@tamu.edu¹, Alejandro A. Calixto¹, Andrew Birt¹ and Bill Ree², ¹Texas A&M Univ., College Station, TX, ²Texas A&M Univ., Bryan, TX

1:50 1157 Using eXtension (www.extension.org) to provide entomological education: experiences of the imported fire ant community of practice. **Bastiaan Drees**, b-drees@tamu.edu¹ and Kathy Flanders², ¹Texas A&M Univ., College Station, TX, ²Auburn Univ., Auburn, AL

2:05 1158 Fostering broad-based collaboration via shared tools for leveraging media, information, data, and maps: Bugwood.org. **G. Keith Douce**, kdouce@uga.edu and J. LaForest, Univ. of Georgia, Tifton, GA

2:20 1159 Development of an online introductory entomology course - a cooperative effort between Bugwood, NPDP and Land Grant University partners. **Michael L. Ferro**, spongymesophyll@gmail.com¹, Natalie A. Hummel², Mark R. Abney³, Matthew Bertone³, Hannah J. Burrack³, Christopher E. Carlton¹, G. Keith Douce⁴, Frank A. Hale⁵, Amanda C. Hodges⁶, Krisanna L. Machtmes², Alan L. Morgan², Karen E. Nix¹, Dennis R. Ring² and Stephanie Stocks⁶, ¹Louisiana State Univ., Baton Rouge, LA, ²Louisiana State Univ. AgCenter, Baton Rouge, LA, ³North Carolina State Univ., Raleigh, NC, ⁴Univ. of Georgia, Tifton, GA, ⁵Univ. of Tennessee, Nashville, TN, ⁶Univ. of Florida, Gainesville, FL

2:35 1160 Development of the iPest iPhone apps – challenges and success. **Rebecca W. Baldwin**, baldwinr@ufl.edu, Univ. of Florida, Gainesville, FL

2:50 1161 Tracking wheat pests using mobile technologies: a progress report for iWheat.org. **Wendy A. Johnson**, wendyann@ksu.edu and Brian P. McCornack, Kansas State Univ., Manhattan, KS

3:05 1162 Developing smartphone IPM guide applications: lessons learned. **Buyung Asmara Ratna Hadi**, buyung.hadi@sdstate.edu¹, Kelley J. Tilton¹, D. Deneke¹ and Connie Strunk², ¹South Dakota State Univ., Brookings, SD, ²South Dakota Cooperative Extension Service, Courthouse Parker, SD

3:20 Break

3:35 1163 Sharing the wonderful world of insects via the internet. **Brett R. Blaauw**, blaauwb1@msu.edu, Michigan State Univ., East Lansing, MI

3:50 1164 IPM-CORE: A synchronized technology transfer and evaluation system to engage low resource farmers. **Ayanava Majumdar**, azm0024@auburn.edu, Auburn Univ., Fairhope, AL

4:05 1165 Blogging and beyond: transforming extension in a single tweet. **Brian P. McCornack**, mccornac@ksu.edu, Kansas

State Univ., Manhattan, KS

4:20 1166 Social media in the classroom and lab. **Blake R. Bextine**, Blake_Bextine@uttyler.edu, Univ. of Texas at Tyler, Tyler, TX

4:35 1167 Fearing bugs on Facebook: how the internet and social media help and hurt the public face of entomology. **Eric R. Eaton**, bugeric24@yahoo.com, SpiderIdentification.org, Tucson, AZ

4:50 1168 Operation global insect media domination: the adventures of Bug Girl. **Bug G. Membracid**, membracid@gmail.com, SSP Enterprises, Ashford, CT

5:05 Concluding Remarks

Symposium: Student Debate: Identify.. Clarify.. Speak Out !! Land Grant Mission, Organic Agriculture & Host Plant Resistance Programs

Room C1-C4, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Cheri M. Abraham¹ and Lisa M. Overall², ¹Univ. of Georgia, Griffin, GA, ²Oklahoma State Univ., Stillwater, OK

1:30 Welcoming Remarks

1:36 1169 Introducing ESA Student Debates 2011. **C. Michael Smith**, cmsmith@ksu.edu, Kansas State Univ., Manhattan, KS

1:56 1170 Topic 1 Unbiased Introduction - The land grant mission of entomology departments remains economically relevant in the U.S. today. **Jennifer Gordon**, jgord13@gmail.com, Univ. of Kentucky, Lexington, KY

2:01 1171 Pro Team- The land grant mission of entomology departments remains economically relevant in the U.S. today. **Matan Shelomi**, mshelomi@ucdavis.edu, Kelly Hamby, Mohammad-Amir Aghaee, Andrew Merwin and Meredith Censer, Univ. of California, Davis, Davis, CA

2:08 Cross-examination by Con Team Topic 1

2:11 1172 Con Team- The land grant mission of entomology departments remains economically relevant in the U.S. today. **M. T. VanWeelden**, mvanweel@purdue.edu¹ and Bryce Blackman², ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²Louisiana State Univ., Baton Rouge, LA

2:18 Cross-examination by Pro Team Topic 1

2:21 1st Rebuttal by Con Team - Topic 1

2:23 1st Rebuttal by Pro Team - Topic 1

2:25 2nd Rebuttal by Con Team - Topic 1

2:27 2nd Rebuttal by Pro Team - Topic 1

2:29 Judges Questions - Topic 1

2:39 Break

2:49 1173 Topic 2 Unbiased Introduction - Organic agriculture will solve projected food and water limitations of the American society. **Lígia Cota Vieira**, lvieira@vt.edu, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

2:54 1174 Pro Team - Organic agriculture will solve projected food and water limitations of the American society. **Ace Lynn-Miller**, alynnmil@uark.edu, Jessica Hartshorn, Kevin Durden, Amber Tripodi and Bryan Petty, Univ. of Arkansas, Fayetteville, AR

3:01 Cross-examination by Con Team Topic 2

3:04 1175 Con Team - Organic agriculture will solve projected food and water limitations of the American society. **Stephanie Weldon**, srweldon@uga.edu, Gretchen Perkins, Ishakh Pulakkatu Thodi and Joe Ballenger, Univ. of Georgia, Athens, GA

3:11 Cross-examination by Pro Team Topic 2

3:14 1st Rebuttal by Con Team - Topic 2

3:16 1st Rebuttal by Pro Team - Topic 2

3:18 2nd Rebuttal by Con Team - Topic 2

3:20 2nd Rebuttal by Pro Team - Topic 2

3:22 Judges Questions - Topic 2

3:32 Break 2

3:42 1176 Topic 3 Unbiased Introduction - Traditional breeding programs for host plant resistance to insects are more productive and effective than transgenic programs. **Buyung Asmara Ratna Hadi**, buyung.hadi@sdstate.edu, South Dakota State Univ., Brookings, SD

3:47 1177 Pro Team - Traditional breeding programs for host plant resistance to insects are more productive and effective than transgenic programs. **Diane E. Silcox**, desilcox@ncsu.edu, Kelly Oten, Jessica Houle, David Bednar and Sriyanka Lahiri, North Carolina State Univ., Raleigh, NC

3:54 Cross-examination by Con Team Topic 3

3:57 1178 Con Team - Traditional breeding programs for host plant resistance to insects are more productive and effective than transgenic programs. **Garima Kakkar**, garimaiari@ufl.edu¹, Vivek Kumar¹, Teresia Nyoike², Margaret Paxson¹ and Paul Bardunias¹, ¹Univ. of Florida, Homestead, FL, ²Univ. of Florida, Gainesville, FL

4:04 Cross-examination by Pro Team Topic 3

4:07 1st Rebuttal by Con Team - Topic 3

4:09 1st Rebuttal by Pro Team - Topic 3

4:11 2nd Rebuttal by Con Team - Topic 3

4:13 2nd Rebuttal by Pro Team - Topic 3

4:15 Judges Questions - Topic 3

4:25 Concluding Remarks

Ten Minute Papers, P-IE Section, Horticultural Entomology II

Room A18, First Floor (Reno-Sparks Convention Center)

Organizers and Moderators: B. Rogers Leonard¹, Bonnie B. Pendleton², Clyde E. Sorenson³ and Clyde E. Sorenson³, ¹Louisiana

State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³North Carolina State Univ., Raleigh, NC

2:00 Introductory Remarks

2:05 1179 Arthropod responses to reduced tillage in sugar beets. **Kristin E. Daku**, daku4807@vandals.uidaho.edu and Erik J. Wenninger, Univ. of Idaho, Kimberly, ID

2:17 1180 Using landscape ecology to inform spotted wing drosophila management practices. **Amanda Ohrn**, ohrna@onid.orst.edu and Amy J. Dreves, Oregon State Univ., Corvallis, OR

2:29 1181 Impacts of timing of predation and landscape complexity on the suppression of horticultural pests in Australia. **Alejandro Carlos Costamagna**, costamag@msu.edu¹ and Nancy A. Schellhorn², ¹Univ. of Manitoba, Winnipeg, Manitoba, Canada, ²CSIRO, Dutton Park, QLD, Australia

2:41 1182 The oral box and its relationship to transmission of *Ca. Liberibacter* in the potato psyllid *Bactericera cockerelli* (Sulc) and Asian citrus psyllid *Diaphorina citri* (Kuwayama). **Joseph M. Cicero**, jmc6@ag.arizona.edu and Judith K. Brown, Univ. of Arizona, Tucson, AZ

2:53 1183 Management of the potato psyllid, *Bactericera cockerelli* Sulc (Hemiptera: Trioziidae), using a long-lasting insecticidal net as a crop border. **Donald C. Henne**, DCHenne@ag.tamu.edu¹, Georgina Bingham Zivanovic² and Joseph E. Munyaneza³, ¹Texas AgriLife Research and Extension Center, Weslaco, TX, ²Vestergaard Frandsen SA, Lausanne, Switzerland, ³USDA - ARS, Wapato, WA

3:05 1184 "Biorationality" in post-harvest systems – how edible plant oils protect southern peas from the cowpea weevil, *Callosobruchus maculatus* (Fabricius). **Louis EN. Jackai**, lejackai@ncat.edu, Beatrice N. Dingha, Henry O. Sintim, Li Jung Wang, Verro J. Mcleary and Heraldo Carvacho, North Carolina A&T State Univ., Greensboro, NC

3:17 1185 Colored shading nets reduce insect born viral diseases in vegetable crops. **David Ben-Yakir**, benyak@volcani.agri.gov.il¹, Yehezkel Antignus¹, Yossi Offir² and Yosepha Shahak¹, ¹Agricultural Research Organization, Bet Dagan, Israel, ²Polysack Plastics Industries, Nir Yitzhak, Israel

3:29 Break

3:44 1186 Population dynamics and comparative efficacy of insecticide placement for *Delia radicum* on coastal California broccoli. **Frank Sances**, frank@pacificaggroup.com¹, James P. Mueller² and Vishal Shinde¹, ¹Pacific Ag Research, San Luis Obispo, CA, ²Dow AgroSciences, Brentwood, CA

3:56 1187 Population dynamics of the beet leafhopper (Hemiptera: Cicadellidae) in the lower Columbia Basin. **Alexandra Murphy**, Alexandra.Murphy@oregonstate.edu and Silvia I. Rondon, Oregon State Univ., Hermiston, OR

4:08 1188 A potential banker plant for management of *Tetranychus urticae* (Acari: Tetranychidae) by augmenting *Feltiella acarisuga* (Diptera: Cecidomyiidae) in greenhouse vegetables. **Yingfang Xiao**, yfxiao@ufl.edu¹, Lance Osborne¹, Jianjun Chen¹, Cindy McKenzie², Katherine Houben¹ and Fabieli Irizarry¹, ¹Univ. of Florida, Apopka, FL, ²USDA - ARS, Fort Pierce, FL

4:20 1189 Utilization of microplot tents in determining insecticide efficacy of western flower thrips (*Frankliniella occidentalis*) on lettuce. **Vishal Shinde**, vishal@pacificaggroup.com¹, Frank Sances¹, James P. Mueller², Jarrod Leland³ and Amy J. Spence¹, ¹Pacific Ag

Research, San Luis Obispo, CA, ²Dow AgroSciences, Brentwood, CA, ³Novozymes Biologicals, Inc., Salem, VA, VA

4:32 1190 Effect of turfgrass fungicides as secondary control agents for Japanese beetle, *Popillia japonica* Newman, larvae in turf. **R. Chris Williamson**, rcwilliamson@wisc.edu, Austin Gorzlanzyk and P. J. Liesch, Univ. of Wisconsin - Madison, Madison, WI

4:44 Concluding Remarks

Ten-Minute Papers, P-IE Section, Biocontrol - Entomopathogens and Weed Management

Room A16, First Floor (Reno-Sparks Convention Center)

Organizers and Moderators: B. Rogers Leonard¹, Bonnie B. Pendleton² and John F. Tooker³, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³Pennsylvania State Univ., Univ. Park, PA

1:30 Introductory Remarks

1:35 1191 Entomopathogen biodiversity increases host mortality. **Randa Jabbour**, randa.jabbour@maine.edu¹, David W. Crowder², Elizabeth Aultman² and William Snyder², ¹Univ. of Maine, Orono, ME, ²Washington State Univ., Pullman, WA

1:47 1192 Control of rhinoceros beetle (*Oryctes rhinoceros*) with *Metarhizium* sp. in Malaysia. **Dave Moore**, d.moore@cabi.org, CABI, Egham, United Kingdom

1:59 1193 The effect of *Wolbachia* on lifetime reproductive success of parasitoid wasps. **Michal Segoli**, msegoli@ucdavis.edu¹, Jay A. Rosenheim¹ and Richard Stouthamer², ¹Univ. of California, Davis, Davis, CA, ²Univ. of California, Riverside, Riverside, CA

2:11 1194 Microbial control potential in strawberry pest management. **Surendra K. Dara**, skdara@ucdavis.edu, Univ. of California Cooperative Extension, San Luis Obispo, CA

2:23 1195 Identification of candidate entomopathogenic fungi for biorational control of katydid pests in PNG. **Genet M. Tulgetske**, genet.tulgetske@ucr.edu¹, Raymond St Leger² and Thomas A. Miller¹, ¹Univ. of California, Riverside, Riverside, CA, ²Univ. of Maryland, College Park, MD

2:35 1196 Biological control of the invasive weed Brazilian pepper with Gracillariidae species of leaf blotchers. **Gregory S. Wheeler**, greg.wheeler@ars.usda.gov¹, F. McKay² and Don Davis³, ¹USDA - ARS, Ft Lauderdale, FL, ²USDA - ARS, Buenos Aires, Argentina, ³National Museum of Natural History, Smithsonian, Washington, DC

2:47 Break

2:59 1197 Biological control of *Hygrophila*: results of native range surveys. **Abhishek Mukherjee**, abhi06@ufl.edu¹, Carol Ellison², James Cuda¹ and William A. Overholt³, ¹Univ. of Florida, Gainesville, FL, ²CABI, Egham, Surrey, United Kingdom, ³Univ. of Florida, Fort Pierce, FL

3:11 1198 Biological control of water hyacinth with *Megamelus scutellaris* (Hemiptera: Delphacidae) in Louisiana. **Anna Meszaros**, ameszaros@agcenter.lsu.edu¹, Seth J. Johnson¹, Lee J. Eisenberg¹, Michael J. Grodowitz² and Katherine A. Parys¹, ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²US Army Engineer Research and Development Center, Vicksburg, MS

3:23 1199 Greenhouse-based rearing and initial field releases of *Jaapiella ivannikovi* (Diptera: Cecidomyiidae), a classical biocontrol agent of the exotic Russian knapweed, *Acroptilon repens* (Asteraceae), in the western US. Jeffrey L. Littlefield¹ and **Richard Hansen**, richard.w.hansen@aphis.usda.gov², ¹Montana State Univ., Bozeman, MT, ²USDA - APHIS, Fort Collins, CO

3:35 1200 Relationships of host plant phylogeny, plant chemistry and host plant specificity of a prospective biological control agent of yellow starthistle. **Lincoln Smith**, link.smith@ars.usda.gov¹, John J. Beck¹ and John Gaskin², ¹USDA - ARS, Albany, CA, ²USDA - ARS, Sidney, MT

3:47 1201 Effect of temperature on the survival and development of *Metamasius callizona*, an invasive bromeliad-eating weevil in Florida. **Teresa M. Cooper**, tmcooper@ufl.edu and RD. Cave, Univ. of Florida, Gainesville, FL

3:59 1202 Biocontrol without borders: the unintended spread of the *Melaleuca* biological control agents. **Paul Pratt**, Paul.Pratt@ars.usda.gov, USDA - ARS, Fort Lauderdale, FL

4:11 Concluding Remarks

Ten-Minute Papers, P-IE Section, Insect Resistance and IRM

Room A5, First Floor (Reno-Sparks Convention Center)

Organizers and Moderators: B. Rogers Leonard¹, Bonnie B. Pendleton² and Gary D. Thompson³, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³Dow AgroSciences, Indianapolis, IN

1:30 Introductory Remarks

1:35 1203 Modeling the evolution of resistance to pyramided transgenic insecticidal maize in European and southwestern corn borer (Lepidoptera: Crambidae). **Zaiqi Pan**, Zaiqi.Pan@cgr.dupont.com¹, Analiza P. Alves², Susan Moser², Timothy M. Nowatzki², Bruce H. Stanley¹, J. Lindsey Flexner³, David Onstad⁴ and Richard L. Hellmich⁵, ¹DuPont Crop Genetics R&D, Wilmington, DE, ²Pioneer Hi-Bred International, Inc., Johnston, IA, ³Pioneer Hi-Bred International, Inc., Wilmington, DE, ⁴Univ. of Illinois, Urbana, IL, ⁵USDA - ARS, Ames, IA

1:47 1204 Monitoring field populations of *Diabrotica virgifera virgifera* for susceptibility to event DAS-59122-7 using the sub-lethal seedling assay. **Analiza P. Alves**, analiza.alves@pioneer.com¹, Stephen D. Thompson¹ and Bonnie Hong², ¹Pioneer Hi-Bred International, Inc, Johnston, IA, ²Pioneer Hi-Bred International, Inc., Ankeny, IA

1:59 1205 Results of insecticide bioassays on *Halyomorpha halys*. **Katherine Kamminga**, kamminka@vt.edu¹, TP. Kuhar¹, Hélène Doughty², Anna K. Wallingford¹, Adam Wimer², James Jenrette² and Christopher R. Philips¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Virginia Polytechnic Institute and State Univ., Painter, VA

2:11 1206 Selecting test species for early-tier risk assessment studies of insect-resistant transgenic crops. **Jörg Romeis**, joerg.romeis@art.admin.ch¹, Alan Raybould², Franz Bigler¹, Marco P. Candolfi³, Richard L. Hellmich⁴, Joseph E. Huesing⁵ and Anthony M. Shelton⁷, ¹Agroscope Reckenholz-Tänikon Research Station ART, Zürich, Switzerland, ²Syngenta, Bracknell, Berkshire, United Kingdom, ³Innovative Environmental Services (IES) Ltd, Witterswil,

Switzerland, ⁴USDA - ARS, Ames, IA, ⁵Purdue Univ., West Lafayette, IN, ⁷Cornell Univ., Geneva, NY

2:23 1207 Fitness cost of resistance to Bt cotton linked with increased gossypol content in pink bollworm larvae. Jennifer L. Williams¹, Christa Eilers-Kirk¹, Robert G. Orth², Aaron J. Gassmann³, Graham Head², Bruce Tabashnik¹ and **Yves Carrière**, ycarriere@ag.arizona.edu¹, ¹Univ. of Arizona, Tucson, AZ, ²Monsanto LLC, St. Louis, MO, ³Iowa State Univ., Ames, IA

2:35 1208 When do seed mixes make sense as a refuge strategy for Bt crops? **Matthew W. Carroll**, matthew.carroll@monsanto.com¹, Graham Head¹ and Michael A. Caprio², ¹Monsanto Company, St. Louis, MO, ²Mississippi State Univ., Mississippi State, MS

2:47 1209 Genetic variation in a laboratory colony of western corn rootworm selected for tolerance to Bt event DAS-59122-7. **Hong Chen**, mailch@gmail.com¹, Analiza P. Alves², Stephen D. Thompson² and Blair Siegfried¹, ¹Univ. of Nebraska - Lincoln, Lincoln, NE, ²Pioneer Hi-Bred International, Inc., Johnston, IA

2:59 Break

3:14 1210 Mechanism of Cry1F resistance in European corn borer *Ostrinia nubilalis*. **Mark Nelson**, mark.e.nelson@pioneer.com¹, Analiza P. Alves², John Mathis² and J. Lindsey Flexner¹, ¹Pioneer Hi-Bred International, Inc., Wilmington, DE, ²Pioneer Hi-Bred International, Inc., Johnston, IA

3:26 1211 Laboratory bioassays to estimate lethal and sublethal effects of newer insecticides on the green lacewing *Chrysoperla carnea*. **Kaushalya G. Amarasekare**, kaushalya.amarasekare@oregonstate.edu, Peter W. Shearer, Nicole Allum and Amanda A. Borel, Oregon State Univ., Hood River, OR

3:38 1212 Sustainable suppression of pesticide resistance using a “screened” refuge. **John Ringland**, ringland@math.buffalo.edu, Univ. at Buffalo, Buffalo, NY

3:50 1213 Adaptation by western corn rootworm to Bt corn: characterizing inheritance, fitness costs, and feeding preference. **Jennifer L. Petzold**, jpetzold@iastate.edu¹, Ximena Cibils Stewart², Stefan T. Jaronski³, B. Wade French⁴ and Aaron J. Gassmann¹, ¹Iowa State Univ., Ames, IA, ²Kansas State Univ., Manhattan, KS, ³USDA, Sidney, MT, ⁴USDA - ARS, Brookings, SD

4:02 1214 Examination of variability among the salivary proteomes of *Diuraphis noxia* biotypes. **Scott Nicholson**, Scott.Nicholson@ARS.USDA.GOV and Gary J. Puterka, USDA - ARS, Stillwater, OK

4:14 1215 The role of oviposition deterrence in insect resistance management: Onstat & Buschman versus Jongma & Gould. **Lawrent Buschman**, lbuschma@ksu.edu, Kansas State Univ., Manhattan, KS

4:26 Concluding Remarks

Ten-Minute Papers, P-IE Section, Population Monitoring and Modeling

Room A19, First Floor (Reno-Sparks Convention Center)

Organizers and Moderators: B. Rogers Leonard¹, Bonnie B. Pendleton² and Robert M. Nowierski³, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX,

³USDA - Cooperative State Research, Education, and Extension Service, Washington, DC

1:10 Introductory Remarks

1:15 1216 Acetate esters as pheromone components in congeneric sympatric parasitoids of the wheat stem sawfly. **Rex A. Davis**, rex.davis@msu.montana.edu and David K. Weaver, Montana State Univ., Bozeman, MT

1:27 1217 Development of the Pink Bollworm Information Consortium (PINC), a virtual research environment for entomological research. **Nathan J. Moses-Gonzales**, nmosesgo@me.com, Univ. of Arizona, Tucson, AZ

1:39 1218 Constructed model of cost/benefit analysis strategy for stem corn borer *Sesamia cretica*. **Hassan Flayiah Hassan**, Flayiah@yahoo.com, Baghdad, Iraq

1:51 1219 Capture and host strain of fall armyworm (*Spodoptera frugiperda*) in traps baited with different pheromone blends. **Robert Meagher**, Rob.Meagher@ars.usda.gov¹, Rodney Nagoshi¹ and J. Scott Armstrong², ¹USDA - ARS, Gainesville, FL, ²USDA - ARS, Weslaco, TX

2:03 1220 Utilizing Photoshop for quantitative data collection and analysis. **Charles P. Hesselein**, hessecp@aces.edu, Alabama Cooperative Extension System, Mobile, AL

2:15 1221 Development of pheromone-based trapping method for the sweetpotato weevil, *Cylas formicarius*. **Gadi V. P. Reddy**, reddy@uguam.uog.edu, Rosalie S. Kikuchi, LouAnna T. Manibusan, Gabriel J. McNassar and Jenelyn E. Remolona, Univ. of Guam, Mangilao, Guam

2:27 1222 Demographic matrix model for informing swallow-wort (*Vincetoxicum* spp.) biological control. **Lindsey R. Milbrath**, Lindsey.Milbrath@ars.usda.gov¹, Jeremy Biazzo¹ and Adam Davis², ¹USDA - ARS, Ithaca, NY, ²USDA - ARS, Urbana, IL

2:39 1223 What’s eating you? Molecular tracking of predation on stink bugs (Hemiptera: Pentatomidae) in cotton. **Kacie J. Johansen**, kacie.johansen@uky.edu¹, John R. Ruberson² and James D. Harwood¹, ¹Univ. of Kentucky, Lexington, KY, ²Univ. of Georgia, Tifton, GA

2:51 1224 A male-produced pheromone attracts both sexes of *Sirex noctilio*, the European woodwasp. **Miriam Cooperband**, Miriam.F.Cooperband@aphis.usda.gov¹, Ashley Hartness¹, Katalin Böröczky², Tappey H. Jones³, Kelley Zylstra⁴, Jim Tumlinson² and Vic Mastro¹, ¹USDA - APHIS, Buzzards Bay, MA, ²Pennsylvania State Univ., State College, PA, ³Virginia Military Institute, Lexington, VA, ⁴USDA - APHIS, North Syracuse, NY

3:03 Break

3:18 1225 Predicting the spatial distribution of golf course insects using ecological niche models. **Matthew J. Petersen**, mjp266@cornell.edu and Daniel C. Peck, Cornell Univ., Geneva, NY

3:30 1226 Competitive-trapping: a novel one-step method for estimating absolute density of insects. **James R. Miller**, miller20@msu.edu, Larry J. Gut and Peter McGhee, Michigan State Univ., E. Lansing, MI

3:42 1227 Comparative movement of codling moth (*Cydia pomonella*) in apple orchards under pheromone mating disruption, using hand-applied isomate dispensers, aerosol emitters, and no pheromone. **Peter S. McGhee**, mcghee@msu.edu, Larry J. Gut and James R. Miller, Michigan State Univ., E. Lansing, MI

3:54 1228 Instantaneous trapping efficiency of two pheromone traps for two fruit pests under field conditions. **Matthew Grieshop**, grieshop@msu.edu and Anne Nielsen, Michigan State Univ., East Lansing, MI

4:06 1229 Pests, potatoes, and paramos: community-based monitoring of the Guatemalan moth (*Tecia solanivora*) and the Andean potato weevil (*Premnotrypes vorax*) in the high plateaus of Venezuela. **Carlo R. Moreno**, crmoreno@ucsc.edu and Stephen R. Gliessman, Univ. of California, Santa Cruz, Santa Cruz, CA

4:18 1230 A probabilistic pathway model of forest insect dispersal via recreational firewood transport. **Frank H Koch**, fhkoch@fs.fed.us¹, Denys Yemshanov², Roger D. Magarey³ and William D. Smith¹, ¹USDA - Forest Service, Research Triangle Park, NC, ²Natural Resources Canada, Canadian Forest Service, Sault Ste. Marie, ON, Canada, ³North Carolina State Univ., Raleigh, NC

4:30 1231 Adaptations of multivariate tools reveal spatial gradients in Carabidae community dynamics across field-forest ecotones. **Timothy W. Leslie**, timothy.leslie@liu.edu¹, David J. Biddinger², Jason R. Rohr³ and Shelby Fleischer⁴, ¹Long Island Univ., Brooklyn, NY, ²Pennsylvania State Univ., Fruit Research & Extension Center, Biglerville, PA, ³Univ. of South Florida, Tampa, FL, ⁴Pennsylvania State Univ., Univ. Park, PA

4:42 1232 Using degree-days and plant phenology to predict pest activity. **Raymond Young**, ray0003@auburn.edu and David Held, Auburn Univ., Auburn, AL

4:54 1233 Trapping spotted wing drosophila (*Drosophila suzukii*) with apple cider vinegar and wine. **Todd B. Adams**, tadams@oda.state.or.us¹, Peter J. Landolt² and Helmuth W. Rogg¹, ¹Oregon Dept. of Agriculture, Salem, OR, ²USDA - ARS, Wapato, WA

5:06 Concluding Remarks

Ten-Minute Papers, PBT Session 3

Room D7, First Floor (Reno-Sparks Convention Center)

Organizers and Moderators: Jeffrey G. Scott¹, Subba R. Palli², Michael Strand³ and Yoonseong Park⁴, ¹Cornell Univ., Ithaca, NY, ²Univ. of Kentucky, Lexington, KY, ³Univ. of Georgia, Athens, GA, ⁴Kansas State Univ., Manhattan, KS

1:30 Introductory Remarks

1:35 1234 Reduction in the number of Formosan subterranean termite colonies contributing to alate swarms in the French Quarter, New Orleans. **Dawn Simms**, dsimms@lsu.edu and Claudia Husseneder, Louisiana State Univ. AgCenter, Baton Rouge, LA

1:47 1235 Molecular markers for colony collapse disorder in the honey bee (*Apis mellifera*). **Johnny Yu**, johnny5yu@gmail.com, Matthew E. Hudson and Gene E. Robinson, Univ. of Illinois at Urbana-Champaign, Urbana, IL

1:59 1236 What do varroa mites (*Varroa destructor*) really want? **Adrian Duehl**, adrian.duehl@ars.usda.gov, Ana Cabrera-Cordon and Peter EA. Teal, USDA - ARS, Gainesville, FL

2:11 1237 Honey bee signals that initiate vitellogenesis in the varroa mite, *Varroa destructor*. **Ana Cabrera-Cordon**, ana.cabrear-cordon@ars.usda.gov, Adrian J. Duehl and Peter E. A. Teal, USDA - ARS, Gainesville, FL

2:23 1238 Function of ilp2 in honey bee larvae. **Ying Wang**, ying.wang.6@asu.edu¹, Sergio Azevedo², Gro Amdam¹, Robert E. Page¹ and Klaus Hartfelder², ¹Arizona State Univ., Tempe, AZ, ²Universidade de São Paulo, Ribeirão Preto, São Paulo, Brazil

2:35 1239 Evidence for a specific red light photoreceptor in aphids. **Hussein Alkheldir**, halkhed@gwdg.de, Petr Karlovsky and Stefan Vidal, Georg-August-Universität, Goettingen, Lower Saxony, Germany

2:47 1240 Photoperiodic induction of summer and winter diapause regulated by opposite temperatures. **Fangsen Xue**, xue_fangsen@hotmail.com, Jiangxi Agricultural Univ., Nanchang, Jiangxi Province, China

2:59 1241 Decline of fat reserves in bodies of multicolored Asian lady beetles (*Harmonia axyridis*) during winter dormancy. **Mark E. Headings**, headings.1@osu.edu and Shah Rahnama, The Ohio State Univ., Wooster, OH

3:11 1242 3D magnetic resonance imaging visualization of Verson's glands during the 4th to 5th instar transition in *Manduca sexta*. **Ian J. Rowland**, irowland@wisc.edu, Que Lan and Walter G. Goodman, Univ. of Wisconsin - Madison, Madison, WI

3:23 Break

3:33 1243 Regulation of beetle reproduction by juvenile hormone and insulin. **Sony Shrestha**, sony.shrestha@uky.edu, Zhentao Sheng and Subba R. Palli, Univ. of Kentucky, Lexington, KY

3:45 1244 Proteomic identification of *Tribolium castaneum* male accessory gland proteins. **Jingjing Xu**, crystal863@yahoo.cn and Subba R. Palli, Univ. of Kentucky, Lexington, KY

3:57 1245 A protein-level glimpse at the rapidly shifting physiology of male and female mountain pine beetles attacking lodgepole pine hosts. **Dezene P. W. Huber**, huber@unbc.ca¹, Caitlin Pitt¹, Jeanne A. Robert¹, Tiffany R. Bonnett¹, Christopher I. Keeling² and Joerg Bohlmann², ¹Univ. of Northern British Columbia, Prince George, BC, Canada, ²Univ. of British Columbia, Vancouver, BC, Canada

4:09 1246 Changes in the fatty acid profile of the potato aphid, *Macrosiphum euphorbiae* in response to different host plants. **Zhaorigetu Chen**, jorigtoo@uark.edu and Fiona L. Goggin, Univ. of Arkansas, Fayetteville, AR

4:21 1247 Locomotor activity patterns are changed by gender, nutrition and age effects in the flesh fly, *Sarcophaga crassipalpis*. **Karl H. Joplin**, joplin@etsu.edu, Xinguo Lu, Veronica Fregoso, Mark Phillips, Anthony Lundy, Kelly Cross and Darrell Moore, East Tennessee State Univ., Johnson City, TN

4:33 1248 A silica gel-based method for extracting insect cuticular hydrocarbons. **Dong-Hwan Choe**, dchoe003@berkeley.edu, Santiago Ramirez and Neil Tsutsui, Univ. of California, Berkeley, Berkeley, CA

4:45 1249 Warming up and cooling down after a very large hot drink by blood-sucking bugs (*Rhodnius prolixus*). **Catherine Loudon**, cloudon@uci.edu and Timothy J. Bradley, Univ. of California, Irvine, Irvine, CA

4:57 Concluding Remarks

Ten-Minute Papers, SysEB: Ecology and Behavior

Room A20, First Floor
(Reno-Sparks Convention Center)

Organizers and Moderators: Jason R. Cryan¹, Andrew D. Austin² and Nico Franz³, ¹New York State Museum, Albany, NY, ²Univ. of Adelaide, Adelaide, Australia, ³Univ. of Puerto Rico - Mayaguez, Mayaguez, PR

1:15 Introductory Remarks

1:20 1250 Exploring insect-symbiote dynamics using a simple mathematical model. **John McCreddie**, jmccread@jaguar1.usouthal.edu and Audi Byrne, Univ. of South Alabama, Mobile, AL

1:32 1251 Origins and success of polygynous supercolonies of the neotropical termite *Nasutitermes corniger*. **Timothy K. O'Connor**, tim.oconnor8@gmail.com and Corrie S. Moreau, Field Museum of Natural History, Chicago, IL

1:44 1252 Simulation study of territory size distributions in subterranean termites. **Wonju Jeon**, wjeon@nims.re.kr and Sang-Hee Lee, National Institute for Mathematical Sciences, Daejeon, South Korea

1:56 1253 Motivation, memory and symbiont fidelity in the fungus-gardening ant *Trachymyrmex septentrionalis*. **Jon N. Seal**, trachymyrmex@gmail.com, Univ. of Texas at Austin, Austin, TX

2:08 1254 Genomic and dietary consequences of plant-ant mutualism. **Benjamin ER. Rubin**, brubin@fieldmuseum.org, Stefanie Kautz and Corrie S. Moreau, Field Museum of Natural History, Chicago, IL

2:20 1255 Social networks regulating caste development in ants and honey bees. **Timothy A. Linksvayer**, tlinks@sas.upenn.edu, Univ. of Pennsylvania, Philadelphia, PA

2:32 1256 Relevance of Allee effects in eusocial insects: experimental evidence in two ant species. **Gloria M. Luque**, gloria.luque@u-psud.fr¹ and Franck Courchamp², ¹Universite Paris Sud XI, Orsay, OH, France, ²CNRS - Univ. Paris Sud XI, Orsay, France

2:44 1257 Distance from buildings affects ant communities: native or invasive? **Merav Vonshak**, mvonshak@stanford.edu, Stanford Univ., Stanford, CA

2:56 Break

3:06 1258 Infection by *Wolbachia* correlates with social structure in the ant *Temnothorax longispinosus*. **Kenneth J. Howard**, howark2@sage.edu¹, Philip M. Johns² and Robert L. Jeanne³, ¹The Sage Colleges, Albany, NY, ²Bard College, Annandale-on-Hudson, NY, ³Univ. of Wisconsin - Madison, Madison, WI

3:18 1259 Gastral drumming in *Vespula germanica*: does a mechanical signal induce nestmates to forage? **Benjamin J. Taylor**, bjtaylor1@wisc.edu and Robert L. Jeanne, Univ. of Wisconsin - Madison, Madison, WI

3:30 1260 Foraging in the swarm-founding wasp *Polybia occidentalis*: the role of associative learning and cue-based recruitment. **Teresa I. Schueller**, tleon@wisc.edu, Benjamin J. Taylor, Erik V. Nordheim and Robert L. Jeanne, Univ. of Wisconsin - Madison, Madison, WI

3:42 1261 Clonality and gall cohabitation in *Tamaila coweni*. **Brian Taylor**, btaylor5@mail.csuchico.edu, California State Univ., Chico, Chico, CA

3:54 1262 Using Theme software to discover complex patterns of behavior displayed by embiopterans (Order Embioptera). **Janice Edgerly-Rooks**, jedgerlyrooks@scu.edu, David McMillan and Khaaliq Dejan, Santa Clara Univ., Santa Clara, CA

4:06 1263 Impairment affects mating costs and behavior in male medflies (Diptera: Tephritidae). **James F. Harwood**, jfharwood@ucdavis.edu¹, Roger I. Vargas² and James R. Carey¹, ¹Univ. of California, Davis, Davis, CA, ²USDA - ARS, Hilo, HI

4:18 1264 Nutritional constraints in the evolution of learning: preliminary data from butterflies. **Emilie C. Snell-Rood**, emilies@umn.edu, Univ. of Minnesota, St. Paul, MN

4:30 1265 Complex relationships between host use and diversification across three trophic levels in two Neotropical forests. **Joseph S. Wilson**, joeswilson@gmail.com, Matthew L. Forister and Lee A. Dyer, Univ. of Nevada, Reno, Reno, NV

4:42 Concluding Remarks

Ten-Minute Papers, SysEB: Systematics II

Room A3, First Floor
(Reno-Sparks Convention Center)

Organizers and Moderators: Jason R. Cryan¹, Daniel Z. Rubinoff² and Clare H. Scott³, ¹New York State Museum, Albany, NY, ²Univ. of Hawaii at Manoa, Honolulu, HI, ³Univ. of Florida, Gainesville, FL

1:30 Introductory Remarks

1:35 1266 Molecular phylogeny of *Lygus* bug inferred from cytochrome oxidase gene sequences. **Ram B. Shrestha**, RShrestha@ag.tamu.edu and Megha N. Parajulee, Texas AgriLife Research and Extension Center, Lubbock, TX

1:47 1267 A sticky tree without resin: phylogenetic insights into the evolution of sticky trap predation in assassin bugs (Hemiptera: Reduviidae). **Guanyang Zhang**, gzhan001@ucr.edu and Christiane Weirauch, Univ. of California, Riverside, Riverside, CA

1:59 1268 Assassin bloodtrails: tracing aspects of the evolution of Reduviidae (Heteroptera). **Wei Song Hwang**, weisong.hwang@email.ucr.edu and Christiane Weirauch, Univ. of California, Riverside, Riverside, CA

2:11 1269 Molecular phylogeny of the plant bugs (Heteroptera: Miridae) and the evolutionary feeding habits. **Sunghoon Jung**, john23@snu.ac.kr¹ and Seunghwan Lee², ¹Laboratory of Insect Biosystematics, Seoul, Seoul, South Korea, ²Research Institute for Agricultural and Life Sciences, Seoul, South Korea

2:23 1270 Evidence for co-diversification of planthoppers (Hemiptera: Fulgoroidea) with four distinct endosymbiotic bacteria representing diverse bacterial phyla (Bacteroidetes, Betaproteobacteria, and Gammaproteobacteria). **Julie M. Urban**, jurban@mail.nysed.gov and Jason R. Cryan, New York State Museum, Albany, NY

2:35 1271 Surveying the microbiome using 454 pyrosequencing: diversity and putative functions of bacteria in ants. **Stefanie Kautz**, skautz@fieldmuseum.org, Benjamin ER. Rubin and Corrie S. Moreau, Field Museum of Natural History, Chicago, IL

2:47 1272 The evolution of ants and their endosymbiotic bacteria from the Australian wet tropics. **Corrie S. Moreau**, cmoreau@fieldmuseum.org, Field Museum of Natural History, Chicago, IL

2:59 1273 Molecular phylogenetics of the deer flies (Diptera: Tabanidae). **Mauren Turcatel**, mturcat@ncsu.edu, Keith M. Bayless and Brian M. Wiegmann, North Carolina State Univ., Raleigh, NC

3:11 1274 Origin and diversification of the true horse flies (Diptera: Tabanidae: Tabanini). **Keith M. Bayless**, kmbayles@ncsu.edu¹, Shelah Morita² and Brian M. Wiegmann¹, ¹North Carolina State Univ., Raleigh, NC, ²Smithsonian Institution, Washington, DC

3:23 1275 Systematics and biogeography of the ecologically diverse genus, *Scaptomyza*. **Richard Lapoint**, rlapoint11@gmail.com¹, Patrick M. O'Grady² and Noah Whiteman¹, ¹Univ. of Arizona, Tucson, AZ, ²Univ. of California, Berkeley, Berkeley, CA

3:35 Break

3:45 1276 Phylogeny and historical biogeography of Apioiceridae and Mydidae inferred from morphological characters of imagines (Diptera: Asiloidea). **Torsten Dikow**, torsten@tdvia.de, Field Museum of Natural History, Chicago, IL

3:57 1277 Sexual selection drives the evolution of dance flies - what phylogeny can tell us. **Steven Paul Turner**, spturner@ncsu.edu, North Carolina State Univ., Raleigh, NC

4:09 1278 Phylogeny and social evolution of the bee-tribe Halictini (Hymenoptera: Halictidae). **Jason Gibbs**, jason.gibbs@cornell.edu¹, Seán Brady², Kojun Kanda³, Margarita López-Uribe¹, Sophie Cardinal¹ and Bryan N. Danforth¹, ¹Cornell Univ., Ithaca, NY, ²Smithsonian Institution, Washington, DC, ³Oregon State Univ., Corvallis, OR

4:21 1279 Phylogeny and classification of the orchid bee genus *Euglossa* Latreille (Hymenoptera: Apidae) based on morphology. **Ismael A. Hinojosa-Díaz**, hinojosadiaz@gmail.com, Univ. of Kansas, Lawrence, KS

4:33 1280 A combined phylogenetic analysis of Chalcidoidea (Hymenoptera). John Heraty and **Astrid Cruaud**, cruaud@supagro.inra.fr, Univ. of California, Riverside, Riverside, CA

4:45 1281 Phylogeny of parasitoid wasps of the superfamily Platygastridae (Hymenoptera): an expanded analysis, evolution of host relationships, and higher classification. Andrew D. Austin¹, Norman F. Johnson², Alejandro A. Valerio², **Andrew Polaszek**, ap@nhm.ac.uk³, Hans Klompen², Elijah Talamas² and Charuwat Taekul², ¹Univ. of Adelaide, Adelaide, Australia, ²The Ohio State Univ., Columbus, OH, ³Natural History Museum, London, United Kingdom

4:57 1282 Rise and success of the acrobat ants: phylogeny of *Crematogaster* unravels the evolution of a cosmopolitan genus (Hymenoptera: Formicidae). **Bonnie B. Blaimer**, bbblaimer@ucdavis.edu, Univ. of California, Davis, Davis, CA

5:09 1283 Phylogeny and taxonomy of the New World Exosternini (Coleoptera: Histeridae). **Michael S. Caterino**, mcaterino@sbnature2.org and Alexey K. Tishechkin, Santa Barbara Museum of Natural History, Santa Barbara, CA

5:21 1284 Dissecting the species groups of *Paussus* (Carabidae: Paussinae): unraveling morphological convergence associated with myrmecophilous life histories. **James A. Robertson**, erotyld@gmail.com and Wendy Moore, Univ. of Arizona, Tucson, AZ

5:33 1285 Combining morphology and molecular data in reconstructing the phylogeny of katydids (Orthoptera: Tettigoniidae). **Piotr Naskrecki**, p.naskrecki@conservation.org, Harvard Univ., Museum of Comparative Zoology, Cambridge, MA

5:45 Concluding Remarks

Tuesday, November 15, 2011, Evening

The Cockroach Monologues: II

**Room A8, First Floor
(Reno-Sparks Convention Center)**

7:00 Introductory Remarks

7:50 The Cockroach Monologues: II. **Shelly Clark Geiser**, shellyclark1725@hotmail.com, Omaha, NE

8:00 Concluding Remarks

Symposium: Heteropterists Conference

**Room D6, First Floor
(Reno-Sparks Convention Center)**

Moderators and Organizers: C. Scott Bundy¹ and Thomas J. Henry², ¹New Mexico State Univ., Las Cruces, NM, ²USDA - ARS, Washington, DC

7:30 Introductory Remarks

7:35 1286 Surviving ants and parasitoids - an assassin's tough life (Hemiptera: Reduviidae: Harpactorinae). **Guanyang Zhang**, gzhan001@ucr.edu, Univ. of California, Riverside, Riverside, CA

7:55 1287 Naucorids in Africa: an overview of endemic genera. **Robert W. Sites**, sitesr@missouri.edu, Univ. of Missouri - Columbia, Columbia, MO

8:15 1288 Determining Heteropteran host plants: real or incidental? **AG. Wheeler**, awhlr@clemson.edu, Clemson Univ., Clemson, SC

8:35 Break

8:50 1289 The Pentatomidae (Hemiptera: Heteroptera) of New Caledonia. **David A. Rider**, David.Rider@ndsu.edu, North Dakota State Univ., Fargo, ND

9:10 1290 An unrecognized, but common new species of big-eyed bug, *Geocoris pseudopallens*, of the southwestern United States. **Merrill Sweet**, New Mexico State Univ., Las Cruces, NM

9:30 1291 *Parasinea*, a new genus of assassin bug, with description of a new species from Colombia (Hemiptera: Heteroptera: Reduviidae). **J. E. McPherson**, mcpherson@zoology.siu.edu¹ and Imtiaz Ahmad², ¹Southern Illinois Univ., Carbondale, IL, ²Univ. of Karachi, Karachi, Pakistan

9:50 Discussion

10:50 Concluding Remarks

Symposium: IOBC Workshop Symposium - Biodiversity and Biological Control

Room D4, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Jonathan Lundgren¹ and Kris Wyckuys²,
¹USDA - ARS, Brookings, SD, ²Consultative Group on International Agricultural Research (CGIAR)

6:00 IOBC Business Meeting

6:30 Graduate Student Awards

6:45 Graduate Student Presentation

7:00 Introductory Remarks

7:05 **1292** Biodiversity and biological control from an omnivore's point of view. **Jonathan G. Lundgren**, jonathan.lundgren@ars.usda.gov, USDA - ARS, Brookings, SD

7:25 **1293** Testing an interference competition hypothesis for native lady beetle decline at habitat and landscape scales: does competitor biodiversity matter? **Mary M. Gardiner**, gardiner.29@osu.edu and Chelsea Smith, The Ohio State Univ., OARDC, Wooster, OH

7:45 **1294** The costs and benefits of predator biodiversity for biological control. **Deborah L. Finke**, FinkeD@Missouri.edu, Univ. of Missouri - Columbia, Columbia, MO

8:05 **1295** Role of biodiversity and biological control in smallholder-based agriculture in the developing world. **Kris Wyckhuys**, k.wyckhuys@cgiar.org, International Center for Tropical Agriculture CIAT, Palmira, Valle del Cauca, Colombia

8:25 IOBC Mixer

Symposium: Korean Young Entomologists (KYE)

Room D9, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Doo-Hyung Lee¹ and Dong-Hwan Choe², ¹Cornell Univ., Ithaca, NY, ²Univ. of California, Berkeley, Berkeley, CA

5:30 Welcoming Remarks

5:40 **1296** Developing a novel detection technique for the common bed bug, *Cimex lectularius*. **Dong-Hwan Choe**, dchoe003@berkeley.edu, Univ. of California, Berkeley, Berkeley, CA

6:00 **1297** Non-consumptive predator effects on the mating and oviposition behaviors by whiteflies. **Doo-Hyung Lee**, dl343@cornell.edu, Cornell Univ., Ithaca, NY

6:20 **1298** Current trends in physiological and molecular entomology in Korea. **Yonggyun Kim**, hosanna@andong.ac.kr, Andong National Univ., Andong, Gyeongbuk, South Korea

6:40 **1299** Current trends in physiological and molecular entomology in the United States. **Yoonseong Park**, ypark@ksu.edu, Kansas State Univ., Manhattan, KS

7:00 Break

7:15 **1300** Current trends in insect ecology and pest management in Korea. **Joon-Ho Lee**, jh7lee@snu.ac.kr, Seoul National Univ., Seoul, South Korea

7:35 **1301** Current trends in insect ecology and pest management in the United States. **Yong-Lak Park**, yong-lak.park@mail.wvu.edu, West Virginia Univ., Morgantown, WV

7:55 Introductory remarks to student competition

8:00 **1302** Molecular phylogeny of Bombycoidea in Korea using COI, 16S rRNA and EF-1 α genes. **Min Jee Kim**, minjeekim@jnu.ac.kr, Chonnam National Univ., Gwangju, South Korea

8:20 **1303** Response of *Tenebrio molitor* (Coleoptera: Tenebrionidae) adults to potato. **Sunghoon Baek**, shbaek007@hotmail.com, West Virginia Univ., Morgantown, WV

8:40 **1304** A study on biodiversity of Lepidoptera of Mt. Jiri National Park, Korea. **Jeong Seop An**, naneon@nate.com, Mokpo National Univ., Mu-an-gun, Jeonnam, South Korea

9:00 Panel Discussion

9:20 Concluding Remarks

Symposium: The Coleopterists Society

Room D5, First Floor (Reno-Sparks Convention Center)

Moderator and Organizer: Michael Caterino, Santa Barbara Museum of Natural History, Santa Barbara, CA

7:30 Introductory Remarks

7:35 **1304.1** Molecular and morphological surprises: unexpected clades and hidden diversity in the ground beetle genus *Bembidion*. **David Maddison**, david.maddison@science.oregonstate.edu, Oregon State Univ., Corvallis, OR

8:35 Concluding Remarks

8:40 Business Meeting

Poster Display Presentations, MUVE I

Exhibit Hall 3, First Floor (Reno-Sparks Convention Center)

D0198 What's working in the Wild West: school IPM. **Guinevere Z. Jones**, gjones9@uwyo.edu¹, Bryan K. Stevens², Dawn Gouge², Tim Stock³, Carrie Foss⁴ and Tessa Grasswitz⁵, ¹Univ. of Wyoming, Laramie, WY, ²Univ. of Arizona, Maricopa, AZ, ³Oregon State Univ., Corvallis, OR, ⁴Washington State Univ., Puyallup, WA, ⁵New Mexico State Univ., Los Lunas, NM

D0199 Demonstrations and partnering increase school IPM adoption in Tennessee. **Karen M. Vail**, kvail@utk.edu, Pat A. Barnwell, Jennifer G. Chandler and Joseph C. Maples, Univ. of Tennessee, Knoxville, TN

D0200 Strategies to increase Ohio schools' compliance to follow the 'Pesticide Use in Schools' mandate and school IPM standards. **Barbara Bloetscher**, bloetscher.1@osu.edu, Jennifer Andon, David

J. Shetlar and Joanne Kick-Raack, The Ohio State Univ., Columbus, OH

D0201 Vector-borne diseases and parasites in Kwajalein Atoll. **Will K. Reeves**, will.reeves@wpafb.af.mil, US Air Force School of Aerospace Medicine (USAFSAM/PHR), Wright-Patterson AFB, OH

D0202 The relationship between hematophagy and the morphology of female tarsal claws in neotropical black flies (Simuliidae: Diptera: Insecta). **Cecilia Coscaron-Arias**, cecilia.coscaron@usuhs.mil¹, Sixto Coscaron², Ana Carolina dos Santos Valente², Leonardo H. Gil-Azevedo², Helene Santos Barbosa², Marilza Maia-Herzog² and John Gireco¹, ¹Uniformed Services Univ. of the Health Sciences, Bethesda, MD, ²Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Rio de Janeiro, Rio de Janeiro, Brazil

D0203 Rat-tailed maggots (Diptera: Syrphidae) as carrion feeders: mythology and reality. **Natalie K. Lindgren**, murphyshu@gmail.com, Alan D. Archambeault, Brent C. Rahlwes and Sibyl R. Bucheli, Sam Houston State Univ., Huntsville, TX

D0204 Hydrocarbon profiles of four forensic important fly species collected from human corpses in Texas, USA. **Marina V. Braga**, mvbraga@ioc.fiocruz.br¹, Natalie K. Lindgren², Nana Matsumoto³, Cesar L.P.A.C. da Silva⁴, Margareth M. de C. Queiroz¹ and Gary J. Blomquist⁵, ¹Leishmaniasis Vectors Laboratory, Rio de Janeiro, Brazil, ²Sam Houston State Univ., Huntsville, TX, ³Univ. of Nevada, Reno, NV, ⁴Fundacao Oswaldo Cruz, Rio de Janeiro, Brazil, ⁵Univ. of Nevada, Reno, NV

D0205 The ecology of mosquitoes (Diptera: Culicidae) in zoos. **H. C. Tuten**, htuten@clemson.edu, Peter H. Adler and William C. Bridges, Clemson Univ., Clemson, SC

D0206 Seasonal activity of La Crosse encephalitis vectors across different habitats. LeAnna Bender¹, **Eric J. Dotseth**, Eric.J.Dotseth@wv.gov² and Dave Geske³, ¹Galesville-Etrick-Trempealeau High School, Galesville, WI, ²West Virginia Dept. of Health & Human Resources, Charleston, WV, ³La Crosse County Health Dept. Vector Control, La Crosse, WI

D0207 Estimating mosquito movement in a mixed rice growing region of northern California. **Mary A. Sorensen**, marys@placermosquito.org, Placer Mosquito & Vector Control District, Roseville, CA

D0208 Effect of wind speed on host location by *Culex quinquefasciatus* in a wind tunnel. **Emerson S. Lacey**, eslacey@ucr.edu and Ring T. Cardé, Univ. of California, Riverside, Riverside, CA

D0209 The effects of microcosm water volume and larval density on *Aedes aegypti* development time and adult mass. **Jessica R. Jacobs**, jessica.jacobs916@my.lincolnu.edu, A. R. Bamber, M. L. Mire and J. R. Benne, Lincoln Univ., Jefferson City, MO

D0210 Morphological features of the spermathecae of virgin and inseminated *Aedes aegypti* females. Tales Vicari Pascini and **Gustavo Ferreira Martins**, gmartins@ufv.br, Universidade Federal de Viçosa, Viçosa, Minas Gerais, Brazil

D0211 Dynamic expression pattern of defensin genes in the gut of *Anopheles gambiae*. Matthew Steritz, **Destiny Sanchez**, destiny@nmsu.edu, Phanidhar Kukutla and Jiannong Xu, New Mexico State Univ., Las Cruces, NM

D0212 Activating Transcription Factor 2 transcriptionally regulates *Defensin 4* and *Dual Oxidase* in *Anopheles gambiae*. **Monica Baldauf**, mbaldauf@nmsu.edu, Phanidhar Kukutla, Matthew Steritz and Jiannong Xu, New Mexico State Univ., Las Cruces, NM

D0213 Vectorial capacity and reproductive performance of the malaria vector *Anopheles gambiae* in sugar-poor and sugar-rich environments. **Chris Stone**, stone.361@osu.edu, Bryan Jackson and Woodbridge Foster, The Ohio State Univ., Columbus, OH

D0214 Assessment of bed bug (*Cimex lectularius* L.) distribution, control strategies and challenges facing pest management professionals in South Carolina. **Margie Lehnert**, melehne@clemson.edu, Eric P. Benson and Patricia A. Zungoli, Clemson Univ., Clemson, SC

D0215 Identification of bed bug (*Cimex lectularius*) surface deposited residues as a means for development of bed bug detection devices. **Mike P. Tolley**, mtolley@dow.com¹, David McCaskill¹, Kerm Yau¹, Jeff Gilbert¹, Mark Fisher², Joe J. DeMark³ and Paul Borth¹, ¹Dow AgroSciences, Indianapolis, IN, ²Dow AgroSciences, Lantana, TX, ³Dow AgroSciences, Fayetteville, AR

D0216 A survey for *Trypanosoma cruzi* in triatomine bugs (Hemiptera: Reduviidae) in southeastern New Mexico. **Derik Bendixsen**, derikb@nmsu.edu, Jane Breen Pierce, Patricia E Monk and Devin Bendixsen, New Mexico State Univ., Artesia, NM

D0217 Triatomine (Hemiptera: Reduviidae) species from three different ecological areas in northern and western Mexico. **José A. Martínez-Ibarra**, aibarra@cusur.udg.mx¹, Karina Balsimelli de la Peña², Manuela Acosta-Legarda², Irene Leal Solís² and Ángel Licón Trillo², ¹Universidad de Guadalajara, Ciudad Guzmán, Jalisco, Mexico, ²Universidad Autónoma de Chihuahua, Chihuahua, Chihuahua, Mexico

Poster Display Presentations, P-IE I

D0218 The sugarcane beetle *Euethola humilis* (Coleoptera: Scarabaeidae) discovers North Carolina turfgrass. **Amy C. Lockwood Murillo**, aclockwo@ncsu.edu and Rick Brandenburg, North Carolina State Univ., Raleigh, NC

D0219 Potential arthropod pests of grasses grown for bioenergy production. **G. David Buntin**, gbuntin@griffin.uga.edu¹ and R. Dewey Lee², ¹Univ. of Georgia, Griffin, GA, ²Univ. of Georgia, Tifton, GA

D0220 A survey of invertebrate populations in potential biomass crops for Ontario. **Robert W. Nicol**, rnicol@ridgetownc.uoguelph.ca and Jocelyn L. Smith, Univ. of Guelph Ridgetown Campus, Ridgetown, ON, Canada

D0221 Modeling the biomass production of the biofuel crop *Miscanthus x giganteus*, to understand and communicate benefits and risks in cultivation. **Godshen R. Palliparambil**, godshen@uark.edu¹, Robert N. Wiedenmann¹ and S. Raghu², ¹Univ. of Arkansas, Fayetteville, AR, ²CSIRO EcoSystem Sciences, Brisbane, Queensland, Australia, Australia

D0222 IPM practices of multi-use landscapes with conventional, bioenergy, and non-crop hosts. **T. E. Reagan**, treagan@agcenter.lsu.edu¹, J. M. Beuzelin¹, M. T. VanWeelden¹, B. E. Wilson¹ and L. T. Wilson², ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²Texas A&M AgriLife Research & Extension Center at Beaumont, Beaumont, TX

D0223 Peroxidase expression in tetraploid switchgrasses with varying levels of resistance to the greenbug, *Schizaphis graminum*. **Gautam Sarath**, Gautam.Sarath@ars.usda.gov¹, Haichuan Wang², Tiffany Heng-Moss², Jeff Bradshaw³, Mark Lagrimini², Paul Twigg⁴, Guoqing Lu⁵ and Lisa Baird⁶, ¹USDA - ARS, Lincoln, NE, ²Univ. of Nebraska - Lincoln, Lincoln, NE, ³Univ. of Nebraska - Lincoln,

Scottsbluff, NE, ⁴Univ. of Nebraska - Kearney, Kearney, NE, ⁵Univ. of Nebraska - Omaha, Omaha, NE, ⁶Univ. of San Diego, San Diego, CA

D0224 Screening for novel sources of resistance in soybean germplasm against soybean aphid. **Raman Bansal**, bansal.67@osu.edu¹, M. A. Rouf Mian² and Andrew Michel¹, ¹The Ohio State Univ., OARDC, Wooster, OH, ²USDA - ARS, Wooster, OH

D0225 Plant resistance to stink bugs (*Nezara viridula* and *Piezodorus guildinii*) increases with exposure to solar UV-B radiation in soybean and correlates with isoflavonoid content. **Jorge A. Zavala**, zavala@agro.uba.ar, Carlos A. Mazza, Francisco M. Dillon, Hugo D. Chludil and Carlos L. Ballare, Universidad de Buenos Aires, Buenos Aires, Argentina

D0226 Effects of temperature and host plant on development, fecundity and longevity of the stinkbug, *Bagrada hilaris*. **Thomas M. Perring**, thomas.perring@ucr.edu, Darcy A. Reed, Crystal May and Timothy Lewis, Univ. of California, Riverside, CA

D0227 Tarnished plant bug (*Lygus lineolaris*) levels in different cotton varieties. **Glenn Studebaker**, gstudebaker@uaex.edu, FM. Bourland and S. Lancaster, Univ. of Arkansas, Keiser, AR

D0228 Distribution of *Bemisia tabaci* (Hemiptera: Aleyrodidae) biotypes in North America – investigating the Q invasion. **Cindy L. McKenzie**, cindy.mckenzie@ars.usda.gov¹, James A. Bethke², Frank J. Byrne², Joe Chamberlin³, Timothy J. Dennehy⁴, Daniel Gilrein⁵, Scott W. Ludwig⁶, Ron D. Oetting⁷, Lance S. Osborne⁸, Lin Schmale⁹ and Robert G. Shatters¹, ¹USDA - ARS, Fort Pierce, FL, ²Univ. of California, Riverside, CA, ³Valent USA Corp, Snellville, GA, ⁴Monsanto Company, St. Louis, MO, ⁵Long Island Horticultural Research and Extension Center, Riverhead, NY, ⁶Texas A&M Univ., Overton, TX, ⁷Univ. of Georgia, Griffin, GA, ⁸Univ. of Florida, Apopka, FL, ⁹Society of American Florists, Alexandria, VA

D0229 New pest-resistant sweetpotato cultivars from USDA, ARS. **D. Michael Jackson**, Michael.Jackson@ars.usda.gov, Judy A. Thies and Howard F. Harrison, USDA - ARS, Charleston, SC

D0230 Novel host plants require novel behaviors: canal-cutting in a euphorb-feeding caterpillar, *Theroa zethus* (Notodontidae). **David E. Dussourd**, dussourd@uca.edu, Univ. of Central Arkansas, Conway, AR

D0231 Caterpillar feeding responses to sorghum leaves with altered lignin. Patrick F. Dowd¹, Jeffery F. Pedersen² and **Scott E. Sattler**, scott.sattler@ars.usda.gov², ¹USDA - ARS, Peoria, IL, ²USDA - ARS, Lincoln, NE

D0232 Correlation of resistance to maize weevil, *Sitophilus zeamais*, and starch arrangement in sectioned kernels of sorghum. Michael W. Pendleton¹, **Bonnie B. Pendleton**, bpendleton@wtamu.edu², E. Ann Ellis¹, Gary C. Peterson³, Fernando M. Chitio⁴ and Suhas Vyavhare², ¹Texas A&M Univ., College Station, TX, ²West Texas A&M Univ., Canyon, TX, ³Texas A&M Univ., Lubbock, TX, ⁴IIAM, Nampula, Mozambique

D0233 Effects of flour conditioning on cannibalism of *Tribolium castaneum* eggs and pupae. **Paul W. Flinn**, paul.flinn@ars.usda.gov and James F. Campbell, USDA - ARS, Manhattan, KS

D0234 Evaluation of reference genes for expression studies in ash (*Fraxinus* spp.). **Loren Rivera-Vega**, lriveravega@gmail.com¹, Praveen Mamidala¹, Jennifer Koch², Mary E. Mason¹ and Omprakash Mittapalli¹, ¹The Ohio State Univ., OARDC, Wooster, OH, ²USDA - Forest Service, Delaware, OH

D0235 Minor genes can delay evolution of major resistance. **David Onstad**, onstad@illinois.edu¹ and Lindsey Flexner², ¹Univ. of Illinois

at Urbana-Champaign, Urbana, IL, ²DuPont Crop Genetics R&D, Wilmington, DE

D0236 Gossypol free cotton effects on selected insects in New Mexico. **Drew Garnett**, garnett022@gmail.com¹, Jane Breen Pierce¹, Patricia E Monk¹, Scott Bundy² and John Idowu², ¹New Mexico State Univ., Artesia, NM, ²New Mexico State Univ., Las Cruces, NM

D0237 Field longevity of a fluorescent protein marker in an engineered strain of the pink bollworm, *Pectinophora gossypiella* (Saunders). **Michelle Walters**, michelle.l.walters@aphis.usda.gov¹, Neil Morrison², John Claus¹, Guolei Tang¹, Caroline Phillips², Robin Young², Richard Zink³ and Luke Alphey⁴, ¹USDA - APHIS, Phoenix, AZ, ²Univ. of Oxford, Oxitec LTD, Oxford, United Kingdom, ³USDA - APHIS, Fort Collins, CO, ⁴Oxitec Ltd, Oxford, United Kingdom

D0238 Neighborhood size of European corn borer, and net dispersal distance from the natal field. **Thomas W. Sappington**, Tom.Sappington@ars.usda.gov¹, Kyung Seok Kim² and Brad S. Coates¹, ¹USDA - ARS, Ames, IA, ²Seoul National Univ., Seoul, South Korea

D0239 Optimum yield of sex pheromone in European corn borer (*Ostrinia nubilalis*) during scotophase. **Charles Mason**, mason@udel.edu and Murray Andrew Johnston, Univ. of Delaware, Newark, DE

D0240 Sugars and free amino acids in weed and crop host plants of the Mexican rice borer, *Eoreuma loftini* (Dyar). **Allan Showler**, allan.showler@ars.usda.gov and Patrick J. Moran, USDA - ARS, Weslaco, TX

D0241 Juvenile coloration as a predictor of health in *Nezara viridula* (Heteroptera: Pentatomidae). **M. Guadalupe Rojas**, guadalupe.rojas@ars.usda.gov, Juan A. Morales-Ramos and Walker A. Jones, USDA - ARS, Stoneville, MS

D0242 Salivary proteins of *Lygus hesperus* (Hemiptera: Miridae). **William Rodney Cooper**, rodney.cooper@ars.usda.gov¹, Scott Nicholson² and Gary J. Puterka², ¹USDA - ARS, Shafter, CA, ²USDA - ARS, Stillwater, OK

D0243 Baseline susceptibility of western corn rootworm, *Diabrotica virgifera virgifera* to dsRNA samples. **Mao Chen**, mao.chen@monsanto.com, Monsanto Company, Chesterfield, MO

D0244 Projected range of cereal leaf beetle with climate change scenarios for the Pacific Northwest. **Sanford D. Eigenbrode**, sanforde@uidaho.edu, Univ. of Idaho, Moscow, ID

D0245 Linking a synoptic climatology model with population dynamics data to explain atmospheric transport of the gypsy moth (*Lymantria dispar*). **Katrina L. Frank**, klfrank@live.com¹, Patrick C. Tobin², Harold W. Thistle² and Laurence S. Kalkstein³, ¹Univ. of Miami, Enterprize, AL, ²USDA - Forest Service, Morgantown, WV, ³Univ. of Miami, Coral Gables, FL

D0246 Climate, reproductive asynchrony, and mate-finding limitation in gypsy moth (*Lymantria dispar*). Kyle J. Haynes¹, Ksenia S. Onufrieva² and **Patrick C. Tobin**, pc.tobin@gmail.com³, ¹Univ. of Virginia, Blandy, VA, ²Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ³USDA - Forest Service, Morgantown, WV

D0247 Low-temperature tolerance of light brown apple moth (LBAM), *Epiphyas postvittana*. **Sian Mary O'Sullivan Bailey**, Sian.M.Bailey@aphis.usda.gov¹, Scott W. Myers¹ and Michelle Walters², ¹USDA - APHIS, Buzzards Bay, MA, ²USDA - APHIS, Phoenix, AZ

D0248 Candidate pheromone receptors from the light brown apple moth (*Epiphyas postvittana*). **Jacob A. Corcoran**, jacob.corcoran@plantandfood.co.nz¹, Doreen S. Begum², Melissa D. Jordan² and Richard D. Newcomb², ¹Univ. of Auckland, Auckland, New Zealand, ²The New Zealand Institute for Plant & Food Research Limited, Auckland, New Zealand

D0249 Addressing the problem of codling moth (*Cydia pomonella*) migration from unmanaged trees to commercial orchards. Rachel Elkins¹, **Richard Hilton**, richard.hilton@oregonstate.edu², Philip VanBuskirk² and Kris Lynn-Patterson³, ¹Univ. of California, Lakeport, CA, ²Oregon State Univ., Central Point, OR, ³Univ. of California, Parlier, CA

D0250 Management of dogwood borer, *Synanthedon scitula* (Harris), with mating disruption and attract and remove strategies in Michigan apple. **David L. Epstein**, david.epstein@ars.usda.gov¹, Matt Grieshop² and Larry J. Gut³, ¹USDA, Washington, DC, ²Washington State Univ., Wenatchee, WA, ³Michigan State Univ., E. Lansing, MI

D0251 Effect of population density on the effective attraction radius of pheromone traps for the navel orangeworm (*Amyelois transitella*). **Charles S. Burks**, charles.burks@ars.usda.gov¹ and Bradley S. Higbee², ¹USDA - ARS, Parlier, CA, ²Paramount Farming Co, Bakersfield, CA

D0252 Use of pheromone traps for monitoring fir bark beetles (*Pityokteines* spp.). **Milan Pernek**, milanp@sumins.hr, Croatian Forest Research Institute, Jastrebarsko, Croatia

D0253 Variety of trapping methods for buprestid, cerambycid, and scolytid woodborers in middle Tennessee. **Joshua P. Basham**, joshua_basham@yahoo.com, Jason Oliver, Nadeer Youssef and Alicia M. Bray, Tennessee State Univ., McMinnville, TN

D0254 Longhorned beetle (Coleoptera: Cerambycidae) diversity in a fragmented temperate forest landscape. **Daniel M. Pavuk**, dmpavuk@bgnet.bgsu.edu, Bowling Green State Univ., Bowling Green, OH

D0255 Life history and trapping methods for the walnut twig beetle (*Pityophthorus juglandis*) in California. **Paul L. Dallara**, pdallara99@yahoo.com¹, Mary Louise Flint¹ and Steven J. Seybold², ¹Univ. of California, Davis, Davis, CA, ²USDA - Forest Service, Davis, CA

D0256 Walnut twig beetle (*Pityophthorus juglandis*) in east Tennessee: testing trap types, height, and baits. **Alicia M. Bray**, abray@tnstate.edu¹, Nadeer Youssef¹, William Klingeman², Paris Lambdin², Katheryne Nix² and Jason Oliver¹, ¹Tennessee State Univ., McMinnville, TN, ²Univ. of Tennessee, Knoxville, Knoxville, TN

D0257 The walnut twig beetle, *Pityophthorus juglandis* (Coleoptera: Scolytidae): distribution, genetic diversity, and impact on native walnuts of the southwestern U.S. **Andrew D. Graves**, adgraves@fs.fed.us¹, Tom W. Coleman², Paul F. Rugman-Jones³, Richard Stouthamer³ and Steven J. Seybold⁴, ¹USDA - Forest Service, Albuquerque, NM, ²USDA - Forest Service, San Bernardino, CA, ³Univ. of California, Riverside, Riverside, CA, ⁴USDA - Forest Service, Davis, CA

D0258 Effect of freezing temperatures on survival of the walnut twig beetle (*Pityophthorus juglandis*). **E. K. Peachey**, emi.pea@hotmail.com, N. Tisserat and Whitney Cranshaw, Colorado State Univ., Fort Collins, CO

D0259 Incidence and distribution of walnut twig beetle, *Pityophthorus juglandis*, and thousand cankers disease on black walnut in Tennessee. **Jerome F. Grant**, jgrant@utk.edu¹, Mark T.

Windham¹, Gregory J. Wiggins¹, Walker Gray Haun² and Paris L. Lambdin¹, ¹Univ. of Tennessee, Knoxville, TN, ²Tennessee Dept. of Agriculture, Nashville, TN

D0260 Influence of trap design, color and placement on emerald ash borer captures in a low density area. **Jacob N. Bournay**, bournayj@msu.edu¹, Deborah G. McCullough¹ and Therese M. Poland², ¹Michigan State Univ., East Lansing, MI, ²USDA - Forest Service, East Lansing, MI

D0261 Improving the EAB cost calculator to address variable rates of mortality and changing management scenarios. **Clifford Sadof**, csadof@purdue.edu and Brent P. De Lara, Purdue Univ., West Lafayette, IN

D0262 Development of emerald ash borer in novel ash hosts. **Andrea Anulewicz**, andreaa@msu.edu and Deborah G. McCullough, Michigan State Univ., East Lansing, MI

D0263 Impact of mating period on fecundity, fertility and adult longevity of the red palm weevil, *Rhynchophorus ferrugineus* (Olivier) (Coleoptera: Curculionidae). **Polana S.P.V. Vidyasagar**, vidyasagar49@yahoo.com, Saleh A. Aldosari, M. M. Abdel-Azim and Rashid Mumtaz, King Saud Univ., Riyadh, Saudi Arabia

D0264 Comparison of arthropod community diversity on the ecologically sympatric, invasive Chinese tallow tree (*Sapium sebifera*) and native swamp red maple (*Acer rubrum*). **Melissa H. Scubelek**, Melissa.Scubelek@selu.edu and Janice L. Bossart, Southeastern Louisiana Univ., Hammond, LA

D0265 Bimodal seasonal emergence and the delayed onset of reproductive development in the lesser chestnut weevil, *Curculio sayi*. **William Terrell Stamps**, stampst@missouri.edu, Ian W. Keeseey and Bruce A. Barrett, Univ. of Missouri, Columbia, MO

D0266 Operation adelgification: evaluating a rain down technique to artificially infest seedlings with the hemlock woolly adelgid. **Robert M. Jetton**, robert_jetton@ncsu.edu¹, Albert E. Mayfield² and Fred P. Hain¹, ¹North Carolina State Univ., Raleigh, NC, ²USDA - Forest Service, Asheville, NC

D0267 Seasonal abundance and hybridization of native and introduced *Laricobius* species on eastern hemlock in the southern Appalachians. **Gregory Wiggins**, wiggybug@utk.edu¹, Jerome Grant¹, Abdul Hakeem¹, Rusty Rhea², Albert E. Mayfield² and Nathan Havill³, ¹Univ. of Tennessee, Knoxville, TN, ²USDA - Forest Service, Asheville, NC, ³USDA - Forest Service, Hamden, CT

D0268 Drought stress on two *Tamarisk* populations (WY and MT) in containment: effects on *Diorhabda carinulata* survival and adult size. **Kevin J. Delaney**, kevin.delaney@ars.usda.gov, Mary Mayer and Dave Kazmer, USDA - ARS, Sidney, MT

D0269 Establishing a baseline for native pests and detection of new invasive species. **Douglas W. Johnson**, doug.johnson@uky.edu¹, Ric Bessin², Jerry Brown³, Clint Hardy⁴, Carla M. Harper⁵, Tim Hendrick⁶, Darian Irvan⁷, Cam Kenimer⁸, Tom L. Miller⁹, Andy Mills¹⁰, Traci Missun¹¹, Diane Perkins¹², Myron Evans¹³, David Fourqurean¹⁴, Darrell Jones¹⁵ and Philip Konopka¹⁶, ¹Univ. of Kentucky, Princeton, KY, ²Univ. of Kentucky, Lexington, KY, ³Univ. of Kentucky, Burlington, KY, ⁴Univ. of Kentucky, Owensboro, KY, ⁵Univ. of Kentucky, Bardwell, KY, ⁶Univ. of Kentucky, Carrollton, KY, ⁷Univ. of Kentucky, Clinton, KY, ⁸Univ. of Kentucky, Hickman, KY, ⁹Univ. of Kentucky, La Center, KY, ¹⁰Univ. of Kentucky, Brandenburg, KY, ¹¹Univ. of Kentucky, La Grange, KY, ¹²Univ. of Kentucky, Hawesville, KY, ¹³Univ. of Kentucky, Grayson, KY, ¹⁴Univ. of Kentucky, Cadiz, KY, ¹⁵Univ. of Kentucky, Smithland, KY, ¹⁶Univ. of Kentucky, Vanceburg, KY

D0270 Exotic pest detection in Washington State: how alert citizens and insatiable naturalists enhance pest surveys. **Chris Looney**, clooney@agr.wa.gov¹, Eric LaGasa¹ and Todd Murray², ¹Washington State Dept. of Agriculture, Olympia, WA, ²Washington State Univ., Stevenson, WA

D0271 Feasibility of a fruit fly-free zone on the island of Puerto Rico: multiple lines of evidence. **David Jenkins**, David.Jenkins@ars.usda.gov¹, Skip Van Bloem², Stephanie Whitmire³, Kristin Peterson¹ and Ricardo Goenaga¹, ¹USDA - ARS, Mayaguez, PR, ²Institute of Tropical Forestry, San Juan, PR, ³Univ. of Puerto Rico, Mayagüez, PR

D0272 Development of improved monitoring strategies for spotted wing *Drosophila*. **Joseph Kleiber**, kleibrj@gmail.com¹, Jana C. Lee² and Denny Bruck², ¹Oregon State Univ., Corvallis, OR, ²USDA - ARS, Corvallis, OR

D0273 Status of the spotted wing *Drosophila* (*Drosophila suzukii*) in the southeastern US. **Hannah J. Burrack**, hannah_burrack@ncsu.edu, North Carolina State Univ., Raleigh, NC

D0274 Management of spotted wing *Drosophila* in West Coast small fruits. **Denny Bruck**, Denny.Bruck@ars.usda.gov, USDA - ARS, Corvallis, OR

D0275 Biology of spotted wing *Drosophila*. **Jana C. Lee**, jana.lee@ars.usda.gov, USDA - ARS, Corvallis, OR

D0276 Rapid development of cold phytosanitary treatments for the invasive tephritid fruit flies *Bactrocera invadens* and *B. zonata* by comparison with known species. **Guy J. Hallman**, Guy.Hallman@ars.usda.gov¹, Scott W. Myers², Mokhtar F. El-Wakkad³ and Michael K. Hennessey⁴, ¹USDA - ARS, Weslaco, TX, ²USDA - APHIS, Buzzards Bay, MA, ³Plant Protection Research Institute, Dokki, Giza, Egypt, ⁴USDA, Raleigh, NC

D0277 Seasonal occurrence of *Diaprepes abbreviatus* (L.) in southern California. Loretta M. Bates¹, **James A. Bethke**, jabethke@ucdavis.edu¹, Gary S. Bender¹, Joseph C. Morse² and Kris E. Godfrey³, ¹Univ. of California Cooperative Extension, San Marcos, CA, ²Univ. of California, Riverside, Riverside, CA, ³California Dept. of Food and Agriculture, Sacramento, CA

D0278 Invasive species, *Diuraphis noxia*, successfully hybridizes with native U.S. *Diuraphis* species resulting in hypervirulent offspring. **Gary J. Puterka**, gary.puterka@ars.usda.gov and Kevin A. Shufan, USDA - ARS, Stillwater, OK

D0279 *Calophya latiforceps*, a new species of jumping plant lice (Hemiptera: Calophyidae) associated with *Schinus terebinthifolius* (Anacardiaceae) in Brazil. Daniel Burckhardt¹, **James P. Cuda**, jcuda@ufl.edu², Veronica Manrique³, Rodrigo Diaz³, William A. Overholt⁴, Dean A. Williams⁵, L. R. Christ⁶ and Marcelo D. Vitorino⁷, ¹Naturhistorisches Museum, CH-4001 Basel, Switzerland, ²Univ. of Florida, Gainesville, FL, ³Univ. of Florida, Fort Pierce, FL, ⁴Indian River Research and Education Center, Fort Pierce, FL, ⁵Texas Christian Univ., Ft Worth, TX, ⁶The Ohio State Univ., Columbus, OH, ⁷Univ. of Blumenau, Blumenau, Santa Catarina, Brazil

D0280 Feeding and ovipositional preferences in *Thaumastocoris peregrinus* (Hemiptera: Thaumastocoridae). Marina V. Santadino, Maria B. Riquelme and **Carlos Coviella**, carlosecoviella@yahoo.com, Universidad Nacional de Lujan, Lujan, Buenos Aires, Argentina

D0281 Temecula Valley management program for the glassy-winged sharpshooter, *Homalodisca vitripennis*. **Gevin Kenney**, gevin.kenney@ucr.edu, Lorena Bastê-Peña, Heavenly Clegg and Nick Toscano, Univ. of California, Riverside, Riverside, CA

D0282 Detection of *Xylella fastidiosa* in the insect vector, the

glassy-winged sharpshooter, *Homalodisca vitripennis*. Mohammad Arif, Ping Ouyang, Francisco Ochoa-Corona, **Astri Wayadande**, a.wayadande@okstate.edu and Jacqueline Fletcher, Oklahoma State Univ., Stillwater, OK

D0283 Viral sequence polymorphism as a surrogate data set to assess attributes of an invasive insect population. **Drake Stenger**, drake.stenger@ars.usda.gov¹, Mark Sisterson¹ and Roy French², ¹USDA, Parlier, CA, ²USDA, Lincoln, NE

D0284 Changes in the spatial distribution of onion thrips (*Thrips tabaci* Lindeman) and iris yellow spot virus over time in onion fields. **Cynthia L. Hsu**, clh33@cornell.edu¹, Christy Hoeting², Marc Fuchs¹, Anthony M. Shelton¹ and Brian A. Nault¹, ¹Cornell Univ., Geneva, NY, ²Orleans County CCE, Albion, NY

D0285 Spatial distribution and genetic diversity of potyviruses occurring in naturalized cucurbits in Puerto Rico. I. J. Lopez-Quintero, Linda Wessel-Beaver and **Jose Carlos V. Rodrigues**, jose_carlos@mac.com, Univ. of Puerto Rico, San Juan, PR

D0286 Post-inoculation whitefly transmission of squash vein yellowing virus. **Felix Cervantes**, fcervantes@ufl.edu and Susan Webb, Univ. of Florida, Gainesville, FL

D0287 Wintering and control of sweetpotato whitefly (*B. tabaci*) in Korea. **Il-kweon Yeon**, yik1@korea.kr¹, Han-woo Do¹, Don-woo Choi¹, Jong-do Cheung¹, Ji-eun Lee¹, Dong-whan Suh¹ and Young-hyun Ryu², ¹Seongju Fruit Vegetable Experiment Station, Seongju, Gyeongbuk, South Korea, ²Natural Product Research Institute, Euisung, Gyeongbuk, South Korea

D0288 Identification of potato virus Y aphid vector from trap samples. **Yvan Pelletier**, pelletieri@agr.gc.ca¹, Xianzhou Nie¹ and Robert Footitt², ¹Agriculture and Agri-Food Canada, Fredericton, New Brunswick, Canada, ²Agriculture and Agri-Food Canada, Ottawa, Ontario, Canada

D0289 Studies on the virus-vector relationship of potato virus Y in single and multiple strain mixtures and their aphid vector *Myzus persicae* (Sulzer) on potato. **Shaonpius Mondal**, mond4500@vandals.uidaho.edu¹, Erik J. Wenninger², Pamela J. S. Hutchinson³, Deepak Shrestha¹ and Jonathan Whitworth⁴, ¹Univ. of Idaho, Moscow, ID, ²Univ. of Idaho, Kimberly, ID, ³Univ. of Idaho, Aberdeen, ID, ⁴USDA - ARS, Aberdeen, ID

D0290 Interactions among potato varieties, virus strains, and inoculation timing and methods in the potato virus Y / *Myzus persicae* (Sulzer) system. **Deepak Shrestha**, shre5086@vandals.uidaho.edu¹, Erik J. Wenninger², Pamela J. S. Hutchinson³, Shaonpius Mondal¹ and Jonathan Whitworth⁴, ¹Univ. of Idaho, Moscow, ID, ²Univ. of Idaho, Kimberly, ID, ³Univ. of Idaho, Aberdeen, ID, ⁴USDA - ARS, Aberdeen, ID

D0291 Impact of the psyllid *Bactericera cockerelli* on the potato seed quality. **Joseph E. Munyaneza**, joseph.munyaneza@ars.usda.gov¹, Jeremy L. Buchman² and Donald C. Henne³, ¹USDA - ARS, Wapato, WA, ²Washington State Univ., Pullman, WA, ³Texas AgriLife Research and Extension Center, Weslaco, TX

D0292 Inter- and intra-plant distribution of potato psyllids (*Bactericera cockerelli*) in commercial fields. **Sean M. Prager**, sean.prager@agnet.tamu.edu, Shawn Seibert, Xavier Martini and Christian Nansen, Texas A&M Univ. - Texas AgriLIFE Extension, Lubbock, TX

D0293 Potato psyllid-*Candidatus* Liberibacter solanacearum interaction: you win some, you lose some. **Punya Nachappa**, pnachappa@neo.tamu.edu and Cecilia Tamborindeguy, Texas A&M Univ., College station, TX

D0294 Attraction of traps to Asian citrus psyllid (*Diaphorina citri*) in urban environments. Celestina Galindo¹, Joseph Patt², Magally Luque-Williams³, Mamoudou Setamou⁴ and **Kris E. Godfrey**, kgodfrey@cdfa.ca.gov⁵, ¹California Dept. of Food and Agriculture, Van Nuys, CA, ²USDA - ARS, Weslaco, TX, ³California Dept. of Food and Agriculture, Riverside, CA, ⁴Texas A&M Univ. - Kingsville, Weslaco, TX, ⁵California Dept. of Food and Agriculture, Sacramento, CA

D0295 Replication and transmission of *Candidatus Liberibacter asiaticus* associated with the Asian citrus psyllid, *Diaphorina citri*. **Kirsten S. Pelz-Stelinski**, pelzstelinski@ufl.edu and Michael E. Rogers, Univ. of Florida, Lake Alfred, FL

D0296 Transmission and replication of *Candidatus Liberibacter asiaticus* associated with citrus huanglongbing disease following various acquisition access periods by nymphs and adults of its psyllid vector. **El-Desouky Ammar**, eldammar@hotmail.com, Robert G. Shatters and David G. Hall, USDA - ARS, Fort Pierce, FL

D0297 Testing *Tamarixia radiata* for safety to California native psyllids. **Raju R. Pandey**, pandeyr@ucr.edu and Mark S. Hoddle, Univ. of California, Riverside, Riverside, CA

D0298 *Pentalonia nigronervosa*, *Pentalonia caladii* and banana bunchy top virus in Micronesia. **Ross H. Miller**, rmiller@uguam.uog.edu¹, Julie Anne Duay¹, George C. Wall¹, Robert Footitt² and Keith S. Pike³, ¹Univ. of Guam, Mangilao, Guam, ²Agriculture and Agri-Food Canada, Ottawa, ON, Canada, ³Washington State Univ., Prosser, WA

D0299 Red bay ambrosia beetle (*Xyleborus glabratus*) abundance and preference of *Persea* spp. in the New World. **J Pena**, jepe@ifas.ufl.edu¹, Rita E Duncan¹, Paul E. Kendra², Gurpreet Brar³ and John Capinera³, ¹Univ. of Florida, Homestead, FL, ²USDA - ARS, Miami, FL, ³Univ. of Florida, Gainesville, FL

D0300 Host preferences of the redbay ambrosia beetle (*Xyleborus glabratus*) in Florida. **Paul E. Kendra**, paul.kendra@ars.usda.gov¹, Wayne S. Montgomery¹, Jerome Niogret¹, Grechen Pruett², Randy Ploetz³, Nancy D. Epsky¹ and Robert R. Heath¹, ¹USDA - ARS, Miami, FL, ²Archbold Biological Station, Lake Placid, FL, ³Univ. of Florida, Homestead, FL

D0301 Using trap trees for minimizing risk of ambrosia beetle attacks in commercial nurseries. **Peter B. Schultz**, schultzp@vt.edu¹, Christopher M. Ranger², Michael E. Reding² and Jason Oliver³, ¹Virginia Polytechnic Institute and State Univ., Virginia Beach, VA, ²USDA - ARS, Wooster, OH, ³Tennessee State Univ., McMinnville, TN

D0302 Significance of water stress on the host-selection behavior and management of *Xylosandrus germanus* and other ambrosia beetles. **Christopher M. Ranger**, christopher.ranger@ars.usda.gov¹, Peter B. Schultz², Steven D. Frank³, Jason B. Oliver⁴ and Michael E. Reding¹, ¹USDA - ARS, Wooster, OH, ²Virginia Polytechnic Institute and State Univ., Virginia Beach, VA, ³North Carolina State Univ., Raleigh, NC, ⁴Tennessee State Univ., McMinnville, TN

D0303 *Xylosandrus germanus* brood development and production on artificial diet made with sawdust from different species. **Louela A. Castrillo**, lac48@cornell.edu¹, Michael H. Griggs² and John D. Vandenberg², ¹Cornell Univ., Ithaca, NY, ²USDA - ARS, Ithaca, NY

D0304 Effects of cover crop and extended rotation on insect communities. **Michael Dunbar**, dunbar17@gmail.com, Aaron J. Gassmann and Matt O'Neal, Iowa State Univ., Ames, IA

D0305 The influence of cover-crop, *Vicia tetrasperma* (L.) Schred, on injurious insect pests on redpepper in field. **Eun-Jung Han**,

hejs2@rda.go.kr, Jong-Ho Park, Sung-Jun Hong, Yong-Ki Kim and Hyung-Jin Jee, National Academy of Agricultural Science, RDA, Suwon, Kyeonggi-do, South Korea

D0306 Small RNAs and their targets are differentially expressed in susceptible and resistant interactions between *Aphis gossypii* and *Cucumis melo*. **James Anstead**, jaa25@psu.edu, Sampurna Sattar and Gary A. Thompson, Pennsylvania State Univ., State College, PA

D0307 Investigating the effects of sun hemp (*Crotalaria juncea*) intercropping on cucumber beetle (*Diabrotica and Acalymma* spp.) populations and plant vigor in a zucchini agroecosystem. **Jermaine Hinds**, jhinds1@umd.edu, Univ. of Maryland, College Park, MD

D0308 Brown marmorated stink bug transmission of yeast in fruit and vegetables. **Gerald Brust**, jbrust@umd.edu, Univ. of Maryland, Salisbury, MD

D0309 Stink bug species associated with organic blackberry production in central Kentucky. **Karen L. Friley**, karen.friley@kysu.edu, John D. Sedlacek, Marquita L. Grayson-Holt, Kirk W. Pomper, Jeremiah D. Lowe and Michael K. Bomford, Kentucky State Univ., Frankfort, KY

D0310 Comparative effectiveness of various mating disruption technologies for vine mealybug management in vineyards. **Ashfaq A. Sial**, ashfaqial@yahoo.com¹, Monica Cooper², Brian N. Hogg¹, John T. Hutchins¹, Stephen Welter¹, S. Kaan Kurtural³ and Kent Daane¹, ¹Univ. of California, Berkeley, Berkeley, CA, ²Univ. of California Cooperative Extension, Napa, CA, ³California State Univ., Fresno, Fresno, CA

D0311 *Erythroneura* spp. (Cicadellidae) feeding behaviour on grapevine. Julien Saguez¹, **Charles Vincent**, charles.vincent@agr.gc.ca², Chrystel Olivier³ and Philippe Giordanengo⁴, ¹Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Quebec, Canada, ²Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Quebec, Canada, ³Agriculture and Agri-Food Canada, Saskatoon, SK, Canada, ⁴Univ. de Picardie Jules Verne, Amiens, France

D0312 Leafminer *Liriomyza trifolii* population dynamics on broad bean in Upper Egypt. **Marwa F. Aly**, maly@purdue.edu¹, GA. Karaman¹, E.A.M. Moftah¹, S.H.H. Hamouda¹ and J.S. Yaninek², ¹El Minia Univ., El Minia, Minya, Egypt, ²Purdue Univ., West Lafayette, IN

D0313 Oviposition preference and larval performance in *Zonosemata vittigera* (Tephritidae: Diptera). **Lauren A. Ward**, lashedley@tamu.edu, Catherine Saenz and Robert Wharton, Texas A&M Univ., College Station, TX

D0314 Pest management challenges in production of medical marijuana in Colorado. **Whitney Cranshaw**, Whitney.Cranshaw@ColoState.edu, Colorado State Univ., Fort Collins, CO

D0315 Validation of spider mite, *Tetranychus* sp., management techniques in mint under California conditions. **Larry D. Godfrey**, ldgodfrey@ucdavis.edu¹, Kris Tollerup¹, Rob Wilson² and Daniel Marcum², ¹Univ. of California, Davis, Davis, CA, ²Univ. of California, Davis, CA

D0316 Seasonal phenologies of pests in Indiana cut flower farms. **Ashley Kissick**, akissick@purdue.edu, Roberto Lopez and Clifford Sadof, Purdue Univ., West Lafayette, IN

D0317 Colonization preferences of the European woodwasp, *Sirex noctilio*, on southeastern pine species. **Kamal J. K. Gandhi**, kgandhi@warnell.uga.edu¹, Jamie Dinkins¹, John J. Riggins¹, Laurie Schimleck¹, Brian T. Sullivan³ and Jeffrey Dean¹, ¹Univ. of Georgia, Athens, GA, ²Mississippi State Univ., Mississippi State, MS, ³USDA - Forest Service, Pineville, LA

D0318 The effect of anthropogenic disturbance on Attine foraging. **Max E. Winston**, mewinsto@gmail.com, Univ. of Chicago, Chicago, IL

D0319 Diet composition does not affect ant colony tempo. **Katie A. Miller**, mill1168@stthomas.edu¹, Jonathan Z. Shik², Andy Van Alst¹, Michael Kaspari² and Adam Kay¹, ¹Univ. of St. Thomas, Saint Paul, MN, ²Univ. of Oklahoma, Norman, OK

D0320 Comparison of ant (Hymenoptera: Formicidae) fauna between native and saltcedar-invaded habitats in western Nevada. **Kirk C. Tonkel**, ktonkel@unr.edu¹, Brian G. Rector¹ and Tashia Steele², ¹USDA - ARS, Reno, NV, ²Univ. of Nevada, Reno, NV

D0321 Comparison of mosquito (Diptera: Culicidae) fauna between native and saltcedar-invaded habitats in western Nevada. **Brian G. Rector**, brian.rector@ars.usda.gov¹, Kirk C. Tonkel¹ and Stacey M. Walquist², ¹USDA - ARS, Reno, NV, ²Univ. of Nevada, Reno, NV

D0322 Comparison of spider (Arachnida: Araneae) fauna between native and medusahead-invaded habitats in northeastern California and northwestern Nevada. **Brian G. Rector**¹, Kirk C. Tonkel¹ and **Shannon L. Swim**, shannonswim@gmail.com², ¹USDA - ARS, Reno, NV, ²Univ. of Nevada, Reno, NV

D0323 Ground beetle (Coleoptera: Carabidae) phenology, diversity, and response to weed cover in an urban turfgrass ecosystem. **Carmen K. Blubaugh**, blubaugh@purdue.edu¹, Victoria A. Caceres¹, Ian Kaplan¹, Jonathan L. Larson², Clifford S. Sadof³ and Douglas S. Richmond¹, ¹Purdue Univ., West Lafayette, IN, ²Univ. of Kentucky, Lexington, KY

D0324 Quantification of insect biodiversity and ecosystem services in naturalized roughs on Kentucky golf courses. **Emily Kathryn Dobbs**, emkdobbs@gmail.com and Daniel A. Potter, Univ. of Kentucky, Lexington, KY

D0325 Spatiotemporal macroinvertebrate shifts in a Missouri Ozark stream system. Rachel L. S. Heth¹ and **Robert W. Sites**, sitesr@missouri.edu², ¹Univ. of Missouri, Columbia, MO, ²Univ. of Missouri - Columbia, Columbia, MO

D0326 Stream macroinvertebrate communities of the Republic of Palau and their use in watershed biomonitoring. **Jen M. Lang**, langjenm@notes.udayton.edu¹, Tiffany Blair¹, Jonathon White¹, Carolyn Teter¹, Kathleen Gorbach¹, Albert Burky¹, Alan Olsen², Tarita Holm³ and M. Eric Benbow¹, ¹Univ. of Dayton, Dayton, OH, ²Belau National Museum, Koror, Palau, ³Office of Environmental Response and Coordination, Koror, Palau

D0327 Changing distribution patterns of the endangered Quino checkerspot: linking local extinction patterns and habitat relationships. **Richard A. Redak**, richard.redak@ucr.edu and Kristine Preston, Univ. of California, Riverside, CA

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D0328 Cytochrome P450 assays in redswamp crayfish, *Procambarus clarkii* insulted with insecticides labeled for use against rice water weevil, *Lissorhoptrus oryzophilus*. **Srinivas K. Lanka**, slanka1@tigers.lsu.edu, James A. Ottea, McClain W. Ray and Michael J. Stout, Louisiana State Univ., Baton Rouge, LA

D0329 Ultrastructure of malpighian tubules of adult flesh fly, *Sarcophaga ruficornis* Fab. (Diptera: Sarcophagidae). **Ruchita Pal**, ruchitapal9@gmail.com and Krishna Kumar, Univ. Of Allahabad, Allahabad, India

D0330 Differences between the external morphology of dried fruit beetle (DFB) and navel orangeworm (NOW) eggs. **Sandipa G. Gautam**, sandipg@okstate.edu¹, George P. Opit¹ and Spenser Walse², ¹Oklahoma State Univ., Stillwater, OK, ²USDA - ARS, Parlier, CA

D0331 Efficacy of insecticides and biopesticides against green June beetle. **Maciej A. Pszczolkowski**, MPszczolkowski@missouristate.edu¹, Donn T. Johnson² and Barbara Lewis², ¹Missouri State Univ., Mountain Grove, MO, ²Univ. of Arkansas, Fayetteville, AR

D0332 Toxicity of different acaricides to *Typhlodromus pyri* adult females. **Beatriz López-Manzanares**, beatriz.lopez@unirioja.es and Francisco J. Sáenz-de-Cabezón Irigaray, Universidad de La Rioja, Logroño, La Rioja, Spain

D0333 Residual effects of acaricides on *Typhlodromus pyri* (Acari, Phytoseiidae). **Francisco J. Sáenz-de-Cabezón Irigaray**, francisco-javier.saenz-de-cabezón@unirioja.es and Beatriz López-Manzanares, Universidad de La Rioja, Logroño, La Rioja, Spain

D0334 Insecticide detoxification genes from alfalfa leafcutting bee (*Megachile rotundata*). **Junhuan Xu**, xu@biology.usu.edu¹ and Rosalind James², ¹Utah State Univ., North Logan, UT, ²USDA - ARS, Logan, UT

D0335 Characterization of resistance mechanisms from *Heliothis virescens* exposed to multiple Bt toxins. **Cris Oppert**¹, Omaththage P. Perera², Fred Gould³ and Juan Luis Jurat-Fuentes¹, ¹Univ. of Tennessee, Knoxville, TN, ²USDA - ARS, Stoneville, MS, ³North Carolina State Univ., Raleigh, NC

D0336 Characterization of Cry1Ac resistance in *Helicoverpa zea*. **William J. Moar**, william.moar@monsanto.com¹, Marianne P. Carey², Bret Nolan² and Konasale J. Anilkumar¹, ¹Monsanto Company, St. Louis, MO, ²Case Western Reserve Univ., Cleveland, OH

D0337 Analyses of *Bacillus thuringiensis* Cry11Ba receptors in mosquito *Anopheles gambiae*. **Gang Hua**, ghua@uga.edu, Rui Zhang, Qi Zhang and Michael J. Adang, Univ. of Georgia, Athens, GA

D0338 Sublethal effects of the botanical deoxydopodophyllotoxin on development and reproduction of the yellow fever mosquito, *Aedes aegypti*. **Zhiqing Ma**, mzhiqing@uga.edu¹ and Mark R. Brown², ¹Northwest A&F Univ., Yangling, Shaanxi, China, ²Univ. of Georgia, Athens, GA

D0339 Cytochrome P450s and their expression profiles in insecticide resistant mosquitoes, *Culex quinquefasciatus*. **Ting Yang**, zhenxinzaoyi@yahoo.com.cn, Auburn Univ., Auburn, AL

D0340 The joint toxicity of three pyrethroid insecticide types to *Drosophila melanogaster*. Jerome J. Schleier, Collin Preftakes and **Robert K. D. Peterson**, bpeterson@montana.edu, Montana State Univ., Bozeman, MT

D0341 Autosomal and mechanisms interaction in pyrethroid resistance of house flies, *Musca domestica*. **Ming Li**, mzl0025@auburn.edu, Li Tian and Nannan Liu, Auburn Univ., Auburn, AL

D0342 Laboratory toxicity profile of an organic formulation of spinosad against the eggplant flea beetle, *Epitrix fuscula* Crotch. Tahir Rashid¹ and **Paul J. McLeod**, pjmcLeod@uark.edu², ¹Alcorn State Univ., Mound Bayou, MS, ²Univ. of Arkansas, Fayetteville, AR

D0343 Heat curing of microsporidian, neogregarine, and eugregarine infections in *Tribolium castaneum*. **Jeff Lord**, Jeff.Lord@ars.usda.gov, USDA - ARS, Manhattan, KS

D0344 Determining optimal nutrient balance in *Tenebrio molitor* (Coleoptera: Tenebrionidae) by self-selection. **Juan A. Morales-Ramos**, juan.moralesramos@ars.usda.gov¹, Guadalupe Rojas¹ and David Shapiro-Ilan², ¹USDA - ARS, Stoneville, MS, ²USDA - ARS, Byron, GA

D0345 Nitrogen economy during insect development. **Donald Mullins**, mullinsd@vt.edu¹, Christine A. Nalepa², Aaron Mullins³ and Sandra Gabbert¹, ¹Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ²Raleigh, NC, ³Univ. of Florida, Ft. Lauderdale, FL

D0346 Roles of bursicon in developmental stages of *Drosophila melanogaster*. **Shengzhang Dong**, dongsm@missouri.edu and Qisheng Song, Univ. of Missouri - Columbia, Columbia, MO

D0347 Diet and aggression in male *Drosophila melanogaster*. **Jannett Dinsmore**, dinsmo63@newpaltz.edu and Aaron Haselton, SUNY at New Paltz, New Paltz, NY

D0348 Nutrient allocation for reproduction and the role of associated symbionts in the reproductive fitness of *Nezara viridula* Priscila Fortes and **Fernando L. Cônsoli**, fconsoli@esalq.usp.br, Universidade de São Paulo/ESALQ, Piracicaba, São Paulo, Brazil

D0349 Regulation of sexual receptivity in *Lygus hesperus*. **Colin S. Brent**, colin.brent@ars.usda.gov, USDA, Maricopa, AZ

Poster Display Presentations, SysEB I

D0350 A new delphacid genus (Hemiptera: Fulgoroidea) from southwestern United States and northern Mexico. **Kathryn Weglarz**, kweglarz@udel.edu and Charles Bartlett, Univ. of Delaware, Newark, DE

D0351 Butterfly abundance and diversity, or lack thereof, in the world's smallest mountain range: California's Sutter Buttes. **Elizabeth C. Long**, eclong@ucdavis.edu, Melissa R. Whitaker and Arthur M. Shapiro, Univ. of California, Davis, Davis, CA

D0352 Encyclopedia of Life: current content status and plans for the future. **Katja S. Schulz**, SchulzK@si.edu, Smithsonian Institution, National Museum of Natural History, Washington, DC

D0353 The insects of Missouri's protected regions. **Derek A. Woller**, asilid@gmail.com, Univ. of Central Florida, Orlando, FL

D0354 A survey of the dung beetles of the critically endangered habitats of the Nimba Mountain Range and environs, Guinea, West Africa. **T. Keith Philips**, keith.philips@wku.edu, Western Kentucky Univ., Bowling Green, KY

D0355 The Dynastinae (Coleoptera: Scarabaeidae) of Peru. **Ronald D. Cave**, rdcave@ufl.edu¹ and Brett C. Ratcliffe², ¹Univ. of Florida, Ft. Pierce, FL, ²Univ. of Nebraska, Lincoln, NE

D0356 The cerambycids of middle Tennessee from trapping, rearing, net and hand collecting. **Nadeer N. Youssef**, nyoussef@blomand.net¹, Jason B. Oliver¹, Joshua P. Basham¹ and William Klingeman², ¹Tennessee State Univ., McMinnville, TN, ²Univ. of Tennessee, Knoxville, Knoxville, TN

D0357 Biosystematics of the *Dendroctonus frontalis* species complex in Mesoamerica. **Brian T. Sullivan**, briansullivan@fs.fed.us¹, Gerardo Zuñiga Bermúdez², Alicia Niño Domínguez³, Francisco Armendariz Toledano², Jorge Macías Sámano⁴ and Stephen R. Clarke⁵, ¹USDA - Forest Service, Pineville, LA, ²Instituto Politécnico Nacional (IPN), México, Distrito Federal, Mexico, ³El Colegio de la Frontera Sur (ECOSUR), Tapachula, Chiapas, Mexico, ⁴Synergy

Semiochemicals Corporation, Burnaby, BC, Canada, ⁵USDA - Forest Service, Lufkin, TX

D0358 Exceptional diversity in a continental montane fauna: examples from the broscine species (Coleoptera: Carabidae: Broscini) of the Gaoligong Mountains, Yunnan Province, China. **David H. Kavanaugh**, dkavanaugh@calacademy.org¹ and Hongbin Liang², ¹California Academy of Sciences, San Francisco, CA, ²Institute of Zoology, Chinese Academy of Sciences, Beijing, China

D0359 The biogeography of montane aquatic true bugs (Heteroptera: Nepomorpha) in central Thailand. **Akekawat Vitheepredit**, akekawat.v@ku.ac.th¹ and Robert W. Sites², ¹Kasetsart Univ., Bangkok, Thailand, ²Univ. of Missouri - Columbia, Columbia, MO

D0360 The semiaquatic bugs (Heteroptera: Gerromorpha) of Phetchabun mountain range, Thailand. **La-Au Nakthong**, airja_aoo@hotmail.com¹, Akekawat Vitheepredit¹ and Robert W. Sites², ¹Kasetsart Univ., Bangkok, Thailand, ²Univ. of Missouri - Columbia, Columbia, MO

D0361 The Gerromorpha (Insecta: Heteroptera) of Tennaserim mountain range, Thailand. **Sajeemat Raruanyong**, nui_pest@hotmail.com¹, Akekawat Vitheepredit¹ and Robert W. Sites², ¹Kasetsart Univ., Bangkok, Thailand, ²Univ. of Missouri - Columbia, Columbia, MO

D0362 The Naucoridae (Heteroptera: Nepomorpha) fauna of San Luis Potosi in central Mexico. **Daniel Reynoso-Velasco**, dvelasco@ibunam2.ibiologia.unam.mx and Robert W. Sites, Univ. of Missouri - Columbia, Columbia, MO

D0363 Creeping water bugs (Hemiptera: Naucoridae) of Tanzania: taxonomic composition, new species, and distributions. **Aaron Y. Mbogho**, aymxb2@mizzou.edu and Robert W. Sites, Univ. of Missouri - Columbia, Columbia, MO

D0364 *Pacarina shoemakeri*, a new species of cicada from North America (Hemiptera: Cicadidae). **Allen Sanborn**, asanborn@mail.barry.edu¹, Polly K. Phillips², Maxine S. Heath³ and James E. Heath³, ¹Barry Univ., Miami Shores, FL, ²Miramar, FL, ³Buchanan Dam, TX

D0365 Mapping distribution of "the Great Southern Brood" 13-year cicada's 2011 emergence in Georgia (USA). **Cecil L. Smith**, CLSmith@uga.edu¹ and Nancy C. Hinkle², ¹Georgia Natural History Museum, Athens, GA, ²Univ. of Georgia, Athens, GA

D0366 The psyllid fauna (Homoptera) of south Texas. **Donald B. Thomas**, Donald.Thomas@ars.usda.gov, USDA - ARS, Weslaco, TX

D0367 The cacao plume moth in Honduras (Lepidoptera: Pterophoridae). **Deborah L. Matthews**, dlott@flmnh.ufl.edu and Jacqueline Miller, Univ. of Florida, Gainesville, FL

D0368 A literature review of the genus *Euchaetes* Harris (Lepidoptera: Erebidae). **Heather M. Cummins**, cummi344@umn.edu, Univ. of Minnesota, St. Paul, MN

D0369 A revision of the genus *Heteranassa* Smith (Lepidoptera, Erebidae; Catocalinae). **Nicholas T Homziak**, nhomziak@unm.edu and Dr. Kelly B. Miller, Univ. of New Mexico, Albuquerque, NM

D0370 Systematics of the European pepper moth, *Duponchelia Zeller* (Lepidoptera: Crambidae: Spilomelinae). **James E. Hayden**, james.hayden@freshfromflorida.com, Florida Dept. of Agriculture and Consumer Services, Gainesville, FL

D0371 Mendel's beehives. **Gene Kritsky**, cdarwin@aol.com, College of Mount St. Joseph, Cincinnati, OH

D0372 Middle-aged honey bees at colony entrances: new behavioral insights. **Michael D. Breed**, michael.breed@colorado.edu, Univ. of Colorado at Boulder, Boulder, CO

D0373 Two genome-wide genotyping studies in honey bees to investigate behavioral resistance to *Varroa* mites. **Jennifer M. Tsuruda**, jtsuruda@purdue.edu¹, Jeffrey W. Harris², Robert G. Danka², Lelania Bourgeois², Miguel E. Arechavala-Velasco³, K. Itzel Alcalá-Escamilla³, Carlos A. Robles-Rios³ and Greg J. Hunt¹, ¹Purdue Univ., West Lafayette, IN, ²USDA - ARS, Baton Rouge, LA, ³INIFAP, Ajuchitlan, Queretaro, Mexico

D0374 Does the *Ageniella accepta* species-group (Hymenoptera: Pompilidae) contain multiple species or a single, wide-ranging, morphologically variable species? **Cecilia Waichert**, cwaichert@gmail.com, Carol D. von Dohlen and James P. Pitts, Utah State Univ., Logan, UT

D0375 The systematic review of the arachnophilous genus *Odontacolus* Kieffer (Hymenoptera: Platygasteridae s.l.). **Alejandro A. Valerio**, aavalerio@gmail.com¹ and Andrew Austin², ¹The Ohio State Univ., Columbus, OH, ²Univ. of Adelaide, Adelaide, SA, Australia

D0376 Species diversity and new sex associations of the mutillid fauna of Trinidad (Hymenoptera). **Kevin A. Williams**, kevin.williams@usu.edu¹, Allan W. Hook² and James P. Pitts¹, ¹Utah State Univ., Hyde Park, UT, ²St. Edward's Univ., Austin, TX

D0377 The *Crematogaster* of Madagascar: systematics and distribution patterns (Hymenoptera: Formicidae). **Bonnie B. Blaimer**, bbblaimer@ucdavis.edu, Univ. of California, Davis, Davis, CA

D0378 Integrative taxonomy of subarctic Chloropidae (Diptera): morphology and sequence data. **Terry A. Wheeler**, terry.wheeler@mcgill.ca¹, Anna M. Solecki¹ and Jinjing Wang², ¹McGill Univ., Ste-Anne-de-Bellevue, QC, Canada, ²China Agricultural Univ., Beijing, China

D0379 The genus *Stichopogon* (Diptera: Asilidae) in North America north of Mexico. **Jeffrey K. Barnes**, jkbarnes@uark.edu, Univ. of Arkansas, Fayetteville, AR

D0380 Sensitive detection and discrimination of stored-product pests of genus *Liposcelis* (Psocoptera: Liposcelididae) and *Lepinotus* (Psocoptera: Trogiidae). Mohammad Arif¹, F. M. Ochoa Corona¹, **George Opit**, george.opit@okstate.edu¹, Zhi-Hong Li², Zuzana Kucerova³, Vaclav Stejskal³ and Qian Qian Yang², ¹Oklahoma State Univ., Stillwater, OK, ²China Agricultural Univ. - Yuanmingyuan, Beijing, China, ³Crop Research Institute, Prague, Czech Republic

D0381 Insect community diversity at a wetland wastewater assimilation site. **Janice L. Bossart**, jbossart@selu.edu and Ryan Clark, Southeastern Louisiana Univ., Hammond, LA

D0382 Systematics and Biodiversity: a journal devoted to whole-organism biology. **Elliot Shubert**, e.shubert@nhm.ac.uk, The Natural History Museum, London, United Kingdom

Wednesday, November 16, 2011, Morning

PBT Section Symposium: Insect Olfaction & Taste: Identifying, Clarifying and Speaking about the Key Issues

Room E1/E2, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Walter S. Leal¹ and John Carlson², ¹Univ. of California, Davis, Davis, CA, ²Yale Univ., New Haven, CT

8:00 Welcoming Remarks

8:05 1305 Odorant binding, trapping, and reception. **Walter S. Leal**, wsleal@ucdavis.edu, Univ. of California, Davis, Davis, CA

8:27 1306 Malaria vector control beyond insecticides: rational approaches for the identification of olfaction-based behavior modifiers for Anopheline mosquitoes. **Kostas Iatrou**, iatrou@bio.demokritos.gr, National Centre for Scientific Research 'Demokritos', Athens, Greece

8:49 1307 Odorant-degrading enzymes and signal inactivation in insect antennae. **Martine Maibèche**, martine.maibèche@snu.jussieu.fr, Univ. Pierre and Marie Curie, Paris, France

9:11 1308 Peripheral olfactory system in two *Helicoverpa* species with different host ranges. **Chen-Zhu Wang**, czwang@ioz.ac.cn, Chinese Academy of Sciences, Beijing, China

9:33 1309 A gustatory receptor involved in host-plant recognition for oviposition of the butterfly, *Papilio xuthus*. **Katsuhisa Ozaki**, ozaki@brh.co.jp, JT Biohistory Research Hall, Osaka, Japan

9:55 Break

10:10 1310 Molecular mechanism of pheromone coding in the Heliothine moth species. **Guirong Wang**, grwang@ippcaas.cn, Chinese Academy of Agricultural Science, Beijing, China

10:32 1311 What we can learn from natural variation in olfactory neuron responses and receptors in *Drosophila*. **Coral Warr**, Coral.Warr@monash.edu, Monash Univ., Victoria, Australia

10:54 1312 Role of heterotrimeric G-proteins in *Drosophila* chemosensory signal transduction. **Eva Neuhaus**, eva.neuhaus@charite.de, Neurowissenschaftliches Forschungszentrum, Berlin, Germany

11:16 1313 Molecular mechanisms of sweet taste recognition in *Drosophila*. **Anupama Dahanukar**, anupama.dahanukar@ucr.edu, Univ. of California, Riverside, Riverside, CA

11:38 1314 Molecular genetics of insect chemoreception. **John Carlson**, john.carlson@yale.edu, Yale Univ., New Haven, CT

P-IE Section Symposium: Evolution and Biological Control

**Room A5, First Floor
(Reno-Sparks Convention Center)**

Moderators and Organizers: Ruth A. Hufbauer¹, George Roderick², M. Navajas³ and Marianna Szucs¹, ¹Colorado State Univ., Fort Collins, CO, ²Univ. of California, Berkeley, Berkeley, CA, ³Institut National de la Recherche Agronomique (INRA), Montferrier-sur-Lez Cedex, France

8:00 1315 Opening remarks: evolution and biological control. **Ruth A. Hufbauer**, ruth.hufbauer@colostate.edu¹, Marianna Szucs¹, Maria Navajas² and George Roderick³, ¹Colorado State Univ., Fort Collins, CO, ²Institut National de la Recherche Agronomique (INRA), Montferrier Sur Lez, France, ³Univ. of California, Berkeley, Berkeley, CA

8:04 1316 The roles of genetics and demography in the success of classical biological control. **Ruth A. Hufbauer**, ruth.hufbauer@colostate.edu¹, Elodie Vercken², Thibaut Malausa² and Xavier Fauvergue², ¹Colorado State Univ., Fort Collins, CO, ²Institut National de la Recherche Agronomique (INRA), Sophia-Antipolis, France

8:22 1317 Cryptic species: challenges for biological control and management. **M. Navajas**, navajas@supagro.inra.fr¹ and George K. Roderick², ¹Institut National de la Recherche Agronomique (INRA), Montferrier-sur-Lez Cedex, France, ²Univ. of California, Berkeley, Berkeley, CA

8:40 1318 Evolutionary and microbial control of insects. **Jennifer Cory**, jennifer_cory@sfu.ca, Simon Fraser Univ., Burnaby, BC, Canada

8:58 1319 The molecular signature of human introduction efforts in an invasive lady beetle. **Yukie Kajita**, yukie.kajita@uky.edu, Eric M. O'Neill, Yanbing Zheng, John J. Obrycki and David W. Weisrock, Univ. of Kentucky, Lexington, KY

9:16 1320 Molecular analysis of host-specificity in plant-feeding insects: phylogenetics and phylogeography of Fergusonina flies on Australian paperbarks. Sonja Scheffer, sonja.scheffer@ars.usda.gov¹, Robin Giblin-Davis², Matt Purcell³, Kerrie Davies⁴, Gary Taylor⁴, Ted Center⁵ ¹Systematic Entomology Lab, USDA-ARS, Beltsville, MD, USA; ²University of Florida-Institute of Food and Agricultural Sciences, Davie, FL, USA; ³Australian Biological Control Lab, USDA-ARS, Brisbane, Australia; ⁴Center for Evolutionary Biology and Biodiversity, Adelaide University, Adelaide, Australia; ⁵Invasive Plant Research Lab, USDA-ARS, Davie, FL, USA

9:34 1321 Meta-population dynamics and evolution of the purposefully released biological control agent *Diachasmimorpha tryoni* (Hymenoptera: Braconidae) a parasitoid of *Ceratitidis capitata* (Diptera: Tephritidae), in Hawaii. **Adam Vorsino**, avorsino@hawaii.edu¹, Ania Wieczorek¹, Mark G. Wright¹ and Russell Messing², ¹Univ. of Hawaii, Honolulu, HI, ²Univ. of Hawaii, Kapaa, HI

9:52 Break

10:07 1322 Selfish genetic elements as biological control agents. **Fred Gould**, fred_gould@ncsu.edu, North Carolina State Univ., Raleigh, NC

10:25 1323 Evolution of tritrophic interactions on wild and cultivated beans in Mexico. **Betty Benrey**, betty.benrey@unine.ch, Sarah G. Kenyon and David Schneider, Univ. of Neuchatel, Neuchatel, Switzerland

10:43 1324 Post-introduction life-history evolution in the weed biological control agent *Longitarsus jacobaeae*. **Marianna Szucs**, szucsmarianna@yahoo.com¹, Urs Schaffner² and Mark Schwarzländer³, ¹Colorado State Univ., Fort Collins, CO, ²CABI, Delémont, Switzerland, ³Univ. of Idaho, Moscow, ID

11:01 1325 Evolution of critical photoperiod for diapause induction enables range expansion of *Diorhabda carinulata*, a biological control for tamarisk (*Tamarix* spp.). **Dan Bean**, dan.bean@ag.state.co.us¹, Tom Dudley² and Peter Dalin³, ¹Colorado Dept. of Agriculture, Palisade, CO, ²Univ. of California, Santa Barbara, CA, ³Swedish Univ. of Agricultural Sciences, Uppsala, Sweden

11:19 1326 Evolution of *Tamarix* spp. influences the outcome of a biological control system. **Wyatt Williams**, Wyatt.Williams@Colostate.edu¹, John Gaskin², Jonathan Friedman³ and Andrew P. Norton¹, ¹Colorado State Univ., Fort Collins, CO, ²USDA - ARS, Sidney, MT, ³USGS, Fort Collins, CO

11:37 1327 Nothing in biological control makes sense except in the light of evolution. **Peter McEvoy**, mcevoyp@science.oregonstate.edu and Kimberley Higgs, Oregon State Univ., Corvallis, OR

11:55 Concluding Remarks

P-IE Section Symposium: Insecticide Mixtures: IRM, Science, Scope, Solutions and Rationale – IRAC US Symposium Series: No.7

**Room A6, First Floor
(Reno-Sparks Convention Center)**

Moderators and Organizers: Charles A. Staetz¹, Caydee Savinelli² and Graham P. Head³, ¹IPS Consulting, Nevada City, CA, ²Syngenta Crop Protection, Greensboro, NC, ³Monsanto Company, St. Louis, MO

8:00 Welcoming Remarks

8:05 1328 Mixtures: history and perspective. **Charles A. Staetz**, castaetz@att.net, IPS Consulting, Nevada City, CA

8:25 1329 Combinations of toxins in sprays and plants: Insights on the benefits and problems. **Anthony M. Shelton**, ams5@cornell.edu¹ and Jian-Zhou Zhao², ¹Cornell Univ., Geneva, NY, ²Pioneer-Hi Bred International, Inc., Johnston, IA

8:45 1330 Mixtures: resistance mechanisms and management. **Rick Roush**, rroush@unimelb.edu.au, Univ. of Melbourne, Melbourne, Victoria, Australia

9:05 1331 Are crops with multiple insect traits the ultimate mixture? **Gary D. Thompson**, gdthompson@dow.com¹ and Nick Storer², ¹Dow AgroSciences, Indianapolis, IN, ²Dow AgroSciences, Kensington, MD

9:25 1332 Biologicals + synthetic products. **Russell Eldridge**, Russell.Eldridge@valentbiosciences.com, Valent BioSciences Corporation, Libertyville, IL

9:45 Break

10:00 1333 Utilization of insecticide mixtures in pest-intensive crops: rationale, rates and recommendations. **John C. Palumbo**, jpalumbo@ag.arizona.edu, Univ. of Arizona, Yuma, AZ

10:20 1334 Mixtures for managing arthropod pests in deciduous orchards: your recipe or ours? **Peter W. Shearer**, peter.shearer@oregonstate.edu¹ and Jay F. Brunner², ¹Oregon State Univ., Hood River, OR, ²Washington State Univ., Tree Fruit Research and Extension Center, Wenatchee, WA

10:40 1335 Mixtures from a professional crop consultant's perspective. **Grady C. Coburn**, CoburnPME1@aol.com¹ and Jim Steffel², ¹Pest Management Enterprises, Inc., Cheneyville, LA, ²LABServices, Hamburg, PA

11:00 1336 Current reality and future: to mix or not to mix? **Timothy J. Dennehy**, timothy.dennehy@bayer.com¹ and Walt Mullins², ¹Bayer CropScience, Research Triangle Park, NC, ²Bayer CropScience, Collierville, TN

11:20 1337 Pesticide mixtures: perspective of the Resistance Action Committees. **Graham P. Head**, graham.p.head@monsanto.com, Monsanto Company, St. Louis, MO

11:40 Concluding Remarks

P-IE Section Symposium: Invasives, Climate Change, and Forest Management: the Forest Service Research Perspective

Room A13, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Nancy E. Gillette¹ and Mary Ellen Dix², ¹USDA - Forest Service, Berkeley, CA, ²USDA - Forest Service, Arlington, VA

7:55 Welcoming Remarks

8:00 1338 Mountain pine beetle outbreaks in western North America: causes and consequences. **Christopher J. Fettig**, cfettig@fs.fed.us¹, Barbara J. Bentz², Ken Gibson³, Nancy E. Gillette⁴, Michael J. Jenkins⁵, Carl L. Jorgensen⁶, Stephen R. McKelvey¹, A. Steven Munson⁷, Jose F. Negron⁸, Robert A. Progar⁹ and Brytten E. Steed¹⁰, ¹USDA - Forest Service, Davis, CA, ²USDA - Forest Service, Logan, UT, ³Missoula, MT, ⁴USDA - Forest Service, Berkeley, CA, ⁵Utah State Univ., Logan, UT, ⁶USDA - Forest Service, Boise, ID, ⁷USDA - Forest Service, Ogden, UT, ⁸USDA - Forest Service, Fort Collins, CO, ⁹USDA - Forest Service, Corvallis, OR, ¹⁰USDA - Forest Service, Missoula, MT

8:20 1339 Spruce beetle, carbon dynamics, and CO₂ fluxes in a subalpine forest in Wyoming. **Jose F. Negron**, jnegron@fs.fed.us, L. S. Huckaby, J. Frank and W. J. Massman, USDA - Forest Service, Fort Collins, CO

8:40 1340 Efforts to reduce mountain pine beetle attack in lodgepole pine using verbenone. **Robert A. Progar**, rprogar@fs.fed.us¹, Carl L. Jorgensen², Darren Blackford³, Danny Cluck⁴, R. Halsey², Sheryl Costello⁵, Tom Eager⁶, Philip J. Mocettini², A. Steven Munson³ and Brytten E. Steed⁷, ¹USDA - Forest Service, Corvallis, OR, ²USDA - Forest Service, Boise, ID, ³USDA - Forest Service, Ogden, UT, ⁴USDA - Forest Service, Redding, CA, ⁵USDA - Forest Service, Golden, CO, ⁶USDA - Forest Service, Gunnison, CO, ⁷USDA - Forest Service, Missoula, MT

9:00 1341 Assessing pest impacts under a changing climate. **John E. Lundquist**, jlundquist@fs.fed.us, USDA - Forest Service, Anchorage, AK

9:20 1342 Climate and high elevation defoliators in the Southwest.

Ann M. Lynch, alynch@fs.fed.us, USDA - Forest Service, Tucson, AZ

9:40 1343 A tale of two hardwood invasives: the research and management response of Forest Service R&D and FHP to gold-spotted oak borer and walnut twig beetle. **Steven J. Seybold**, sjseybold@gmail.com¹, Tom W. Coleman² and Andrew D. Graves³, ¹USDA - Forest Service, Davis, CA, ²USDA - Forest Service, San Bernardino, CA, ³Univ. of California, Davis, Davis, CA

10:00 Break

10:15 1344 Novel interactions between a "reverse invasive" bark beetle and its newly acquired fungal associates. **Nancy E. Gillette**, ngillette@fs.fed.us¹, Jianghua Sun², Min Lu², Donald Owen³ and Michael Wingfield⁴, ¹USDA - Forest Service, Berkeley, CA, ²Chinese Academy of Sciences, Beijing, Beijing, China, ³California Dept. of Forestry and Fire Protection, Redding, CA, ⁴Univ. of Pretoria, Pretoria, South Africa

10:35 1345 Working in Pacific island forests: a search for hope. **Tracy Johnson**, tracyjohnson@fs.fed.us¹, Flint Hughes² and Christian Giardina², ¹USDA - Forest Service, Volcano, HI, ²USDA - Forest Service, Hilo, HI

10:55 1346 Herbivore-induced plant defenses and biological control of invasive plants. **Justin B. Runyon**, jrunyon@fs.fed.us, USDA - Forest Service, Bozeman, MT

11:15 1347 Hybrid weeds and agent genotypes: factors confounding biological control of weeds. **Sharlene Sing**, ssing@hotmail.com, USDA - Forest Service, Bozeman, MT

11:35 1348 Research challenges for protecting forests and rangeland ecosystems. **Mary Ellen Dix**, mdix@fs.fed.us¹ and Nancy E. Gillette², ¹USDA - Forest Service, Arlington, VA, ²USDA - Forest Service, Berkeley, CA

11:50 Concluding Remarks

MUVE Section Symposium: Pinpointing the Problem: Assessing the Impact of White-tailed Deer on the Spread of Cattle Fever Ticks (*Rhipicephalus (Boophilus) microplus* and *R. (B.) annulatus*) in South Texas

Room D8, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Kimberly H. Lohmeyer¹ and Pia Untalan Olafson², ¹Knipling-Bushland US Livestock Insect Research Laboratory, Kerrville, TX, ²USDA - ARS, Kerrville, TX

8:00 Welcoming Remarks

8:05 1349 Overview of the U.S. cattle fever tick eradication program: history and challenges. **RB. Davey**, ronald.davey@ars.usda.gov¹, J. M. Pound², K. H. Lohmeyer² and P. U. Olafson², ¹USDA - ARS, Edinburg, TX, ²Knipling-Bushland US Livestock Insect Research Laboratory, Kerrville, TX

8:30 1350 Impact of white-tailed deer and exotic ungulate populations on cattle fever tick outbreaks in South Texas. **K. H. Lohmeyer**, kim.lohmeyer@ars.usda.gov¹, J. M. Pound¹, R. B. Davey², P. U. Olafson¹, D. M. Kammlah¹ and M. A. May¹, ¹Knipling-Bushland US Livestock Insect Research Laboratory, Kerrville, TX, ²USDA - ARS, Edinburg, TX

8:55 1351 Novel technologies developed to control cattle fever ticks feeding on free-ranging white-tailed deer along the Rio Grande in South Texas. **J. M. Pound**, mat.pound@ars.usda.gov¹, R. B. Davey², K. H. Lohmeyer¹, D. M. Kammlah¹ and P. U. Olafson¹, ¹Knipling-Bushland US Livestock Insect Research Laboratory, Kerrville, TX, ²USDA - ARS, Edinburg, TX

9:20 1352 Using remote sensing to identify favorable white-tailed deer habitat and correlate to field sampling of southern cattle fever tick larvae. **P. Phillips**, pamela.phillips@ars.usda.gov¹, J. Welch² and M. Kramer³, ¹USDA - ARS, Kerrville, TX, ²USDA - APHIS, Panama City, Panama, ³USDA, Beltsville, MD

9:45 Break

10:00 1353 Integration of ecologically-based approaches to re-eradicate cattle fever ticks from the U.S. **G. Schuster**, kugs2002@tamuk.edu¹, D. G. Hewitt¹, A. Ortega-Santos¹, T. A. Campbell², M. Messenger³, E. J. Bowers⁴, K. H. Lohmeyer⁵, J. M. Pound⁵, R. B. Davey⁶, A. A. Perez de Leon⁵, C. R. Currie¹ and N. Perry¹, ¹Texas A&M Univ. - Kingsville, Kingsville, TX, ²USDA - APHIS, Kingsville, TX, ³USDA - APHIS, Riverdale, MD, ⁴USDA - APHIS, Laredo, TX, ⁵Knipling-Bushland US Livestock Insect Research Laboratory, Kerrville, TX, ⁶USDA - ARS, Edinburg, TX

10:25 1354 *Rhipicephalus (Boophilus) microplus* ticks collected from Texas deer and cattle share gene pools. **Joseph D. Busch**, joseph.busch@nau.edu¹, Nathan E. Stone¹, Roxanne D. Nera¹, Greta Buckmeier², Deanna M. Bodine², Ronald B. Davey³, Jeanne M. Freeman², Glen A. Scoles⁴, Pia U. Olafson² and David M. Wagner¹, ¹Northern Arizona Univ., Flagstaff, AZ, ²USDA - ARS, Kerrville, TX, ³USDA - ARS, Edinburg, TX, ⁴USDA - ARS, Pullman, WA

10:50 1355 Biological differences between populations of *Rhipicephalus (Boophilus) microplus* collected from white-tailed deer and from cattle. **Glen A. Scoles**, scoles@vetmed.wsu.edu¹, Ronald B. Davey², Pia U. Olafson³, Joseph D. Busch⁴ and David M. Wagner⁴, ¹USDA - ARS, Pullman, WA, ²USDA - ARS, Edinburg, TX, ³USDA - ARS, Kerrville, TX, ⁴Northern Arizona Univ., Flagstaff, AZ

11:15 1356 Immune response of white-tailed deer to infestation by a one-host tick. **Pia Untalan Olafson**, Pia.Olafson@ars.usda.gov¹, Jeanne M. Freeman¹, Kimberly H. Lohmeyer¹, J. Mat Pound¹ and D. Knowles², ¹USDA - ARS, Kerrville, TX, ²USDA - ARS, Pullman, WA

11:40 Concluding Remarks

SysEB Section Symposium: Social Insect Evolution Today: Clarifying Leading Hypotheses with Novel Approaches

Room D1, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Theresa L. Pitts-Singer¹, Brielle J. Fischman² and S. Hollis Woodard², ¹USDA - ARS, Logan, UT, ²Univ. of Illinois at Urbana-Champaign, Urbana, IL

8:00 Introductory Remarks

8:05 1357 Social terminology redux. **James Costa**, costa@email.wcu.edu, Highlands Biological Station, Highlands, NC

8:21 1358 What evolves and what does not in a Darwinian paradigm. **John Wenzel**, WenzelJ@CarnegieMNH.Org, Carnegie Museum of Natural History, Rector, PA

8:37 1359 Evolution of phenotypic plasticity in social insects. **Michael Goodisman**, michael.goodisman@biology.gatech.edu, Georgia Institute of Technology, Atlanta, GA

8:53 1360 Social evolution in termites: a case study and its implications. **Judith Korb**, Judith.Korb@Biologie.Uni-Osnabrueck.DE, Universität Osnabrück, Osnabrück, Lower Saxony, Germany

9:09 Break 1

9:19 1361 Hypothesis-driven insights into proximate mechanisms of termite sociality: nutrition and endocrinology. **Michael E. Scharf**, mscharf@purdue.edu, Purdue Univ., West Lafayette, IN

9:35 1362 Integrative physiological and genomic analyses of behavior in bees and wasps: insights into social evolution. **Amy L. Toth**, amytoth@iastate.edu, Iowa State Univ., Ames, IA

9:51 1363 Solitary and social lives of *Xylocopa virginica* - the ecological effect. **Miriam Richards**, mrichards@brocku.ca, Brock Univ., St. Catharines, ON, Canada

10:07 1364 The evolution of caste determination: insights from the solitary bee, *Megachile rotundata*. **Brielle J. Fischman**, bfischm2@illinois.edu, Univ. of Illinois at Urbana-Champaign, Urbana, IL

10:23 1365 The evolution of brood-feeding behavior in bumble bees. **S. Hollis Woodard**, euglossine@gmail.com, Univ. of Illinois, Urbana, IL

10:39 Break 2

10:49 1366 Opportunities and constraints in brain evolution for social animals. **Sean O'Donnell**, sodonnell@u.washington.edu, Univ. of Washington, Seattle, WA

11:05 1367 Using the unique mode of caste determination and the genome of *Pogonomyrmex barbatus* to gain insight into the mechanisms of caste determination. **Chris R. Smith**, crsmith.ant@gmail.com, Earlham College, Richmond, IN

11:21 1368 Reproductive physiology, behavior, and evolution in the ant, *Pogonomyrmex californicus*. **Adam G. Dolezal**, Adam.Dolezal@asu.edu, Arizona State Univ., Tempe, AZ

11:37 1369 Dynamics of symbioses between ants and their gut bacteria. **Jacob A. Russell**, Jacob.A.Russell@drexel.edu, Drexel Univ., Philadelphia, PA

SysEB Section Symposium: Taxonomy and Systematics of the Tenebrionoidea (Coleoptera)

Room D2, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Kojun Kanda, Oregon State Univ., Corvallis, OR

8:00 Introductory Remarks

8:05 1370 Molecular phylogenetics and evolution of ripiphorid beetles (Ripiphoridae). **Duane D. McKenna**, dmckenna@memphis.edu¹ and Zachary Falin², ¹Univ. of Memphis, Memphis, TN, ²Univ. of Kansas, Lawrence, KS

8:25 1371 From Broun to Bayesian: morphological and molecular investigations of the Zopheridae of New Zealand. **Nathan P. Lord**,

bothriderid@gmail.com¹, Richard A. B. Leschen² and Thomas Buckley², ¹Univ. of New Mexico, Albuquerque, NM, ²Landcare Research, Auckland, New Zealand

8:45 1372 Systematics of basal tenebrionoid lineages (Ulodidae, Zopheridae) in New Zealand. **Richard AB. Leschen**, LeschenR@landcareresearch.co.nz¹, Thomas Buckley¹ and Nathan P. Lord², ¹Landcare Research, Auckland, New Zealand, ²Univ. of New Mexico, Albuquerque, NM

9:05 1373 A molecular phylogeny of the Tenebrionoidea (Cucujiformes). **Kojun Kanda**, kanda@science.oregonstate.edu¹, Alexander Wild², Duane D. McKenna³ and David Maddison¹, ¹Oregon State Univ., Corvallis, OR, ²Univ. of Illinois, Urbana, IL, ³Univ. of Memphis, Memphis, TN

9:25 Break

9:40 1374 Tenebrionidae of Canada and Alaska. **Patrice Bouchard**, patrice.bouchard@agr.gc.ca and Yves Bousquet, Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, ON, Canada

10:00 1375 Flightless beetles on islands: distribution and life history of darkling beetles of the genus *Branchus* (Coleoptera: Tenebrionidae). **Warren E. Steiner**, steinerw@si.edu, Smithsonian Institution, Washington, DC

10:20 1376 Patterns in *Eleodes*. **Rolf Aalbu**, raalbu@comcast.net¹, Charles A. Triplehorn² and Aaron D. Smith³, ¹California Academy of Sciences, San Francisco, CA, ²The Ohio State Univ., Columbus, OH, ³Arizona State Univ., Tempe, AZ

10:40 1377 A revision of *Cnodalon* Latreille. **Michael A. Ivie**, mvie@montana.edu, Montana State Univ., Bozeman, MT

11:00 1378 *Stenomorpha* Solier (Tenebrionidae) revision and morphology. **M. Fran Keller**, mfkeller@ucdavis.edu, Univ. of California, Davis, Davis, CA

11:20 1379 The asidine genera (Coleoptera: Tenebrionidae: Asidini) of North America. **Aaron D. Smith**, pimeliinae@gmail.com, Arizona State Univ., Tempe, AZ

11:40 Concluding Remarks

Symposium: Advances in Plant Insect Vectors Using -omic Approaches

Room A12, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Michelle Cilia¹ and Cecilia Tamborindeguy², ¹USDA - ARS, 14853 Ithaca, NY, ²Texas A&M Univ., College station, TX

8:00 Introductory Remarks

8:20 1380 Transcriptomics to elucidate molecular and cellular interactions between *Candidatus Liberibacter solanacearum* and the potato psyllid vector *Bactericera cockerelli* (Sulc.). **Judith K. Brown**, jbrown@ag.arizona.edu, Univ. of Arizona, Tucson, AZ

8:40 1381 Transcriptomics to illuminate *Candidatus Liberibacter solanacearum* -potato psyllid (*Bactericera cockerelli*). **Judith K. Brown**, jbrown@ag.arizona.edu, Univ. of Arizona, Tucson, AZ

9:00 1382 Functional analysis of aphid salivary proteins. **Alex C. C.**

Wilson, acwilson@bio.miami.edu, Univ. of Miami, Coral Gables, FL

9:20 Break

9:35 1383 Proteomics and aphid transmission of viruses. **Michelle Cilia**, mlc68@cornell.edu, USDA - ARS, Ithaca, NY

9:55 1384 Regulatory networks and the leafhopper transmission of the bacterium *Xylella fastidiosa*. **Rodrigo P. P. Almeida**, rodrigoalmeida@berkeley.edu, Univ. of California, Berkeley, Berkeley, CA

10:15 1385 From proteomics to insect function in the pea aphid *Acyrtosiphon pisum*. **Calum W. Russell**, car7@cornell.edu, Anton Poliakov, Klaas van Wijk and Angela Douglas, Cornell Univ., Ithaca, NY

10:35 1386 RNA interference targeting psyllid pests. **Wayne B. Hunter**, wayne.hunter@ars.usda.gov, USDA - ARS, Ft. Pierce, FL

10:55 Concluding Remarks

Symposium: Employers Speak Out About Professional Opportunities in Entomology; Identifying and Clarifying Career Paths for Graduate Students

Room A10, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Deane Zahn¹, Alec Gerry¹ and Kimberly Skyrms², ¹Univ. of California, Riverside, Riverside, CA, ²Oregon State Univ., Corvallis, OR

8:00 Welcoming Remarks

8:05 1387 Where do students end up and what do they want to do? **Deane K. Zahn**, deane.zahn@email.ucr.edu, Univ. of California, Riverside, Riverside, CA

8:20 1388 Launching and running a profitable private company: funding leading edge research to commercialize disruptive products. **Agenor Mafra-Neto**, president@iscatech.com, ISCA Technologies, Riverside, CA

8:35 1389 Working for industry as a field entomologist. **Melissa Willrich Siebert**, mwillrichsiebert@dow.com, Dow AgroSciences, Greenville, MS

8:50 1390 Entomology with a global perspective- making a difference and serving your country as an Army entomologist. **Scott Gordon**, US Army Medical Research Unit - Kenya, Silver Spring, MD

9:05 1391 Entomology careers in cooperative extension: the interface of academia and society. **Eric T. Natwick**, etnatwick@ucdavis.edu, Univ. of California Cooperative Extension, Holtville, CA

9:20 Break

9:35 1392 Curating and managing national collections. **Floyd W. Shockley**, fshockley@bugs.ent.uga.edu, Univ. of Georgia, Athens, GA

9:50 1393 Somewhere over the rainbow: opportunities for careers at USDA's National Institute of Food and Agriculture. **Mary Purcell-Miramontes**, mpurcell@nifa.usda.gov, USDA, Washington, DC

10:05 1394 Working for industry—what can you expect? Perspectives of a former academic entomologist now in the corporate world. **Marlin E. Rice**, marlin.rice@pioneer.com, Pioneer Hi-Bred International, Inc., Johnston, IA

10:20 1395 Entomology in academia; balancing teaching, research, and community engagement. **Alec Gerry**, alec.gerry@ucr.edu, Univ. of California, Riverside, Riverside, CA

10:35 1396 Entomological careers in the USDA, Agricultural Research Service. **Victoria Y. Yokoyama**, victoria.yokoyama@ars.usda.gov, USDA - ARS, Parlier, CA

10:50 1397 Independent contract research laboratories - small fish in a big pond. **William A. Donahue**, srl@clearwire.net, Sierra Research Laboratories, Modesto, CA

11:05 1398 Public health and entomology: career opportunities. **Vicki Kramer**, vicki.kramer@cdph.ca.gov, California Dept. of Public Health, Sacramento, CA

11:20 Concluding Remarks

Symposium: Insect Biodiversity in Chiapas

Room D4, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Robert S. Anderson¹ and Jorge L. León-Cortés², ¹Canadian Museum of Nature, Ottawa, ON, Canada, ²El Colegio de la Frontera Sur (ECOSUR), San Cristóbal de las Casas, Mexico

8:00 Welcoming Remarks

8:05 1399 Introduction - Biogeography, habitats, and vegetation of Chiapas. **Robert S. Anderson**, RAnderson@mus-nature.ca, Canadian Museum of Nature, Ottawa, ON, Canada

8:25 1400 Diversity patterns of Lepidoptera (Butterflies) in Chiapas. **Jorge Leon Cortes**, jleon@ecosur.mx, Armando Luis-Martínez and Arcángel Molina-Martínez, El Colegio de la Frontera Sur (ECOSUR), San Cristobal, Chiapas, Mexico

8:45 1401 Highs and lows of Chiapas ant diversity (Hymenoptera: Formicidae). **John Longino**, longinoj@evergreen.edu¹ and Michael G. Branstetter², ¹The Evergreen State College, Olympia, WA, ²Univ. of California, Davis, Davis, CA

9:05 1402 Amnestinae (Hemiptera: Heteroptera: Cydnidae) from Chiapas. **Luis Cervantes**, luis.cervantes@inecol.edu.mx¹, Harry Brailovsky² and Christina Mayorga-Martínez¹, ¹Instituto de Ecología, Xalapa, Oaxaca, Mexico, ²Universidad Nacional Autónoma de México (UNAM), Mexico, D.F., Mexico

9:25 1403 Diversity of aquatic insects of Chiapas. **Atilano Contreras-Ramos**, acontreras@ibiologia.unam.mx and Rafael Barba-Alvarez, Universidad Nacional Autónoma de México (UNAM), Mexico City, DF., Mexico

9:45 Break

10:00 1404 Scraping the surface: diversity and endemism of ground dwelling weevils (Coleoptera: Curculionidae). **Robert S. Anderson**, RAnderson@mus-nature.ca, Canadian Museum of Nature, Ottawa, ON, Canada

10:20 1405 Species richness and endemism of scarab beetles

in Chiapas, Mexico (Coleoptera; Scarabaeidae).. **Miguel Moron**, miguel.moron@inecol.edu.mx¹ and Benigno Gomez², ¹Instituto de Ecología, Xalapa, Oaxaca, Mexico, ²El Colegio de la Frontera Sur (ECOSUR), San Cristobal, Chiapas, Mexico

10:40 1406 Chiapas insect amber fossils. **Donald B. Thomas**, dthomas@weslaco.ars.usda.gov, USDA - ARS, Weslaco, TX

11:00 1407 Conclusions: ecology and conservation of butterfly populations in fragmented landscapes in Chiapas.. **Jorge Leon-Cortes**, jleon@ecosur.mx, El Colegio de la Frontera Sur (ECOSUR), San Cristóbal de las Casas, Mexico

Symposium: Insect Rearing as Science: Building an Education and Research Infrastructure

Room A11, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Allen C. Cohen, North Carolina State Univ., Raleigh, NC

8:00 Welcoming Remarks

8:05 1408 How can we educate mass-rearing specialists to handle the versatility-requirements in rearing systems. **Gregory Simmons**, gregory.s.simmons@aphis.usda.gov, USDA - APHIS, Moss Landing, CA

8:25 1409 Insect rearing education at Mississippi State University: past, present and future. **John C. Schneider**, jschneider@entomology.msstate.edu and Frank M. Davis, Mississippi State Univ., Mississippi State, MS

8:45 1410 What kinds of scientific and practical backgrounds are needed for a successful rearing specialist in industry? **Jared S. Ostrem**, jared.ostrem@pioneer.com, Pioneer Hi-Bred International, Inc., Ankeny, IA

9:05 1411 Improving insect rearing from an ARS scientist's perspective. **Thomas A. Coudron**, tom.coudron@ars.usda.gov, USDA - ARS, Columbia, MO

9:25 Break

9:40 1412 How to increase the real and perceived professionalism of insect rearing specialists. **Norman C. Leppla**, ncleppla@ufl.edu¹ and Frank M. Davis², ¹Univ. of Florida, Gainesville, FL, ²Mississippi State Univ., Mississippi State, MS

10:00 1413 A view of the future of insect rearing from a graduate student's perspective. **Kelly LF. Oten**, klfelder@ncsu.edu, North Carolina State Univ., Raleigh, NC

10:20 1414 Insect rearing as science. **Allen C. Cohen**, accohen@ncsu.edu, North Carolina State Univ., Raleigh, NC

10:40 Concluding Remarks

Symposium: Insect Research on the Urban Frontier: Biocontrol and Pollination Services in City Landscapes

Room A1, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Mary M. Gardiner¹ and Donald Weber², ¹The Ohio State Univ., OARDC, Wooster, OH, ²USDA - ARS, Beltsville, MD

8:00 Introductory Remarks

8:10 1415 Urban ecosystem services and land use change: assessment and value. **Thomas Elmqvist**, thomase@ecology.su.se, Stockholm Univ., Stockholm, Sweden

8:35 1416 Biodiversity and trophic dynamics in urban arthropod communities: patterns and causes. Stanley H. Faeth¹, Christofer Bang² and **Susanna Saari**, stsaari@uncg.edu¹, ¹Univ. of North Carolina, Greensboro, Greensboro, NC, ²Arizona State Univ., Tempe, AZ

8:55 1417 Response of arthropods to urban habitat structure and management. **Thomas Sattler**, thomas.sattler@wsl.ch¹, Martin K. Obrist¹, Peter Duelli¹ and Marco Moretti², ¹Swiss Federal Research Institute WSL, Birmensdorf, Switzerland, ²Swiss Federal Research Institute WSL, Bellinzona, Switzerland

9:20 1418 Bringing nature home: designing backyards to encourage beneficial insects as components of restored ecosystems. **Douglas W. Tallamy**, dtallamy@udel.edu, Karin Burghardt and Chris Phillips, Univ. of Delaware, Newark, DE

9:40 1419 Patterns in arthropod taxa and ecosystem function in native and alien urban landscapes. **Paula M. Shrewsbury**, pshrewsb@umd.edu¹, Douglas W. Tallamy², Michael J. Raupp¹ and Ellery A. Krause¹, ¹Univ. of Maryland, College Park, MD, ²Univ. of Delaware, Newark, DE

10:00 Break

10:15 1420 Converting vacant land to produce food in cities: influences on beneficial insects and arthropod-mediated ecosystem services. **Mary M. Gardiner**, gardiner.29@osu.edu, Scott Prajzner and Caitlin Burkman, The Ohio State Univ., OARDC, Wooster, OH

10:35 1421 Largest known occurrence of morphological anomalies of predatory beetles in an urban landscape. **Kamal J. K. Gandhi**, kgandhi@warnell.uga.edu¹ and Daniel A. Herms², ¹Univ. of Georgia, Athens, GA, ²The Ohio State Univ., OARDC, Wooster, OH

10:55 1422 Below-ground biocontrol services in the urban environment: soil food web structure in vacant land and urban farming sites. **Parwinder Grewal**, grewal.4@osu.edu, The Ohio State Univ., Wooster, OH

11:15 1423 Native bees in the urban environment, citizen science and monitoring efforts. **Sam Droege**, USGS, Beltsville, MD

11:35 1424 Pollinator diversity and abundance in cities: using preferred food resources to monitor bee communities. **Victoria Agatha Wojcik**, vwojcik@berkeley.edu, Univ. of California, Berkeley, Oakland, CA

Symposium: New Containment Procedures and Technology for Quarantine and Rearing of Arthropods

Room D5, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Jay S. Bancroft and Jian J. Duan, USDA - ARS, Newark, DE

9:00 Introductory Remarks

9:10 1425 Challenges with starting up a new insect quarantine rearing facility. **Lindsey Milbrath**, Lindsey.Milbrath@ars.usda.gov¹ and Ann E. Hajek², ¹USDA - ARS, Ithaca, NY, ²Cornell Univ., Ithaca, NY

9:35 1426 Quarantine and biocontrol issues when agents are geared for distant release. **John Goolsby**, jgoolsby@weslaco.ars.usda.gov, USDA - ARS, Weslaco, TX

10:00 1427 New upgrades and procedures to improve operations in an invasive insect and biocontrol quarantine. **Jay S. Bancroft**, Jay.Bancroft@ars.usda.gov, USDA - ARS, Newark, DE

10:25 Break

10:40 1428 A quarantine rearing system for the recent invasive pest, the European grapevine moth (*Lobesia botrana*). **Hannah Nadel**, Hannah.Nadel@aphis.usda.gov, USDA - APHIS, Buzzards Bay, MA

11:05 1429 Recent issues in rearing lepidopterans for the sterile insect technique. **James E. Carpenter**, jim.carpenter@ars.usda.gov, USDA - ARS, Tifton, GA

11:30 1430 Issues rearing multiple species under quarantine. **Melody A. Keena**, mkeena@fs.fed.us, USDA - Forest Service, Hamden, CT

11:55 Concluding Remarks

Mini-Symposium, SysEB/P-IE: Teaching and Education in Entomology

Room A19, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Jason R. Cryan¹, B. Rogers Leonard², Kirk J. Larsen³ and Norman J. Fashing⁴, ¹New York State Museum, Albany, NY, ²Louisiana State Univ. AgCenter, Winnsboro, LA, ³Luther College, Decorah, IA, ⁴College of William and Mary, Williamsburg, VA

9:00 Introductory Remarks

9:05 1431 Packaging and delivering IPM through collaboration across state and regional boundaries: the Bugwood Center experience. **G. Keith Douce**, kdouce@uga.edu¹, J. LaForest¹, Howard Schwartz² and Mary E. Burrows³, ¹Univ. of Georgia, Tifton, GA, ²Colorado State Univ., Fort Collins, CO, ³Bozeman, MT

9:25 1432 Insect diversity in introductory entomology courses: Why *teach* it? **Kirk Larsen**, larsenkj@luther.edu, Luther College, Decorah, IA

9:45 1433 Teaching research methods in an entomology laboratory course designed for non-science majors. **Norman J. Fashing**, njfash@wm.edu, College of William and Mary, Williamsburg, VA

10:05 1434 School of ants: using global citizen scientists to map urban biodiversity patterns. **Andrea Lucky**, alucky@ucdavis.edu and Robert R. Dunn, Univ. of North Carolina, Raleigh, NC

10:25 Concluding Remarks

Ten Minute Papers, P-IE Section, Chemical Control Strategies II

Room A4, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: B. Rogers Leonard¹, Bonnie B. Pendleton² and Anthony W. Weiss³, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³Dow AgroSciences LLC, Indianapolis, IN

8:00 Introductory Remarks

8:05 1435 Making sense of pesticide formulation development in the ag chem industry. **Paul Borth**, pwborth@dow.com, Dow AgroSciences, Indianapolis, IN

8:17 1436 SIVANTO™ - discovery of a new butenolide insecticide. **Klaus Kunz**, klaus.kunz@bayer.com, Robert Velten and Peter Jeschke, Bayer CropScience AG, Monheim am Rhein, Germany

8:29 1437 SIVANTO™ - biological aspects of a novel butenolide insecticide. **Matthias Haas**, matthias.haas@bayer.com¹, Hans-Juergen Schnorbach¹, Ralf Nauen¹, David Rogers², John Curtis³ and Richard Warner⁴, ¹Bayer CropScience, Monheim am Rhein, Germany, ²Bayer CropScience, Research Triangle Park, NC, ³Bayer CropScience, Morrilton, FL, ⁴Bayer CropScience, Clovis, CA

8:41 1438 SIVANTO™ - new tool for management of *Bemisia* whiteflies and Cysdv in melons. **John C. Palumbo**, jpalumbo@ag.arizona.edu¹, Mark White², David Rogers³, Matthias Haas⁴, Klaus Kunz⁵ and Robert Velten⁵, ¹Univ. of Arizona, Yuma, AZ, ²Bayer CropScience, Yuma, AZ, ³Bayer CropScience, Research Triangle Park, NC, ⁴Bayer CropScience, Monheim am Rhein, Germany, ⁵Bayer CropScience AG, Monheim am Rhein, Germany

8:53 1439 Control of the green peach aphid (*Myzus persicae*) and other potato pests with sulfoxaflor. **Harvey A. Yoshida**, hyoshida@dow.com¹, James D. Thomas², Alan G. McFadden³, Jackie A. Lee⁴ and Vernon B. Langston⁵, ¹Dow AgroSciences, Richland, WA, ²Dow AgroSciences, Indianapolis, IN, ³Dow AgroSciences, Guelph, ON, Canada, ⁴Dow AgroSciences, Lubbock, TX, ⁵Dow AgroSciences, The Woodlands, TX

9:05 1440 Field trial performance of Transform™, a novel sulfoxamine insecticide from Dow AgroSciences, against soybean aphid (*Aphis glycines*). **Neil Spomer**, naspomer@dow.com¹, James Thomas², Scott Ditmarsen³, Bradley W Hopkins⁴, Kevin Johnson⁵, Mike Melichar², Patricia Prasifka⁶, Dave Ruen⁷ and Eric Scherder⁸, ¹Dow AgroSciences, Brookings, SD, ²Dow AgroSciences, Indianapolis, IN, ³Dow AgroSciences, Madison, WI, ⁴Dow AgroSciences, Westerville, OH, ⁵Dow AgroSciences, Barnsville, MN, ⁶Dow AgroSciences, Champaign, IL, ⁷Dow AgroSciences, Lanesboro, MN, ⁸Dow AgroSciences, Huxley, IA

9:17 1441 Evaluation of sulfoxaflor for effects on beneficial insects. James D. Thomas¹, Vincent J. Kramer¹, Mark Miles², **Kevin Steffey**, KLSteffey@dow.com¹ and Chris Longhurst², ¹Dow AgroSciences, Indianapolis, IN, ²Dow AgroSciences, Abingdon, United Kingdom

9:29 1442 Efficacy of sulfoxaflor, a novel insecticide from Dow AgroSciences, for control of insect pests in citrus. **Anthony Weiss**, awweiss@dow.com¹, Barat Bisabri², Jesse M. Richardson³ and James Thomas⁴, ¹Dow AgroSciences, Brandon, FL, ²Dow AgroSciences, Orinda, CA, ³Dow AgroSciences, Hesperia, CA, ⁴Dow AgroSciences, Indianapolis, IN

9:41 1443 Incorporation of sulfoxaflor in a management program for tarnished plant bugs. **Melissa Willrich Siebert**, mwillrichsiebert@dow.com¹, Larry Walton², Ralph B. Lassiter³, Robert Haygood⁴, Jonathan Siebert¹, Andrew Ellis¹ and Jamey Thomas⁵, ¹Dow AgroSciences, Greenville, MS, ²Dow AgroSciences, Tupelo, MS, ³Dow AgroSciences, Little Rock, AR, ⁴Dow AgroSciences, Collierville, TN, ⁵Dow AgroSciences, Indianapolis, IN

9:53 Break

10:08 1444 Sulfoxaflor for aphid management in tree nuts. **Jesse M. Richardson**, jmrichardson@dow.com¹, John Richburg², Barat Bisabri³, Brad Lewis⁴ and James D. Dutcher⁵, ¹Dow AgroSciences, Hesperia, CA, ²Dow AgroSciences, Headland, AL, ³Dow AgroSciences, Orinda, CA, ⁴New Mexico State Univ., Las Cruces, NM, ⁵Univ. of Georgia, Tifton, GA

10:20 1445 Movement of Cyazypyr™ (DPX-HGW86, Cyantraniliprole) formulations in plants after foliar applications and its impact on control of sucking and chewing insects. **James D. Barry**, james.d.barry@usa.dupont.com, Hector E. Portillo, I. Billy Annan, Rachel A. Cameron, Donald G. Clagg, Robert F. Dietrich, Lawrence J. Watson, Mary P. Koechert, Robert M. Leighty, Joseph P. Saienni, David L. Ryan, James A. McMillan, R. Scott Swain and Raymond A. Kaczmarczyk, DuPont Crop Protection, Newark, DE

10:32 1446 The role of DuPont Cyazypyr™ in reducing insect-transmitted plant diseases. **Juan M. Alvarez**, juan.m.alvarez@usa.dupont.com, Hector E. Portillo, I. Billy Annan and Rachel A. Cameron, DuPont Crop Protection, Newark, DE

10:44 1447 DuPont Cyazypyr™ (DPX-HGW86, cyantraniliprole): a novel insecticide for aphid pest management and plant protection. **I. Billy Annan**, i-billy.annan@usa.dupont.com¹, Juan M. Alvarez¹, Hector E. Portillo¹, Rajul Edoliya² and John Wiles³, ¹DuPont Crop Protection, Newark, DE, ²DuPont India Pvt. Ltd, Crop Protection, Gurgaon, Haryana, India, ³DuPont (U.K.) Limited, Crop Protection, Stevenage, Hertfordshire, United Kingdom

10:56 1448 Sulfoxaflor insecticide to manage aphids and whiteflies in vegetable crops. **Boris A. Castro**, bacastro@dow.com¹, Jesse M. Richardson², Leonardo Paniagua³, John C. Palumbo⁴ and James D. Thomas⁵, ¹Dow AgroSciences, Fresno, CA, ²Dow AgroSciences, Hesperia, CA, ³Dow AgroSciences, San José, Costa Rica, ⁴Univ. of Arizona, Yuma, AZ, ⁵Dow AgroSciences, Indianapolis, IN

11:08 1449 DuPont Cyazypyr™ (DPX-HGW86, cyantraniliprole): a cross-spectrum insecticide for control of major pests of rice. **Vineet Singh**, SINGH2V@sglnm1.email.dupont.com¹, I. Billy Annan², Yong C. Hahn³, Kok Eng Ooi⁴, Hector E. Portillo² and Daniel Vincent², ¹DuPont India Pvt. Ltd., Vadodara, Gujarat, India, ²DuPont Crop Protection, Newark, DE, ³DuPont Singapore Ltd, Singapore, Singapore, Singapore, ⁴DuPont Malaysia Sdn. Bhd., Kuala Lumpur, KL, Malaysia

11:20 1450 Impact of Cyazypyr™ (DPX-HGW86, Cyantraniliprole) on thrips biology and its significance for crop protection. **Hector E. Portillo**, hector.e.portillo@usa.dupont.com¹, I. Billy Annan¹, George G. Kennedy², Alana L. Jacobson², D. Ames Herbert³, Jessica A. Sampler⁴, Christopher E. Clark⁴, Robert W. Williams⁵, Charles S. Baer⁶, Glenn G. Hammes⁷, Joseph E. Funderburk⁸ and Juan M. Alvarez¹, ¹DuPont Crop Protection, Newark, DE, ²North Carolina

State Univ., Raleigh, NC, ³Virginia Polytechnic Institute and State Univ., Suffolk, VA, ⁴Virginia Polytechnic Institute and State Univ., Blacksburg, VA, ⁵DuPont Crop Protection, Raleigh, ND, ⁶DuPont Crop Protection, Memphis, TN, ⁷DuPont Crop Protection, Blairsville, GA, ⁸Univ. of Florida, Quincy, FL

11:32 1451 Role of DuPont Cyazypyr™ insecticide in the management of whiteflies in multiple crops. **R. Cameron**, Rachel.A.Cameron@usa.dupont.com¹, I. Billy Annan¹, Juan M. Alvarez², Hector E. Portillo¹, Danny M. Tamayo², John C. Palumbo³, Glenn G. Hammes⁴, David G. Riley⁵, Stanley S. Royal⁶, David Schuster⁷ and R. Caballero⁷, ¹DuPont Crop Protection, Newark, DE, ²DuPont Crop Protection, Yuma, AZ, ³Univ. of Arizona, Yuma, AZ, ⁴DuPont Crop Protection, Blairsville, GA, ⁵Univ. of Georgia, Tifton, GA, ⁶DuPont Crop Protection, Girard, GA, ⁷Univ. of Florida, Wimauma, FL

11:44 1452 In plant movement and insecticidal activity of chlorantraniliprole (Coragen, DuPont) against tobacco budworm (*Heliothis virescens*) in tobacco (*Nicotiana tabacum*). **Hannah J. Burrack**, hannah_burrack@ncsu.edu and Dylan Kraus, North Carolina State Univ., Raleigh, NC

11:56 Concluding Remarks

Ten-Minute Papers, MUVE Session 4: Vector Biology & Management

Room D3, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: C. Geden¹, Douglas E. Norris², Matthew Aubuchon¹ and Roxanne Burrus³, ¹USDA - ARS, Gainesville, FL, ²Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, ³US Naval Medical Research Unit #6, Callao 2, Lima, Peru

8:00 Introductory Remarks

8:05 1453 Entomologic and taphonomic differences between autopsied and non-autopsied carrion and its implications for cadaver research. **Michelle L. Lewis**, mlewis@SHSU.EDU, Natalie K. Lindgren, Alan D. Archambeault, Brent C. Rahlwes, James R. Willett and Sibyl Bucheli, Sam Houston State Univ., Huntsville, TX

8:17 1454 Necrophagous invertebrate community assembly in relation to microbial metabolic activity on a carrion resource: exploring ecological mechanisms of vertebrate decomposition. **M. Eric Benbow**, benbow@notes.udayton.edu and Andrew Lewis, Univ. of Dayton, Dayton, OH

8:29 1455 Update on landing preferences of the sand fly *Phlebotomus papatasi* on multiple surface materials. **Matt Aubuchon**, Matt.Aubuchon@ars.usda.gov, Sandra A. Allan and Gary G. Clark, USDA - ARS, Gainesville, FL

8:41 1456 Update on black-legged tick (*Ixodes scapularis* Say) in West Virginia. **Eric J. Dotseth**, Eric.J.Dotseth@wv.gov, West Virginia Dept. of Health & Human Resources, Charleston, WV

8:53 1457 Invasion success in a novel landscape: spatial factors determine the establishment of *Ixodes scapularis*. **Brian F. Allan**, ballan@illinois.edu, Univ. of Illinois, Urbana, IL

9:05 1458 Comparative effects of cattle, horse, and chicken blood on stable fly (*Stomoxys calcitrans* (L.)) fecundity. **Kristina Hale**, kristina.hale@ars.usda.gov, USDA - ARS, Lincoln, NE

9:17 1459 Management of house flies (*Musca domestica*) on

dairies by strategic placement of traps. **Jerome A. Hogsette**, Jerry.Hogsette@ars.usda.gov¹ and Mary E. Sowerby², ¹USDA - ARS, Gainesville, FL, ²Univ. of Florida, Live Oak, FL

9:29 1460 Comparison of trapping techniques for adult Tabanidae. **Daniel L. Kline**, dan.kline@ars.usda.gov¹ and Jerome A. Hogsette², ¹Mosquito and Fly Research Unit, Gainesville, FL, ²USDA - ARS, Gainesville, FL

9:41 1461 Natural carbon dioxide generation for the attraction of blood feeding arthropods. William E. Yarnell¹, Dana Nayduch², Matthew Schacht³ and **Lee W. Cohnstaedt**, Lee.Cohnstaedt@ars.usda.gov¹, ¹USDA - ARS, Manhattan, KS, ²Georgia Southern Univ., Statesboro, GA, ³Southeastern Technical College, Vidalia, GA

9:53 1462 Insecticidal activity of novel compounds against pests of medical and veterinary importance. **Phillip E. Kaufman**, pkaufman@ufl.edu¹, Rajinder S. Mann² and Jerry F. Butler¹, ¹Univ. of Florida, Gainesville, FL, ²Univ. of Florida, Lake Alfred, FL

10:05 Break

10:20 1463 Linking resident knowledge, attitudes and practices regarding mosquitoes to socioeconomic factors and vector control. Zara R. Dowling¹, **Paul Leisnham**, leisnham@umd.edu¹ and Peter Armbruster², ¹Univ. of Maryland, College Park, MD, ²Georgetown Univ., Washington, DC

10:32 1464 Personalized pesticides-a new paradigm: volatilization of individual components of botanical insect repellents from human skin. **Saber Miresmaili**, Saber@illinois.edu¹ and Murray B. Isman², ¹Univ. of Illinois at Urbana-Champaign, Urbana, IL, ²Univ. of British Columbia, Vancouver, BC, Canada

10:44 1465 Effectiveness of four clip-on repellent devices in repelling *Aedes albopictus* from baited artificial targets in North Florida. Aaron Lloyd¹, Joseph Diclaro², **C.D.R. David F. Hoel**, davidfhoel@yahoo.com³ and Daniel L. Kline⁴, ¹Navy Entomology Center of Excellence, Jacksonville, FL, ²Univ. of Florida, Gainesville, FL, ³US Navy, Gainesville, FL, ⁴USDA - ARS, Gainesville, FL

10:56 1466 An autodissemination station for the transfer of an insect growth regulator to container breeding mosquitoes. **Devi S. Suman**, dss1978@rediffmail.com, Randy Gaugler and Yi Wang, Center for Vector Biology, New Brunswick, NJ

11:08 1467 Point source and area wide field studies of pyriproxyfen autodissemination against container-inhabiting mosquitoes in urban environments. **Randy Gaugler**¹, Sean P. Healy², Greg Williams³, Yi Wang¹, Ary Farajollahi⁴, Devi Suman¹, Aaron Lloyd⁵, Dina Fonseca¹, Muhammad Farooq⁵, Chris Brey⁶ and George Schoeler⁵, ¹Center for Vector Biology, New Brunswick, NJ, ²Monmouth County Mosquito Commission, Eatontown, NJ, ³Hudson County Mosquito Control, Jersey City, NJ, ⁴Mercer County Mosquito Control, Trenton, NJ, ⁵Navy Entomology Center of Excellence, Jacksonville, FL, ⁶Marywood Univ., Scranton, PA

11:20 1468 Functional characterization of P450 genes associated with insecticide resistance in *Anopheles funestus*, malaria vector in Africa. **Jacob Riveron**, riveron@liverpool.ac.uk, Helen Irving and Charles Wondji, Liverpool School of Tropical Medicine, Liverpool, United Kingdom

11:32 1469 Slowing the development of insecticide resistance in malaria mosquitoes: application of a spatially complex simulation model. **Kristine T. Edwards**, kt20@msstate.edu, Michael Caprio and Jerome Goddard, Mississippi State Univ., Mississippi State, MS

11:44 1470 United States and Peruvian Navies collaborate to provide improved public health measures against dengue fever

vector, *Aedes aegypti* (Diptera: Culicidae), in Lima, Peru. **Roxanne G. Burrus**, roxanne.burrus@med.navy.mil¹, Manuel J. Larru², Victor Zorrilla-Cieza¹, Carmen Flores-Mendoza¹, Jorge O. Alarcón Villaverde³, Roberto Fernández-Loayza¹ and Sofia Gonzalez-Collantes², ¹US Naval Medical Research Unit #6, Callao 2, Lima, Peru, ²Centro Médico Naval (CEMENA), Callao, Lima, Peru, ³Univ. of San Marcos, Callao 2, Lima, Peru

11:56 Concluding Remarks

Ten-Minute Papers, P-IE Section, Pollinators II

Room A18, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: B. Rogers Leonard¹, Bonnie B. Pendleton² and Gary Brewer³, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³Univ. of Nebraska - Lincoln, Lincoln, NE

8:30 Introductory Remarks

8:35 1471 Differences in nutritional profiles of pollen stored by African and European honey bees (*Apis mellifera* L.) and the effects on worker bees. **Gloria DeGrandi-Hoffman**, Gloria.Hoffman@ARS.USDA.GOV¹, Bruce Eckholm² and Ming Huang², ¹Carl Hayden Bee Research Center, Tucson, AZ, ²Univ. of Arizona, Tucson, AZ

8:47 1472 Honey bee, *Apis mellifera*, brood pheromone (SuperBoost) promotes colony vigor and survival. **John H. Borden**, john.borden@contech-inc.com¹, Onour E. Moeri¹, Cameron G. Lait¹, Ervin Kovacs¹, Cristina MN. Machial¹ and Michael Campbell², ¹Contech Enterprises Inc., Delta, BC, Canada, ²Campbell's Gold Honey Farm and Meadery, Abbotsford, BC, Canada

8:59 1473 Honey bee colony losses in stationary apiaries across the U.S. **F. A. Drummond**, frank.drummond@umit.maine.edu¹, Kate Aronstein², Brian Eitzner³, James Ellis⁴, Jay Evans⁵, Nancy Ostiguy⁶, Marla Spivac⁷, Walter S Sheppard⁸ and Kirk Visscher⁹, ¹Univ. of Maine, Orono, ME, ²USDA - ARS, Weslaco, TX, ³Connecticut Agricultural Experiment Station, New Haven, CT, ⁴Univ. of Florida, Gainesville, FL, ⁵Bee Research Laboratory, Beltsville, MD, ⁶Pennsylvania State Univ., Univ. Park, PA, ⁷Univ. of Minnesota, St Paul, MN, ⁸Washington State Univ., Pullman, WA, ⁹Univ. of California, Riverside, CA

9:11 1474 Proteomics of the hypopharyngeal glands of honey bees (*Apis mellifera*). **Diana Sammataro**, diana.sammataro@ars.usda.gov, Carl Hayden Bee Research Center, Tucson, AZ

9:23 1475 Genetic diversity affects colony survivorship in migratory beekeeping operations. **David R. Tarpy**, david_tarpy@ncsu.edu¹, Dennis VanEngelsdorp² and Jeff Pettis³, ¹North Carolina State Univ., Raleigh, NC, ²Pennsylvania Dept. of Agriculture, Harrisburg, PA, ³Bee Research Laboratory, Beltsville, MD

9:35 1476 Which trap type and trap color work best in collecting different groups of bees (Family: Apidae) and pollinating flies (Order: Diptera)? **Mark A. Schlueter**, mschluet@ggc.edu and Nicholas G. Stewart, Georgia Gwinnett College, Lawrenceville, GA

9:47 1477 Functional diversity of honey bee (*Apis mellifera*) associated lactic-acid bacterial genomes. **Kirk E. Anderson**, Kirk.Anderson@ars.usda.gov, USDA - ARS, Tucson, AZ

9:59 1478 Overwintering success of honey bee hives following chronic exposure to imidacloprid. **David J. Hawthorne**, djh@umd.edu¹, Galen P. Dively¹ and Jeff Pettis², ¹Univ. of Maryland, College Park, MD, ²Bee Research Laboratory, Beltsville, MD

edu¹, Galen P. Dively¹ and Jeff Pettis², ¹Univ. of Maryland, College Park, MD, ²Bee Research Laboratory, Beltsville, MD

10:11 Concluding Remarks

Ten-Minute Papers, P-IE Section, Transgenic Crops

Room A17, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: B. Rogers Leonard¹, Bonnie B. Pendleton² and Michael Culy³, ¹Louisiana State Univ. AgCenter, Winnsboro, LA, ²West Texas A&M Univ., Canyon, TX, ³Dow AgroSciences, Indianapolis, IN

8:30 Introductory Remarks

8:35 1479 Field trial performance of Refuge Advanced™ powered by SmartStax® for control of fall armyworm and corn earworm in the U.S. Corn Belt. **Dwain M. Rule**, ddrule@dow.com¹, Patricia Prasifka², William H. Hendrix³ and Nick Storer⁴, ¹Dow AgroSciences, Fowler, IN, ²Dow AgroSciences, Champaign, IL, ³Dow AgroSciences, Indianapolis, IN, ⁴Dow AgroSciences, Kensington, MD

8:47 1480 Update on Optimum®AcreMax® insect protection. **Laura Higgins**, laura.higgins@pioneer.com¹, J. Lindsey Flexner² and Rachel R. Binning³, ¹Pioneer Hi-Bred International, Inc., Johnston, IA, ²Pioneer Hi-Bred International, Inc., Wilmington, DE, ³Pioneer Hi-Bred International, Inc., Ankeny, IA

8:59 1481 The use of dsRNA to control insects: the science and applications. **William J. Moar**, william.moar@monsanto.com, Graham P. Head and Thomas L. Clark, Monsanto Company, St. Louis, MO

9:11 1482 Field trial performance of Refuge Advanced™ powered by SmartStax® for control of western bean cutworm and European corn borer in the U.S. Corn Belt. **Bradley W. Hopkins**, bwhopkins@dow.com¹, Dwain M. Rule², William H. Hendrix³, Patricia Prasifka⁴ and Nick Storer⁵, ¹Dow AgroSciences, Westerville, OH, ²Dow AgroSciences, Fowler, IN, ³Dow AgroSciences, Indianapolis, IN, ⁴Dow AgroSciences, Champaign, IL, ⁵Dow AgroSciences, Kensington, MD

9:23 1483 Performance of Optimum® IntraSect™ insect protection against southern lepidopteran pests of maize. **Jarrod T. Hardke**, jarrod.hardke@pioneer.com¹, Murdick J. McLeod², Steven R. Paszkiewicz³ and Robert L. Rorie¹, ¹Pioneer Hi-Bred International, Inc., Union City, TN, ²Pioneer Hi-Bred International, Inc., Windfall, IN, ³Pioneer Hi-Bred International, Inc., Johnston, IA

9:35 1484 Assessments of prey-mediated effects of Bt corn demonstrate no adverse effects of Cry1F on *Coleomegilla maculata*. **Junce Tian**, tianjunce@163.com¹, Hilda L. Collins¹, Jörg Romeis², Steven Naranjo³, Richard L. Hellmich⁴ and Anthony M. Shelton¹, ¹Cornell Univ. NYSAES, Geneva, NY, ²Agroscope Reckenholz-Tänikon Research Station ART, Zürich, Switzerland, ³USDA - ARS, Maricopa, AZ, ⁴USDA - ARS, Ames, IA

9:47 1485 Impact of Bt crops on bollworm populations. **Ben Von Kanel**, mbv7@entomology.msstate.edu¹, Angus Catchot¹, Jeffrey Gore², Fred R. Musser¹ and Ryan Jackson³, ¹Mississippi State Univ., Starkville, MS, ²Mississippi State Univ., Stoneville, MS, ³USDA, Stoneville, MS

9:59 1486 Confirmation and response to pink bollworm resistance to Bollgard (Cry1Ac) cotton in localized regions of India. **KC. Ravi**, KS. Mohan, **John Greenplate**, John.t.greenplate@monsanto.com, William Moar and Graham Head, Monsanto Company, St. Louis, MO

10:11 1487 Responding to unusual survival occurrences by *Helicoverpa zea* in Bollgard II cotton: 2010-2011 field season activities. John Greenplate¹, **Paula A. Price**, paula.a.price@monsanto.com¹, William Moar¹, Graham Head¹, Waseem Akbar¹ and Nancy Adams², ¹Monsanto Company, St. Louis, MO, ²Monsanto Company, Union City, TN

10:23 Concluding Remarks

Ten-Minute Papers, SysEB: Physiology, Morphology, and Development

Room A20, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Jason R. Cryan¹, Anamaria DalMolin² and Wei Song Hwang³, ¹New York State Museum, Albany, NY, ²Texas A&M Univ., ³Univ. of California, Riverside, Riverside, CA

8:20 Introductory Remarks

8:25 1488 Insights gained from the manual alignment of arthropod anatomy ontologies. **Matthew Bertone**, matthew.bertone@gmail.com, István Mikó, Matthew J. Yoder, Katja Seltmann and Andrew R. Deans, North Carolina State Univ., Raleigh, NC

8:37 1489 The effects of honey bee (*Apis mellifera*) queen reproductive potential on colony growth. **Juliana Rangel**, jrangel@ncsu.edu, David Tarpy and Jennifer Keller, North Carolina State Univ., Raleigh, NC

8:49 1490 Potential of Cicindelidae as bioindicators of arsenic uptake in a marine food web. **Frank J Dirrigl**, dirriglf@utpa.edu, Alondra Hernandez and Thomas Eubanks, Univ. of Texas - Pan American, Edinburg, TX

9:01 1491 The effects of gall morphology on parasitism rates in a complex of gall midges (Diptera: Cecidomyiidae). **Jeremy J. Heath**, heath.22@wright.edu and John O. Stireman III, Wright State Univ., Dayton, OH

9:13 1492 Brain miniaturization: limitation on brain size from beetles to ants. **Marc A. Seid**, seidm2@scranton.edu, Univ. of Scranton, Scranton, PA

9:25 Break

9:35 1493 Local and global tests of models of soldier production in *Pheidole* ants. **Terrence P. McGlynn**, terry.mcglynn@gmail.com¹ and Rob R. Dunn², ¹California State Univ., Dominguez Hills, Carson, CA, ²North Carolina State Univ., Raleigh, NC

9:47 1494 A mimic without its model - geographic variation in viceroy butterfly chemical defenses, palatability, and mimicry. **Kathleen L. Prudic**, kathleen.prudic@yale.edu, Yale Univ., New Haven, CT

9:59 1495 Butterfly eyespots and the evolution of serial humility. **Jeffrey C. Oliver**, jeffrey.oliver@yale.edu and Antónia Monteiro, Yale Univ., New Haven, CT

10:11 1496 Gynogenesis in *Neochlamisus* leaf beetles. **Daniel J. Funk**, daniel.j.funk@vanderbilt.edu, Vanderbilt Univ., Nashville, TN

10:23 1497 Frog-biting midges (*Corethrella* spp.) as vectors of *Trypanosoma* sp. and *Batrachochytrium dendrobatidis*. **Ximena E. Bernal**, ximena.bernal@ttu.edu¹, Taegan McMahon² and C. Miguel Pinto³, ¹Texas Tech Univ., Lubbock, TX, ²Univ. of South Florida,

Tampa, FL, ³American Museum of Natural History, New York, NY

10:35 Concluding Remarks

Wednesday, November 16, 2011, Afternoon

Program Symposium: The Molecular Physiology of Arthropod Vectors and Pests: Towards the Development of Novel Control Agents and Approaches

Room A3, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Omprakash Mittapalli, The Ohio State Univ., Wooster, OH

1:30 Welcoming Remarks

1:32 Introductory Remarks

1:35 1498 Molecular pharmacology of new anticholinesterases for control of the malaria mosquito, *Anopheles gambiae*. **Jeffrey R. Bloomquist**, jrbloom@epi.ufl.edu, Univ. of Florida, Gainesville, FL

1:50 1499 Developing control strategies for managing insecticide resistant horn fly populations. **Lane Foil**, lfoil@agcenter.lsu.edu, Louisiana State Univ. AgCenter, Baton Rouge, LA

2:05 1500 RNAi interference based pest management. **Fang Zhu**, fangzhudy@uky.edu and Subba R. Palli, Univ. of Kentucky, Lexington, KY

2:20 1501 Genetically engineered microorganisms for pest control. **Claudia Husseneder**, chusseneder@agcenter.lsu.edu, Louisiana State Univ. AgCenter, Baton Rouge, LA

2:35 1502 Functional proteomics of the insect neuropeptidome: things we know we don't know and things we don't know we don't know. **Rolando Rivera-Pomar**, riverapomar@creg.org.ar and Sheila Ons, Universidad Nacional de La Plata, Florencio Varela, Buenos Aires, Argentina

2:50 1503 Mimetic analogs of insect neuropeptides as rational tools for pest management. **Ronald J. Nachman**, Ron.Nachman@ARS.USDA.GOV, USDA - ARS, College Station, TX

3:05 1504 Global gene expression and neuroendocrine regulation of tick development and reproduction. **R. Michael Roe**, michael_roe@ncsu.edu, North Carolina State Univ., Raleigh, NC

3:20 Break

3:35 1505 The molecular physiology of insect sterol nutrition: novel targets and strategies to control crop pests. **Sophie Bouvaine**, sb622@cornell.edu and Angela E. Douglas, Cornell Univ., Ithaca, NY

3:50 1506 Anion transport in midguts of larval mosquitoes. **Paul J. Linsler**, pjil@whitney.ufl.edu, Univ. of Florida, St. Augustine, FL

4:05 1507 Inhibiting arginine kinase as a novel insect control strategy. **Rajeev Vaidyanathan**, rajeev.vaidyanathan@sri.com, SRI International, Harrisonburg, VA

4:20 1508 Mechanism of Bt resistance in the cabbage looper, *Trichoplusia ni*. **Ping Wang**, pw15@cornell.edu, Cornell Univ. NYSAES, Geneva, NY

4:35 1509 Got milk? The molecular biology of tsetse lactation. **Geoff Attardo**, geoff.attardo@yale.edu, Yale Univ., New Haven, CT

4:50 1510 Pharmacological modulation of blood feeding and egg-laying behaviors in the southern cattle tick *Rhipicephalus microplus*. **Andrew Y. Li**, Andrew.Li@ars.usda.gov, USDA - ARS, Kerrville, TX

5:05 1511 The ion transport mechanisms of mosquito Malpighian tubules as potential targets for novel control agents. **Klaus W. Beyenbach**, kwb1@cornell.edu, Cornell Univ., Ithaca, NY

5:20 1512 Functional genomics of bed bugs: an update. **Praveen Mamidala**, p.mamidala@yahoo.com and Omprakash Mittapalli, The Ohio State Univ., OARDC, Wooster, OH

5:35 Concluding Remarks

P-IE Section Symposium: Biodiversity, Global Change and Insect-Mediated Ecosystem Services

Room A5, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Rachael Winfree¹, Neal Williams² and Deborah L. Fink³, ¹Rutgers, The State Univ. of New Jersey, New Brunswick, NJ, ²Univ. of California, Davis, Davis, CA, ³Univ. of Missouri - Columbia, Columbia, MO

1:30 Welcoming Remarks

1:32 1513 Pollinator biodiversity and pollination services: a multi-year study. **Rachael Winfree**, rwinfree@rci.rutgers.edu¹, Claire Kremen² and Neal Williams³, ¹Rutgers, The State Univ. of New Jersey, New Brunswick, NJ, ²Univ. of California, Berkeley, Berkeley, CA, ³Univ. of California, Davis, Davis, CA

1:52 1514 Rediversifying agricultural landscapes to promote pollination services. **Claire Kremen**, Univ. of California, Berkeley, Berkeley, CA

2:12 1515 Get rich or get even? Linking biodiversity and natural pest control. **William E. Snyder**, wesnyder@wsu.edu, Washington State Univ., Pullman, WA

2:32 1516 Local to landscape scale management of multiple ecosystem services. **Riccardo Bommarco**, Riccardo.Bommarco@slu.se, Swedish Univ. of Agricultural Sciences, Uppsala, Sweden

2:52 1518 Biodiversity and bioenergy: finding win -wins for agriculture and environment. **Doug Landis**, landisd@msu.edu, Michigan State Univ., East Lansing, MI

3:12 Break

3:22 1519 Quantifying the links between biodiversity, pollination function and landscape change. **Neal Williams**, nmwilliams@ucdavis.edu, Univ. of California, Davis, Davis, CA

3:42 1520 Climate change affects phenology and plant-pollinator interactions: results from a contemporary and 120-year old dataset. **Tiffany Knight**, tknight@biology2.wustl.edu, Washington Univ., St. Louis, St. Louis, MO

4:02 1521 Climate change, food web reorganization and implications for carbon and nitrogen cycling. **Os Schmitz**, oschmitz@yale.edu, Yale Univ. School of Forestry and Environmental Studies, New Haven, CT

4:22 1522 Landscape approaches to conserving insect-mediated services: insights from large-scale experiments. **Nick Haddad**, nick_haddad@ncsu.edu, North Carolina State Univ., Raleigh, NC

4:42 1523 Mitigating arthropod biodiversity loss: one size fits all or do we need a tailored approach? **David Kleijn**, David.Kleijn@wur.nl, Wageningen Univ., Wageningen, Netherlands

5:02 1524 Roundtable discussion: how can we put our results into practice? **Mace Vaughan**, mace@xerces.org¹ and David Kleijn², ¹Xerces Society, Portland, OR, ²Wageningen Univ., Wageningen, Netherlands

P-IE Section Symposium: The Future is Now: Blended Refuge, Resistance, and Rootworm Options for Tomorrow

Room A6, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Joseph L. Spencer¹, Lance J. Meinke² and Bruce E. Hibbard³, ¹Univ. of Illinois at Urbana-Champaign at Urbana-Champaign, Urbana, IL, ²Univ. of Nebraska - Lincoln, Lincoln, NE, ³USDA - ARS, Columbia, MO

1:30 1525 Rootworm management with transgenic corn: history and future challenges. **Lance J. Meinke**, LMEINKE1@unl.edu, Univ. of Nebraska - Lincoln, Lincoln, NE

1:55 1526 Western corn rootworm abundance, movement, and mating in transgenic corn with block or blended refuges. Joseph L. Spencer¹ and **Sarah A. Hughson**, hughson2@illinois.edu², ¹Univ. of Illinois at Urbana-Champaign at Urbana-Champaign, Urbana, IL, ²Univ. of Illinois at Urbana-Champaign, Urbana, IL

2:15 1527 Comparing refuge strategies: seed mixes versus structured refuges. **Michael A. Caprio**, mcaprio@entomology.msstate.edu¹, Kristine T. Edwards¹, Jeannette C. Martinez², Ryan Kurtz³, Matthew W. Carroll⁴ and John A. Glaser⁵, ¹Mississippi State Univ., Mississippi State, MS, ²US Environmental Protection Agency, Office of Pesticide Programs, Washington, DC, ³Syngenta Biotechnology, Inc., Research Triangle Park, NC, ⁴Monsanto Company, St. Louis, MO, ⁵US Environmental Protection Agency, Cincinnati, OH

2:35 1528 Grower perspectives on a looming 95:5 landscape in the Midwestern corn belt: is the Bt bubble sustainable? **Michael E. Gray**, megray@illinois.edu, Univ. of Illinois at Urbana-Champaign, Urbana, IL

2:55 1529 Volunteer corn in continuous Bt corn: quantifying potential effects on western corn rootworm management. **Christian H. Krupke**, ckrupke@purdue.edu¹, Paul T. Marquardt¹ and Vianney OM. Willot², ¹Purdue Univ., West Lafayette, IN, ²Michigan State Univ., East Lansing, MI

3:15 Break

3:30 1530 Current understanding of laboratory selection to transgenic Bt corn by western corn rootworm. **Daniel L. Frank**, Daniel.Frank@ars.usda.gov and Bruce E. Hibbard, USDA - ARS, Columbia, MO

3:50 1531 Evaluating susceptibility to Bt corn for populations of western corn rootworm. **Aaron J. Gassmann**, aaronjg@iastate.edu, Jennifer L. Petzold, Ryan S. Keweshan and Michael Dunbar, Iowa State Univ., Ames, IA

4:10 1532 Is it real? Exploring the prospects of field resistance to corn-rootworm resistant transgenic corn in Minnesota. **Ken Ostlie**, ostli001@umn.edu¹, Bruce D. Potter² and Lee French³, ¹Univ. of Minnesota, St. Paul, MN, ²Univ. of Minnesota, Lamberton, MN, ³French Agricultural Research, Lamberton, MN

4:30 1533 What can genomics tell us about rootworm ecology and resistance evolution? **Nicholas J. Miller**, nmiller4@unl.edu, Univ. of Nebraska - Lincoln, Lincoln, NE

4:50 1534 Chemical ecology and behavior: new tools for western corn rootworm management. **Elisa Bernklau**, bernklau@lamar.colostate.edu and Louis Bjostad, Colorado State Univ., Fort Collins, CO

5:10 1535 What do we know about the genetic basis of native resistance in maize to the western corn rootworm? **Martin Bohn**, mbohn@uiuc.edu, Univ. of Illinois, Urbana, IL

MUVE Section Symposium: Cost-effective Alternatives to Traditional Sequencing: Applying Next Generation Molecular Technologies to Medical and Veterinary Entomology

Room D3, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Michelle Sanford and Rebecca T Trout, Univ. of California, Davis, Davis, CA

1:30 Welcoming Remarks

1:35 1536 The *Lucilia sericata* transcriptome: developing and using genomic tools in a non-model organism of medical, veterinary, and forensic importance. **Aaron Tarone**, amtarone@ag.tamu.edu, Texas A&M Univ., College Station, TX

1:50 1537 Transcriptome sequencing and the molecular underpinnings of ecological adaptation in the Asian tiger mosquito, *Aedes albopictus*. **Monica Poelchau**, mfp33@georgetown.edu¹, Julie A. Reynolds², Christine Elsik¹, David L. Denlinger² and Peter Armbruster¹, ¹Georgetown Univ., Washington, DC, ²The Ohio State Univ., Columbus, OH

2:05 1538 Olfaction gene expression in mosquito disease vectors. **Michel A. Slotman**, maslotman@ag.tamu.edu, Texas A&M Univ., College Station, TX

2:20 1539 Comparative transcriptome analysis of pyrethroid resistant and susceptible *Anopheles gambiae* mosquitoes. Mariangela Bonizzoni¹, Jun Li¹, Andrew Githeko² and **Guiyun Yu**, guiyuny@uci.edu¹, ¹Univ. of California, Irvine, Irvine, CA, ²Kenya Medical Research Institute, Kisumu, Kenya

2:35 1540 Sleeping beauties: "omics" approaches to dissecting insect diapause. **Daniel A. Hahn**, dahahn@ufl.edu, Univ. of Florida, Gainesville, FL

2:50 1541 Mosquito sex and the early embryo: a next-gen perspective. **Jake Tu**, jaketu@vt.edu, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

3:05 Break

3:20 1542 Using sequenom massarray for SNP genotyping in *Culex pipiens*. **Rebecca T Trout**, rtrout@ucdavis.edu, Yoosook Lee, Gregory Lanzaro and Anthony Cornel, Univ. of California, Davis, Davis, CA

3:35 1543 SNP genotyping for population structure in *Anopheles* spp. **Clare Marsden**, cmarsdenresearch@gmail.com, Yoosook Lee, Catelyn Nieman, Anthony Cornel and Gregory C. Lanzaro, Univ. of California, Davis, Davis, CA

3:50 1544 Application of single-strand conformation polymorphism (SSCP) for the identification of ticks and to investigate their population genetics. **Neil Chilton**, neil.chilton@usask.ca, Univ. of Saskatchewan, Saskatoon, SK, Canada

4:05 1545 Community composition and assembly on decomposing vertebrate carcasses using pyrosequencing. **Jennifer L. Pechal**, jenpechal18@tamu.edu¹, M. Eric Benbow², Tawni Crippen³, Aaron Tarone⁴ and Jeffery K. Tomberlin¹, ¹Texas A&M Univ., College Station, TX, ²Univ. of Dayton, Dayton, OH, ³USDA - ARS, College Station, TX

4:20 1546 Using next generation sequencing to examine genetic differentiation in *Anopheles gambiae* s.s. **Michelle Sanford**, uranotaenia@gmail.com, Yoosook Lee, Clare Marsden and Gregory Lanzaro, Univ. of California, Davis, Davis, CA

4:35 1547 Next generation sequencing of *Borrelia* isolates. **Alan Barbour**, abarbour@uci.edu, Univ. of California, Irvine, Irvine, CA

4:50 Concluding Remarks

MUVE Section Symposium: Identify.. Clarify.. Speak Out.. About IPM Implementation in Schools

Room A1, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Dawn Gouge¹, Thomas A. Green², Tim Stock³, Carrie Foss⁴ and Janet A. Hurley⁵, ¹Univ. of Arizona, Maricopa, AZ, ²IPM Institute of North America, Inc., Madison, WI, ³Oregon State Univ., Corvallis, OR, ⁴Washington State Univ., Puyallup, WA, ⁵Texas Cooperative Extension, TAMU Ag Research & Extension Center, Dallas, TX

1:30 Welcoming Remarks

1:35 1548 Bellevue School District IPM success story. **Nancy Larson**, cfoss@wsu.edu, Bellevue School District, Bellevue, WA

1:55 1549 PMP partner. **Jack Marlowe**, jackmarlowe@edenpest.com, Eden Advanced Pest Technologies, Olympia, WA

2:15 1550 Education, education, education, the best form of enforcement. **Kathy Murray**, kathy.murray@maine.gov, Maine Dept. of Agriculture, Food and Rural Resources, Augusta, ME

2:35 1551 Environmental protection - children are 100% of our future. **Sherry Glick**, Glick.Sherry@epamail.epa.gov, US EPA Office of Pesticide Programs, Las Vegas, NV

2:55 1552 Coordination, cooperation, and inspiration. **Carrie Foss**, cfoss@wsu.edu, Washington State Univ., Puyallup, WA

3:15 1553 Student IPM advocates. **Annaka Gouge-Smith**, annaka@lamortes.com and Natalie Stoltman, Tarwater Elementary and San Tan Elementary Schools, Chandler, AZ

3:20 Discussion

Symposium: Essentials of Delivering Communitywide Multi-Disciplinary Integrated Pest Management Program

Room A11, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Naresh Duggal¹, Pari Pachamuthu², Robert Davis³, Zia Siddiqi⁴, Michael E. Merchant⁵ and Mary A. Sorensen⁶, ¹Santa Clara County, San Jose, CA, ²Western Exterminator Company, Sacramento, CA, ³BASF Corporation, Pflugerville, TX, ⁴Orkin, ⁵Texas Cooperative Extension, TAMU Ag Research & Extension Center, Dallas, TX, ⁶Placer Mosquito & Vector Control District, Roseville, CA

1:30 Introductory Remarks

1:35 1554 Essentials of delivering communitywide multidisciplinary IPM program: administration. **Naresh Duggal**, Naresh.Duggal@ceo.sccgov.org, Santa Clara County, San Jose, CA

2:00 1555 Essentials of delivering communitywide multidisciplinary IPM program: research. **Zia Siddiqi**, zsiddiqi@rollins.com, Orkin, Atlanta, GA

2:25 1556 Essentials of delivering communitywide multidisciplinary IPM program: outreach. **Zia Siddiqi**, zsiddiqi@rollins.com, Orkin, Atlanta, GA

2:50 1557 Selling community IPM in the age of the internet: an extension challenge. **Michael E. Merchant**, m-merchant@tamu.edu, Texas Cooperative Extension, TAMU Ag Research & Extension Center, Dallas, TX

3:15 Break

3:30 1558 Best practices in delivering county-wide structural IPM program. **Pari Pachamuthu**, ppachamuthu@west-ext.com, Western Exterminator Company, Sacramento, CA

3:55 1559 Best practices in integrated vector management: successes and challenges in local mosquito control. **Mary A. Sorensen**, marys@placemosquito.org, Placer Mosquito & Vector Control District, Roseville, CA

4:20 1560 Manufacturer's role in providing products, training and stewardship for urban IPM programs. **Robert Davis**, robert.davis@basf.com, BASF Corporation, Pflugerville, TX

4:45 Discussion

5:15 Concluding Remarks

Symposium: Biosurveillance: Using a Native Wasp *Cerceris fumipennis* to Find Emerald Ash Borer and Other Species of Buprestidae.

Room A12, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: Claire E. Rutledge, Connecticut Agricultural Experiment Station, New Haven, CT

1:30 Welcoming Remarks

1:35 1561 An introduction to *Cerceris fumipennis*: assessing its

potential as a biosurveillance tool, including mobile wasp colonies. **Philip D. Careless**, pcareles@uoguelph.ca¹, Bruce Gill² and Stephen A Marshall¹, ¹Univ. of Guelph, Guelph, ON, Canada, ²Canadian Food Inspection Agency, Ottawa, ON, Canada

1:55 1562 Male and female nest guarding in *Cerceris* wasps (Hymenoptera: Crabronidae). **Allan W. Hook**, St. Edward's Univ., Austin, TX

2:15 1563 Individual wasp size and prey selection in *Cerceris fumipennis*. **Warren E. Hellman**, atmospherical5@hotmail.com and Melissa K. Fierke, SUNY College of Environmental Science and Forestry, Syracuse, NY

2:35 1564 Cuticular hydrocarbons used for prey recognition by *Cerceris fumipennis*. **Claire E. Rutledge**, Claire.Rutledge@ct.gov¹ and Peter J. Silk², ¹Connecticut Agricultural Experiment Station, New Haven, CT, ²Natural Resources Canada, Canadian Forest Service - Atlantic Forestry Centre, Fredericton, NB, Canada

2:55 1565 Abiotic conditions and the foraging behavior of *Cerceris fumipennis*. **Eleanor Groden**, groden@umit.maine.edu and Tawny Virgilio, Univ. of Maine, Orono, ME

3:15 Break

3:30 1566 Degree day modeling for *Cerceris fumipennis*. **Claire E. Rutledge**, Claire.Rutledge@ct.gov¹, Colleen Teerling², Philip D. Careless³ and Melissa K. Fierke⁴, ¹Connecticut Agricultural Experiment Station, New Haven, CT, ²Maine Forest Service, Augusta, ME, ³Univ. of Guelph, Guelph, ON, Canada, ⁴SUNY College of Environmental Science and Forestry, Syracuse, NY

3:50 1567 Running a state-wide biosurveillance program for *Cerceris fumipennis*: baseball diamonds as survey units. **Christine A. Nalepa**, christine.nalepa@ncmail.net and Whitney G. Swink, North Carolina Dept. of Agriculture, Raleigh, NC

4:10 1568 Wasp Watchers: using citizen-scientists to provide state-wide monitoring for exotic buprestids. **Colleen Teerling**, colleen.teerling@maine.gov, Maine Forest Service, Augusta, ME

4:30 1569 Guidebook to Northeastern jewel beetles: identifying *Cerceris fumipennis* prey, both invasive and native species of Buprestidae. **Morgan D. Jackson**, morgandjackson@gmail.com, Steven M. Paiero and Adam Jewiss-Gaines, Univ. of Guelph, Guelph, ON, Canada

4:50 1570 The role of biosurveillance and *Cerceris fumipennis* in forest health management. **Michael Bohne**, mbohne@fs.fed.us, USDA - Forest Service, Davis, CA

5:10 Concluding Remarks

Ten-Minute Papers, MUVE Session 5: Ants and Others

Room D6, First Floor (Reno-Sparks Convention Center)

Moderators and Organizers: C. Geden¹, Douglas E. Norris², David Oi¹ and Dina Richman³, ¹USDA - ARS, Gainesville, FL, ²Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, ³FMC Specialty Products Business, Philadelphia, PA

1:30 Introductory Remarks

1:35 1571 Alkaloid chemistry of the venom of *Solenopsis* fire

ants. **Li Chen**, chenli@ioz.ac.cn¹ and Henry Fadamiro², ¹Institute of Zoology, Chinese Academy of Sciences, Beijing, China, ²Auburn Univ., Auburn, AL

1:47 1572 Opportunities for fabulous fire ant (*Solenopsis invicta*) research. **W. R. Tschinkel**, tschinkel@bio.fsu.edu, Florida State Univ., Tallahassee, FL

1:59 1573 Queen dispersal in Florida ant communities. **J. R. King**, kingjor@mail.ccsu.edu¹ and W. R. Tschinkel², ¹Central Connecticut State Univ, New Britain, CT, ²Florida State Univ., Tallahassee, FL

2:11 1574 Larval fatty acid esters regulates foraging in the red imported fire ant (*Solenopsis invicta*). **Bradley N. Metz**, bmetz@tamu.edu and SB. Vinson, Texas A&M Univ., College Station, TX

2:23 1575 Progress towards trail pheromone disruption in Argentine ants (*Linepithema humile*). **D. M. Suckling**, Max.Suckling@plantandfood.co.nz, LD. Stringer and JE. Corm, New Zealand Institute of Plant and Food Research Ltd, Christchurch, New Zealand

2:35 1576 Age-stage distributions in harvester ants (*Pogonomyrmex occidentalis*). **Blaine J. Cole**, blaine.cole@mail.uh.edu and Diane C. Wiernasz, Univ. of Houston, Houston, TX

2:47 1577 *SIGNBP*, a potential target for RNA interference-based pest control of *Solenopsis invicta*. **Liming Zhao**, liming.zhao@ars.usda.gov and Jian Chen, National Biological Control Laboratory, Stoneville, MS

2:59 1578 Testing of a borate based granular bait for the red imported fire ant, *Solenopsis invicta*. **Janet Kintz-Early**, janete@niscuscorp.com¹, Charles L. Barr², Stan Diffie³ and Tim Davis⁴, ¹Niscus Corporation, Rockford, TN, ²Texas A&M Univ., College Station, TX, ³Univ. of Georgia, Tifton, GA, ⁴Clemson Univ., Columbia, SC

3:11 1579 Potential use of *Solenopsis invicta* viruses to control fire ants. **Steven M. Valles**, steven.valles@ars.usda.gov, USDA - ARS, Gainesville, FL

3:23 1580 Searching for baits with insect growth regulating effects on an invasive crazy ant, *Nylanderia pubens*. **David Oi**, david.oi@ars.usda.gov, USDA - ARS, Gainesville, FL

3:35 Break

3:50 1581 The Caribbean crazy ant, *Nylanderia pubens*: a research update from Florida. **Dawn Calibeo-Hayes**, dcalibeohayes@ufl.edu and Faith Oi, Univ. of Florida, Gainesville, FL

4:02 1582 Efficacy of a new dry scatter-bait against several species of ants and peri-domestic roaches. **Reid M. Ipser**, reid.ipser@fmc.com¹, Dina Richman¹ and Guadalupe Rojas², ¹FMC Corporation, Philadelphia, PA, ²USDA - ARS, Stoneville, MS

4:14 1583 Perception and control measures of German cockroach (*Blattella germanica*) in residential housing and day care centers in selected rural counties in North Carolina. **Beatrice N. Dingha**, bndingha@ncat.edu, Louis EN. Jackai, Jimo Ibrahim and Valerie L. Giddings, North Carolina A&T State Univ., Greensboro, NC

4:26 1584 Could incidental storage insect pests be potential food allergens? **Rachel Estelle Goeriz Pearson**, Rachel.Pearson@fda.hhs.gov¹, Monica Pava-Ripoll¹, Amy K. Miller¹, George Opit² and George C. Ziobro¹, ¹US Food and Drug Administration (FDA), College Park, MD, ²Oklahoma State Univ., Stillwater, OK

4:38 1585 Development of an effective new bait for silverfish control. **Steven R. Sims**, steve.sims@basf.com¹, David Naffziger¹, Arthur G. Appel² and Jerry L. Cook³, ¹BASF Corporation, St. Louis, MO, ²Auburn Univ., Auburn, AL, ³Sam Houston State Univ., Huntsville, TX

4:50 1586 Biogenic silica: a selective molluscicides for the most damaging snail pests *Achatina fulica*. **Vetrivel V Anguselvi**, vasselvi@yahoo.com, Central Institute of Mining & Fuel Research, Dhanbad, India

5:02 1587 The potential for select residual insecticides as post-application inspection tools. **Marc Eaton**, eato0052@umn.edu and Alice M. Kells, Univ. of Minnesota, St. Paul, MN

5:14 1588 Multiplex PCR for the detection of insects in food. **Monica Pava-Ripoll**, Monica.PavaRipoll@fda.hhs.gov, Rachel E. Goeriz Pearson, Amy K. Miller and George Ziobro, US Food and Drug Administration (FDA), College Park, MD

5:26 1589 A new stink bug trap for both outdoor and indoor use. **Qing-He Zhang**, qing-he@rescue.com, Rod G. Schneidmiller, Marc Chapin, Doreen Hoover, Guiji Zhou, Armen Margaryan, Steve Hastings and Paul Bryant, Sterling International, Inc., Spokane, WA

5:38 Concluding Remarks

Wednesday, November 16, 2011, Evening

Closing Plenary with Old Masters Linnaean Games

Room C1-C4, First Floor (Reno-Sparks Convention Center)

5:30 - 7:30

Poster Display Presentations, MUVE II

Exhibit Hall 3, First Floor (Reno-Sparks Convention Center)

D0383 Fifty golden years of tick surveillance. James W. Mertins¹, **H. Joel Hutcheson**, hjoel.hutcheson@aphis.usda.gov², Jeffery T. Alfred¹ and Jack L. Schlater¹, ¹National Veterinary Services Laboratories, Ames, IA, ²USDA - APHIS, Ames, IA

D0384 *Ixodes scapularis* distribution and the emergence of Lyme disease in Southwest Virginia. **Jake E. Bova**, jbova86@vt.edu, Eric Shepherd, Cynthia Denbow, Sally Paulson and Carlyle Brewster, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

D0385 Survey and detection of the western black-legged tick (*Ixodes pacificus*) and the Lyme-causing bacteria (*Borrelia burgdorferi*) in northern Utah. **Ryan S. Davis**, ryan.davis@usu.edu, Scott A. Bernhardt and Ricardo A. Ramirez, Utah State Univ., Logan, UT

D0386 Infection rates of *Ixodes scapularis* (Acari, Ixodidae) ticks from Iowa with *Borrelia burgdorferi* s.l., *Anaplasma phagocytophilum*, and *Rickettsia* sp. **Keely Duff**¹, Jonathan Oliver² and Lorenza Beati¹, ¹Georgia Southern Univ., Statesboro, GA, ²Iowa State Univ., Ames, IA

D0387 Environmental persistence of botanical acaricides for the control of *Ixodes scapularis*. **Anuja Bharadwaj**, Anuja.Bharadwaj@ct.gov¹, Kirby C. Stafford¹ and Robert W. Behle², ¹Connecticut

Agricultural Experiment Station, New Haven, CT, ²USDA - ARS, Peoria, IL

D0388 Crossbreeding between different geographical populations of the brown dog tick – *Rhipicephalus sanguineus*. **Michael L. Levin**, MLevin@cdc.gov¹, Elizabeth Studer¹, Galina E. Zemtsova¹ and Kosta Mumcuoglu², ¹Centers for Disease Control and Prevention, Atlanta, GA, ²Kuvin Center for the Study of Infectious and Tropical Diseases, Jerusalem, Israel

D0389 Spatial distribution of *Dermacentor andersoni* in southern Alberta. **Kateryn Rochon**, kateryn.rochon@agr.gc.ca¹ and Tim Lysyk², ¹Agriculture and Agri-Food Canada, Lethbridge, AB, Canada, ²Lethbridge Research Centre, Lethbridge, AB, Canada

D0390 Do scabies mites (*Sarcoptes scabiei*) bind host IL-8 as an evasive mechanism? **Marjorie S. Morgan**, marjorie.morgan@wright.edu and Larry G. Arlian, Wright State Univ., Dayton, OH

D0391 Wild bird nests serving as reservoirs for northern fowl mites (*Ornithonyssus sylviarum*). **Nancy C. Hinkle**, nhinkle@uga.edu, Whitney E. Boozer and Kristen J. Navara, Univ. of Georgia, Athens, GA

D0392 Laboratory evaluation of methanol extracts from three plant species as repellents against a vector of scrub typhus, *Leptotrombidium pallidum* (Acari: Trombiculidae). **Kyu Sik Chang**, cks10910@nih.gov.kr, E Hyun Shin, Chan Park and Hyun Kyung Kim, Korea Center for Disease Control & Prevention, Cheongwon-gun, South Korea

D0393 Imidacloprid modulates spider mite endosymbiont *Wolbachia* leading to its resurgence. **Garima Gupta**, garima79@in.com, Panjab Univ., Chandigarh, India

D0394 Identification of main biting midge species and detection of arboviruses from those, Korea. Jae-Ku Oem¹, Joon-Yee Chung¹, Hye-Ryoung Kim¹, Toh-Kyung Kim², Tae-Uk Lee³, O-Soo Lee¹ and **You-Chan Bae**, kyusfather@korea.kr¹, ¹National Veterinary Research and Quarantine Service, Anyang, South Korea, ²Gyeongnam Institute of Livestock and Veterinary Research, Tongyeong, South Korea, ³Jeollanamdo Institute of Livestock and Veterinary Science, Gangjin, South Korea

D0395 Phenology of spring emergence by first generation stable flies, *Stomoxys calcitrans* (L.) in North America. **Roger D. Moon**, rdmooon@umn.edu¹, Dennis Berkebile², Holly Ferguson³, Patrick Tobin⁴, Ludek Zurek⁵, Greg Johnson⁶, Sarah M. Butler⁷ and Nancy C. Hinkle⁸, ¹Univ. of Minnesota, St. Paul, MN, ²USDA - ARS, Lincoln, NE, ³Washington State Univ., Prosser, WA, ⁴USDA - Forest Service, Morgantown, WV, ⁵Kansas State Univ., Manhattan, KS, ⁶Montana State Univ., Bozeman, MT, ⁷Louisiana State Univ., Baton Rouge, LA, ⁸Univ. of Georgia, Athens, GA

D0396 Efficacy of Cyromazine for the control of immature stable flies (*Stomoxys calcitrans*) developing in winter hay feeding sites. **David Taylor**, Dave.Taylor@ars.usda.gov¹, Kristina Hale¹ and Kai Sievert², ¹USDA - ARS, Lincoln, NE, ²Novartis Animal Health Inc., Basel, Switzerland

D0397 Evaluating dispersal distances of house flies (*Musca domestica*) out of commercial feedlots and immigration into commercial feedlots. **Trisha Dubie**, trishd@okstate.edu, Oklahoma State Univ., Stillwater, OK

D0398 Are foodborne pathogens vertically transmitted in the house fly? **Monica Pava-Ripoll**, Monica.PavaRipoll@fda.hhs.gov, Rachel E. Goeriz Pearson, Amy K. Miller and George Ziobro, US Food and Drug Administration (FDA), College Park, MD

D0399 Status of the French Quarter program in New Orleans, Louisiana, 2011. **Dennis R. Ring**, dring@agctr.lsu.edu¹, Alan L. Morgan¹, Frank S. Guillot², Alan R. Lax² and Charles McCown¹, ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²USDA - ARS, New Orleans, LA

D0400 Molecular biogeography of *Incisitermes minor* (Hagen) and *Incisitermes snyderi* (Light): two distinct urban termite pests. **James W. Austin**, james.austin@basf.com¹, AL. Szalanski² and Rudolph H. Scheffrahn³, ¹BASF Corporation, Raleigh, NC, ²Univ. of Arkansas, Fayetteville, AR, ³Univ. of Florida, Ft. Lauderdale, FL

D0401 Food preference related to colony development in the Asian needle ant, *Pachycondyla chinensis*. **Ying Mo**, ymo@clemson.edu, Patricia Zungoli, Eric Benson and Patrick Gerard, Clemson Univ., Clemson, SC

D0402 Using citizen scientists to record and map 13-year periodical cicadas in South Carolina. **Eric P. Benson**, ebenson@clemson.edu¹, De Anna Estella Beasley², Laurie S. Reid³, Ken Allen¹ and Tim Mousseau³, ¹Clemson Univ., Clemson, SC, ²Univ. of South Carolina, Columbia, SC, ³South Carolina Forestry Commission, Columbia, SC

Poster Display Presentations, P-IE II

D0403 Evaluating seasonal exposure to soybean aphid (Hemiptera: Aphididae) and yield for *Rag1* soybeans. **Robert F. Bruner**, rfbruner@iastate.edu, Aaron J. Gassmann, Erin W. Hodgson and Matthew E. O'Neal, Iowa State Univ., Ames, IA

D0404 Larval survival and plant injury of Cry1Ab-susceptible, -resistant, and -heterozygous genotypes of the sugarcane borer on transgenic corn containing single or pyramided Bt genes. **David Sindani Wangila**, DWangila@agcenter.lsu.edu¹, B. Rogers Leonard², Mukti N. Ghimire¹, Bai Yaoyu¹, Liping Zhang¹ and Fangneng Huang¹, ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²Louisiana State Univ. AgCenter, Winnsboro, LA

D0405 Development of digital repositories for pink bollworm (*Pectinophora gossypiella*) and rangeland grasshopper. **Nathan J. Moses-Gonzales**, nmosesgo@me.com¹, Michelle Walters², Larry E. Jech³, Bruce E. Tabashnik¹ and R. Nelson Foster³, ¹Univ. of Arizona, Tucson, AZ, ²USDA - APHIS, Phoenix, AZ, ³USDA, Phoenix, AZ

D0406 Calculating and testing sequential variables from EPG datasets using SAS. **Timothy Ebert**, tebert@ufl.edu¹, Elaine Backus², Miguel Cid³, Alberto Ferreres⁴, Rosana H. Serikawa¹ and Michael Rogers¹, ¹Univ. of Florida, Lake Alfred, FL, ²USDA - ARS, Parlier, CA, ³Instituto de Ciencias Agrarias - CSIC, Madrid, Spain, ⁴CCMA-CSIC, Madrid, Spain

D0407 Comparative modeling for the development of quarantine treatments. **Lisa Gail Neven**, lisa.neven@ars.usda.gov¹ and Shelley A. Johnson², ¹USDA - ARS, Wapato, WA, ²Univ. of Stellenbosch, Matieland, South Africa

D0408 Temperature dependent model simulation of greenhouse whitefly and American serpentine leafminer in cherry-tomato greenhouses using microclimate temperature. **Jung-Joon Park**, jungjoonpark72@gmail.com¹, Eun Woo Park² and Kijong Cho¹, ¹Korea Univ., Seoul, South Korea, ²Seoul National Univ., Seoul, South Korea

D0409 Simulation model of *Spodoptera exigua* (Lepidoptera: Noctuidae). Ju-Won Yoo¹, Chang-Gyu Park² and **Joon-Ho Lee**, jh7lee@snu.ac.kr¹, ¹Seoul National Univ., Seoul, South Korea, ²National Academy of Agricultural Science, Su-won, South Korea

D0410 Predictive modeling of the effects of climate change on

the infestation patterns of a migratory crop pest. **Shelby Fleischer**, sjf4@psu.edu¹, Rodney Nagoshi², Robert Meagher² and John Westbrook³, ¹Pennsylvania State Univ., Univ. Park, PA, ²USDA - ARS, Gainesville, FL, ³USDA - ARS, College Station, TX

D0411 The perils of linear thinking: modeling the effects of climate change on insect pest dynamics. **Scott C. Merrill**, scott.merrill@colostate.edu and Frank B. Peairs, Colorado State Univ., Fort Collins, CO

D0412 Modeling the spread of insect transmitted plant pathogens: roguing in perennial crops. **Mark Sisterson**, mark.sisterson@ars.usda.gov, USDA, Parlier, CA

D0413 Detection of vectors and pathogens: ISCA's smart traps and nanosensory arrays. **Agenor Mafra-Neto**, president@iscatech.com¹, Lyndsie Stoltman¹, Youngwoo Rheem¹, Eamonn Keogh², Kim Spencer¹ and Allen Veach¹, ¹ISCA Technologies, Riverside, CA, ²Univ. of California, Riverside, CA

D0414 Developing a sampling plan for *Dectes texanus* and mapping adult activity in soybean using smartphones. **Brian P. McCornack**, mccornac@ksu.edu, Kansas State Univ., Manhattan, KS

D0415 Wireworm survey of small grain fields in Montana. **Anuar Morales-Rodriguez**, a.moralesrodriguez@montana.edu, Emily Rohwer and Kevin Wanner, Montana State Univ., Bozeman, MT

D0416 2010 multistate rice insect survey. **Anna Meszaros**, ameszaros@agcenter.lsu.edu¹, Natalie A. Hummel¹, Bryce Blackman¹, Michael J. Stout¹, MO. Way², Kelly V. Tindall³, Gus Lorenz⁴, Jeffrey Gore⁵, John L. Bernhardt⁶ and Krisanna L. Machtmes¹, ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²Texas A&M AgriLife Research & Extension Center, Beaumont, TX, ³Univ. of Missouri, Portageville, MO, ⁴Univ. of Arkansas, Lonoke, AR, ⁵Mississippi State Univ., Stoneville, MS, ⁶Univ. of Arkansas, Stuttgart, AR

D0417 A study of the gall midges (Diptera: Cecidomyiidae) on hackberries (*Celtis*: Ulmaceae) in North America. **John C. Moser**, johnmoser@fs.fed.us¹ and Raymond Gagne², ¹USDA - Forest Service, Pineville, LA, ²USDA, Systematic Entomology Laboratory (SEL), Washington, DC

D0418 Current status of ecological researches on forest insect pests in Korea Forest Research Institute, Korea. **Sang Hyun Koh**, shkoh@forest.go.kr, Won Il Choi and Youngwoo Nam, Korea Forest Research Institute, Seoul, South Korea

D0419 Morphological phenotypic plasticity of *Monochamus saltuarius* (Coleoptera: Cerambycidae) during post-diapause development in response to temperature. **Youngwoo Nam**, Sang Hyun Koh and Won Il Choi, Korea Forest Research Institute, Seoul, South Korea

D0420 Dispersal patterns of exotic forest pests in Korea. **Won Il Choi**¹, Sang Hyun Koh¹ and Young-Seuk Park², ¹Korea Forest Research Institute, Seoul, South Korea, ²Hyung Hee Univ., Seoul, South Korea

D0421 Using insect pollinator movement behavior and plant demography to predict the range expansion of a federally threatened plant. **Helena Puche**, hpuche@sbcglobal.net¹, Jenny Zambrano¹ and Joy Marburguer², ¹Univ. of Illinois at Chicago, Chicago, IL, ²National Park Service, Porter, IN

D0422 Assessing the utility of a molecular diagnostic marker for identification of Africanized honey bees in the United States. **Allen L. Szalanski**, aszalan@uark.edu and Amber D. Tripodi, Univ. of Arkansas, Fayetteville, AR

D0423 Tracking honey bee (*Apis mellifera*) movement with protein markers to enhance gene flow evaluations. **James R. Hagler**, james.hagler@ars.usda.gov¹, Shannon C. Mueller² and Larry R. Teuber³, ¹USDA - ARS, Maricopa, AZ, ²Univ. of California, Fresno, CA, ³Univ. of California, Davis, CA

D0424 Honey bee, *Apis mellifera*, colonies treated with synthetic brood pheromone (SuperBoost) make more honey. **John H. Borden**, john.borden@contech-inc.com, Cameron G. Lait, Ervin Kovacs and Michael Campbell, Contech Enterprises Inc., Delta, BC, Canada

D0425 Bottom-up effects on pollinator nutrition and health. **Yasmin J. Cardoza**, yasmin_cardoza@ncsu.edu¹, Gabriel K. Harris¹ and Christina Grozinger², ¹North Carolina State Univ., Raleigh, NC, ²Pennsylvania State Univ., Univ. Park, PA

D0426 Assessing pollinator and vegetation response to the USDA State Acres for Wildlife Enhancement (SAFE) program for the Karner blue butterfly. **Paula Kleintjes Neff**, kleintpk@uwec.edu, Otto Renner, Evan Weiher and Brianna Schmidt, Univ. of Wisconsin - Eau Claire, Eau Claire, WI

D0427 Response of bee pollinators to wildfire in sagebrush steppe. **Byron Love**, blove@biology.usu.edu, Utah State Univ., Logan, UT

D0428 Hawaiian *Hylaeus* (Hymenoptera: Colletidae): potential pollinators in the Pacific? Heather F. Sahl¹ and **Jonathan Koch**, kochj@biology.usu.edu², ¹Shippensburg Univ., Shippensburg, PA, ²Utah State Univ., Logan, UT

D0429 A multi-year collection inventory of bees and pollinating flies found in North Georgia apple orchards: comparing an early apple bloom with a late apple bloom. **Mark A. Schlueter**, mschluet@ggc.edu and Nicholas G. Stewart, Georgia Gwinnett College, Lawrenceville, GA

D0430 The influence of flowering time on pollinator-mediated interactions between *Clarkia unguiculata* (Onagraceae) and its neighbors. **Melissa K. Ha**, mng2@mail.csuchico.edu and Christopher T. Ivey, California State Univ., Chico, Chico, CA

D0431 Pollen preference of *Osmia lignaria* in eastern orchards. **Mark E. Kraemer**, Mkraemer@vsu.edu and Francoise D. Favi, Virginia Polytechnic Institute and State Univ., Petersburg, VA

D0432 Conditioned response of the solitary bee *Osmia lignaria* (Hymenoptera: Megachilidae) under the influence of fungicides. **Cory A. Stanley**, cory.stanley@usu.edu¹ and Theresa L. Pitts-Singer², ¹Utah State Univ., Logan, UT, ²USDA - ARS, Logan, UT

D0433 Effects of methyl jasmonate applications on insect pests of crucifers. **Crystal L. McEwen**, clmcewen@gmail.com and Whitney Cranshaw, Colorado State Univ., Fort Collins, CO

D0434 Biochemical aspects of lettuce plant resistance to leafminers and aphids. **Nasir Masood**, nasirmasood2004@yahoo.com, Univ. of California Cooperative Extension, Davis, Salinas, CA

D0435 Olfactory response of pepper weevil *Anthonomus eugenii* (Coleoptera: Curculionidae) to *Capsicum annuum* volatiles. **Julio C. Velazquez-Gonzalez**, velazquez@colpos.mx and Juan Cibrian-Tovar, Colegio de Postgraduados, Texcoco, Mex, Mexico

D0436 Potential for plant odors as repellants for redbay ambrosia beetle, a vector of laurel wilt disease. **Emily H. Kuhns**, emilykuhns@ufl.edu¹, Wendy L. Meyer¹, Jorge E. Peña² and Lukasz L. Stelinski¹, ¹Univ. of Florida, Lake Alfred, FL, ²Univ. of Florida, Homestead, FL

D0437 Biosynthesis of defense-priming volatiles from *Opuntia* associated with cactus boring moth (Lepidoptera: Pyralidae) herbivory. **Anastasia M. Woodard**, anastasia.woodard@smail.astate.edu, John Hubstenberger, Fabrico Medina-Bolivar, Greg Phillips and Travis D. Marsico, Arkansas State Univ., State Univ., AR

D0438 Tree damages by the wood boring pest insects are monitored by the analysis of the volatile components of the trees. **Masahiko Tokoro**, tokoro@affrc.go.jp¹, Atsushi Kato¹, Mishuhiro Okada², Shoich Saitoh³ and Haruo Kinuura⁴, ¹Forestry and Forest Products Research Institute, Tsukuba, Ibaraki, Japan, ²Nagano Prefectural Forest Research Center, Siojiri, Nagano, Japan, ³Yamagata Prefectural Forest Research and Instruction Center, Sagae, Yamagata, Japan, ⁴Forestry and Forest Products Research Institute, Kyoto, Kyoto, Japan

D0439 Biological activity of some essential oils on red palm weevil, *Rhynchophorus ferrugineus* Olivier (Curculionidae: Coleoptera). **Saleh A. Aldosari**, aldosari95@hotmail.com, Polana S.P.V. Vidyasagar, Paraj Shukla and M. M. Abdel-Azim, King Saud Univ., Riyadh, Saudi Arabia

D0440 Behavioral and electrophysiological responses of the lesser chestnut weevil, *Curculio sayi*, to individual volatile organic compounds identified from host plant. **Bruce A. Barrett**, barrettb@missouri.edu, Ian W. Keeseey, William Terrell Stamps and Chung-Ho Lin, Univ. of Missouri, Columbia, MO

D0441 Characterization of volatile compounds associated with thousand cankers disease and walnut twig beetle in northern California black walnut, *Juglans hindsii*. **Lori J. Nelson**, lnelson@fs.fed.us¹, Steven J. Seybold¹, Richard M. Bostock², Tatiana Roubtsova², Tivonne Nguyen², Stacy Hishinuma², Paul L. Dallara² and Andrew D. Graves³, ¹USDA - Forest Service, Davis, CA, ²Univ. of California, Davis, Davis, CA, ³USDA - Forest Service, Albuquerque, NM

D0442 Studies of the chemical ecology of *Laricobius nigrinus*. **William P. Shepherd**, williamshepherd@fs.fed.us¹, Albert E. Mayfield², Brian T. Sullivan¹ and Kimberly F. Wallin³, ¹USDA - Forest Service, Pineville, LA, ²USDA - Forest Service, Asheville, NC, ³Univ. of Vermont, Burlington, VT

D0443 Insecticide treatment increases survival of coast live oaks (*Quercus agrifolia*) infected with *Phytophthora ramorum*, cause of sudden oak death, in coastal California. **Brice A. McPherson**, bmcpherson@berkeley.edu¹, David L. Wood¹, Pavel Svihra², Andrew J. Storer³ and Richard B. Standiford¹, ¹Univ. of California, Berkeley, CA, ²Univ. of California Cooperative Extension, Novato, CA, ³Michigan Technological Univ., Houghton, MI

D0444 Effects of silvicultural treatments on forest stand susceptibility to southern pine beetle (*Dendroctonus frontalis*) outbreaks. **David R. Coyle**, dcoyle@warnell.uga.edu¹, John T. Nowak² and Kamal JK. Gandhi¹, ¹Univ. of Georgia, Athens, GA, ²USDA - Forest Service, Asheville, NC

D0445 Potential impacts of spray deposition from applications of carbaryl to protect individual trees from bark beetle attack. **Christopher J. Fettig**, cfettig@fs.fed.us¹, A. Steven Munson², Stephen R. McKelvey¹ and Parshall B. Bush³, ¹USDA - Forest Service, Davis, CA, ²USDA - Forest Service, Ogden, UT, ³Univ. of Georgia, Athens, GA

D0446 The short-term local economic benefit of protecting urban and sub-urban ash trees from the emerald ash borer: tree removal vs. insecticide application costs. **Rodrigo J. Mercader**, rjmercader@gmail.com¹ and Deborah G. McCullough², ¹Washburn Univ., Topeka, KS, ²Michigan State Univ., East Lansing, MI

D0447 One-, two- and three-year control of emerald ash borer with systemic insecticides. **Deborah G. McCullough**, mccullo6@msu.edu¹, Andrea Anulewicz¹, Therese M. Poland² and Phillip Lewis³, ¹Michigan State Univ., East Lansing, MI, ²USDA - Forest Service, East Lansing, MI, ³USDA - APHIS, Otis ANGB, MA

D0448 Differential response of ambrosia beetles to various tree species injected with ethanol. **Michael E. Reding**, mike.reding@ars.usda.gov¹, Christopher Ranger¹, Jason Oliver² and Peter B. Schultz³, ¹USDA - ARS, Wooster, OH, ²Tennessee State Univ., McMinnville, TN, ³Virginia Polytechnic Institute and State Univ., Virginia Beach, VA

D0449 Evaluation of chemical treatments for the management of granulate ambrosia beetle and camphor shot borer in nursery trees. **Jason Oliver**, joliver@tnstate.edu¹, Michael E. Reding², Christopher M. Ranger², Peter B. Schultz³, Nadeer Youssef¹, James Moysenko² and Alicia M. Bray¹, ¹Tennessee State Univ., McMinnville, TN, ²USDA - ARS, Wooster, OH, ³Virginia Polytechnic Institute and State Univ., Painter, VA

D0450 Transitioning apple growers to non-OP spray programs in Kentucky. **Ric Bessin**, rbessin@uky.edu¹ and Patty Lucas², ¹Univ. of Kentucky, Lexington, KY, ²Univ. of Kentucky, Princeton, KY

D0451 Insect growth regulator insecticides nim and rynaxypyr for lesser mealworm *Alphitobius diaperinus* control. Janaina Zorzetti¹, **P. Neves**, pedroneves@uel.br², Patricia Santoro³, Kelly Constanski¹ and Inês Fonseca¹, ¹Universidade Estadual de Londrina, Londrina, PARANÁ, Brazil, ²Universidade Estadual de Londrina, Londrina, Paraná, Brazil, ³IAPAR _ Instituto Agronomico do Paraná, Londrina, Paraná, Brazil

D0452 Can diflubenzuron be used to control isopods in no-till crop systems? **Kerri Farnsworth-Hoback**, farnsworthkm@unk.edu and Monluedee Luecham, Univ. of Nebraska - Kearney, Kearney, NE

D0453 Behavioral responses of pest mole crickets, *Scapteriscus* spp. (Orthoptera: Grylotalpidae), to selected insecticides. **Olga Kostromytska**, kolgaent@rci.rutgers.edu¹ and Eileen A. Buss², ¹Rutgers, The State Univ. of New Jersey, New Brunswick, NJ, ²Univ. of Florida, Gainesville, FL

D0454 New insecticides to manage *Bemisia tabaci* and tomato yellow leaf curl virus on tomatoes. **Hugh A. Smith**, hughsmith@ufl.edu, Univ. of Florida, Wimauma, FL

D0455 Efficacy of new insecticides on control of aphids and leafminers in lettuce. **Jianlong Bi**, jbi@ucdavis.edu, Univ. of California Cooperative Extension, Salinas, CA

D0456 Effect of insecticides on whitefly transmission of squash vein yellowing virus. **Susan Webb**, sewe@ufl.edu and Felix Cervantes, Univ. of Florida, Gainesville, FL

D0457 The effects of spider mite behavior and spray coverage on the performance of two miticides. **Xavier Martini**, XPMartini@ag.tamu.edu¹, Natalie Kincy² and Christian Nansen¹, ¹Texas A&M Univ. - Texas AgriLIFE Extension, Lubbock, TX, ²Texas Tech Univ., Lubbock, TX

D0458 Patterns of insecticide use in California rice. **Luis Espino**, laespino@ucdavis.edu, Univ. of California Cooperative Extension, Colusa, CA

D0459 Transcriptional profiling of soybean to assess physiological effects of neonicotinoid seed treatment on soybean aphid, *Aphis glycines* matsumura (Hemiptera: Aphididae). **Mitchell D. Stamm**, mitchell.stamm@huskers.unl.edu and Tiffany M. Heng-Moss, Frederick Baxendale, Blair D. Siegfried and Roch E. Gaussoin, Univ. of Nebraska - Lincoln, Lincoln, NE

D0460 The insect community in soybeans planted with insecticidal seed treatment. **Kelley J. Tilmon**, kelley.tilmon@sdstate.edu and Devi Ram Kandel, South Dakota State Univ., Brookings, SD

D0461 Assessing the benefits of pyramids and seed treatments for soybean aphid (*Aphis glycines*) host plant resistance. **Michael T. McCarville**, mikemcc@iastate.edu¹, Matthew E. O'Neal¹, Walter R. Fehr¹, Brian P. McCornack², Kelley Tilmon³, Eileen M. Cullen⁴ and Bruce D. Potter⁵, ¹Iowa State Univ., Ames, IA, ²Kansas State Univ., Manhattan, KS, ³South Dakota State Univ., Brookings, SD, ⁴Univ. of Wisconsin, Madison, WI, ⁵Univ. of Minnesota, Lamberton, MN

D0462 Effects of sulfoxaflor insecticide on growth and vigor of soybean. **Mary Kubiszak**, MKubiozak@dow.com, Ed King and Jamey Thomas, Dow AgroSciences, Indianapolis, IN

D0463 Managing key pests in potatoes with tolfenpyrad (Rycar™ 15EC) insecticide. **Allison Walston**, awalston@nichino.net¹, Adam Wimer², Thomas Kuhar², James C. Adams¹, Pedro Hernandez¹, Botond Balogh¹ and Scott Ludwig¹, ¹Nichino America, Inc., Wilmington, DE, ²Virginia Polytechnic Institute and State Univ., Painter, VA

D0464 Managing key pests in vegetables with tolfenpyrad (Torac™ 15EC) insecticide. **Botond Balogh**, bbalogh@nichino.net, James C. Adams, Allison Walston, Pedro Hernandez and Scott Ludwig, Nichino America, Inc., Wilmington, DE

D0465 Managing thrips in vegetable crops with tolfenpyrad 15EC insecticide. **Pedro Hernandez**, PHernandez@nichino.net, James C. Adams, Allison Walston, Botond Balogh and Scott Ludwig, Nichino America, Inc., Wilmington, DE

D0466 Biological attributes of DuPont Cyazypyr™ (DPX-HGW86, Cyantraniliprole) new cross-spectrum insecticide. **Hector E. Portillo**, hector.e.portillo@usa.dupont.com, Juan M. Alvarez, Rachel A. Cameron, I. Billy Annan, Joseph P. Saienni, Christopher J. Williams, James D. Barry, Mary P. Koechert, Robert M. Leighty, Don G. Clagg and Christopher E. Clark, DuPont Crop Protection, Newark, DE

D0467 Fit of DuPont Cyazypyr™ (DPX-HGW86, Cyantraniliprole) in soil application methods for pest control and crop protection. **Rachel A. Cameron**, Rachel.A.Cameron@usa.dupont.com¹, Hector E. Portillo¹, I. Billy Annan¹, Danny M. Tamayo², Christopher J. Williams¹, Edward B. Lang¹, Christian T. Pedersen¹, Robert F. Dietrich¹, Larry J. Watson¹, William R. Tillotson¹, James A. McMillan¹, David L. Ryan¹, R. Scott Swain¹ and Cheryl Bellin¹, ¹DuPont Crop Protection, Newark, DE, ²DuPont Crop Protection, Yuma, AZ

D0468 Impact of DuPont Cyazypyr™ on control of leafminer pests in vegetable crops. **I. Billy Annan**, i-billy.annan@usa.dupont.com¹, Wayne Steele², Danny M. Tamayo³, Hector E. Portillo¹, Charles S. Baer⁴, Fabio M. Andrade-Silva⁵, John Wiles⁶ and Juan M. Alvarez¹, ¹DuPont Crop Protection, Newark, DE, ²DuPont Crop Protection, Fresno, CA, ³DuPont Crop Protection, Yuma, AZ, ⁴DuPont Crop Protection, Memphis, TN, ⁵DuPont do Brasil, Paulinia, Brazil, ⁶DuPont (U.K.) Limited, Stevenage, Hertfordshire, United Kingdom

D0469 The role of DuPont Cyazypyr™ in the management of *Bactericera cockerelli* and the zebra chip disease in the potato crop. **Juan M. Alvarez**, juan.m.alvarez@usa.dupont.com¹, I. Billy Annan¹, Hector E. Portillo¹, Mark S. Christie², Geoff W Cornwell³, Brendan P. Ahern⁴, Jose del R. Munoz⁵, Fabio M. Andrade⁶ and Charles S. Baer⁷, ¹DuPont Crop Protection, Newark, DE, ²DuPont, Auckland, New Zealand, ³DuPont Crop Protection, Toowoomba, Australia, ⁴DuPont Crop Protection, Macquarie Park, Australia, ⁵DuPont Crop Protection, Mexico City, Mexico, ⁶DuPont Crop Protection, Paulinia, Brazil, ⁷DuPont Crop Protection, Memphis, TN

D0470 Rice planthopper management and reduction of vectored diseases using DuPont Cyazypyr™. **Daniel Vincent**, Daniel.R.Vincent@USA.dupont.com¹, I. Billy Annan¹, Vineet Singh², Hector E. Portillo¹, Kok Eng Ooi³, Rajul Edoliya⁴ and Yong C. Hahn⁵, ¹DuPont Crop Protection, Newark, DE, ²DuPont India Pvt. Ltd., Vadodara, Gujarat, India, ³DuPont Malaysia Sdn. Bhd., Kuala Lumpur, KL, Malaysia, ⁴E.I. DuPont India Pvt. Ltd., Gurgaon, Haryana, India, ⁵DuPont Singapore Ltd., Singapore, Singapore

D0471 Where is scientific evidence in support of refuge size reduction for pyramided Bt crops? **Andrei Alyokhin**, andrei.alyokhin@umit.maine.edu, Univ. of Maine, Orono, ME

D0472 Susceptibility of eight Cry1Ab corn-resistant strains of sugarcane borer to three individual Cry toxins. **Fangneng Huang**, fhnag@agcenter.lsu.edu¹, Mukti Ghimire¹, B. Rogers Leonard², Yu Cheng Zhu³, Yaoyu Bai¹, Liping Zhang¹, David Sindani Wangila¹ and Yunlong Yang¹, ¹Louisiana State Univ. AgCenter, Baton Rouge, LA, ²Louisiana State Univ. AgCenter, Winnsboro, LA, ³USDA - ARS, Stoneville, MS

D0473 Evaluation of western bean cutworm *Striacosta albicosta* (Lepidoptera: Noctuidae) survival and damage on transgenic corn expressing *Bacillus thuringiensis* insecticidal proteins. **Jocelyn L. Smith**, jsmith@ridgetown.uoguelph.ca and Arthur W. Schaafsma, Univ. of Guelph, Ridgetown, ON, Canada

D0474 Comparative susceptibility of laboratory and field-collected populations of fall armyworm (*Spodoptera frugiperda*) to Cry1F Bt protein. **Ed King**, jeking@dow.com and Mary Kubiszak, Dow AgroSciences, Indianapolis, IN

D0475 Effect of the growth rate of *Bacillus thuringiensis* in the cry protein production and their toxicity against *S. frugiperda*. **Josefina Barrera-Cortés**, jbarrera@cinvestav.mx¹ and Reynold Farrera Rebollo², ¹Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, México, D.F., Mexico, ²Escuela Nacional de Ciencias Biológicas del Instituto Politécnico Nacional, México, D.F., Mexico

D0476 Characterization of *Diabrotica virgifera virgifera* colonies selected for tolerance to Event DAS-59122-7. **Stephen D. Thompson**, steve.thompson@pioneer.com¹, Analiza P. Alves¹, Megan M. McCallister¹, Matt Wihlm¹ and J. Khai Tran², ¹Pioneer Hi-Bred International, Inc., Johnston, IA, ²Pioneer Hi-Bred International, Inc., Wilmington, DE

D0477 Field trial performance of Refuge Advanced™ powered by SmartStax® for control of western corn rootworm in the U.S. Corn Belt. **Patricia Prasifka**, plprasifka@dow.com¹, Dwain M. Rule², Kevin Johnson³, William H. Hendrix⁴ and Nick Storer⁵, ¹Dow AgroSciences, Champaign, IL, ²Dow AgroSciences, Fowler, IN, ³Dow AgroSciences, Barnsville, MN, ⁴Dow AgroSciences, Indianapolis, IN, ⁵Dow AgroSciences, Kensington, MD

D0478 Field performance of Optimum® AcreMax® insect protection against corn rootworm. **Murdick J. McLeod**, murdick.mcleod@pioneer.com and Roxanne Fegley, Pioneer Hi-Bred International, Inc., Windfall, IN

D0479 Field performance of Optimum® AcreMax® insect protection against key lepidopteran pests of corn. **Roxanne Fegley**, roxanne.fegley@pioneer.com and Murdick J. McLeod, Pioneer Hi-Bred International, Inc., Windfall, IN

D0480 SPLAT controlled release semiochemical bait and kill formulations for sustained fruit fly management under humid conditions. **Lyndsie Stoltman**, lyndsie.stoltman@iscatech.com¹, Rafael Borges², Diego Zeni¹ and Agenor Mafra-Neto¹, ¹ISCA

Technologies, Riverside, CA, ²ISCA Technologies, Ijuí, RS, Brazil

D0481 Lethal and sublethal effects of vector-expressed insecticidal and antimicrobial peptides on the Asian citrus psyllid. **Harsimran Gill**, goyalgau@ufl.edu, Gaurav Goyal, Siddarame Gowda, William Dawson and Kirsten P Stelinski, Univ. of Florida, Lake Alfred, FL

D0482 Mortality of lesser mealworm, *Alphitobius diaperinus*, larvae exposed to *Metarhizium anisopliae* applied as microsclerotia to potting soil. **Robert W. Behle**, robert.behle@ars.usda.gov and Mark A. Jackson, USDA - ARS, Peoria, IL

D0483 Field trials with *Metarhizium* spp. against rangeland grasshopper (Orthoptera: Acrididae) populations in the western US. **Larry E. Jech**, larry.e.jech@aphis.usda.gov¹, R. Nelson Foster¹, K. Chris Reuter¹, Lonnie R. Black¹, Stefan Jaronski² and Donald W. Roberts³, ¹USDA, Phoenix, AZ, ²USDA - ARS, Sidney, MT, ³Utah State Univ., Logan, UT

D0484 Outdoor evaluation of *Beauveria* and *Metarhizium* fungi for Mormon cricket management. **Stefan T. Jaronski**, stefan.jaronski@ars.usda.gov¹, R. Nelson Foster², K. Chris Reuter², Lonnie R. Black², Robin Schlothauer¹ and Donald W. Roberts³, ¹USDA, Sidney, MT, ²USDA, Phoenix, AZ, ³Utah State Univ., Logan, UT

D0485 Field evaluation of a sub-lethal insecticide stressor with *Beauveria bassiana* for control of rangeland grasshoppers. **R. Nelson Foster**, nelson.foster@aphis.usda.gov¹, Larry E. Jech¹, K. Chris Reuter¹, Lonnie R. Black¹, Stefan T. Jaronski² and Donald W. Roberts³, ¹USDA, Phoenix, AZ, ²USDA, Sidney, MT, ³Utah State Univ., Logan, UT

D0486 Impact of the entomopathogenic fungus *Beauveria bassiana* on several biological control agents. **Maribel Portilla**, maribel.portilla@ars.usda.gov, Gordon Snodgrass and Randy Luttrell, USDA - ARS, Stoneville, MS

D0487 Does competition from stemborers increase parasitism rates of the gall former *Asphondylia borrichiae* (Diptera: Cecidomyiidae)? **Keith H Stokes**, khstokes@mail.usf.edu and Peter Stiling, Univ. of South Florida, Tampa, FL

D0488 Estimation of developmental parameters for adult emergence of *Gonatocerus morgani*, a novel egg parasitoid of the glassy-winged sharpshooter, and development of a degree-day model. **Sunghoon Baek**, shbaek007@hotmail.com¹, Youngsoo Son², Hannah Nadel³, Marshall W. Johnson⁴ and David Morgan⁵, ¹West Virginia Univ., Morgantown, WV, ²California Dept. of Food and Agriculture, Arvin, CA, ³USDA - APHIS, Buzzards Bay, MA, ⁴Univ. of California, Riverside, Parlier, CA, ⁵California Dept. of Food and Agriculture, Riverside, CA

D0489 Establishment, spread, and non-target effects of *Eretmocerus mundus* (Hymenoptera: Aphelinidae) for control of *Bemisia tabaci* in central California. Charles H. Pickett¹, **Dan Keaveny**, dkeaveny@cdfa.ca.gov² and Marypat Stadtherr¹, ¹California Dept. of Food and Agriculture, Sacramento, CA, ²California Dept. of Food and Agriculture, Shafter, CA

D0490 Managing the stinging nettle caterpillar, *Darna pallivitta*, in Hawaii with a newly introduced natural enemy (*Aroplectrus dimerus*). **Renato Bautista**, Renato.C.Bautista@hawaii.gov and Juliana A. Yalem, Patrick Conant and Derek K. Arakaki, Hawaii Dept. of Agriculture, Honolulu, HI

D0491 Pheromones of *Spathius agrili* and *S. floridanus*: exotic and native parasitoids of the invasive emerald ash borer. **Allard Cossé**, allard.cosse@ars.usda.gov, USDA - ARS, Peoria, IL

D0492 Emerald ash borer larval mortality and the increasing impact of native natural enemies. **Andrew R. Tluczek**, tluczek@msu.edu and Deborah G. McCullough, Michigan State Univ., East Lansing, MI

D0493 An innovative method for laboratory rearing of emerald ash borer larvae for parasitoid production. **Jian Duan**, jian.duan@ars.usda.gov¹, Tim Watt² and Craig Oppel¹, ¹USDA, Newark, DE, ²Univ. of Delaware, Newark, DE

D0494 The South Dakota bark beetle caper, 2002 -2011. **Adrian S. Juttner**, adriantree@aol.com, Adrian's Tree Service Inc., Abita Springs, LA

D0495 Parasitism and predation patterns of light brown apple (*Epiphyas postvittana*) moth eggs in California. **William Roltsch**, wroltsch@cdfa.ca.gov¹, Nada Carruthers² and Richard Stouthamer³, ¹California Dept. of Food and Agriculture, Sacramento, CA, ²USDA - APHIS, Albany, CA, ³Univ. of California, Riverside, Riverside, CA

D0496 Effects of parasitized greenbugs (*Schizaphis graminum*) on *Chrysoperla rufilabris* larval development and adult body weight. **Casi N. Jessie**, casi.jessie@okstate.edu and Kristopher L. Giles, Oklahoma State Univ., Stillwater, OK

D0497 Regulation of Russian wheat aphid (*Diuraphis noxia*) populations with natural enemies present in the wheat system. **Terri L. Randolph**, Terri.Randolph@ColoState.EDU, Cynthia Walker, Scott C. Merrill, Michael Koch and Frank B. Peairs, Colorado State Univ., Fort Collins, CO

D0498 Slugs- accidental or intentional predators of insects? **George D. Hoffman**, george.hoffman@oregonstate.edu, Oregon State Univ., Corvallis, OR

D0499 Influence of harvesting practices on predation in alfalfa and adjacent cotton in New Mexico. **Jane Breen Pierce**, japierce@nmsu.edu and Patricia E. Monk, New Mexico State Univ., Artesia, NM

D0500 Effect of insectary plantings on pests and beneficial insects associated with pumpkin in New Mexico. **Tessa R. Grasswitz**, tgrasswi@nmsu.edu, New Mexico State Univ., Los Lunas, NM

D0501 Movement of *Lygus hesperus* and associated natural enemies in trap-cropped strawberries. **Sean Swezey**, findit@ucsc.edu¹, James R. Hagler², Charles H. Pickett³, Scott A. Machtley², Diego J. Nieto¹ and Janet A. Bryer¹, ¹Univ. of California, Santa Cruz, Santa Cruz, CA, ²USDA - ARS, Maricopa, AZ, ³California Dept. of Food and Agriculture, Sacramento, CA

D0502 Floral resources enhance aphid suppression by the hoverfly *Eupeodes fumipennis*. **Brian N. Hogg**, hoggbrian@yahoo.com, Erik H. Nelson, Nicholas J. Mills and Kent M. Daane, Univ. of California, Berkeley, Berkeley, CA

D0503 Ornamental pepper: a potential banker plants for augmentation of predatory mites, *Amblyseius swirskii* (Acari: Phytoseiidae). **Yingfang Xiao**, yfxiao@ufl.edu¹, Lance Osborne¹, Jianjun Chen¹, Cindy McKenzie², Pasco B. Avery³, Katherine Houben¹ and Fabieli Irizarry¹, ¹Univ. of Florida, Apopka, FL, ²USDA - ARS, Fort Pierce, FL, ³Univ. of Florida, Fort Pierce, FL

D0504 Companion plants in greenhouses: potential for pest monitoring, trapping, and natural enemy open rearing. **Emily Pochubay**, pochubay@msu.edu¹, Matthew Grieshop¹, Jeanne Himmelein² and Mark Elzinga³, ¹Michigan State Univ., East Lansing, MI, ²Michigan State Univ., Nazareth, MI, ³Elzinga and Hoeksema Greenhouses, Portage, MI

D0505 Trophobiotic relationship between *Solenopsis invicta* and Rhodesgrass mealybug (Hemiptera, Pseudococcidae) and the potential impact on fire ant management. **Melissa K. Layton**, layt16@tamu.edu, Julio S. Bernal and S. Bradleigh Vinson, Texas A&M Univ., College Station, TX

D0506 Natural enemies of *Diaphorina citri* Kuwayama (Hemiptera: Psyllidae) in the citrus orchards of Mexico. **J. Isabel López-Arroyo**, jila64@yahoo.com¹, Alejandro González-Hernández², Jesús Loera-Gallardo³, Marco A. Reyes-Rosas³ and E. Cortés-Mondaca⁴, ¹INIFAP, Mexico City, D.F., Mexico, ²UANL, San Nicolás de los Garza, N.L., Mexico, ³INIFAP, Río Bravo, Tamaulipas, Mexico, ⁴INIFAP, Juan José Ríos, SIN, Mexico

D0507 Predation of lepidopteran eggs in New Mexico pecan orchards. **Devin Bendixsen**, devinb@nmsu.edu, Jane Breen Pierce, Patricia E. Monk and Derik Bendixsen, New Mexico State Univ., Artesia, NM

D0508 Spider diversity in longleaf pine stands invaded by cogongrass. Kristyn E. Carroll, **David Held**, dwh0004@auburn.edu and Sallie Martin, Auburn Univ., Auburn, AL

D0509 Bark beetle and associated predator communities in mature and second-growth stands in western Oregon. **Darrell W. Ross**, darrell.ross@oregonstate.edu, Oregon State Univ., Corvallis, OR

D0510 Improvements in mass-rearing predators of hemlock woolly adelgid. **J. Patrick Parkman**, jparkman@utk.edu, Univ. of Tennessee, Knoxville, TN

D0511 Functional and numerical response of *Laricobius* spp. predators (Coleoptera: Derodontidae) to hemlock woolly adelgid, *Adelges tsugae* (Hemiptera: Adelgidae). **Ligia Cota Vieira**, lvieira@vt.edu, Scott M. Salom and Loke T. Kok, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

D0512 Lady beetle composition and abundance in sweet corn bordered by pasture, buckwheat or sunflower plantings. **John D. Sedlacek**, john.sedlacek@kysu.edu and Karen L. Friley, Kentucky State Univ., Frankfort, KY

D0513 The Lost Ladybug Project. **Leslie Allee**, lla1@cornell.edu, John Losey and Rebecca Smyth, Cornell Univ., Ithaca, NY

D0514 Metabolic profiling: a new tool in the prediction of host-specificity in classical biological control of weeds? **Carole B. Rapo**, c.rapo@cabi.org¹, Harriet L. Hinz², Sanford D. Eigenbrode¹, John Gaskin³, Urs Schaffner², William J. Price¹ and Mark Schwarzländer¹, ¹Univ. of Idaho, Moscow, ID, ²CABI, Delémont, Switzerland, ³USDA - ARS, Sidney, MT

D0515 Master Gardener IPM: teaching strategies for conserving beneficial arthropods in Oklahoma gardens. **Eric J. Rebek**, eric.rebek@okstate.edu, Jannette A. Steets, Janet C. Cole and Brian A. Kahn, Oklahoma State Univ., Stillwater, OK

D0516 Learning organic farming while working with college students and small farmers in South Texas. Raul T. Villanueva, Luis Ribera and **Gabriela Esparza-Diaz**, gabe@colpos.mx, Texas A&M Univ. - Texas AgriLIFE Extension, Weslaco, TX

D0517 Educational materials for teaching pesticide label comprehension in developing countries. **Patricia Ann Hipkins**, phipkins@vt.edu and Donald E. Mullins, Virginia Polytechnic Institute and State Univ., Blacksburg, VA

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D0518 The social clock: circadian rhythms in the common eastern bumble bee *Bombus impatiens*. **Edgar Javier Hernandez**, ejh983@umsl.edu, Univ. of Missouri - St. Louis, St. Louis, MO

D0519 Bioprospecting for novel enzymes from protist communities of *Reticulitermes flavipes* for efficient biomass processing. **Amit Sethi**, sethi@purdue.edu¹, E. S. Kovaleva², J. Slack², S. Brown², G. W. Buchman² and Michael Scharf¹, ¹Purdue Univ., West Lafayette, IN, ²Chesapeake-PERL Inc., Savage, MD

D0520 Status of the *Coptotermes formosanus* and *Reticulitermes flavipes* genome projects. Matthew R. Tarver¹, Natalie Fedorova², William Nierman², Dunhua Zhang¹, Rhitoban Raychoudhury³, Ruchira Sen³, Amit Sethi³, Andres Sandoval-Mojica³, Ameya Gondhalekar⁴, Zachary Karl³, Jesse Hoteling³, Xuguo "Joe" Zhou⁵, Srinu Kambhampati⁶, **Michael Scharf**, mscharf@purdue.edu³ and Alan Lax¹, ¹USDA - ARS, New Orleans, LA, ²J. Craig Venter Institute, Rockville, MD, ³Purdue Univ., West Lafayette, IN, ⁴Univ. of Florida, Gainesville, FL, ⁵Univ. of Kentucky, Lexington, KY, ⁶Univ. of Texas at Tyler, Tyler, TX

D0521 *Myosin* gene expression and protein abundance in the Formosan subterranean termite (*Coptotermes formosanus*). **Matthew R. Tarver**, Matt.Tarver@ars.usda.gov, Christopher B. Florane, Christopher P. Mattison and Alan R. Lax, USDA - ARS, New Orleans, LA

D0522 Sequencing of the house fly (*Musca domestica*) genome and transcriptome. **Jeffrey G. Scott**, jgs5@cornell.edu¹, Serap Aksoy², Nannan Liu³ and Michael Kristensen⁴, ¹Cornell Univ., Ithaca, NY, ²Yale Univ., New Haven, CT, ³Auburn Univ., Auburn, AL, ⁴Danish Pest Infestation Laboratory, Lyngby, NA, Denmark

D0523 Effect of biogenic amines on the mating and egg-laying behaviors in the stable fly. **Samuel Liu**, samuel.liu@ars.usda.gov and Andrew Li, USDA - ARS, Kerrville, TX

D0524 Isolation and characterization of novel antimicrobial peptide from the black soldier fly, *Hermetia illucens*. Soon Ik Park, Jeehyun Yoe, Yeonggyun Choe, Hayeon Jang and **Sung Moon Yoe**, smyoe@dankook.ac.kr, Dankook Univ., Cheonan, Chungcheongnam-do, South Korea

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D0526 Mitochondria's role in metabolic depression and acquisition of freeze tolerance in the overwintering gall fly, *Eurosta solidaginis*. **Shu-Xia Yi**, yis@muohio.edu, Kelsey Magee and Richard E. Lee, Miami Univ., Oxford, OH

D0527 Identification and expression analysis of Hessian fly small RNAs. **Chitvan Khajuria**, chitvan@ksu.edu and Ming-Shun Chen, Kansas State Univ., Manhattan, KS

D0528 Transcriptomic determination of genes involved in the nutritional ecology of fall armyworm plant host strains. **Howard W. Fescemyer**, hif1@psu.edu, Germán V. Sandoya, J. Cristobal Vera, James H. Marden and Dawn S. Luthe, Pennsylvania State Univ., Univ. Park, PA

D0529 The extended loop of the C-terminal carbohydrate-recognition domain of *Manduca sexta* immunlectin-2 is important for ligand binding and functions. **Xiuzhen Shi**, SHIXIU@UMKC.EDU and Xiaoqiang Yu, Univ. of Missouri - Kansas City, Kansas city, MO

D0530 Neural coding of a three-component pheromone in the antennal lobe of the moth *Manduca sexta*. **Rachel Bober**, bober@email.arizona.edu and John Hildebrand, Univ. of Arizona, Tucson, AZ

D0531 Mutational studies of the putative *Bombyx mori* pheromone biosynthesis activating neuropeptide receptor (BPANR) binding pocket. **Eric J. Hoffmann**, eric.hoffmann@ars.usda.gov¹, Joe Hull¹ and Shogo Matsumoto², ¹USDA - ARS, Maricopa, AZ, ²RIKEN Advanced Science Institute, Wako-shi, Saitama, Japan

D0532 Functional characterization of tick glutaminy cyclase. **Steven Adamson**, steven.adamson@usm.edu and Shahid Karim, Univ. of Southern Mississippi, Hattiesburg, MS

D0533 Compositional and biosynthetic studies of the Asian citrus psyllid (Hemiptera: Psyllidae, *Diaphorina citri*) salivary sheath. **J. Kent Morgan**, kent.morgan@ars.usda.gov¹, Rocco T. Alessandro¹, Wayne B. Hunter² and Robert G. Shatters¹, ¹USDA - ARS, Fort Pierce, FL, ²USDA - ARS, Ft. Pierce, FL

D0534 Oral uptake of host-gene-targeted dsRNA increases mortality in the Asian citrus psyllid, *Diaphorina citri* Kuwayama (Hemiptera: Psyllidae). **Robert G. Shatters**, robert.shatters@ars.usda.gov¹, Lindsay Shaffer², Charles A. Powell² and Dov Borovsky³, ¹USDA - ARS, Fort Pierce, FL, ²Univ. of Florida, Fort Pierce, FL, ³Univ. of Florida, Vero Beach, FL

D0535 Characterization of five *CYP4* genes from Asian citrus psyllid and their expression levels in *Candidatus Liberibacter asiaticus* infected and uninfected psyllids. **Siddharth Tiwari**, stiwari@ufl.edu¹, Ameya Gondhalekar², Rajinder S. Mann¹, Michael Scharf³ and Lukasz L. Stelinski¹, ¹Univ. of Florida, Lake Alfred, FL, ²Univ. of Florida, Gainesville, FL, ³Purdue Univ., West Lafayette, IN

D0536 Expression analyses of odorant binding proteins in *Lygus lineolaris*. **Joe Hull**, joe.hull@ars.usda.gov, USDA - ARS, Maricopa, AZ

D0537 Control of task allocation in the honey bee (*Apis mellifera*). **Chelsea N. Cook**, chelsea.cook@colorado.edu and Michael Breed, Univ. of Colorado at Boulder, Boulder, CO

D0538 Distribution and intraspecific transfer of cantharidin and cantharidin-related compounds in *Hycleus scabiosae* (Coleoptera: Meloidae). **Mahmood Reza Nikbakhtzadeh**, nik.nikbakht@gmail.com¹, Mozaffar Vahedi², Hassan Vatandoost³ and Ali Mehdi⁴, ¹The Ohio State Univ., Columbus, OH, ²Tarbiat Modares Univ., Tehran, Iran, ³Tehran Univ. of Medical Sciences, Tehran, Iran, ⁴National Oceanography Institute, Tehran, Iran

D0539 Nucleic acid collections from the pink spotted lady beetle, *Coleomegilla maculata*. **Margaret L. Allen**, meg.allen@ars.usda.gov, USDA - ARS, Stoneville, MS

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D0540 Ant lion safari: using myrmeleon antlions as biology teaching tools. **David A. Pick**, dpick@fau.edu¹, Steven Arthurs² and Robert Leckel², ¹Florida Atlantic Univ., Jupiter, FL, ²Univ. of Florida, Apopka, FL

D0541 Jumping the bar(code): did a numt in blue orchard bees (*Osmia lignaria*) come from the barcode region of *Osmia californica*? **Richard L. Roehrdanz**, richard.roehrdanz@ars.usda.gov and Sheila Sears, USDA - ARS, Fargo, ND

D0542 Isothermal amplification of insect DNA. **Aaron M. Dickey**,

Aaron.Dickey@ars.usda.gov¹, Lance S. Osborne², Robert G. Shatters¹ and Cindy L. McKenzie¹, ¹USDA - ARS, Fort Pierce, FL, ²Univ. of Florida, Apopka, FL

D0543 The genome challenge: *why study morphology?* **KG. Andrew Hamilton**, Andy.Hamilton@AGR.GC.CA, Agriculture and Agri-Food Canada Biodiversity, Ottawa, ON, Canada

D0544 Temporal genetic variability in *Ixodes scapularis* (Acari, Ixodidae) collected in Connecticut between 2001 and 2004. **Jaymin Patel**, jp02646@georgiasouthern.edu¹, Jigar Bhagatwala¹, Cynthia Chan¹, Jean Tsao² and Lorenza Beati¹, ¹Georgia Southern Univ., Statesboro, GA, ²Michigan State Univ., East Lansing, MI

D0545 Genetic structure of *Ixodes scapularis* (Acari: Ixodidae) throughout its distribution area based on mitochondrial gene markers. **Cynthia Chan**, cynthiat.chan@gmail.com, Heather Walker and Lorenza Beati, Georgia Southern Univ., Statesboro, GA

D0546 Preliminary molecular phylogeny of Limacodidae (*Apoditrysia*) based upon nuclear and mitochondrial markers. **C. Taylor Wardwell**, wardw006@umn.edu¹, Jennifer Zaspel² and Susan J. Weller³, ¹Univ. of Minnesota, St. Paul, MN, ²Univ. of Wisconsin - Oshkosh, Oshkosh, WI, ³Univ. of Minnesota, Minneapolis, MN

D0547 Reconstructing intraordinal relationships in Lepidoptera using mitochondrial genome data with the description of two newly sequenced lycaenids, *Spindasis takanonis* and *Protantigius superans* (Lepidoptera: Lycaenidae). Min Jee Kim¹, Ah Rang Kang¹, Heon Cheon Jeong², Ki-Gyoung Kim³ and **Iksoo Kim**, ikkim81@chonnam.ac.kr¹, ¹Chonnam National Univ., Gwangju, Korea, South Korea, ²Insect Research Institute of Hampyeong, Hampyeong, Jeollanamdo, South Korea, ³National Institute of Biological Resources, Incheon, South Korea

D0548 Patterns of mitochondrial haplotype diversity in the invasive pest *Epiphyas postvittana* (Lepidoptera: Tortricidae). **Leah K. Tooman**, leah.tooman@plantandfoodresearch.co.nz¹, Caroline J. Rose¹, Colm Carragher¹, D. Max Suckling¹, Sebastien Rioux Paquette², Lisa A. Ledezma³, Todd M. Gilligan⁴, Marc Epstein⁵, Norman Barr³ and Richard D. Newcomb¹, ¹The New Zealand Institute for Plant & Food Research Limited, Auckland, New Zealand, ²Wellington, New Zealand, ³USDA - APHIS, Edinburg, TX, ⁴Colorado State Univ., Fort Collins, CO, ⁵California Dept. of Food and Agriculture, Sacramento, CA

D0549 Cluster analysis of diamond back moth (*Plutella xylostella*) local strains based on insecticide toxicity and Ace1 gene SNP variation. **Siwoo Lee**, siwlee@rda.go.kr, Chang-Gyoo Park, Kwan-Seok Lee, Kwang-Ho Kim and Sang-Gye Lee, National Academy of Agricultural Science, Suwon, Gyeonggido, South Korea

D0550 Identifying genetic populations structuring in *Diatraea saccharalis* (Lepidoptera: Crambidae) from sugarcane and corn crops. **Karina Lucas Silva-Brandão**, ksilva@gmail.com, Thiago V. Santos, Fernando L. Cônsoli and Celso Omoto, ESALQ-USP, Piracicaba, São Paulo, Brazil

D0551 Phylogenetic analysis of GABA receptor gene in western corn rootworm (*Diabrotica virgifera virgifera*) populations in North America. **Haichuan Wang**, HWANG4@unlserve.unl.edu, Hong Chen and Blair Siegfried, Univ. of Nebraska - Lincoln, Lincoln, NE

D0552 Molecular phylogeny of the Aleocharine tribe Oxypodini (Coleoptera: Staphylinidae). **Judith Osswald**, judith.osswald@nhm.uio.no, Lutz Bachmann and Vladimir Gusarov, Univ. of Oslo, Natural History Museum, Oslo, Norway

D0553 Of trash bins and catch-alls: a molecular phylogeny of

the *Odonotophotopsis melicausa* species-group. **David A. Tanner**, david.tanner@unt.edu¹ and James P. Pitts², ¹Univ. of North Texas at Dallas, Dallas, TX, ²Utah State Univ., Logan, UT

D0554 The genome of the egg-parasitoid wasp *Trissolcus basalis* (Wollaston) (Hymenoptera: Platygastridae). **Norman F. Johnson**, johnson.2@osu.edu¹, Joseph Cora¹, Elijah Talamas¹, Alejandro A. Valerio¹, Andrew D. Austin², Hans Klompen¹ and Ferdinando Bin³, ¹The Ohio State Univ., Columbus, OH, ²Univ. of Adelaide, Adelaide, Australia, ³Univ. of Perugia, Perugia, Italy

D0555 The armilla group of genera of egg parasitoids in the family Platygastridae (Hymenoptera). **Luciana Musetti**, musetti.2@osu.edu¹, Norman F. Johnson¹ and Lubomir Masner², ¹The Ohio State Univ., Columbus, OH, ²Agriculture and Agri-Food Canada, Ottawa, ON, Canada

D0556 Intersex production in the *Wolbachia*-infected parasitoid wasp, *Trichogramma kaykai*. **Genet M. Tulgetske**, genet.tulgetske@ucr.edu and Richard Stouthamer, Univ. of California, Riverside, Riverside, CA

D0557 Studies on the structure and pathogens of *Aethina tumida*, the small hive beetle. **Natasha A. Wright**, nawright@uark.edu and Donald C. Steinkraus, Univ. of Arkansas, Fayetteville, AR

D0558 Scanning electron microscopic studies on the tongue of *Apis* species. **Neelima R. Kumar**, neelimark6@gmail.com, Kalpana Nayyar and Ruchi Sharma, Panjab Univ., Chandigarh, Chandigarh, India

D0559 A comprehensive inventory of lignocellulolytic enzymes in the wood-feeding cockroach *Cryptocercus punctulatus*. **Xuguo "Joe" Zhou**, xuguozhou@uky.edu¹, Xiangrui Li¹, Scott Geib², Christine A. Nalepa³ and Ling Yuan¹, ¹Univ. of Kentucky, Lexington, KY, ²USDA - ARS, Hilo, HI, ³Raleigh, NC

D0560 Culture-independent approach for endosymbiotic bacterial systematics in Pentatomidae. **Simone Prado**, ssprado@msn.com⁴, Tiago Zucchi¹, Antônio R. Panizzi² and Fernando Luis Cônsoli³, ¹Costa Lima Quarantine Laboratory, Embrapa Environment, Jaguariuna, São Paulo, Brazil ²Embrapa Trigo, Passo Fundo, RS, Brazil, ³ESALQ-USP, Piracicaba, São Paulo, Brazil⁴,

D0561 Exploring termite's behavior at a tunnel intersection: directional selection and the intersection passing time. **Sook Jung Ku**, sjku0123@hotmail.com¹ and Sang-Hee Lee², ¹Kangwon National Univ., Chuncheon, Kangwon, South Korea, ²National Institute for Mathematical Sciences, Daejeon, Chungnam, South Korea

D0562 Interactions between the Arctic mosquito (*Aedes nigripes*) and predaceous diving beetles (*Colymbetes dolabratus*) in snowmelt ponds near Kangerlussuaq, Greenland. **Lauren E. Culler**, Lauren.E.Culler@dartmouth.edu, Dartmouth College, Hanover, NH

D0563 Water loss rates and desiccation mortality relate to circadian rhythms for two species of burying beetle. **W. Wyatt Hoback**, hobackww@unk.edu, Stephanie Butler, Jeremiah Carlson, Jessica Jurzenski, Jess Lammers and Matheus Parenti, Univ. of Nebraska - Kearney, Kearney, NE

D0564 Stream invertebrate community trends and environmental correlates at Ozark National Scenic Riverways, Missouri, 2005-2010. **David E. Bowles**, david_bowles@nps.gov, J. Tyler Cribbs, Jan A. Hinsey and Jessica A. Lurras, US National Park Service, Republic, MO

D0565 Aquatic insect assemblages of ephemeral ponds in the Apalachicola National Forest, Florida. **Andrew K. Rasmussen**,

andrew.rasmussen@famuedu, Barton A. Richard and James L. Richardson, Florida A&M Univ., Tallahassee, FL

D0566 Comparison of leaf litter and wood dwelling ant communities in southern Guyana. **Joseph Bradley Wright**, jwrigh16@students.towson.edu, Towson Univ., Towson, MD

D0567 A study of ant diversity in burned versus unburned sandplain forest in Vermont. **Emily Ogilvy**, eogilvy@smcvt.edu and Valerie S. Banschbach, Saint Michael's College, Colchester, VT

D0568 Patterns of diversity in high-elevation grassland Diptera. **Alyssa MacLeod**, alyssa.macleod@mail.mcgill.ca and Terry A. Wheeler, McGill Univ., Ste Anne de Bellevue, QC, Canada

D0569 Invertnet: a new platform for biodiversity research. **Christopher H. Dietrich**, dietrich@inhs.illinois.edu¹, Nahil Sobh² and Omar Sobh², ¹Illinois Natural History Survey, Champaign, IL, ²Univ. of Illinois, Urbana, IL

D0570 Evolution of flies: those without ptilina are like birds without beaks. **Lloyd Knutson**, lvknutson@tiscali.it¹ and Rory J. Mc Donnell², ¹Salita degli Albito 29, 04024 Gaeta (LT), Italy, ²Univ. of California, Riverside, CA

D0571 Ecological speciation in the holly leaf-miner, *Phytomyza glabricola* (Diptera: Agromyzidae). **Julie Byrd Hébert**, julie.b.hebert@gmail.com¹, Sonja J. Scheffer² and David J. Hawthorne¹, ¹Univ. of Maryland, College Park, MD, ²USDA, Systematic Entomology Laboratory (SEL), Beltsville, MD

D0572 Monitoring techniques for *Pseudacteon litoralis* (Diptera: Phoridae) in Alabama. **Kelly Ridley**, ridleka@auburn.edu and LC. "Fudd" Graham, Auburn Univ., Auburn, AL

D0573 Study of a non-flammable liquid as an insect preservative. **Amy K. Miller**, Amy.Miller@fda.hhs.gov, Monica Pava-Ripoll, Rachel E. Goeriz Pearson and George Ziobro, US Food and Drug Administration (FDA), College Park, MD



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but you make a life by what you give."*

Winston Churchill



Sharing Insect Science Globally

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(* = not an ESA-approved common name for arthropod species, family, or order)

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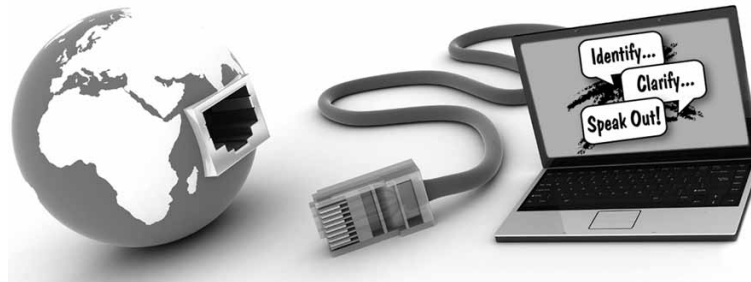
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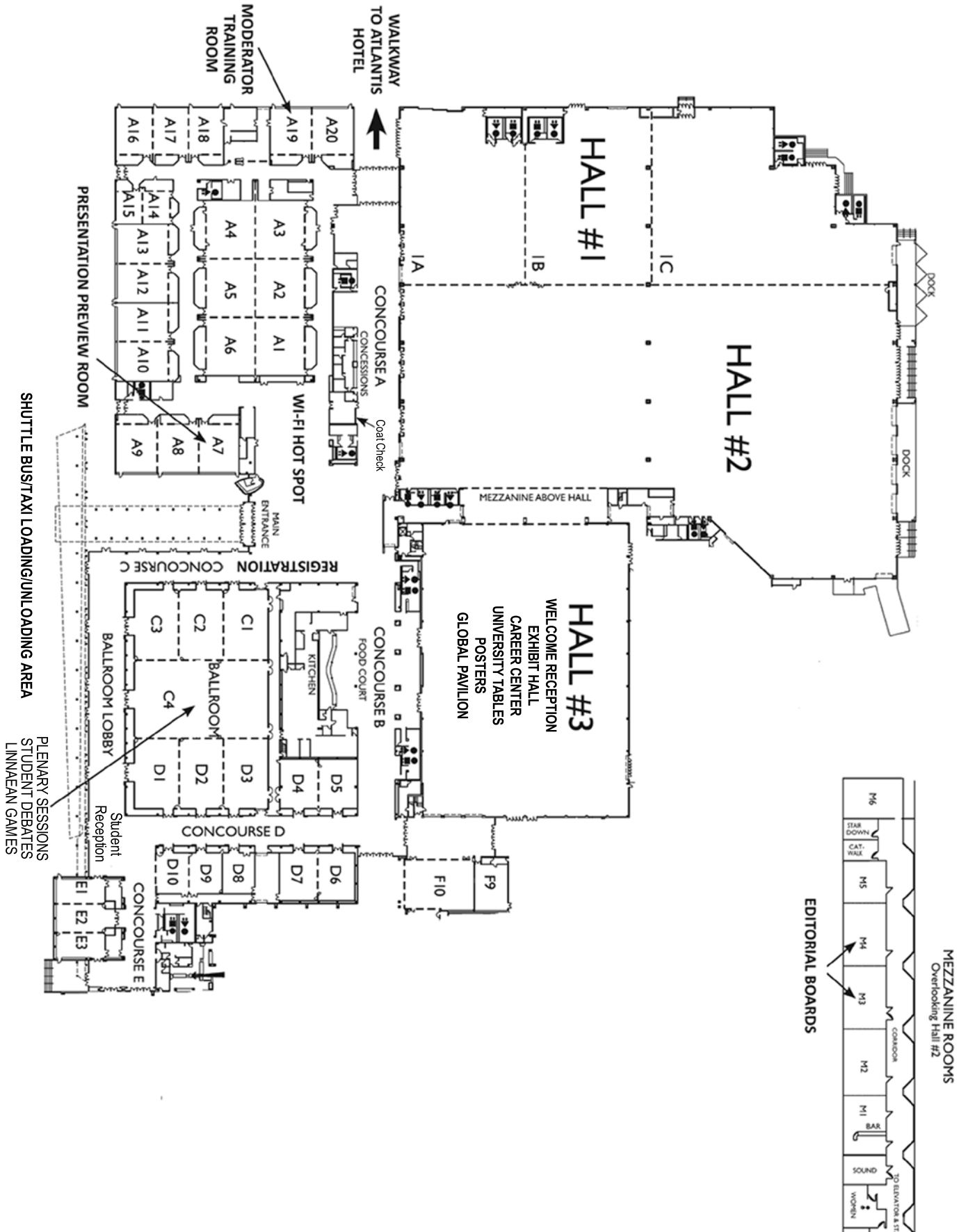
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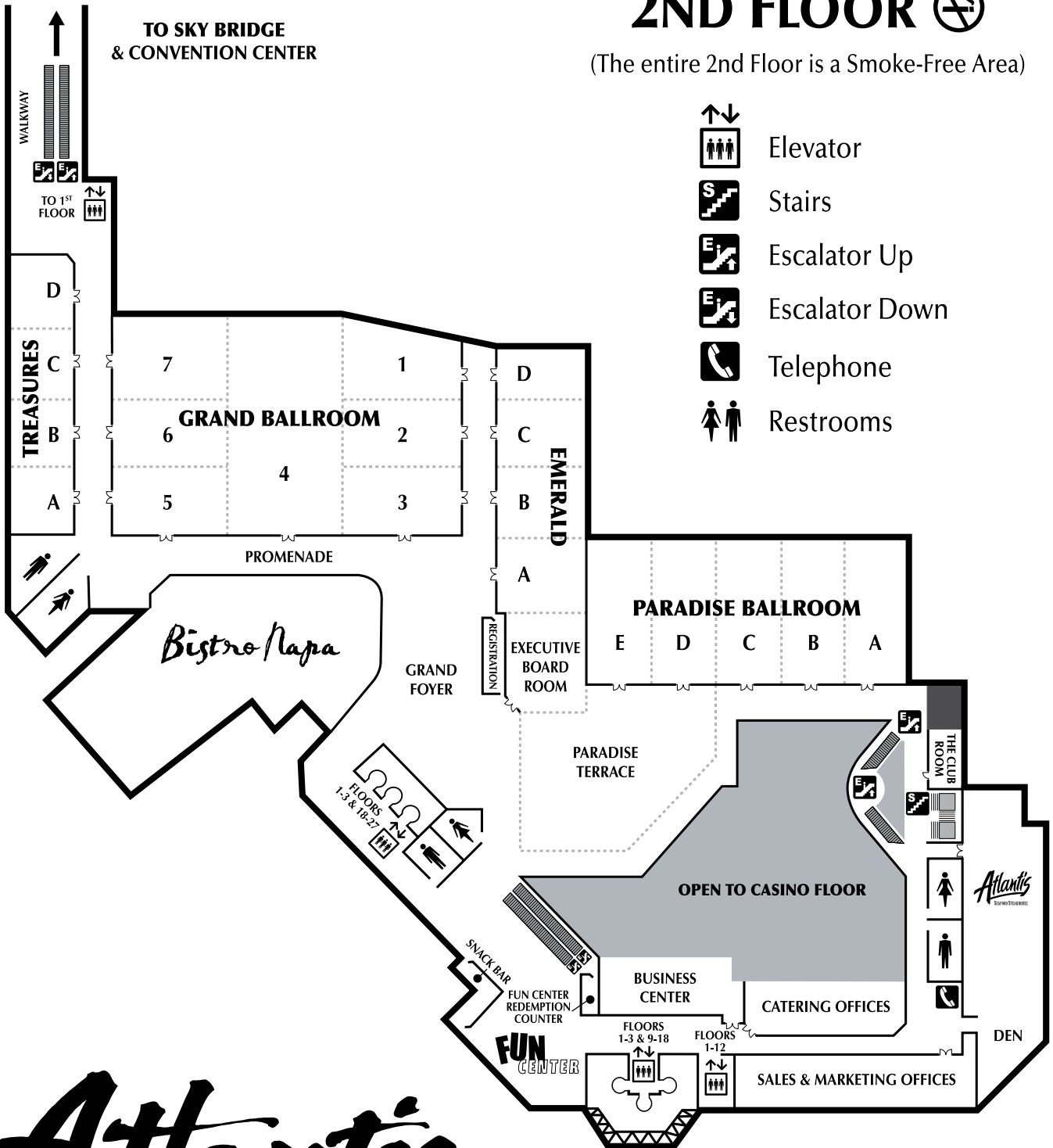
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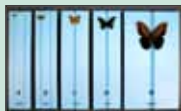
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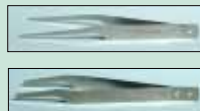
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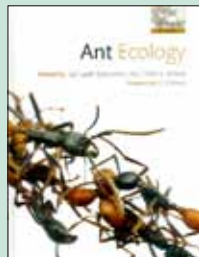
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