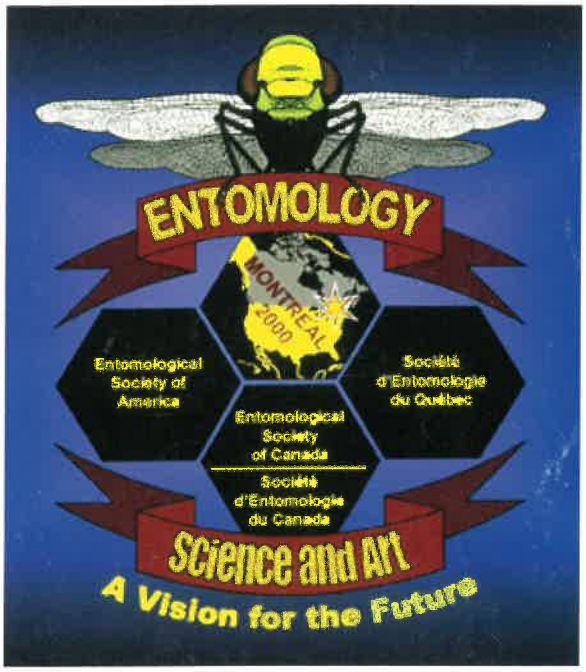
2000 JOINT ANNUAL MEETING

Société d'entomologie du Québec
Entomological Society of Canada
Entomological Society of America

December 3–6, 2000
Palais des Congrès de Montréal
Montréal, Québec, Canada



ENTOMOLOGICAL SOCIETY OF AMERICA
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2000 JAM—the Joint Annual Meeting

Société d'entomologie du Québec
Entomological Society of Canada
Entomological Society of America

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Palais des Congrès de Montréal
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Société d'entomologie du Québec

Entomological Society of Canada

ENTOMOLOGICAL SOCIETY OF AMERICA 1889 • 1906 • 1953

Please bring this program with you.
Additional copies will cost $10.00 on site.

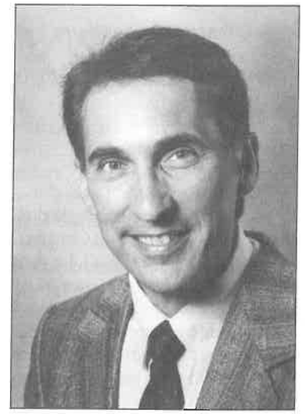
Please note: This year's program was created by extracting author-entered data from the online database of presentation abstracts. For this reason, there are stylistic inconsistencies throughout the text of this program.

CONTENTS

Society Presidents' Message

Sharron Quisenberry
President
Entomological Society of America

François Lorenzetti
President
Société d'entomologie du Québec



Dan Johnson
President
Entomological Society of Canada

Welcome to Montreal and the joint meeting of the Société d'entomologie du Québec (SEQ), the Entomological Society of Canada (SEC), and the Entomological Society of America (ESA). The theme of the meeting, *Entomology: Science and Art*, reflects the technological advances and the beauty of insects, as well as the tremendous impact insects have had on humankind throughout history. Programming for this meeting has been integrated among the societies and includes a combined reception, a joint Plenary Session—with Georges Brossard, founder of the Montreal Insectarium, as the distinguished speaker, jointly sponsored program symposia co-organized by members of the three societies, and section symposia on topics of mutual interest. Program *Highlights* include "Genetic Engineering of Mosquitoes—New Approaches to Controlling Disease Transmission", "Saturniid Moths of the World: The Art of John Cody", and "Adventures Through a Looking Glass".

The joint North American meeting, an exceptional event, provides an opportunity to share perspectives, ideas, and experiences with colleagues. Monday evening, December 4, is a free time that allows meeting participants and guests to enjoy the Montreal Insectarium Open House, university and industry receptions, special society functions, and/or dinner with colleagues. Members of the ESC and SEQ are invited to attend their societies' annual general meetings and ESC-SEQ social at Château Ramezay in Old Montreal (see Program). Your meeting registration badge will admit you to the Montreal Insectarium at all times during the meeting. We are grateful to Johanne Landry, Montreal Insectarium Director, and to Marjolaine Giroux (Education Services) for this warm invitation. Your meeting registration badge will also admit you to all other meeting events. Do not forget to visit both the U.S. and Canadian Pavilions. The U.S. Pavilion will house the Cody and Through the Looking Glass exhibits, while the Canadian Pavilion will house ESC and SEQ exhibits, the Montreal Insectarium and Biodome information desks and exhibits, as well as exhibits from other organizations serving entomology in Quebec.

Efforts to organize this meeting began 24 months ago when members of the SEQ, ESC, and ESA first met in Las Vegas. The process has been rewarding and we look forward to an exciting meeting. We would like to extend thanks to Program Chair, Marlin Rice, ESA Director of Meetings, Judy Miller, and the Program Committee, Z B Mayo (1999 Program Chair), Michael Gray and Kevin Steffey (2001 Program Co-chairs), Hélène Chiasson and Noubar Bostanian (SEQ and ESC Representatives), Jacqueline Miller (Section A), Jeffrey Shapiro (Section B), Susan Webb and Susan Rice Mahr (Section C Chair and Vice-Chair), Leonard Munstermann (Section D), Alan Schreiber (Section E), Michael Weiss (Section F), and Michael Toews (Student Liaison) for their efforts in developing an excellent and stimulating program. We also extend a special thanks to the many individuals who have contributed to the program.

The Local Arrangements Committee has done an excellent job in organizing and implementing a very diverse meeting. We would like to thank the Local Arrangements Co-chairs, Steve Clement and Charles Vincent, and ESA Director of Meetings, Judy Miller; Subcommittee Chairs Anthony Daniel, Wayne Gardner, Susan Rice Mahr, Mark Sears, and Terry Wheeler; Subcommittee members Ken Bloem, Stephanie Bloem, Dave Bragg, Caroline Bourassa, Beverly Burden, Leslie Elbertson, François Fournier, Marjolaine Giroux, Rebecca Hallet, Dave Hogg, Nancy Larocque, Brian Nault, Thierry Poiré, André Poliquin, Gaétan Racette, Benoît Rancourt, Pete Shultz, Cynthia Scott-Dupree, and Martin Trudeau.

We would also like to express our deep appreciation to the ESA National Office Staff under the leadership of Jim Olmes, Judy Miller, Carolyn DeSimon, Alan Kahan, Patty Connelley, and Barbara Clanton. It is through their tremendous efforts and dedication that this meeting has come to fruition.

This joint meeting is truly an exciting event, and we trust you will take advantage of its many opportunities for scientific exchange. Enjoy Montreal and have an excellent meeting.

Mot des Présidents des Sociétés

Sharron Quisenberry
Présidente
Entomological Society of America

François Lorenzetti
Président
Société d'entomologie du Québec

Dan Johnson
Président
Société d'entomologie du Canada

Bienvenue à Montréal et à la réunion conjointe de la Société d'entomologie du Québec (SEQ), de la Société d'entomologie du Canada (SEC) et de la Entomological Society of America (ESA). Le thème de la réunion, *L'Entomologie: une Science et un Art*, reflète aussi bien les innovations technologiques développées par cette science que la beauté propre des insectes. Ce thème met également en évidence l'impact formidable que les insectes ont eu sur l'humanité tout au long de son existence. Le programme de cette réunion a été planifié de façon conjointe et il intègre les différents aspects traditionnels des réunions des trois Sociétés qui la parrainent. Le programme comprend une réception à laquelle les participants sont tous conviés, une Session Plénière conjointe—avec Georges Brossard, fondateur de l'Insectarium de Montréal, comme conférencier distingué, les symposiums de programme, conjointement organisés par des membres des trois Sociétés, et des symposiums de section sur des thèmes d'intérêt commun. Le programme est également rehaussé par les *événements* suivants: "Genetic Engineering of Mosquitoes—New Approaches to Controlling Disease Transmission (*Modification Génétique des Moustiques—Approches Nouvelles dans le Contrôle de la Transmission des Maladies*)", "Adventures Through a Looking Glass (*Aventures de l'Autre Côté du Miroir*)", "Saturniid Moths of the World: The Art of John Cody (*Saturnidés du Monde Entier: L'Art de John Cody*).

Cette réunion conjointe nord-américaine, un événement rarissime, est une véritable opportunité pour échanger nos perspectives, nos idées et notre expérience entre collègues. La soirée du lundi, 4 décembre, est une soirée ouverte, sans programme scientifique prévu à l'horaire. Profitez de ce temps libre, participants et invités, pour visiter gratuitement l'Insectarium de Montréal, ou pour assister aux différentes rencontres sociales organisées par les groupes universitaires et de l'industrie, aux rencontres d'affaires des Sociétés, ou, tout simplement, pour aller au restaurant avec vos collègues. Les membres de la SEQ et de la SEC sont invités à tenir leur Assemblée Générale Annuelle respective et à profiter d'un cocktail conjoint en ce lieu rempli d'histoire qu'est le Château Ramezay, au coeur du Vieux-Montréal (veuillez voir le Programme pour les détails). Veuillez noter que vous aurez tout le loisir de visiter gratuitement l'Insectarium de Montréal aux heures régulières d'ouverture, et ce durant toute la durée de la réunion, du moment que vous présentez votre carton d'identification. Nous remercions sincèrement la Directrice de l'Insectarium Montréal, Johanne Landry, ainsi que Marjolaine Giroux (Service éducatif) pour cette chaleureuse invitation. Votre carton d'identification vous donne également accès à tous les autres événements prévus au programme. N'oubliez pas de visiter les Pavillons Américain et Canadien. Au Pavillon Américain, vous pourrez visiter l'exposition Cody et vous y trouverez la vente de livres de la ESA. Le Pavillon Canadien abrite, entre autres, les kiosques de la SEQ et de la SEC, de l'Insectarium et du Biodome de Montréal, ainsi que les kiosques d'autres organismes oeuvrant en entomologie au Québec.

Il y a 2 ans, des membres de la SEQ, de la SEC et de la ESA se rencontrèrent pour une première fois à Las Vegas et, depuis, un effort soutenu a été engagé afin d'organiser cette réunion conjointe. Nous croyons que cet effort est rempli de promesses de réussite et nous envisageons avec enthousiasme une réunion passionnante. Nous voulons prendre le temps de remercier le Président du Programme, Marlin Rice, la Directrice des réunions de la ESA, Judy Miller, et les membres du Comité de Programme, Z.B. Mayo (Président du Programme en 1999), Michael Gray et Kevin Steffey (Coprésident du Programme en 2001), Hélène Chiasson et Noubar Bostanian (représentants de la SEQ et de la SEC), Jacqueline Miller (Section A), Jeffrey Shapiro (Section B), Susan Webb et Susan Rice Mahn (Présidente et Vice-Président de la Section C), Leonard Munstermann (Section D), Alan Schreiber (Section E), Michael Weiss (Section F) et Michael Toews (Liaison avec les Étudiants) pour les efforts qu'ils ont mis à développer un programme excellent et stimulant. Nous étendons également nos remerciements à toutes les autres personnes qui ont contribué au programme de cette réunion de Montréal.

Un excellent travail d'organisation et de développement a été effectué par Le Comité Organisateur Local, et ceci se reflète dans un programme très diversifié. À cet égard, nous voudrions remercier les Coprésidents du Comité Local, Steve Clement et Charles Vincent, la Directrice des réunions de la ESA, Judy Miller, les Présidents des sous-comités, Anthony Daniel, Wayne Gardner, Susan Rice Mahr, Mark Sears et Terry Wheeler, ainsi que les membres des sous-comités, Ken Bloem, Stephanie Bloem, Dave Bragg, Caroline Bourassa, Beverly Burden, Leslie Elbertson, François Fournier, Marjolaine Giroux, Rebecca Hallet, Dave Hogg, Nancy Larocque, Brian Nault, Thierry Poiré, André Poliquin, Gaétan Racette, Benoît Rancourt, Pete Shultz, Cynthia Scott-Dupree, et Martin Trudeau.

Nous voulons également exprimer notre plus profonde reconnaissance au personnel du Bureau National de la ESA qui ont oeuvré sous la gouverne de Jim Olmes, Judy Miller, Carolyn DeSimon, Alan Kahan, Susan Kuper, Patty Connelly, et Barbara Clanton. C'est grâce à leurs efforts et leur dévouement soutenus que cette réunion a pu se concrétiser.

Cette réunion conjointe est certainement un événement excitant et nous croyons que vous profiterez des multiples occasions qu'elle offre pour faciliter les échanges sur un plan scientifique. Passez un agréable moment à Montréal. Nous vous souhaitons une excellente réunion.

Program Chair's Message

Marlin E. Rice

With great expectations and warm wishes I welcome you to Montréal and the Joint Annual Meeting of the Entomological Society of America, Entomological Society of Canada, and Société d'entomologie du Québec. The presidents of our three societies have selected "Entomology—Science and Art" as the theme for this year's meeting. The gathering of our sister societies holds the promise of an exciting exchange of ideas, challenging discussions, new acquaintances, and rekindled friendships.

There are 70 scientific sessions scheduled for this annual meeting. These include 3 Program Highlights, 5 Program Symposia, 20 Section Symposia, 10 Formal Conferences, and 32 Informal Conferences. These are more scientific sessions for this meeting than any ESA meeting during the previous 5 years. The Program Highlight is a new facet that the society presidents and myself hope you will enjoy. Three presentations will focus on one or both aspects of the theme for this annual meeting: Saturniid Moths of the World—The Art of John Cody, Genetic Engineering of Mosquitoes—New Approaches to Controlling Disease, and Adventures Through a Looking Glass.

The program has been organized to cover 4 days. Scientific sessions will begin on Sunday morning. The Plenary Session is set for Sunday evening with presentations and awards from all three societies. Monday afternoon is reserved for the Student Competition for the Presidents' Prize (from all three societies), followed by Preliminary ESA Section Business Meetings. Receptions and an Open House at the Montréal Biodome and Insectarium are scheduled for Monday evening. Scientific sessions are scheduled for the full day and evening on Tuesday. Scientific presentations will conclude Wednesday afternoon followed by the Final ESA Section Business Meetings late Wednesday afternoon. The ESA Final Business Meeting, in conjunction with the SEQ and ESC, will be held Wednesday evening. And on Thursday, nothing. Like ants that have had their fill at a picnic, most of us are ready to return to the nest by Thursday.

As with all annual meetings, the success of the program is a collective effort by many dedicated individuals. I greatly appreciate the spirit of cooperation and organization of the Program Committee during the past year and at the program planning meeting in Montréal in July. The Program Committee members are Noubar Bostanian (Canadian Entomological Society); Hélène Chiasson (Entomological Society of Quebec); Z B Mayo (Poster Chair and 1999 Program Chair); Michael Gray and Kevin Steffey (Student Competition Co-Chairs and 2001 Program Co-Chairs); Jacqueline Miller (Section A); Jeffrey Shapiro (Section B); Susan Webb and Susan Rice Mahr (Section C); Leonard Munstermann (Section D); Alan Schreiber (Section E); and Michael Weiss (Section F). Throughout the year, Z B Mayo was an excellent mentor. Many thanks to all of these individuals. The professionalism, cooperation, and suggestions of Judy Miller and Carolyn DeSimon at the ESA National Office were excellent. Their dedication to our society is a primary reason why the annual meeting is a success. Thanks to President Sharron Quisenberry for the opportunity to serve our society. It has been challenging, it has been rewarding, and occasionally it has been fun. A special thanks goes to my wife, Kay, who has been a reliable source of encouragement during times of stress. However, she also wanted reassurances that I would never agree to do this job again. To her, I promise.

Even though the program is now in place, there are always opportunities for re-evaluation and incorporation of ideas into future meetings. If you have comments or constructive criticisms regarding the program at Montréal, or thoughts on our next meeting in San Diego, I encourage you to share them with either next year's Program Co-Chairs, Mike Gray and Kevin Steffey, or myself.

Last, I hope that you will find the joint annual meeting to be a rewarding experience both professionally and personally. I thank the ESA members for the privilege of serving our society, and I look forward to seeing you in Montréal. Enjoy the meeting and be of good cheer.

Back row (L to R): L. E. Munstermann, H. Chiasson, N. Bostanian, A. A. Schreiber, S. Rice-Mahr, S. L. Clement, G. Bradfisch, S. Webb, J. P. Shapiro, J. Y. Miller, K. Steffey. Front row (L to R): C. Vincent, M. J. Weiss, Z B Mayo, M. Gray, M. E. Rice.

Message du Président du Programme

Marlin E. Rice
Président du programme 2000, ESA

C'est avec beaucoup d'anticipation que je vous souhaite le lus chaleureux des accueils à Montréal pour cette Réunion Annuelle conjointe de la *Entomological Society of America*, de la Société d'entomologie du Canada et de la Société d'entomologie du Québec. Les présidents de nos trois sociétés ont choisi "*L'Entomologie: une Science et un Art*" comme thème de la réunion de cette année. Cet événement qui réunit nos trois sociétés soeurs contient la promesse d'un échange excitant d'idées, de discussions stimulantes, d'occasions de faire de nouvelles connaissances et de raviver des amitiés.

Soixante-dix sessions scientifiques sont prévues dans le cadre de cette réunion annuelle. De ces sessions, trois sont des événements spéciaux reliés au thème de la réunion, cinq sont des Symposiums de Programme, vingt sont des Symposiums de Section, sessions auxquelles s'ajoutent dix Conférences Formelles et trente-deux Conférences Informelles. C'est plus de sessions scientifiques qu'à l'une ou l'autre des réunions de la ESA tenues durant les cinq dernières années. La présentation d'événements spéciaux est une nouvelle facette que les présidents des sociétés, ainsi que moi-même, espérons que vous allez apprécier. Ces événements vont mettre l'emphase sur l'un ou l'autre des éléments du thème de cette réunion annuelle: "Saturniid Moths of the World: The Art of John Cody (*Saturnidés du Monde Entier: L'Art de John Cody*)", "Genetic Engineering of Mosquitoes—New Approaches to Controlling Disease Transmission (*Modification Génétique des Moustiques — Approches Nouvelles dans le Contrôle de la Transmission des Maladies*)" et "Adventures Through a Looking Glass (*Aventures de l'Autre Côté du Miroir*)".

Le programme se déroule sur quatre journées. Les sessions scientifiques débuteront le dimanche matin. L'après-midi du lundi est réservé à la Compétition des Étudiants pour le Prix des Présidents (des trois sociétés), suivi des Réunions d'Affaires Préliminaires des Sections de la ESA. La soirée du lundi est réservée aux activités de la SEC et de la SEQ, aux rencontres sociales et à la visite de l'Insectarium et du Biodome de Montréal. Les Réunions d'Affaires Finales des Sections de la ESA ainsi que l'Assemblée Générale Annuelle de la SEC se tiendront en fin d'après-midi, mardi, suivi d'autres sessions scientifiques en soirée. Les sessions scientifiques prendront fin le mercredi après-midi. La Réunion d'Affaire Finale de la ESA se déroulera le mercredi soir. Rien n'est prévu pour le jeudi. Donc, ce jeudi, et comme des fourmis ayant fait le plein à un pique-nique, la plupart de nous seront prêt à retourner au nid.

Comme c'est le cas pour chaque réunion annuelle, le succès du programme est le fruit de l'effort collectif et du dévouement de plusieurs personnes. J'apprécie grandement l'esprit de coopération et d'organisation du Comité de Programme durant l'année écoulée et durant la réunion de planification tenue à Montréal en juillet dernier. Les membres du Comité de Programme sont Noubar Bostannian (Société d'entomologie du Canada), Hélène Chiasson (Société d'entomologie du Québec), Z B Mayo (Président de la session des affiches scientifiques et Président du Programme en 1999), Michael Gray et Kevin Steffey (Co-Présidents de la Compétition Étudiante et Co-Présidents du Programme en 2001), Jacqueline Miller (Section A); Jeffrey Shapiro (Section B), Susan Webb, Susan Rice Mahr et Ernest Delfosse (Section C), Leonard Munstermann (Section D), Alan Schreiber (Section E) et Michael Weiss (Section F). Durant toute cette année écoulée, Z B Mayo a été un excellent mentor. Mes remerciements vont à toutes ces personnes. Le professionnalisme, la coopération et les suggestions de Judy Miller et de Carolyn DeSimon, du Bureau National de la ESA, ont été admirables.

Merci à la Présidente Sharron Quisenberry pour cette opportunité de servir notre société. Ce fut un défi, enrichissant à relever, et certainement plaisant en quelques occasions.

Des remerciements tous spéciaux vont à ma femme, Kay, qui fut une source constante d'encouragements durant les périodes de stress. Cependant, elle désirait que je la rassure à l'effet que je ne répéterais pas cet engagement. Je lui promet cela.

Bien que le programme soit maintenant établi, il y a toujours place pour une réévaluation et pour d'autres idées, au profit de futures réunions. Si vous avez des commentaires ou des critiques constructives à formuler en ce qui concerne le programme de Montréal, ou des suggestions pour la prochaine réunion de San Diego, je vous encourage à les partager avec les Co-Présidents du Programme de l'an prochain, Mike Gray et Kevin Steffey, ou avec moi-même.

Enfin, je souhaite que cette Réunion Annuelle Conjointe vous fera vivre une expérience enrichissante à la fois sur le plan professionnel et sur le plan personnel. Je remercie les membres de la ESA pour le privilège de servir notre société et je suis impatient de vous voir à Montréal. Profitez pleinement de cette réunion et soyez plein d'entrain.

Local Arrangements Committee's Message

Stephen L. Clement, Co-chair
Charles Vincent, Co-chair

Disclaimer: This information is current as of July 2000 and is subject to change.

The Committee's Greeting and Words of Appreciation

Your Local Arrangements Committee (LAC) welcomes you to the 2000 JAM—the Joint Annual Meeting of the SEQ/ESC/ESA in Montréal. LAC Co-chairs are Steve Clement and Charles Vincent. The LAC is comprised of members of all three societies who are committed to seeing that you have a very rewarding and productive meeting and your visit to Montréal is a memorable one. Chairs for subcommittees are Anthony Daniel, Wayne Gardner, Susan Mahr, Mark Sears, and Terry Wheeler. Sub-committee members are Ken Bloem, Stephanie Bloem, Dave Bragg, Caroline Bourassa, Beverly Burden, Leslie Elberson, François Fournier, Marjolaine Giroux, Rebecca Hallet, Dave Hogg, Nancy Larocque, Brian Nault, Thierry Poiré, André Poliquin, Gaëtan Racette, Benoit Rancourt, Pete Schultz, Cynthia Scott-Dupree, and Martin Trudeau. The LAC office will be in Room 402C on Level 4 in the Palais des Congrès de Montréal (Convention Center) and will be staffed to provide assistance to all members during the meeting.

The LAC is especially grateful to Judy Miller, ESA Director of Meetings, and Carolyn DeSimon, ESA Meetings Assistant, for all of their help, advice, and assistance. The LAC thanks all members of the three societies who worked hard to make this meeting a success. Additional help was provided by Phil Blain (Manager, Convention Services and Special Projects, Tourism Montréal) and Valérie St-Amand (Event Manager, Palais des Congrès).

Travel Advisories and Documents

Regulations for entering Canada—Citizens of the U.S. and permanent residents of the U.S. can enter Canada without a passport or visa. However, it is highly advisable to carry evidence of citizenship, such as the original birth certificate, a notarized copy of the birth certificate, or a certificate of naturalization. If these documents do not contain a photograph, a driver's license or other photo identification can be combined with these forms of identification to establish identity. Permanent residents of the U.S. who are not citizens should carry a Resident Alien Card.

All persons visiting Canada from countries other than the U.S. must be in possession of a valid passport. Graduate students from other countries who currently attend U.S. universities, and who plan to attend the meeting in Montréal, should contact a Canadian Consulate for visa requirements, information on visa processing fees, and other specific requirements to enter Canada.

In addition, all speakers entering Canada must carry a **Speaker's Letter of Introduction** and a **Letter from Revenue Canada** through Customs, both of which are available on the ESA website. Type in the necessary information and print both letters from the website.

Regulations for Re-entry into the United States

Evidence of citizenship is required to re-enter the U.S. If you embark for the U.S. from Montréal's Dorval airport, U.S. customs officers at the airport will clear you for re-entry into the U.S. Although a valid U.S. passport is not required for U.S. citizens and permanent residents to re-enter the U.S., your Local Arrangements Committee advises members, spouses, and other meeting attendees to carry and use a passport if they have one. This will greatly facilitate entry into Canada and re-entry into the U.S. Without a passport, other evidence of U.S. citizenship is required, such as the original birth certificate, a notarized copy of the birth certificate, or an original certificate of naturalization. If these forms of identification are without a photograph, additional documentation such as a valid driver's license with a photo and a faculty staff card with photo will help to establish identity. Non–U.S. citizens who are permanent residents should carry a Resident Alien Card and non–U.S. students attending school in the U.S. should carry the documents (passport, etc.) needed to re-enter the U.S. It is the responsibility of a traveler entering Canada and re-entering the U.S. to ensure that he/she has the required documents for proof of citizenship and the necessary visa/documents to enter Canada and re-enter the U.S.

Other Useful Information About Montréal

- Montréal is the second largest metropolitan center in Canada and is the largest French speaking city outside of France. The population in the greater metropolitan area is approximately 3,327,000.
- Canada has two official languages, French and English. French is spoken by a majority of Montréalers and English is spoken by more than half of the population as a second language.
- There are four Universities in Montréal: Université de Montréal, Université du Québec à Montréal (UQAM), McGill University, and Concordia University.
- Canada uses the metric system; 1 meter is 1.094 yards, 1 km is 0.62 miles, 1 mile is 1.61 km, 1 pound is 453.6 grams, 1 gallon is 3.785 liters, and 1 liter is 0.26 gallons.
- The average temperature for December is -3°C (27°F). It can snow in early December so dress accordingly.
- Montréal is in the Eastern Daylight Time zone.
- Approximately 500,000 people use Montréal's subterranean walkways every day.
- Montréal is one of the safest cities in North America.
- Telephones (including cellular phones), electricity and banking systems (ATMs) are fully compatible with U.S. systems.
- Non-Canadian citizens must pay for necessary medical services.
- No smoking in public buildings.
- Call 911 for serious emergencies. In hotels and Palais, contact security by dialing the hotel or Palais operator from a house phone.
- Tipping (15%) is expected.
- For more information on Montréal visit: www.tourism-montreal.org and www.pagemontreal.qc.ca/eindex.html

Palais des Congrès de Montréal (Convention Center)

Main entrance: 201 Viger Avenue W., for access by taxis and buses. Direct access by subway (Metro Place d'Armes, Orange line).

The Palais is configured so most symposia, conferences, and paper sessions will be held in rooms on Level 4, and a few on Level 6. This will greatly facilitate the movement of people from one venue to another. Restrooms are on Levels 1, 2, 3, 5 and 6. *Services at the Palais*: coat check in the main entrance on Level 1 ($2 CDN/coat and $5 CDN/piece of luggage); business center (Level 4) with photocopy, fax, and currency exchange services; lost and found at the Security Desk in the main entrance hall; and food services, which include Café Express in the main entrance (beverages, pastries and other snacks), and a kiosk with snacks and beverages during exhibit hours in the exhibits and poster hall.

The Hotels

The Queen Elizabeth (900 René-Lévesque Blvd., West, Metro Bonaventure: Orange Line, or Metro McGill: Green Line), Marriott Chateau Champlain (1 Place du Canada, Metro Bonaventure: Orange Line), and the Le Centre Sheraton (1201 René-Lévesque Blvd., West, close to Metro Lucien-L'Allier: Orange line) are all located in the heart of downtown Montréal. Together, they have over 2,300 guestrooms and all have restaurants, bars, access to indoor parking, a physical fitness center, and an indoor swimming pool. Your hotel concierge can help with restaurant recommendations and with directions to city attractions.

Transportation

From Dorval Airport to hotels: The Dorval International Airport is located 18 km west of downtown Montréal. The hotels do not have complimentary shuttle buses. You will find car rental agencies and shuttle bus services after claiming baggage and clearing Customs. Buses to downtown Montréal are $11 CDN (one way) or $19.75 CDN (return). Shuttle buses will drop you off at the Central Train Station (777, de la Gauchetière Street, West, Metro Bonaventure: Orange line), which is approximately 300 m from the Queen Elizabeth and Marriott Hotels and 600 m from the Sheraton Hotel. Taxi fare to downtown Montréal is approximately $28 CDN plus tip. Have Canadian dollars for transportation to hotels.

Important Airport Information: All passengers departing from Dorval Airport are subject to an airport improvement fee, presently $10 CDN. This can be paid by credit card or Canadian currency. *By car or train*: Driving distances (km) from Montréal to: Ottawa (204), Québec City (257), Boston (512), Toronto (546), New York (608), Detroit (915), Washington, DC (971), and Pittsburgh (978). Montréal is accessible via highways 87N from New York State, 91N from Vermont, and 401 or the Trans–Canada Highway from Ontario in the east. Amtrak offers daily service from New York (Penn Station) to Montréal (Central Station).

Parking: Free parking is very difficult to find near the Palais. There are several parking lots and garages near the hotels and the hotels offer parking ($8–15 CDN per day). At the Palais, indoor parking (400 spaces) is available as well as outdoor parking close by ($8–10 CDN per day).

Getting from the Hotels to the Palais. **Subway:** There is access to the underground city and the subway system from the Queen Elizabeth and Marriott hotels. From the Sheraton, access to the subway system is across the street at 1250 René-Lévesque Blvd on weekdays from 6:00 a.m.—9:00 p.m. A trip on the subway costs $2 CDN, a strip of 6 tickets costs $8.25 CDN, and a three-day pass costs $14 CDN (also valid on buses). Buy subway tickets at the Metro Station booths. Follow the metro signs in the underground city to Metro Stations. The most direct subway route from the hotels to the Palais is from the Bonaventure Metro Station. From this station go eastbound on the orange line (toward Henri-Bourassa) and get off at the second stop, Place-D'Armes Station, to enter the Palais. Allow at least 20 minutes to get from your hotel to the Palais via the underground city and the metro.
Outdoor walking: From the Marriott hotel, take La Gauchetière Street and walk east for 12—20 minutes, depending on the weather and traffic. From the Queen Elizabeth Hotel or the Sheraton Hotel, walk east on René-Lévesque Blvd., then south on Jeanne-Mance Street. **Bus:** Limited bus transportation between the 2000 JAM hotels and Palais will be provided by Tourisme Montreal. Schedules have not been established, but check with your hotel concierge or hotel reservations desk for the schedule and pick up locations. Signs with the transportation schedule and pick-up and drop-off locations will be provided at each of the three hotels. **Taxis**: Numerous and fairly inexpensive.

Taxes

A non-reimbursable $2 CDN hotel tax is charged per night at all hotels. *Sales Tax:* A Federal Goods and Services Tax (TPS) of 7% is charged on most goods and services in Canada. A Quebec provincial tax (TVQ) of 7.5% is added to all goods and services. Non-resident visitors and meeting attendees can apply for a rebate of TPS and TVQ paid on most goods (there are exceptions) purchased for use outside of Canada, as well as on short-term accommodations. Rebate forms and details are available at the meeting registration desk in the Palais, the airport's duty–free counters, the front desk of your hotel, or any tourist information center. Access www.ccra-adrc.gc.ca/visitors on the Internet for more information.

Organized Tours and Other Attractions

Guided tours with something for everyone have been arranged by your LAC. A representative from the tour company, Visites de Montréal, will be in the Matapedia Room on the third floor of the Queen Elizabeth Hotel, 7:30 a.m.—10:00 a.m., Sunday through Wednesday, and 7:00 a.m.—8:00 a.m. on Thursday. In this room, claim your pre-paid tickets and meet your tour guide at least 30 minutes before a tour's scheduled departure time. Also, a representative of Visites de Montréal will be at a table in the Palais registration area on Saturday (12:00 noon—6:00 p.m.) and Sunday through Tuesday (10:30 a.m.—1:30 p.m.). **All tours leave from the Queen Elizabeth Hotel.** Walking tours end in Old Montréal after lunch, while all other tours will return to the Queen Elizabeth.

A **Montréal City Tour** is scheduled for Sunday, December 3 (9:00 a.m.—12:00 noon), and Tuesday, December 5 (9:00 a.m.—2:00 p.m.), while a **Walking Tour of Montréal's Underground City and Old Montréal** is scheduled for Monday, December 4, and Wednesday, December 6 (9:00 a.m.—2:00 p.m.). Walking tours conclude with lunch at "Chez Queux" restaurant. **Discover the Insectarium, Botanical Garden, and Biodome** on Wednesday, December 6, with a professional guide (9:00 a.m.—1:00 p.m.). After the joint meeting, depart for a **Rendez-vous in Québec City** on Thursday, December 7, at 8:00 a.m. and return to the Queen Elizabeth on Friday, December 8, at approximately 6:00 p.m.

Some tours may have been cancelled if they were not filled with a minimum number of participants by November 17, 2000.

In addition to arranged tours, the LAC recommends the following city attractions: **Insectarium** is part of the SEQ/ESC/ESA program. Free admittance to meeting attendees and guests with badge or registration receipt. (Metro Pie IX or Viau, Green line). **Montréal Olympic Park** is the site of the 1976 Olympic Games (Metro Viau, Green line). **Montréal Fine Art Museum** (Metro Peel or Guy, Green line). **Canadian Architecture Centre** (Metro Guy, Green line). **McCord Museum of Canadian History** (Metro McGill, Green line). **Musée d'Art contemporain de Montréal** (Metro Place des Arts, Green line). **Casino de Montréal** (Metro Ile Sainte-Hélène, Yellow line). **Molson Centre** in downtown Montréal houses all the memorabilia from the world's most famous hockey team, the Montréal Canadians. (Metro Lucien L'Allier, Green line). **Streets with a European Flavor,** namely Crescent St., Ste-Catherine St., St-Laurent St., Prince Arthur St., St-Denis St. and Duluth St. where cozy restaurants, boutiques and shops are located. Complete information about Montréal attractions can be found in the free brochure **Montréal Official Tourist Guide (2000—2001)**, available at the meeting registration desk in the Palais and hotels.

Restaurants and Cafés

Montréal, the gastronomic capital of North America, has over 4,500 restaurants, bistros, sidewalk and underground cafés, and restaurants specializing in ethnic and regional cuisine. **Resto 2000—2001 Montréal**, a free guide available at the registration desk, hotels, and Tourist Centers, lists restaurants with addresses, phone numbers, prices, and food offered. Visit the restaurant kiosk and the main desk in the entrance hall (Level 1) of the Palais for more information and reservation services. Your hotel concierge can assist with restaurant recommendations. The Queen Elizabeth is home to The Beaver Club, one of two 5-star restaurants in Canada.

Breakfast: Queen Elizabeth. The Le Montréalais offers breakfast from 6:30 a.m.—11:30 a.m. (buffet $19.50 CDN). *Marriott.* Le Gauchetière offers breakfast from 6:30 a.m.—10:30 a.m. (buffet $14.25 CDN). *Sheraton.* Le Boulevard is open for breakfast from 6:30 a.m.—10:30 a.m. (buffet $14.75 CDN). In the under-ground city beneath the Queen Elizabeth and near Bonaventure Metro Station and Central Train Station, you will find several good and fairly inexpensive cafés that offer breakfast and other meals. Consider eating at one of these eateries en route to the Palais and enjoy the ambience and vitality of Montréal's underground city.

Lunch and Dinner near the Palais: Restaurants can be found in Chinatown, about 150 m east of the Palais. Additional eateries can be found in the underground, north of the Palais, and to the south along Notre-Dame St., a 5–10–minute walk.

Recommendations for Graduate Students: Near the Palais reasonably priced lunch spots can be found in Chinatown and north in the underground city. Also, students will find modestly priced menus at the les Halles (underground near the Queen Elizabeth) and Mövenpick (underground near Place Ville-Marie). South of the Palais, two restaurants, Chez Cora (2 Cours le Royer) and Eggspectations (201 St-Jacques St.), specialize in value breakfasts. For other restaurants (and bars), a stroll along Ste.-Catherine St. is recommended. Nightlife is diverse and vibrant. The streets and public areas of Montréal are very safe by North American standards.

2000 JAM Information

Meeting Overview

2000 JAM will begin at 8:00 a.m., Sunday, December 3, and will end at 8:00 p.m., Wednesday, December 6, after the Final Business Meeting.

- Morning sessions will run from 8:00 a.m. until noon.
- Afternoon sessions will run from 1:30 p.m. (between 12:30 p.m. —1:30 p.m. on Sunday) until 5:30 p.m.
- Evening sessions will run from 7:00 p.m. until the session concludes, usually between 9:00 p.m. and 10:00 p.m.

Audiovisual Information

Please bring your own standard 80-slide 35-mm carousel tray or rent one ($3.50 CDN) from the on-site audiovisual vendor, Corpav@congresmtl.com, attention Daniel Fisher, Tel.: (514) 871-3195, Fax: (514) 871-1713 (Corpav accepts MasterCard, VISA, and American Express. The SEQ/ESC/ESA will not provide slide trays. Trays should be labeled by speaker and paper number and given to the slide projectionist in the session room at least 10 minutes before the beginning of the session. Slides should be retrieved promptly at the end of the session. Slides can be previewed in the Slide Preview Room, Room 401A (Palais, Level 4) during the following hours:

- Saturday, December 2, 3:00 p.m. – 6:00 p.m.
- Sunday, December 3, 6:30 a.m. – 5:00 p.m.
- Monday, December 4, 6:30 a.m. – 5:30 p.m.
- Tuesday, December 5, 6:30 a.m. – 10:30 p.m.
- Wednesday, December 6, 6:30 a.m. – 6:30 p.m.

Speakers should preview their slides as expeditiously as possible, taking a maximum of 15 minutes per talk. Slide projectors and screens will be provided for each session. Computer projectors and other specialized equipment will be available to speakers of selected symposia and conferences if organizers arranged for this equipment with the Program Chair before the meeting. Computer projectors and other specialized equipment cannot be used in 10-minute paper sessions. Speakers requiring specialized equipment for other symposia, conferences, and meetings are required to bring their own or rent it from the on-site audiovisual (see above). You will be asked to complete an order form and present a credit card by the vendor. Speakers using their own computer projectors and renting specialized equipment must set the equipment up before a session starts and remove it at the end of the session. They must also coordinate the use of such equipment with the organizers and moderators of these sessions and meetings. Last, these speakers are advised to contact the AV vendor in advance to check for compatibility between software and hardware. The SEQ/ESC/ESA are not liable for any damage to audiovisual equipment brought to and used in the Palais or hotels during this meeting.

Awards

The following awards and honors will be presented during the Plenary Session to be held at 5:00 p.m., Sunday, December 3, in Room 407AB (Palais, Level 4).

- ESA Award for Excellence in Integrated Pest Management Award (sponsored by Novartis Crop Protection, Inc., formerly Sandoz Agro, Inc.)
- ESA Recognition Award in Entomology (sponsored by Novartis Crop Protection, Inc., formerly CIBA-GEIGY Corporation)
- ESA Distinguished Achievement Award in Teaching
- ESA Distinguished Achievement Award in Extension Entomology
- ESA Distinguished Achievement Award in Regulatory Entomology (sponsored by the American Nursery and Landscape Association)
- ESA Recognition Award in Urban Entomology (sponsored by S. C. Johnson's Wax)
- ESA Recognition Award in Insect Physiology, Biochemistry, and Toxicology (sponsored by The Rohm and Haas Co.)
- Founders' Memorial Award
- Léon-Provencher (Professional and Amateur) Awards (SEQ)
- C. Gordon Hewitt Award (ESC)
- Gold Medal Award (ESC)

Awards, Student

The following Student Awards will be presented at the Final Business Meeting, 6:30 p.m.—8:00 p.m., Wednesday, December 6, in Room 407B (Palais, Level 4).

- Presidents' Prize for Student Competition Awards, sponsored by SEQ/ESC/ESA
- John Henry Comstock Graduate Student Awards
- Jeffrey P. LaFage Graduate Student Research Award
- Plant Resistance to Insects Graduate Student Research Award
- Henry and Sylvia Richardson Award
- Norman DuBois Award

Presentation of the Entomology Foundation Student Awards:

- ESA Undergraduate Scholarships (sponsored by BioQuip Products and The Entomological Foundation)
- Stan Beck Fellowship
- Graduate Student Award for Leadership in Applied Entomology (sponsored by Dow AgroSciences)
- Lillian & Alex Feir Graduate Student Travel Award

All student participants in the Presidents' Prize for Student Competition are requested to attend this awards ceremony. Winners of the competition will NOT be announced before this presentation. The ESA Program Committee thanks all student participants and all ESA members who served as judges.

BCE Certification Board

Shripat Kamble, *Director,* University of Nebraska, Lincoln, NE
Von Kaster, *Director-Elect*, Garst Seed Co., Slater IA
Don Allemann, *Past Director*, Greensboro, NC
Harold J. Harlan, *Eastern Branch—2001*, Crownsville, MD
Gerald S. Wegner, *North Central Branch—2002*, Varment Guard Env. Serv., Inc., Columbus, OH
Michael S. Chapman, *Pacific Branch—2000,* Yorba Linda, CA
Donald P. Harlan, *Southeastern Branch—2001*, Mid - South AG Research, Inc., Proctor, AR
Michael E. Merchant, *Southwestern Branch—2001*, Texas Agric. Extension Service, Dallas, TX
Scott H. Hutchins, *ESA Governing Board Representative*, Dow AgroSciences, Indianapolis, IN

Board Certified Entomologist Meetings

The ESA Certification Board will meet during the following dates and times:

- Certification Board, Saturday, December 2, 8:00 a.m.—5:00 p.m., Room 311 (Palais, Level 3)
- BCE Business Meeting, Tuesday, December 5, 5:30 p.m.—7:30 p.m., Room 403AB (Palais, Level 4)

Busing/Transportation

Limited bus transportation between the 2000 JAM hotels and Palais will be provided by Tourisme Montréal. Schedules have not been established yet, but check with your hotel concierge or hotel reservations desk for the schedule and pick up locations. Signs with the transportation schedule and pick-up and drop-off locations will be provided at each of the three hotels.

Canadian Pavilion

New to this year's meeting, the Canadian Pavilion, located in the Exhibit Hall 100AB (Palais, Level 1) will offer exhibits from the Montréal Insectarium and Biodome, as well as other Canadian government agencies. The Insectarium is sponsoring several displays in the Pavilion and on Level 4 of the Palais. Privately owned collections by Insectarium collectors of numerous cultural entomology objects such as coins, stamps, jewelry, and sculptures from all over the world will be displayed.

Childcare Services

While ESA recognizes that many of its members want to include their families in a trip to the annual meeting, ESA cannot provide childcare during the meeting. Please check with the hotel concierge if you require childcare services during the meeting. Major hotels usually provide in-house childcare service.

Coat Check

Coat check services will be available in the lobby of the Palais (level 1): $2 per coat/article or $5 per suitcase.

Combined Federal Campaign

The Entomological Foundation Board of Directors would like to thank all of you who generously donated to The Entomological Foundation during the fall 2000 Combined Federal Campaign. Your support makes a difference and helps to guarantee a healthy planet. During fall 2001, federal employees and military personnel will once again be given the opportunity to designate their charitable gift to the Foundation through the Combined Federal Campaign. We hope you will once again consider the Foundation as a recipient of your gift.

Combined Publishers' Book Exhibit

Features titles from scientific publications around the world and is located in the ESA Sales Booth. See Table of Contents for listing of titles and publishers.

- Exhibit Hall 100AB (Palais, Level 1)
- Monday, December 4, 9:00 a.m.—5:00 p.m.
- Tuesday, December 5, 9:00 a.m.—5:00 p.m.
- Wednesday, December 6, 9:00 a.m.—5:00 p.m.

Daily Announcements and Messages

Check the Announcements and Messages bulletin board near the Local Arrangements Office, Room 402C (Palais, Level 4) for news, announcements of meeting changes, and messages.

Editorial Board Meetings

All ESA publications and editorial board meetings will be held in Room 410C (Palais, Level 4). Meetings are scheduled as follows:

Sunday, December 3	
Annals of the ESA:	8:00 a.m.–10:00 a.m.
Book and Media Review:	10:00 a.m.–12:00 n.
Journal of Economic Entomology:	1:00 p.m.–3:00 p.m.
American Entomologist:	3:00 p.m.–5:00 p.m.
Monday, December 4	
Journal of Medical Entomology:	1:30 p.m.–3:30 p.m.
Environmental Entomology	3:30 p.m.–5:30 p.m.
Tuesday, December 5	
Thomas Say Publications:	8:00 a.m.–10:00 a.m.
Arthropod Management Tests:	10:00 a.m.–12:00 n
Publications Council:	1:30 p.m.–5:30 p.m.
Wednesday, December 6	
Handbook of Insect Pests:	8:00 a.m.–11:00 a.m.

Employment Opportunity Center (EOC)

The ESA Standing Committee on Student Affairs will conduct an Employment Opportunity Center, Room 318 (Palais, Level 3). If you have a job vacancy or are seeking employment, please bring your job announcement or resume to this room. Please complete a "Position Available" or "Position Desired" form as appropriate for your needs and attach it to your announcement or resume. The Center will be open during the following hours:

- Sunday, December 3, 10:00 a.m.—2:00 p.m. (to accept job announcements only)
- Monday, December 4, 7:30 a.m.—5:30 p.m.
- Tuesday, December 5, 7:30 a.m.—5:30 p.m.
- Wednesday, December 6, 7:30 a.m.—5:30 p.m.

For the convenience of those employers wishing to conduct interviews, the Student Affairs Committee will maintain an interview facility in Room 317. Interviews may be scheduled with the person on duty in the Employment Opportunity Center.

Entomological Foundation

Watch for the following activities of The Entomological Foundation:

Foundation Exhibit Booth—The Entomological Foundation will provide information on the Foundation in its booth in the U.S. Pavilion on the exhibit floor. Representatives will be available during exhibit hours:

- Monday—Wednesday, December 4—6, from 9:00 a.m.—5:00 p.m., Exhibit Hall 100A (Palais, Level 1)

Foundation Dinner—Robert Riley will be honored at this year's dinner/dance. Join members of The Entomological Foundation for an evening of dinner and dancing. Be a part of this important evening, and help us recognize Bob for his many devoted years to the success of the Foundation! Tickets may be purchased in advance of the dinner. Proceeds of this dinner are contributed to the Stan Beck Fellowship for challenged entomology students. Purchase your tickets now!

- Wednesday, December 6, at 8:00 p.m., Caf' Conc' (Marriott Chateau Champlain, Lower Lobby).

Foundation Reception—By invitation only:

- Monday, December 4, 6:30 p.m.—7:30 p.m., Salon 5 (Sheraton Hotel)

Foundation Counselors' Meeting

- Monday, December 4, 7:30 a.m.—11:00 a.m., Room 409C (Palais, Level 4)

Foundation Board of Directors

- Tuesday, December 5, 10:00 a.m.—1:00 p.m., Room 403C (Palais, Level 4)

Foundation Members Retirement and Estate Planning Seminar
Are you prepared to retire? Get the latest information on retirement and estate planning options from TIAA CREF counselors. It's not too late or too early to plan for your financial future. For more information or to sign up for this seminar, please contact April Gower, The Entomological Foundation, (301) 731-4535, ext. 2039, or april@entsoc.org.

- Monday, December 4, 11:30 a.m.—2:30 p.m., Room 409C (Palais, Level 4)

Foundation Silent Auction—Win wonderful Entomological items! All funds raised by this Auction will help The Entomological Foundation expand its efforts to promote research and education in entomology. Stop by the Foundation's Silent Auction Booth in the U.S. Pavilion, to place a bid. The bidding will close at 12:00 noon on December 6. Help the Entomological Foundation make a difference by placing a bid!

- Monday—Wednesday, December 4—6, 9:00 a.m.—5:00 p.m., U.S. Pavilion, Exhibit Hall, 100AB (Palais, Level 1)

Exhibits

Please plan to visit the exhibits located near the poster display presentations. See the latest in entomological equipment, supplies, and reference materials. Visit the Canadian and U.S. Pavilions to see the specialty exhibits arranged. A list of exhibitors and floorplan of the exhibit hall may be found in this book (see table of contents). See also U.S. Pavilion and Canadian Pavilion descriptions elsewhere in this General Information section:

- Exhibit Hall 100AB (Palais, Level 1)
- Monday, December 4, 9:00 a.m.–5:00 p.m.
- Tuesday, December 5, 9:00 a.m.–5:00 p.m.
- Wednesday, December 6, 9:00 a.m.–5:00 p.m.

Exhibitor Refreshments

Complimentary refreshments, courtesy of several of the ESA exhibitors, will be provided in the Exhibit Hall:

- Exhibit Hall 100AB (Palais Level 1) in exhibit booth 611.
- Tuesday, December 5, 2:00 p.m.–3:00 p.m.

ESA wishes to express its thanks to the following exhibitors:

Agdia, Inc.
C-D International
Enconair
Entomological Foundation
Entomological Society of America
Gylling Data Management, Inc.
Novartis Crop Protection
Percival Scientific
Scenturion, Inc.
W. L. Enterprises, Inc.

[This list is effective August 25, 2000.]

Governing Board (ESA)

Sharron Quisenberry, *President*, College of Agriculture, Bozeman, MT
Larry L. Larson, *President-Elect*, Dow AgroSciences, Indianapolis, IN
Christian Y. Oseto, *Past-President*, Purdue University, West Lafayette, IN
Kathleen Shields, *Secretary-Treasurer*, US Forest Service, Hamden, CT
Michael A. Ivie, *Section A*, Montana State University, Bozeman, MT
Dale B. Gelman, *Section B*, USDA ARS, Beltsville, MD
Thomas O. Holtzer, *Section C*, Colorado State University, Ft. Collins, CO
Gary R. Mullen, *Section D*, Auburn University, Auburn, AL
William F. Gimpel, *Section E*, Maryland Department of Agriculture, Annapolis, MD
Donald C. Herzog, *Section F*, Quincy, FL
Scott H. Hutchins, *North Central Branch*, Dow AgroSciences, Indianapolis, IN
Richard A. Redak, *Pacific Branch*, University of California, Riverside, CA
Mark R. Trostle, *Southwestern Branch*, Texas Department of Agriculture, Austin, TX
Susan P. Whitney, *Eastern Branch*, University of Delaware, Newark, DE
Gary A. Herzog, *Southeastern Branch*, Coastal Plain Expt. Station, Tifton, GA
James E. Olmes, *Executive Director*, ESA, Lanham, MD

Governing Board (ESA) Meetings

The ESA Governing Board will be in session during the following dates:

- Friday, December 1, 8:00 a.m.– 6:00 p.m., Etude Champlain (Marriott Chateau Champlain)
- Saturday, December 2, 7:30 a.m.– 4:30 p.m., Room 402AB (Palais, Level 4)
- Saturday, December 2, 4:30 p.m.–6:30 p.m., CEDA and Governing Board Meeting/Reception, Room 402AB (Palais, Level 4)
- Sunday, December 3, 7:30 a.m.–11:30 a.m., Room 402AB (Palais, Level 4)
- Wednesday, December 6, 8:00 a.m.–12:00 noon, Etude Champlain (Marriott Chateau Champlain)

Guests' Suite

Registered guests of meeting attendees can meet friends in the Matapedia Room, (Queen Elizabeth Hotel, Level 3) to plan daily activities and excursions. Tours will also depart from this room, which will be open Sunday through Wednesday (7:30 a.m.–10:00 a.m.) and Thursday (7:00 a.m.–8:00 a.m.).

Information Desk

The ESA Information Desk will be located in the ESA meeting registration area:

- Lobby (Palais, Level 1)
- Saturday, December 2, 1:00 p.m.–6:00 p.m.
- Sunday, December 3, 7:00 a.m.– 7:00 p.m.
- Monday, December 4, 7:00 a.m.–5:00 p.m.
- Tuesday, December 5, 7:00a.m.–5:00 p.m.
- Wednesday, December 6, 7:00 a.m.– 5:00 p.m.

Insect Photo Salon

Members of ESA and the Photographic Society of America, and all photographers have submitted slides of insects, spiders, and related arthropods to the Photo Salon. Be sure to see the presentations.

- Monday, December 4, 10:30 a.m.–11:30 a.m., Room 411AB (Palais, Level 4)
- Wednesday, December 6, 10:00 a.m.–11 a.m., Room 404AB (Palais, Level 4)

Linnaean Games

Be sure to check out the Linnaean Games, a "College Bowl"-type competition that is one of the more spirited sessions of the Annual Meeting. Stop by and root for your favorite team! The Games will be held:

- Preliminary Round: Sunday, December 3, 1:30 p.m.– 4:00 p.m., Room 404AB (Palais, Level 4)
- Final Round: Tuesday, December 5, 7:00 p.m.– 9:30 p.m., Room 404AB (Palais, Level 4)

Lost and Found

Lost and found articles may be retrieved or turned in at the Palais' Security office, located:

- Lobby, Palais (Level 1)

Moderators/Projectionists

Moderators of symposia, formal and informal conferences, and submitted paper sessions should attend one of the training sessions to receive instructions on light controls, equipment operation, procedures in case of equipment failures, and other responsibilities. These sessions will be held during the following times in room 401A in the Palais:

- Saturday, December 2, 5:30 p.m. –6:00 p.m.
- Sunday, December 3, 7:00 a.m.–7:30 a.m. and 12:00 noon–12:30 p.m.
- Monday, December 4, 7:00 a.m.– 7:30 a.m. and 12:00 noon–12:30 p.m.
- Tuesday, December 5, 7:00 a.m.–7:30 a.m. and 12:00 noon–12:30 p.m.
- Wednesday, December 6, 7:00 a.m.–7:30 a.m. and 12:00 noon–12:30 p.m.

If you are unable to attend one of these meetings, please visit the LAC office in room 402C for instructions and training prior to your session. All sessions should have two co-moderators. During the first part of the session, one person will moderate and the other will serve as projectionist. Co-moderators will switch positions at the middle of the session. Co-moderators should obtain a laser pointer and timer for their session from the Slide Preview Room (Room 401A) at least 30 minutes before the beginning of the session and return the items to room 401A immediately after the session ends. Moderators are responsible for keeping their sessions on time according to the published program schedule.

National Office (ESA) Staff

James E. Olmes, Executive Director
Meetings
Judy Miller, Director
Carolyn DeSimon, Meetings Administrative Assistant
Administration
Barbara Clanton, Director
Linder Jenkins, Executive Administrative Assistant
Anne Albero, Resource Management Assistant
Linda Williams, Receptionist/Clerk Typist
John Lucas, Mailroom Clerk
Communications
Alan Kahan, Director
Maggie Meitzler, Manuscript Editor
Elizabeth Caesar, Desktop Publisher
Lathifa Mohamed-Ibrahim, Production Editor
Jeannie Allen, Production Editor
Gloria Bradley, Administrative Assistant
Marketing/Sales/Public Affairs
Christopher Stelzig, Manager
Lisa Spurlock, Public Affairs Coordinator
Nancy Young, Sales Coordinator
Member Services/BCE
Patty Connelley, Acting Director of Member Services
Carolyn DeSimon, BCE Administrative Assistant
LaToya Mathis, Membership Assistant
Stella Wright, Membership Assistant
Accounting
Joseph Logue, Financial Resources Manager

Poster Presentations Schedule

This year, there are designated timeslots when presenters are asked to be present at their displays. Because of the 4 foot x 4 foot poster size (inside diameter 46 inches x 46 inches), we anticipate that the poster display hall will be crowded during poster viewing hours. Therefore, we ask that presenters be present at their designated time period in an attempt to distribute attendance at posters throughout the day. Presenters are encouraged to post additional times when they will be present at their posters. Presenters, please find the set-up, viewing, time to be present, and take-down time for your poster in the list below. Your cooperation is appreciated.

Monday Posters

Set up	Sunday	7:30 p.m.—9:30 p.m.
Viewing	Monday	7:00 a.m.—7:00 p.m.
Presenters Present:		
Posters with odd numbers		9:30 a.m.—10:30 a.m.
Posters with even numbers		11:00 a.m.—12:00 noon
Take down	Monday	7:00 p.m.—8:00 p.m.

Tuesday Posters

Set up	Monday	8:00 p.m.—10:00 p.m.
Viewing	Tuesday	7:00 a.m.—7:00 p.m.
Presenters Present:		
Posters with odd numbers	Tuesday	10:00 a.m.—11:00 a.m.
Posters with even numbers	Tuesday	2:00 p.m.—3:00 p.m.
Take Down	Tuesday	7:00 p.m.—8:00 p.m.

Wednesday Posters

Set Up	Tuesday	8:00 p.m.—10:00 p.m.
Viewing	Wednesday	7:00 a.m.—5:30 p.m.
Presenters Present:		
Posters with odd numbers	Wednesday	10:00 a.m.—11:00 a.m.
Posters with even numbers	Wednesday	2:00 p.m.—3:00 p.m.
Take Down	Wednesday	5:30 p.m.—6:30 p.m.

Note: All presenters are expected to be available at their displays during the "presenters present" time-slot for questions and discussion. Posters must be removed by 6:30 p.m. on Wednesday. Please DO NOT remove the poster number and student competitor cards.

Instructions for Presenters of Display Presentations

The 2000 Program Committee has scheduled three sessions of display presentations for 2000 JAM—the Joint Annual Meeting in Montréal. The first session will be Monday, December 4, and will run from 7:00 a.m.—7:00 p.m. This session will include the Student Competition for the Presidents' Prize for all sections. The second and third display sessions will be on Tuesday, December 5, 7:00 a.m.—7:00 p.m., and Wednesday, December 6, 7:00 a.m.—5:30 p.m., respectively. Displays are numbered sequentially in the program handbook, and where possible, are grouped according to sections. Display your poster on the board bearing the same number as in the program handbook.

Display Setup: Your display must be set up in the assigned space in the Exhibit Hall (Level 1) of the Palais des Congrès de Montréal the night before your display is scheduled. Monday displays (including the Student Competition Displays) must be set up on Sunday evening between 7:00 p.m. and 9:00 p.m. Tuesday and Wednesday displays must be set up between 8:00 p.m. and 10:00 p.m. of the preceding evening. Displays on Monday and Tuesday must be in place until 7:00 p.m. Displays on Wednesday should remain in place until 5:30 p.m. The provided board will accept pushpins or thumbtacks, but you should be prepared with multiple ways to attach your display presentation to the display board. You must bring with you everything that you need to set up your display (including all tape, push pins, thumbtacks, etc.). SUPPLIES WILL NOT BE FURNISHED.

Time for Presenters to be Present: Because of poster size, the poster hall may become quite congested. To alleviate this problem, presenters of posters with odd and even numbers will be asked to be present at different times. Please check the program handbook for your assigned time. You may also attach a card to your poster indicating additional times that you will be present.

Display Removal: On Monday and Tuesday, it is critical that you remove your display between 7:00 p.m. and 8:00 p.m. on the same day as your presentation. This is extremely important for the next day's presenters, as they will begin placing their display on the boards at 8:00 p.m. Posters on Wednesday must be removed between 5:30–6:30 p.m. DISPLAYS NOT REMOVED BY THE DESIGNATED TAKE DOWN TIME EACH DAY WILL BE REMOVED AND DISCARDED.

Guidelines for Display Presentations: Guidelines for displays can be found on the ESA website, www.entsoc.org click on annual meeting. Your display is one of many that will be up at the same time. Help your audience with clear and concise presentations. Inside poster board dimensions are 94 inches x 46 inches. To avoid overlapping the outside edges of the poster board, posters should be no more than 46 inches x 46 inches. You will be sharing a 4 foot x 8 foot display surface. Please be considerate of the person with whom you are sharing a display space. YOUR POSTER MUST FIT WITHIN THE 46 INCH X 46 INCH SPACE ASSIGNED.

Electric Outlets: If you need a 120V electrical outlet or other special requirements at your display board, please contact the ESA National Office immediately in order to determine if we can accommodate your request (9301 Annapolis Road, Lanham, MD 20706; email: meet@entsoc.org.) You may order and pay for any special equipment directly with the Palais.

Press Desk

A press desk will be available in the meeting registration area. Copies of press releases and press kits will be available there for registered media. Proper credentials are required to receive a press pass to attend seminars and lectures. For press registration, please check at the Press Desk, located:

- Lobby (Palais, Level 1)
- Saturday, December 2, 1:00 p.m.–6:00 p.m.
- Sunday, December 3, 7:00 a.m.–7:00 p.m.
- Monday, December 4, 7:00 a.m.–5:00 p.m.
- Tuesday, December 5, 7:00a.m.–5:00 p.m.
- Wednesday, December 6, 7:00 a.m.–5:00 p.m.

Private Receptions

ESA members appreciate and enjoy privately sponsored receptions at the meeting. Sponsors are requested to close all receptions during paper presentation sessions, during section and society business meetings, and by 1:00 a.m.

Program Committee

Marlin E. Rice, *2000 Program Committee Chair*, Iowa State University, Ames, IA
Z B Mayo, *Poster Chair*, University of Nebraska, Lincoln, NE
Michael Gray and Kevin Steffey, *Student Competition Co-Chairs*, University of Illinois, Urbana, IL
Hèléne Chiasson, *SEQ Program Representative*, Saint-Jean-sur-Richelieu, Québec, Canada
Noubar Bostanian, *ESC Program Representative*, Agriculture and Agri-food, Canada, Saint-Jean-sur-Richelieu, Québec
Jacqueline Y. Miller, *Section A Chair*, Florida Museum of Natural History, Sarasota, FL
Jeffrey P. Shapiro, *Section B Chair*, USDA ARS CMAVE, Gainesville, FL
Susan E. Webb, *Section C Chair*, University of Florida, Leesburg, FL
Susan E. R. Mahr, *Section C Acting Co-Chair*, University of Wisconsin, Madison, WI
Leonard E. Munstermann, *Section D Chair*, Yale University School of Medicine, New Haven, CT
A. Alan Schreiber, *Section E Chair*, Agricultural Development Group, Pasco, WA
Michael J. Weiss, *Section F Chair*, University of Idaho, Moscow, ID
Michael Toews, *Student Liaison*, Oklahoma State University, Stillwater, OK
Judy Miller, *Staff Liaison*, ESA National Office, Lanham, MD

Refreshments

ESA-sponsored Refreshments—Due to ESA's current budget situation, complimentary coffee will not be offered. However several cash eateries will be available at the Palais. Stop by the restaurant in exhibit hall 100A (Palais, Level 1) or the snack bar in Poster Hall 100B (Palais, Level 1). Check hours of operation with security guard at the door.

Exhibitor-sponsored Refreshments—Don't forget to stop by the commercial exhibits to enjoy complimentary refreshments courtesy of several of the exhibitors.

- Tuesday, December 5, 2:00 p.m., Exhibit Hall 100A (Palais, Level 1) in exhibit booth 611.

Registration Information

Attendees will want to make the Registration Area (Palais, Lobby Level 1) their first stop before attending sessions. Pick up your badge, program and other meeting materials here. Also check the affiliates registration tables located in this area:

- Saturday, December 2, 1:00 p.m.–6:00 p.m.
- Sunday, December 3, 7:00 a.m.–7:00 p.m.
- Monday, December 4, 7:00 a.m.–5:00 p.m.
- Tuesday, December 5, 7:00a.m.–5:00 p.m.
- Wednesday, December 6, 7:00 a.m.–5:00 p.m.

On site registration fees for the Annual Meeting are:

• Student member	$ 95
• Youth member	$ 10
• Member	$295
• Non-member	$375
• Spouse/guest	$ 95
• Honorary member	Gratis (social event is $25)
• Emeritus member	$ 95

The above fees do NOT include a copy of the program. Programs may be purchased for $10. Honorary members who wish to attend the Welcome Reception on Sunday evening may purchase tickets ($25) at the ESA registration desk.

Sales Booth

The ESA Sales Booth is one of the major highlights of the Annual Meeting, and features all of ESA's most popular books and products, many at discounted prices. Another attraction is the Combined Publishers' Book Exhibit located in the Sales Booth featuring the latest titles from scientific publishers around the world. On Wednesday, December 6, immediately following the Treasure Chest Drawing, the books on exhibit are offered for sale to attendees at significant discounts in the Sales Booth. Visit the ESA Sales Booth to view the latest titles, purchase holiday gifts, and even win a prize!

- Room 100A (Palais, Level 1)
- Monday - Wednesday, December 4– 6, 9:00 a.m.–5:00 p.m.

Social Evening

For this first time in recent ESA history, Monday evening is being set aside as a social evening. There will be NO scientific sessions on Monday evening (immediately following Section business meetings). Enjoy this opportunity to attend the many receptions scheduled that evening, or participate in the Insectarium's Open House.

Sponsorships

Thank you to the following groups for their support of 2000 JAM programs this year: Program Highlights, Presidents' Prize for Student Competition, Student Awards, Student Competition Posters, and Welcome Reception.

Montréal Insectarium
Dow AgroScience
The Entomological Foundation
Entomological Society of Canada
Société d'Entomologie du Québec

Student Reception

Students are invited to attend the Student Reception while at the meeting. The reception is open to registered students gratis (admission by badge).

- Wednesday, December 6, 8:00 p.m.–10:00 p.m., Room 611A (Palais, Level 6)

Sustaining Associates, 2000

Sustaining Associates promote continuing society programs, support entomological activities in the public community, and advance a better understanding of entomology. ESA is grateful for the support of the 2000 Sustaining Associates.

Dow AgroSciences

9330 Zionsville Road, #308/2B, Indianapolis, IN 46268
Dow AgroSciences is a Global Company focused exclusively on the discovery, development, and commercialization of agricultural and urban pest management technology and products. Entomology is a core science enabling our mission of providing progressive technology to meet current and future pest management challenges.

Bayer Corporation

P.O. Box 4913, 8400 Hawthorn Road, Kansas City, KS 64120-0013
Bayer Corporation, Agriculture Division, is a developer and marketer of insecticides, fungicides, herbicides, and plant growth regulators for use in crop protection, home and garden, and animal pest control in North America.

Bedoukian Research, Inc.

21 Finance Drive, Danbury, CT 06810
For almost 25 years, Bedoukian Research has been providing the highest quality insect pheromones for monitoring and control. We currently offer more than 12 EPA registered pheromones, along with over 50 additional catalog pheromones. Custom synthesis is available. Located in Danbury, Connecticut, we have recently expanded. We specialize in small to medium scale products, and offer over 500 flavor and fragrance ingredients in addition to our pheromone products. Our goals are to provide our customers with the highest levels of quality, customer service, and responsiveness.

Gustafson, Inc.

P.O. Box 660065, Dallas, TX 75266-0065
Gustafson LLC is the nation's leading researcher, manufacturer and marketer of seed treatment products and application equipment. The company offers growers and seedsmen the industry's largest line of seed treatment products, including fungicides, insecticides, and biologicals, as well as stored grain protectants.

Rohm and Haas Company

100 Independence Mall West, Philadelphia, PA 19106-2399
A basic manufacturer of marketer of agricultural chemicals. New insecticide developments include CONFIRM® insecticide, an ecdysone agonist with specific activity against lepidopterous pests for use in fruit, nut, vegetable, cotton, sugarcane, forestry and ornamental pests; INTREPID™/RUNNER™ insecticide, a second generation MAC insecticide for control of lepidoptera insects; and AphiSTAR™ aphicide, a selective aphicide for use on pome fruit, vegetables and Christmas trees; and MACH 2 insecticide, an insecticide for coleoptera and lepidoptera insects in turf.

Novartis Corporation

P.O. Box 18300, Greensboro, NC 27419
Novartis Crop Protection, Inc., is one of the leading world supplier of agricultural chemical products used by farmers to control harmful pests. The company also produces turf and ornamental products for use in the residential and commercial lawn care markets. Novartis Crop Protection is one of the largest producers of crop protection chemicals in the United States. In 1999, Novartis invested more than $2.8 billion in R&D. Headquartered in Basel, Switzerland, Novartis employs about 82,400 people and operates in over 140 countries around the world. The Group recently announced plans to spin off its Crop Protection and Seeds sectors and to merge them with the agrochemicals business of AstraZeneca in the second half of 2000. The new company will be named Syngenta.

Griffin L.L.C.

P.O. Box 1847, Valdosta, GA 31603-1847
Griffin L.L.C. began in 1935 as Parramore and Griffin, a retail farm store in Valdosta, Georgia. One of their first products, a copper fungicide, provided aid to tobacco farmers in their fight against blue mold. After this successful launch, the company started formulating a number of pesticides. In the 1970's, the name was changed to Griffin Corporation. In the 1980's and 90's, the company began to increase its product line and process capabilities to include organic and copper fungicides. In the early 1990's, more herbicides, insect bait, and spray dried technology were added along with the expansion of the cotton line. Griffin has established itself as a leader in supplying post-patent crop protection products. Griffin's goal is to continue to give quality and added value in all we do.

BASF Corporation

P.O. Box 13528, Research Triangle Park, NC 27709-3528
BASF Agricultural Products develops a range of innovative crop protection products and systems that enable growers to be more cost-efficient and increase crop yield potential. BASF Agricultural Products is a unit of BASF Corporation.

Town Meeting—Meet the (ESA) Governing Board

New at this year's meeting is your opportunity to meet informally with the ESA Governing Board. Discuss issues ESA ReForm measures to include Annual Meeting structure. A cash bar will be available. The Governing Board wants to hear from you!

- Monday, December 4, 12:00 noon–1:00 p.m., Room 611A (Palais, Level 6)
- Tuesday, December 5, 12:00 noon–1:30 p.m., Room 611A (Palais, Level 6)

Treasure Chest Drawing

The Treasure Chest Drawing is comprised of products donated by exhibitors, and will be held:

- ESA Sales Booth, Room 100AB (Palais, Level 1)
- Wednesday, December 6, 12:00 noon

Prizes have been donated by the following companies:

Agdia, Inc.
BioQuip
C-D Internatinal
Cricket Science
Entomological Society of America
Horti-Centre du Québec
Natural Resources Canada-Canadian Forest Service
Noldus Information Technology
Novartis Crop Protection
Onset Computer
W. L. Enterprises, Inc.

[This list is effective August 25, 2000.]

University Entomology Clubs Sales

Representatives from university entomology clubs will be available in the U.S. Pavilion during exhibit hours during the meeting.

- Monday–Wednesday, December 4–6, 9:00 a.m.–5:00 p.m., Exhibit Hall 100AB (Palais, Level 1)

U.S. Pavilion

New to this year's show floor is the U.S. Pavilion, Monday–Wednesday, December 4– 6, 9:00 a.m.–5:00 p.m., Exhibit Hall 100A (Palais, Level 1) which will feature displays by John Cody and Ralph Howard, as well as the Entomological Foundation booth, and university entomology clubs.

Welcome Reception

You are cordially invited to attend the Welcome Reception immediately following the Plenary Session. Network with your peers and enjoy the light fare at this kick-off reception before finding dinner at one of Montréal's restaurants:

- Sunday, December 3, 7:30 p.m.–9:30 p.m., Room 611AB (Palais, Level 6)

Exhibitors

Please plan to visit the exhibits located near the poster display presentations. See the latest in entomological equipment, supplies, and reference materials. Visit the Canadian and U.S. Pavilions to see the specialty exhibits arranged for this meeting.

- Exhibit Hall 100AB (Palais, Level 1)
- Monday, December 4, 9:00 a.m.–5:00 p.m.
- Tuesday, December 5, 9:00 a.m.– 5:00 p.m.
- Wednesday, December 6, 9:00 a.m.–5:00 p.m.

Adventures Through a Looking Glass — U.S. Pavilion

Ralph Howard, USDA-ARS, 1515 College Ave., U. S. Grain Marketing Res. Lab., Manhattan, KS 66502-2736; (785) 776-2706; e-mail: howard@usgmrl.ksu.edu
Our world view is colored by the limitations of our vision. Part of the magic of the tales of Lewis Carroll is his ability to generate novel worlds from his imagination, much the way children do: Worlds that are unfettered by our standard visual limitations. Imagine that insects and spiders were as large as us (or larger), and that we were the tiny ones! What would the world look like to us then? Microscopes (especially electron microscopes) allow us to perform this feat, and the results exceed even the imagination of Lewis Carroll!

Art of John Cody — U.S. Pavilion

John Cody Gallery, Riverbend Mall, 511 Parkway, Suite 113, Gatlinburg, TN 37738; (800) 433-1132; fax: (423) 436-3219
The lovely saturniid moth, the most majestic of insects, also has one of the most poignant and romantic life stories: born without a mouth, a stomach, or any defensive mechanism beyond camouflage, each moth lives just a few days— long enough only to mate and then it dies. Because the moths are nocturnal, and some species are endangered, many people will glimpse these beautiful creatures only through the paintings of John Cody, who has been called "the Audubon of Moths." Cody has spent a lifetime studying and painting the Great Saturniids, also known as silkmoths. Over seventy of Cody's paintings of saturniids will be shown, accompanied by his commentary on the moths' life cycles, habitats, and geographical range and on the circumstances of his finding and painting each moth.

AEF Global, Inc. — Booth 613

Guy Viel, Yannick Bidon, 855 Pepin Street, Sherbrooke, Québec, J1L 2P8 Canada; (819) 348-9461; fax: (819) 348-9466; e-mail: aefglobal@qc.aiva.com; web address: www.enviroaccess.ca/pages/aef.fr.html
Research and development in environment-developing biopesticides for forestry and agricultural use.

Agdia, Inc. — Booth 713

Willye Bryan, 30380 County Road 6, Elkhart, IN 46514; (219) 264-2014; fax: (219) 264-2153; e-mail: wbryan@agdia.com; web address: www.agdia.com
Agdia produces and distributes Hel-ID, the diagnostic test kit which identifies both *Helicoverpa zea* and *Heliothis virescens* in the egg stage; and Btk, kits which detect Bt-endotoxins in transgenic plants.

Agritechnove, Inc. — Booth 410

Bruno Faucher, Philippe Poire, 5 Rue Morin, St-Anselme, PQ, G0R 2N0 Canada; (418) 885-9595; fax: (418) 885-4957; e-mail: agritech@total.net
Design of controlled growth facilities for plants and insects research. Services include facilities assessment, technical programming, drawings and specifications for tendering, construction supervision and commissioning.

Association Des Entomologistes Amateurs du Québec — Canadian Pavilion Booth 724

Raymond Hutchinson, Nadine Duperre, 18, rue Washington, Aylmer, Québec, J9H 4B9 Canada; (819) 682-8331; e-mail: blandry@sympatico.ca; web address; www.acaq.qc.ca
We will display books and journal issues published by the Association, as well as t-shirts and entomological material.

ATELIER Jean Paquet — Booth 710

Jean Paguet, Yues Pascal Dion, 3 du coteau, Port Rouge, PQ G3H 2E1, Canada; (418) 873-2984; fax: (418) 873-2984; e-mail: jeanpaquet@webnet.qc.ca; web address: www.Québecinsectes.com
Equipment supplies Entomological, the material at the best price ever offered. Notice too that all prices are in Canadian money.

BIObserve — Booth 408

Christian Gutzen, Stephan Schwarz, Sebastianstr. 76, Bonn 53115, Germany; 49 228 2427813; fax: 49 228 2427814; e-mail: info@biobserve.com; web address: www.biobserve.com
BIObserve provides powerful tools for a wide range of behavioral experiments with almost all kinds of animals.

Biodôme de Montréal — Booth 720

Marjolaine Giroux, 4581, rue Sherbrooke Est Montréal, Québec, H1X 2B2 Canada; (514) 872-0655; e-mail: marjolaine_giroux@ville.montreal.qc.ca

BioQuip Products — Booth 507

Christopher J. Fall, Louise H. Fall, Lianne Fall, Ken Fall, 17803 LaSalle Ave., Gardena, CA 90248; (310) 324-0620; fax: (310) 324-7931; e-mail: bioquip@aol.com; web address: www.bioquip.com
BioQuip Products, "Leader in the Field," has the most comprehensive listing of equipment, books, and instructional materials available anywhere for the professional or student entomologist.

Burkard Manufacturing Co. LTD. — Booth 514

Geoff Wili, Woodcock Hill Industrial Estate, Rickmansworth Herts, WD3 1PJ Great Britain; 44-1923-773134; fax: 44-1923-774790; e-mail: sales@burkard.co.uk; web address: www.burkard.co.uk
Burkard will be exhibiting at Booth 514, the following new products for entomology: Computer Controlled Spraying Apparatus, Vortis Insect Suction Sampler for plant and grassland, new airborne particle samplers for "eliza" evaluation techniques.

C-D International — Booth 614

Scott Anderson, Dorothy Johnson, 3330 Simpson Ave., Ocean City, NJ 08226; (800) 430-9072; fax: (609) 814-1484; e-mail: cdintl@earthlink.net; web address: www.cdintl.com
Designers/Manufacturers of Entomological bioassay and rearing tray/cover system using unique vented pressure sensitive covers; Lab Automation Specialists/Designers of diet filling equipment.

CID, Inc. — Booth 603

Shane Chen, 4018 N.E. 112th Ave., Suite D-8, Vancouver, WA 98682; (360) 254-7874; fax: (360) 254-7923; e-mail: sales@cid-inc.com; web address: www.cid-inc.com
CID, Inc. manufactures research instruments. We will demonstrate our Photosynthesis Systems, Leaf Area Meters, Plant Canopy Imager, Computer Image Analysis System, Soil Profile and Root Growth Monitoring System and Spectrometer.

Cornell University Press Booth 709
Peter Prescott, Sage House, 512 East State Street, Ithaca, NY 14851; (607) 277-2338; fax: (607) 277-2397; e-mail: hch7@cornell.edu; web address: www.cornellpress.cornell.edu
Cornell University Press is notably strong in the life sciences. Our particular strengths in the science field are biological sciences, natural history, and veterinary science.

Corporation Entomofaune du Québec
Canadian Pavilion Booth 731

Robert Loiselle, Département des sciences fondamentales, Université du Québec à Chicoutimi, 555, Boul. De l'Université, Chicoutimi, Québec, G7H 2B1 Canada; (418) 545-5011, ext. 2461

CRC Press, LLC — Booth 609

John Sulzycki, 2000 Corporate Blvd., N.W., Boca Raton, FL 33431; (561) 994-0555; fax: (561) 997-7249; web address: www.crcpress.com
CRC Press invites you to visit our booth and examine our new and established titles in entomology including American Insects by Ross Arnett, Jr.

Cricket Science — Booth 820

Robert Anderson, 1611 Shane Dr., Pocatello, ID 83204; (208) 232-5548; fax: (208) 232-5548; e-mail: robert@cricketscience.com; web address: www.cricketscience.com
Antiquarian books, prints and engravings of insects, arthropods; cricket/insect audiovisuals, etc.

Dow AgroSciences — Booth 810

Mike Culy, 9330 Zionsville Road, Indianapolis, IN 46268; (317) 337-4581; fax: (317) 337-4900; e-mail: mdculy@dowagro.com
Dow AgroSciences is a leader in discovery and commercialization of agriculturally useful products and technologies, as well as urban pest management products and technologies.

Enconair — Booth 705

Robert Pauls, 477 Jarvis Ave., Winnipeg, MB, R2W 3A8 Canada; (204) 589-8900; fax: (204) 582-1024; e-mail: info@enconair.com
Enconair is a custom manufacturer of entomology chambers and rooms. With an emphasis on quality, our products are the ones researchers demand. Please stop by to collect brochures and discuss your upcoming projects and special needs that only ENCONAIR can deliver.

Entomological Foundation, The
U.S. Pavilion Booth 527

April Gower, 9301 Annapolis Rd., Ste. 300, Lanham, MD 20706; (301) 731-4535 ext. 3029; fax: (301) 731-4538; e-mail: april@entsoc.org; web address: www.entsoc.org
Stop by the Entomological Foundation booth from December 4 – 6, to learn how your investment in the Foundation helps to guarantee a healthy planet. We also want to hear from you. Let us know what needs you would like the Foundation to address through support from its funding partners. Your ideas and financial support are greatly appreciated and helps the Foundation make a difference.

Entomological Foundation Silent Auction
U.S. Pavilion Booth 529

Dennis Kopp, April Gower, 9301 Annapolis Rd., Ste. 300, Lanham, MD 20706; (301) 731-4535 ext. 3029; fax: (301) 731-4538; e-mail: april@entsoc.org; web address: www.entsoc.org
Win wonderful Entomological items! All funds raised by this Auction will help the Entomological Foundation expand its efforts to promote research and education in entomology. Stop by the Foundation's Silent Auction Booth in the U.S. Pavilion, to place a bid. The bidding will close at 12:00 noon on December 6. Help the Entomological Foundation make a difference by placing a bid! Monday–Wednesday, December 4–6, 9:00 a.m.–5:00 p.m.

Entomological Society of America — Booth 420

Nancy Young , Chris Stelzig, 9301 Annapolis Road, Ste. 300, Lanham, MD 20706; (301) 731-4535; fax: (301) 731-4538; e-mail: sales@entsoc.org; web address: www.entsoc.org
The ESA Sales booth features a display of ESA's most popular publications as well as new merchandise and titles, many at discounted prices. Immediately following the Treasure Chest drawing, the exhibited books will be offered for sale to attendees on a first-come, first-served basis. Visit the sales booth today to pick up the latest titles, purchase holiday gifts, meet the headquarters staff, and maybe even win a prize! Free gifts available with a minimum purchase.

Entomological Society of Canada
Canadian Pavilion Booth 728

Lorraine Braun, Saskatoon Research Centre, 107 Science Place, Saskatoon, S7N 0X2 Canada; (306) 956-7650; fax: (306) 956-7247; e-mail: braunl@em.agr.ca
Publications from the Entomological Society of Canada, including *Diseases and Pests of Vegetable Crops in Canada*.

Environmental Growth Chambers — Booth 703

Steven Griggs, 510 East Washington Street, Chagrin Falls, OH 44022; (800) 321-6854; fax: (440) 247-8710; e-mail: sgriggs@egc.com; web address: www.egc.com
For more than forty-five years Environmental Growth Chambers has been supplying the controlled environmental needs of academia, industry and government. EGC will have literature and pictures available on its lines of Plant Growth Chambers, Controlled Environmental Rooms, Entomological Research Chambers for insect rearing, Host Computer Systems, and Biological Incubators. Company personnel will be on hand to answer questions.

George Foster — Booth 714

2069 Chemin Labbe, R.R. 1, Ayer's Cliff, Québec, J0B 1C0, Canada J0B 1C0; (819) 838-4365; fax: (819) 838-5909
Bronze entomological sculptures by George Foster and other Insect Art by his friends. Also jewelry.

Gylling Data Management, Inc. — Booth 807

Steven R. Gylling, 405 Martin Blvd., Brookings, SD 57006; (605) 693-4150; fax: (605) 693-4180; e-mail: staff@gdmdata.com; web address: gdmdata.com
Gylling Data Management Inc. sells computer software and equipment for managing research trials. The Agriculture Research Manager (ARM) is computer software for establishing, managing, analysing, and reporting of crop protection research trails. ARM is a 32 bit program that runs on Microsoft Windows 95, 98, and NT operating systems and can manage all information gathered during the course of conducting a research trial. Free updates of ARM version 6 will be offered to registered clients. Data collection software running on small hand-held computers and an update of *Summary Across Trials* (ARM ST) multi-trial summarisation software is also available.

Harvard University Press — Booth 707

Ann Downer-Hazell, Sara Davis, 79 Garden Street, Cambridge, MA 02138; (617) 495-2650; fax: (617) 496-2550; web address: www.hup.harvard.edu
Harvard University Press is the publisher of *A Fly for The Prosecution* by M. Lee Goff, *The Extended Organism* by J. Scott Turner, and *Promiscuity* by Tim Birkham.

Horti-Centre du Québec
Canadian Pavilion Booth 729

Jean Denis Brisson, Claude El-Masri, 2020 Jules-Verne, Sainte-Foy, Canada; (418) 877-2017; fax: (418) 872-7428
The Hortigraf Bookclub is a Specialized Library covering Horticulture, and Natural Sciences including Entomology, mainly 50% in French titles. The Horti-Service is a scientific writing section for companies (free).

Insect Biology — Booth 608

Henry Hagedorn, Department of Entomology, 410 Forbes Bldg., Univ. of Arizona, Tucson, AZ 85721; (520) 621-5358; fax: (520) 621-1150; e-mail: hagedorn@ag.arizona.edu
The Journal of Insect Science-A new on-line journal.

Insectarium de Montréal
Canadian Pavilion Booth 719

Marjolaine Giroux, 4581, rue Sherbrooke Est Montréal, Québec, H1X 2B2 Canada; (514) 872-0655;
e-mail: marjolaine_giroux@ville.montreal.qc.ca

Johns Hopkins University Press — Booth 706

Trevor Lipscombe, Margaret Galambos, 2715 N. Charles St., Baltimore, MD 21218; (410) 516-6935; fax: (410) 516-6998; web address: www.press.jhu.edu

Kluwer Academic Publishers — Booth 605

Marcia Kidston, 101 Philip Drive, Norwell, MA 02061; (781) 871-6600; fax: (781) 871-6528; e-mail: kluwer@wkap.com; web address: www.wkap.nl
Displaying books and journals, including the *Encyclopedia of Earth Science Series, Developments in Plant and Soil Science Series, Developments in Hydrobiology* and the journal *Biological Invasions*

La Maison des Insectes
Canadian Pavilion Booth 727

Caroline Tremblay, coordonnatrice, 9141, avenue du Zoo, Charlesbourg, Québec, G1G 4G4 Canada; (418) 841-3306; e-mail: mar@cmq.qc.ca

MegaView Science Education Services — Booth 510

Eddy Lin, Shih-Chang Kang, No. 11, Alley 1, Lane 122-29, Sec 2 Tai Chung Kang Rd., Taichung 407, Taiwan; 886-4-2542586; fax: 886-4-2542585; e-mail: megaview@ms2.hinet.net; web address: www.megaview.com.tw
Insect Rearing Supplies, Insect Collecting Gear

Natural Resources Canada-Canadian Forest Service
Booth 812

Julie Simard, 1055 du Peps, Sainte-Foy, Québec, Canada; (418) 648-5254; fax: (418) 648-3354; e-mail: jsimard@cfl.forestry.com; web address: www.cfl.forestry.ca
Research on: forest insect diversity and ecology, developing methods for biological control and improving systems for monitoring forest insects.

Noldus Information Technology — Booth 513

Wilant van Giessen, Lucas Noldus, 6 Pidgeon Hill Drive, Suite 180, Sterling, VA 20165; (703) 404-5506; fax: (703) 404-5507; web address: www.noldus.com
Noldus Information Technology offers computer software and integrated systems for recording and analyzing animal behavior. Products on display include The Observer and Etho Vision.

Novartis Crop Protection — Booth 412

Stephen M. White, D. Scott Lawson, John P. Koenig, Linda A. Dykes, 410 Swing Road, Greensboro, NC 27409; (336) 632-2322; fax: (336) 632-7837; e-mail: steve.white@cp.novartis.com; web address: www.cp.novartis.com

Onset Computer — Booth 704

Eileen McKinstry, Gregg Daly, 470 Macarthur Blvd., Bourne, MA 02559; (800) 564-4377; fax: (508) 759-9100; e-mail: eileen_mckinstry@onsetcomp.com; web address: www.onsetcomp.com
Onset manufactures and distributes accurate, inexpensive, small, reusable, batterypowered dataloggers for recording temperature, humidity, light, rainfall, and more. Applications include field research and environmental monitoring.

Percival Scientific — Booth 503

Sara Swarbrick, Molly Redenbaugh, 505 Research Drive, Perry, IA 50220; (515) 465-9363; fax: (515) 465-6464; e-mail: sswarbrick@percival-scientific.com; web address: www.percival-scientific.com
Percival offers a full line of incubators that set the standard of excellence in environmental control. Visit our booth to learn more about Percival's legendary products.

Plant Sciences, Inc. — Booth 509

Mark Bolda, Bernard Olsen, 342 Green Valley Road, Watsonville, CA 95076; (831) 728-7771; fax: (831) 728-4967; e-mail: mbolda@plantsciences.com; web address: www.plantsciences.com

Scenturion, Inc — Booth 504

Joan Fisher, 8754 SR 525 Ste. #1, P. O. Box 585, Clinton, WA 98236; (360) 341-3989; fax: (360) 341-3242; e-mail: dnjfishr@whidbey.net; web address: www.scenturion.com
Your source for pheromone-based monitoring systems delivered at the lowest price with the best service. What more could you ask for?

SL3D, Inc. — Booth 607

Jason Skelton, 5277 Manhattan Circle, #113, Boulder, CO 80303; (720) 304-2200; fax: (303) 494-1520; e-mail: sales@sl3d.com; web address: www.sl3d.com
Using a single lens to produce natural 3D, SL3D is proud to introduce SL3D™ technology, revolutionizing the value of microscopes in all fields.

Societe d'Entomologie du Québec
Canadian Pavilion Booth 723

Stephane Villeneuve, Christine Jean; 207, Place Barret, L'Assomption, Québec, J5W 1M5 Canada; (450) 589-3072; e-mail: bioloque@vl.videotron.ca; web address: www.seq.qc.ca
Visit the Societe d' entomologie du Québec Booth. SEQ celebrates its 127th Anniversary this year. Learn about the activities of the Society to promote entomology.

Syncroscopy — Booth 506

Stephen McJonathan, Bob Town, Lisa McNeil, Gina McJonathan, 97H Monocacy Blvd., Frederick, MD 21701; (301) 662-6835, (800) 396-4276 U.S. Sales; fax: (301) 662-8096; e-mail: ussales@syncroscopy.com; web address: www.syncroscopy.com
Syncroscopy will be displaying the revolutionary Auto-Montage and Montage Explorer digital imaging systems for microscopy. Auto-Montage automatically constructs a completely focused image from a series of partially focused source images. Montage Explorer is the ultimate solution to the microscopists' eternal problems of small viewable area and limited depth of focus, allowing the user to build huge 9000 x 9000 pixel, high definition, fully focused images in real time.

U.S. Army Recruiting Command — Booth 809

James E. Morrison; RSBDE-RSB-NCD; 1307 3rd Avenue, Bldg. 6579, Ft. Knox, KY 40121; (502) 626-1981 or (502) 626-1979; fax: (502) 626-0933; e-mail: morrisoj@usarec.army.mil; web address: www.goarmy.com
The Army Exhibit provides information on professional training, education, and career opportunities available as an Army and Army Reserve Medical Service Corps Officer.

Urgel Delisle & Associates, Inc. — Booth 813

Nadine Beloin, Andre Poliquin, 426, chemin des Patriotes, Saint-Charles-sur-Richelieu, Québec, J0H 2G0, Canada; (450) 584-2207; fax: (450) 584-2523; e-mail: hchiasson@udainc.com; web address: www.udainc.com
The general services of the company will be presented (in agriculture, forestry and environment) as well as three specific areas related to the development of a botanical pesticide, urban IPM and pesticide evaluation.

Victoria Bug Zoo — Booth 913

Carol Maier, Natalie Godin, 1107 Wharf St., Victoria, B.C. V8W 1T7 Canada; (250) 384-2847; fax: (250) 389-2847; e-mail: cmaier@bugzoo.bc.ca; web address: www.bugzoo.bc.ca
Check out the Bug Zoo booth for unique "bug" accessories, neck ties, home décor, jewellery, toys, t-shirts, and Triops. We specialize in keeping the Entomologist looking smart and having fun!

Vision Engineering, Inc. — Booth 610

Richard Fournier, Mark Rocha, 570 Danbury Road, New Milford, CT 06776; (860) 355-3776; fax: (860) 355-0712; e-mail: info@visioneng.com; web address: www.visioneng.com
Featuring stereo microscopes with large viewing area rather than difficult to use eyepieces. View images without the eye, neck and backstrain affiliated with eyepieces.

Wildscape — Booth 803

Kathy Stout, 141 Mt. Lebanon Drive, Wheeling, WV 26003; (304) 233-1571; e-mail: kathy@wildscape.com; kathy@wildscape.com
Jewelry made by Cadissfly larva! We give our larva gemstones to use in creating their cocoons, then create one-of-a-kind jewelry made with the help of nature.

W. L. Enterprises, Inc. — Booth 708

Wendy Lewison; One Gateway Center; Suite A194, Newark, NJ 07102; (973) 624-0100; fax: (973) 624-5399;
e-mail: wlmainc@attglobal.net
Supplier of all plastic and paper products for science labs. Unique design applications possible. Any size order shipped. Telephone, fax, or web ordering.

[This exhibitor list is effective August 25, 2000.]

Exhibitors and Booths

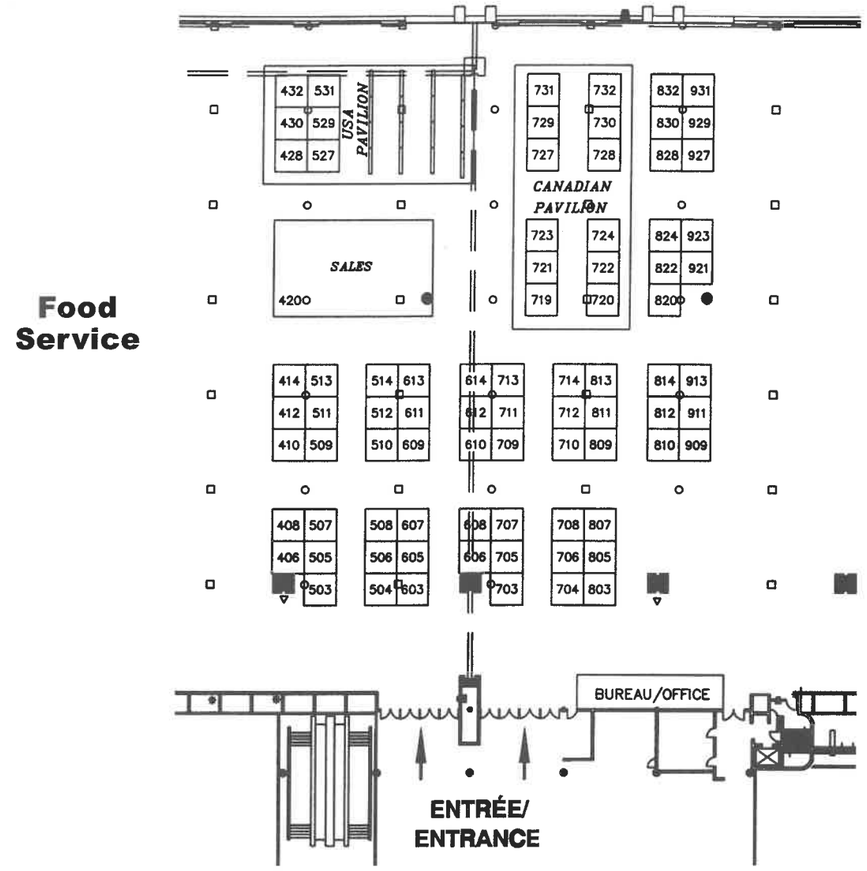
Exhibiting Company	Booth Number
AEF Global	613
Agdia, Inc.	713
AgriTechnove, Inc.	410
Atelier Jean Paquet	710
BioQuip Products	507
BIObserv	408
Burkard Manufacturing Co, LTD	514
CD International, Inc.	614
CID, Inc.	603
Cornell University Press	709
CRC Press, LLC.	609
Cricket Science	820
Dow AgroSciences	810
Enconair	705
Entomological Society of America	420
Environmental Growth Chambers	703
George Foster	714
Gylling Data Management	807
Harvard University Press	707
Insect Biology	608
Johns Hopkins University Press	706
Kluwer Academic Publishers	605
Megaview Science Education Svces.	510
Natural Resources Canada	812
Noldus Information Technologies	513
Novartis Crop Protection, Inc.	412
Onset Computer	704
Percival Science	503
Plant Sciences, Inc.	509
Scenturion, Inc.	504
SL3D, Inc.	607
Syncroscopy	506
U.S. Army Recruiting	809
Urgel Delisle & Associates, Inc.	813
Victoria Bug Zoo	913
Vision Engineering, Inc.	610
Wildscape	803
W.L. Enterprises, Inc.	708
Exhibitors in the U.S. Pavilion:	
Adventures Through a Looking Glass	U.S. Pavilion
Art of John Cody	U.S. Pavilion
Entomological Foundation Booth	527
Entomological Foundation Silent Auction	529
University Student Entomology Clubs	U.S. Pavilion
Exhibitors in the Canadian Pavilion:	
Assn. Entomol. Amateurs du Québec	724
Biodôme de Montréal	720
Corp. Entomofaune du Québec	731
Entomological Society of Canada	728
Insectarium de Montréal	719
Hort-Centre du Québec	729
La Maison des Insectes	727
Société d'entomologie du Québec	723

[This list effective August 25, 2000.]

EXHIBITS

2000 JAM - The Joint Annual Meeting of SEQ, ESC, and ESA

December 3—6, 2000



Food Service

Posters and Food Service

Combined Publishers' Book Exhibit

Features titles from scientific publications around the world and is located in the ESA Sales Booth.

- Exhibit Hall 100AB (Palais, Level 1)
- Monday, December 4, 9:00 a.m.—5:00 p.m.
- Tuesday, December 5, 9:00 a.m.—5:00 p.m.
- Wednesday, December 6, 9:00 a.m.—5:00 p.m.

Every year in the ESA Sales booth a sampling of recent and classic scientific titles is displayed. Make sure you allow enough time to browse through the shelves. Here are some of the titles that will be included in this year's exhibit:

APS Press/The American Phytopathological Society

3340 Pilot Knob Road,
Saint Paul, MN 55121-2097
(651) 454-7250—phone
(651) 454-0766—fax
aps@scisoc.org
Emerging Technologies for Integrated Pest Management: Concepts, Research, and Implementation, Kennedy & Sutton, 2000. $54
Induced Plant Defenses Against Pathogens and Herbivores. Biochemistry, Ecology, and Agriculture, Agrawal, Tuzun, et al, 1999. $59

Cambridge University Press

40 West 20th Street
New York, NY 10011
(212) 924-3900, ext. 329—phone
(212) 691-3239—fax
achan@cup.org
The Insects, 4th edition. Chapman, 1998. List: $54.95. Discount $43.95
Insect Predator-Prey Dynamics. Dixon, 2000. List $74.95. Discount $59.95
Food Webs and Container Habitats. Kitching. List $100, Discount $80.00
An Introduction to Parasitology. Matthews, 1998. List $20.95. Discount $16.75
Medical Entomology for Students, 2nd edition. Service, 2000. List $37.95. Discount. $30.35
The Genus Rhipicephalus. Walker/Keirans/Horak, 2000. List $105, Discount $83.95

Insect Resistance Action Committee (IRAC)

C/O ACPA
1156 15th Street, NW
Washington D.C. 20005
(202) 872-3875—phone
tgilliam@acpa.org
IRAC Educational Kit. IRAC, 2000. $10.00

San Luis Video Publishing

999 Pismo Avenue
Los Osos, CA 93442
(805) 528-8322—phone
(805) 528-7227—fax
slvp@slvideopublishing.com
Insect Structure, Function & Metamorphosis (video). Clokey/Sheridan, 1999. $95
Insect Orders, Classifications & Identification (video). Clokey/Sheridan, 1999. $95
Insect Families & Identification (video). Clokey/Sheridan, 2000. $95
Arthropods (video). Clokey/Sheridan, 2000. $95

South Carolina Entomological Society, Inc.

P.O. Box 582
Clemson, SC 29633-0582
rmcwhrt@clemson.edu
Journal of Agricultural and Urban Entomology, 4 issues per year. $50

Annual Reviews

4139 El Camino Way
Palo Alto, CA 94303-0139
(650) 493-4400—phone
(650) 424-0910—fax
service@annurev.org
Annual Review of Entomology, volume 45. Berenbaum, 2000. $60
Annual Review of Ecology and Systematics, volume 30. Fautin, 1999. $60
Annual Review of Microbiology, volume 53. Ornston, 1999. $60

Intercept Limited

P.O. Box 716
Andover
Hampshire SP10 1Y0
United Kingdom
44-1264-334748 – phone
44-1264-334058 – fax
intercept@andover.co.uk
Insects and Forests: The Role and Diversity of Insects in the Forest Environment. Dajoz, 2000. $140

CSIRO Publishing

PO BOX 1139 (150 Oxford Street)
Collingwood Victoria 3066
Australia
011-613-9662-7640—phone
011-613-9662-7555—fax
sales@publish.csiro.au
Butterflies of Australia: Their Identification, Biology, and Distribution. 2000. $195
Monographs on Australian Lepidoptera. 2000. $120
Beetles of the World. 1999. $200
Beetle Larvae of the World. 1999. $200
Monographs on Australian Lepidoptera. 1999. $98
Zoological Catalogue of Australia. 1999. $130
Monographs on Australian Lepidoptera. 1999. $165

Marcel Dekker, Inc.

270 Madison Avenue
New York, NY 10016
(212) 696-9000—phone
(212) 685-4540—fax
gcoppola@dekker.com
Handbook of Pest Management. Ruberson, 1999. $191.25
Integrated Management of Insects in Stored Products. Subramanyam, 1995. $148.75

University of Hawaii Press

2840 Colowalu Street
Honolulu, HI 96822
(808) 956-8255—phone
(808) 988-6052—fax
uhpbooks@hawaii.edu
Pests of Paradise. Scott & Thomas, 2000. $19.95
What's Bugging Me? Tenorio & Nishida, 1995. $18.95

Manaaki Whenua Press

Landcare Research
P.O. Box 40
Lincoln, 8152
New Zealand
+64-3-3256700—phone
+64-3-3252127—fax
mwpress@landcare.cri.nz
Fauna of New Zealand, no. 40. Lariviere, 1999. $37.50
Fauna of New Zealand, no. 41. Hodgson & Henderson, 2000. $72.50

Virginia Museum of Natural History

1001 Douglas Avenue
Martinsville, VA 24112
(540) 666-8600—phone
(540) 632-6487—fax
dgreytak@umnh.org
Checklist of the Millipedes of North and Middle America. Hoffman, 1999. $50
Scale Insects of Northeastern North America. Kosztarab, 1996. $59.95
Biology of Tiger Beetles. Kinsley & Schultz, 1997. $25

GEM Publishing Company

Brightwood, Brightwell
Wallingford, Oxfordshire 0X10 0QD, United Kingdom
+44-1491-833882—phone
+44-1491-825161—fax
info@gempublishing.co.uk
Entomologist's Monthly Magazine. Smith. 3 issues per year. $79.00
Entomologist's Gazette. Tremewan. 4 issues per year. $72.00
Handbook of Palearctic Macrolepidoptera vol. 1 – Sesiidae – Clearwing moths. Spatenka, Gorbunov et al, 1999. $220.00

Wiley Europe Ltd.

Main Offices
Baffins Lane, Chichester
West Sussex PO 19 1UD, England
44 01243 779 777—phone
44 1 243-775878—fax
customer@wiley.co.uk
Aphids on the Worlds Crops, An Identification and Information Guide, 2nd Edition. Blackman and Eastrop.

The Harvard Common Press

535 Albany Street
Boston, MA 02118
(617) 423-5803 - phone
(617) 695-9794 - fax
aanifant@harvardcommonpress.com
The Butterfly Garden, Matthew Tekulsky, 1985. $10.95

Section Business Meetings

Section A: SYSTEMATICS, MORPHOLOGY AND EVOLUTION

Preliminary Business Meeting:
Monday, December 4 4:30 p.m.—6:30 p.m.
Room: 408B

Final Business Meeting:
Wednesday, December 6 5:00 p.m.—6:00 p.m.
Room: 406A

Section A Officers:
Jacqueline Y. Miller, *Chair*, Florida Museum of Natural History, Sarasota, FL
Joseph V. McHugh, *Vice-Chair*, University of Georgia, Athens, GA
Susan Weller, *Secretary*, University of Minnesota, St. Paul, MN
Michael A. Ivie, *Governing Board Representative*, Montana State University, Bozeman, MT

Section B: PHYSIOLOGY, BIOCHEMISTRY, TOXICOLOGY, AND MOLECULAR BIOLOGY

Preliminary Business Meeting:
Monday, December 4 4:30 p.m.—6:30 p.m.
Room: 411A

Final Business Meeting:
Wednesday, December 6 5:00 p.m.—6:30 p.m.
Room: 411C

Section B Officers:
Jeffrey P. Shapiro, *Chair*, USDA ARS, Orlando, FL
Florence V. Dunkel, *Vice-Chair*, Montana State University, Bozeman, MT
Richard Mankin, *Secretary*, USDA ARS, Gainesville, FL
Dale Gelman, *Governing Board Rep.*, Insect Biocontrol Lab USDA ARS, Beltsville, MD

Section C: BIOLOGY, ECOLOGY, AND BEHAVIOR

Preliminary Business Meeting:
Monday, December 4 5:00 p.m.—6:30 p.m.
Room: 408A

Final Business Meeting:
Wednesday, December 6 5:00 p.m.—6:30 p.m.
Room: 407C

Officers Meeting:
Monday, December 4 7:00 a.m.—7:30 a.m.
Room: Queen Elizabeth Hotel—
Restaurant to be determined

Section C Officers:
Susan E. Webb, *Chair*, University of Florida IFASCFREC, Leesburg, FL
Ernest S. Delfosse, *Vice-Chair*, Laurel, MD
James P. Cuda, *Secretary*, University of Florida, Gainesville, FL
Thomas O. Holtzer, *Governing Board Representative*, Colorado State University, Ft. Collins, CO

SubSection Ca: BIOLOGICAL CONTROL

Business Meeting:
Monday, December 4 4:30 p.m.—5:00 p.m.
Room: 611A

SubSection Ca Officers:
Ernest Delfosse, *Chair*, USDA-ARS, Beltsville,MD
Susan E. Rice Mahr, *Chair-Elect*, University of Wisconsin, Madison, WI
Robert M. Nowierski, *Secretary*, Montana State University, Bozeman, MT

SubSection Cb: APICULTURE AND SOCIAL INSECTS

Business Meeting:
Monday, December 4 4:30 p.m.—5:00 p.m.
Room: 408A

SubSection Cb Officers:
Charles Milne, *Chair*, Dickinson State University, Dickinson, ND
Zachary Y. Huang, *Chair-Elect*, Michigan State University, East Lansing, MI
Nicholas W. Calderone, *Secretary*, Cornell University, Ithaca, NY

SubSection Cc: INSECT VECTORS IN RELATION TO PLANT DISEASE

Business Meeting:
Monday, December 4 4:30 p.m.—5:00 p.m.
Room: 405AB

SubSection Cc Officers:
Randi V.W. Eckel, *Chair*, RWVE Consulting, Frenchtown, NJ
David W. Ragsdale, *Chair-Elect*, University of Minnesota, St. Paul, MN
Raymond K. Yokomi, *Secretary*, Parlier, CA

SubSection Cd: BEHAVIOR AND ECOLOGY

Business Meeting:
Monday, December 4 4:30 p.m.—5:00 p.m.
Room: 404AB

SubSection Cd Officers:
Paul A. Weston, *Chair*, Kentucky State University, Frankfort, KY
Michael M. Ellsbury, *Chair-Elect*, USDA-ARS, Brookings, SD
Robert Meagher, *Secretary*, USDA ARS, Center for Medical Agricultural and Veterinary Entomology, Gainesville, FL

SubSection Ce: INSECT PATHOLOGY AND MICROBIAL CONTROL

Business Meeting:
Monday, December 4 4:30 p.m.—5:00 p.m.
Room: 402AB

SubSection Ce Officers:
Mary Barbercheck, *Chair*, North Carolina State University, Raleigh, NC
Leah S. Bauer, *Chair-Elect*, USDA Forest Service, East Lansing, MI
John D. Vandenberg, *Secretary*, USDA-ARS, Ithaca, NY

SubSection Cf: QUANTITATIVE ECOLOGY

Business Meeting:
Monday, December 4 4:30 p.m.—5:00 p.m.
Room: 403AB
SubSection Cf Officers:
David W. Onstad, *Chair*, Illinois Natural History Survey, Champaign, IL
Gerardo R. Camilo, *Chair-Elect*, St. Louis University, St. Louis, MO
Carlyle C. Brewster, *Secretary*, Virginia Tech., Blacksburg, VA

Section D: MEDICAL AND VETERINARY ENTOMOLOGY

Preliminary Business Meeting:
Monday, December 4 5:00 p.m.—6:00 p.m.
Room: 407A

Final Business Meeting:
Wednesday, December 6 3:00 p.m.—5:30 p.m.
Room: 404AB

Section D Officers:
Leonard E. Munstermann, *Chair,* Yale University School of Medicine, New Haven, CT
Charles S. Apperson, *Vice Chair*, North Carolina State University, Raleigh, NC
Brad Mullens, *Secretary*, University of California, Riverside, CA
Gary R. Mullen, *Governing Board Representative*, Auburn University, Auburn, AL

Section E: REGULATORY AND EXTENSION ENTOMOLOGY

Preliminary Business Meeting:
Monday, December 4 5:00 p.m.—6:30 p.m.
Room: 410AB

Final Business Meeting:
Wednesday, December 6 5:00 p.m.—6:30 p.m.
Room: 408A

Section E Officers:
A. Alan Schreiber, *Chair*, Washington State University, Richland, WA
Rick L. Brandenburg, *Vice Chair*, North Carolina State University, Raleigh, NC
Guy Hallman, *Secretary*, Weslaco, TX
William F. Gimpel, *Governing Board Representative*, MD Department of Agriculture, Annapolis, MD

SubSection Ea: EXTENSION

Business Meeting:
Monday, December 4 4:00 p.m.—5:00 p.m.
Room: 410AB

SubSection Ea Officers:
Tom Royer, *Chair*, Oklahoma State University, Stillwater, OK
David L. Kerns, *Chair-Elect*, Yuma Valley, AZ
Name of Secretary not provided

SubSection Eb: REGULATORY

Business Meeting:
Monday, December 4 4:00 p.m.—5:00 p.m.
Room: 410C

SubSection Eb Officers:
Walter Gould, *Chair*, Subtrop. Hort. Research Station, Miami, FL
Victoria Y. Yokoyama, *Chair-Elect*, USDA-ARS, Fresno, CA
Douglas W.S. Sutherland, *Secretary*, Greenbelt, MD

Section F: CROP PROTECTION ENTOMOLOGY

Preliminary Business Meeting:
Monday, December 4 5:00 p.m.—6:30 p.m.
Room: 408C

Final Business Meeting:
Wednesday, December 6 5:00 p.m.—6:30 p.m.
Room: 411AB

Officers Meeting:
Monday, December 4 4:00 p.m.—4:30 p.m.
Room: 409C

Section F Officers:
Michael J. Weiss, *Chair*, North Dakota State University, Fargo, ND
Larry D. Godfrey, *Vice-Chair*, University of California, Davis, CA
Leon D. Higley, *Secretary*, University of Nebraska-Lincoln, Lincoln, NE
Donald C. Herzog, *Governing Board Representative*, Quincy, FL

SubSection Fa: HOST PLANT RESISTANCE

Business Meeting:
Monday, December 4 4:30 p.m.—5:00 p.m.
Room: 409C

SubSection Fa Officers:
Gary Brewer, *Chair*, North Dakota State University, Fargo, ND
Frank Peairs, *Chair-Elect*, Colorado State University, Fort Collins, CO
Bruce Hibbard, *Secretary*, USDA ARS, University of Missouri, Columbia, MO

SubSection Fb: URBAN ENTOMOLOGY

Business Meeting
Monday, December 4 4:30 p.m.—5:00 p.m.
Room: 409AB

SubSection Fb Officers:
Eric Benson, *Chair*, Clemson University, Clemson, SC
Faith Oi, *Chair-Elect*, USDA ARS CMAVE, Gainesville, FL
Karen Vail, *Secretary*, University of Tennessee, Knoxville, TN

Société d'entomologie du Québec & Entomological Society of Canada / Société d'entomologie du Canada

Activités Annuelles des Sociétés ~ Annual Society Functions

Samedi, 2 décembre ~ Saturday, 2 December

10h00 - 17h00 / 10:00am - 5:00pm
Réunion du Conseil d'administration de la SEQ
SEQ Governing Board Meeting

9h00 - 17h00 / 9:00am - 5:00pm
Réunion du Conseil d'administration de la SEC
ESC Governing Board Meeting

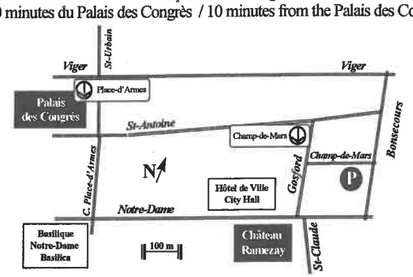
Lundi soir, 4 décembre ~ Monday evening, 4 December

Musée du Château Ramezay ~ Château Ramezay Museum
280, Notre-Dame Est / East (Vieux Montréal ~ Old Montreal)

Stationnement / Parking : 330, Champ-de-Mars
une rue au nord du Musée; ≈ $5.00 / one block north of the Museum; ≈ $5.00

Métro / Subway :
Station Champ-De-Mars / Champ-De-Mars Station

À pied / Walking :
à 10 minutes du Palais des Congrès / 10 minutes from the Palais des Congrès



☞ **19h00 - 20h00 / 7:00pm - 8:00pm**
Assemblée Générale Annuelle des Membres de la SEQ
SEQ Annual General Meeting

☞ **20h00 - 20h30 / 8:00pm - 8:30pm**
Présentation et mots des Décorés de la SEQ honorés à la Session Plénière

Presentation and addresses of SEQ Awardees honored at the Plenary Session

☞ **20h00 - 20h30 / 8:00pm - 8:30pm**
Les Étudiants rencontrent le Conseil (SEC)
Students Meet the Board (ESC)

☞ **20h30 - Minuit / 8:30pm - Midnight**

RECEPTION CONJOINTE DE LA SEQ ET DU PRESIDENT DE LA SEC

JOINT SEQ & ESC PRESIDENT'S RECEPTION

Pour souligner le nouveau millénaire ainsi que la 50ème réunion annuelle de la SEC, vous êtes cordialement invités par le Président de la SEC, Dan Johnson, et par le Président de la SEQ, François Lorenzetti, à venir célébrer ces événements.

To start off the new millennium, and to highlight the 50th Annual ESC meeting, you are cordially invited by ESC President Dan Johnson and SEQ President François Lorenzetti to join in celebration of these occasions.

Mardi, 5 décembre ~ Tuesday, 5 December

17h00 - 18h00 / 5:00pm - 6:00pm

Assemblée Générale Annuelle des Membres de la SEC
ESC Annual General Meeting

Palais des Congrès
Pièce 406B ~ Room 406B

Mercredi soir, 6 décembre ~ Wednesday evening, 6 December

Remise des Prix aux Étudiants
Prix de la ESA
Prix des Présidents
(ESA-SEC-SEQ)
Prix Melville-Duporte (SEQ)

Presentation of Student Awards and Student Prizes
ESA Student Awards
Presidents' Prizes
(ESA-ESC-SEQ)
Melville-Duporte Award (SEQ)

Voir le programme à "ESA Final Business Meeting" pour l'horaire et la salle.
See the program under "ESA Final Business Meeting" for schedule and room.

Jeudi, 7 décembre ~ Thursday, 7 December

10h00 - 11h00 / 10:00am - 11:00am
Réunion du Conseil d'administration de la SEQ
SEQ Governing Board Meeting

9h00 - 11h30 / 9:00am - 11:30am
Réunion du Conseil d'administration de la SEC
ESC Governing Board Meeting

(locations to be announced)

Remerciements : La SEQ et la SEC désirent remercier leurs commanditaires pour leur support, André Poliquin, Vice-président SEQ, pour la recherche de ces commanditaires, et Stéphane Villeneuve, Directeur SEQ, région de Montréal, pour l'organisation des activités au Musée du Château Ramezay.
Acknowledgements : SEQ and ESC would like to thank their sponsors for their support, André Poliquin, SEQ Vice-president, for contact with sponsors, and Stéphane Villeneuve, SEQ Director, Montreal area, for organizing the Societies' functions at the Château Ramezay Museum.

Les membres de la *Société d'entomologie du Québec* et de la *Société d'entomologie du Canada* sont heureux de s'associer aux membres de la *Entomological Society of America* pour cette réunion conjointe.

The members of the *Société d'entomologie du Québec* and of the *Entomological Society of Canada* are pleased to meet with the members of the *Entomological Society of America* in this joint meeting.

Summary of Student Activities

Student Activities for 2000 JAM

Sunday, December 3
10:00 a.m.—2:00 p.m.
Employment Opportunity Center
Job announcements, 318 (Palais, Level 3)

1:30 p.m.—4:00 p.m.
Linnaean Games Preliminary Rounds, 404AB (Palais, Level 4)

5:00 p.m.—7:30 p.m.
SEQ/ESC/ESA Plenary, 407AB (Palais, Level 4)

7:30 p.m.—9:30 p.m.
Welcome Reception, 611AB (Palais, Level 6)

Monday, December 4
7:30 a.m.—5:30 p.m.
Employment Opportunity Center
Job announcements, 318 (Palais, Level 3)
Interviews, 317 (Palais, Level 3)

12:00 noon—1:00 p.m.
Town Meeting—Meet the Governing Board, 611A (Palais, Level 6)

1:30 p.m.—4:00 p.m.
Student Competition for the Presidents' Prize
(Sessions start between 1:00 p.m. and 1:30 p.m. Check the session listings for exact times. All sessions in the 400 and 600 series of rooms are located on level 4 and 6, respectively, of the Palais.)
Section A1—408B
Section A2—408C
Section A3—409AB
Section B1—411AB
Section B2—411C
Section Ca1—611A
Section Ca2—611B
Section Cb—408A
Section Cc, Ce—403AB
Section Cd1—404AB
Section Cd2—405AB
Section Cd3—406A
Section Cd4—406B
Section Cd5—406C
Section Cf—401BC
Section D—407A
Section Ea, F, Fa, Fb—407B
Section F, Fa, Fb—407C
Student Posters—100AB (Palais, Level 1)

Tuesday, December 5
7:30 a.m.—5:30 p.m.
Employment Opportunity Center
Job announcements, 318 (Palais, Level 3)
Interviews, 317 (Palais, Level 3)

12:00 noon —1:30 p.m.
Town Meeting—Meet the Governing Board, 611A (Palais, Level 6)

1:30 p.m.—5:30 p.m.
Formal Conference on Student Affairs
Graduate Student Debate: Control of Invasive Species, 404AB (Palais, Level 4)

7:00 p.m.—9:30 p.m.
Linnaean Games Semifinals and Final Rounds, 404AB (Palais, Level 4)

Wednesday, December 6
7:30 a.m.—5:30 p.m.
Employment Opportunity Center
Job announcements, 318 (Palais, Level 3)
Interviews, 317 (Palais, Level 3)

6:30 p.m.—8:00 p.m.
Final Business Meeting, 407B (Palais, Level 4)
*Student competitors: Please sit in the reserved section at the front of the room.
ESA Student Awards to be presented:
- John Henry Comstock Graduate Student Awards
- Henry and Sylvia Richardson Research Grant
- Jeffery P. LaFage Graduate Student Research Award
- Presidents' Prize for Student Competition, sponsored by SEQ/ESC/ESA
- Plant Resistance to Insect Graduate Student Research Award
- Norman DuBois Award

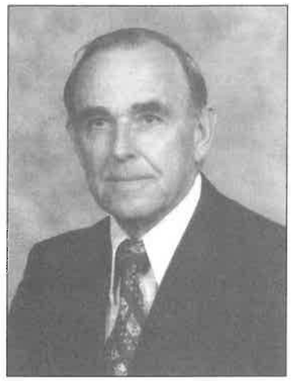
The Entomological Foundation Student Awards to be presented:
- ESA Undergraduate Scholarship (sponsored by BioQuip Products and the Entomological Foundation)
- Stan Beck Fellowship
- Graduate Student Award for Leadership in Applied Entomology (sponsored by Dow AgroScience)
- Lillian and Alex Feir Graduate Student Travel Award

All student competitors in the Presidents' Prize for Student Competition are requested to attend this awards ceremony. Winners of the competition will not be announced before this presentation. The Program Committee thanks all student participants and all members who served as judges.

8:00 p.m.—10:00 p.m.
Student Reception, 611A (Palais, Level 6)

The Entomologist We Honor

L. Dale Newsom
February 23, 1915, to October 10, 1987



Dale Newsom was a promising young agricultural entomologist when DDT was introduced as a new miracle drug to control insect pests. As with most entomologists of his generation he was intrigued with the possibilities of the "new" pest control chemicals. His first published papers dealt with the positive effects of DDT and BHC in the control of forage crop pests. As he switched from forage crops to cotton entomology, however, he soon found out that those insecticides also destroyed important natural enemies. A keen student of Dwight Isely's approach to pest control, Newsom used his own early experience with insecticides and his awareness of Isely's multitactical pest control systems for cotton to determine the directions of his future career. Also central to this was Newsom's deep appreciation for the importance of a multidisciplinary approach to pest management. Some of his early papers dealt with the interactions of insects, nematodes, and plant diseases, and he persistently stressed the need to consider the impact of pest complexes. Promotion of truly integrated pest management systems became a cornerstone of his professional life.

Newsom's scientific career spanned four decades during which he served as Department Head at Louisiana State University from 1954-1977, making it one of the prime departments of entomology in the nation. In 1966, he was named Boyd Professor, the University's highest professorial rank. He served on numerous national and international committees on IPM and chaired many high level ESA committees, including the Long-Range Goals Presidential Committee. In 1979 he presented the Founder's Memorial Lecture that paid tribute to Dwight Isely as a pioneer of IPM.

Born in Shongaloo, in North Louisiana, Newsom grew up in a completely rural setting with a love for the woods and hunting, mainly birds—quail and woodcock—as well as a love for bird dogs. He graduated from Shongaloo (population 160) High School at age 15. Although education was a priority for his parents, it was six years before a college education became a reality. In 1936 Newsom joined the Louisiana Polytechnic Institute located about 60 miles from Shongaloo. Besides attending courses, he worked in the dairy at Tech, and still found time to practice amateur boxing. It was a course at Louisiana Tech that opened his mind to the idea of pursuing entomology for his life work. He transferred to Louisiana State University in 1938 obtaining his B.S. degree in 1940. Subsequently he enrolled as a graduate student at Cornell University. Graduate studies were interrupted in 1942 when Newsom joined the U.S. Army Medical Corps in Europe, during World War II. He returned to Cornell in 1946 to complete his Ph.D. degree in 1947. From there, he moved back to LSU in 1947 as an assistant professor in cotton entomology. He remained at LSU throughout the rest of his career.

Newsom combined an unusual talent for natural history observation with a profound commitment to serve society. While he made significant contributions to the basic science of entomology, he never lost sight of the need to translate scientific discovery into practical applications to solve real life problems in agriculture. His scientific publications may be grouped into five main areas: 1. The role of beneficial natural enemies in the regulation of insect pests, the detrimental effect of pesticides on natural enemies, and the nature of pesticide selectivity; 2. Biology and control of major insect pests of forage crops, sweet potato, rice, sugar cane, and principally of cotton and soybean; 3. The effect of multiple, interacting pests, including arthropods, nematodes, fungal pathogens, and weeds; 4. Basic studies on the diapause of the boll weevil; and 5. The role of IPM in the increase of world food production.

Although keenly aware of the risks involved in the indiscriminate use of insecticides, Newsom also was convinced that the level of agricultural production needed to feed and cloth an exploding human population could not be sustained without the sensible use of pesticides. His first two decades of research were dedicated to studies of insects affecting cotton, rice, and sweet potato agro-ecosystems in Louisiana, a state whose agricultural areas harbor a rich wildlife. He witnessed the benefits of pesticide use in increasing the yield of food and fiber crops, but he observed the major problems that resulted from overuse of broad-spectrum insecticides. In his often cited papers for *Annual Review of Entomology* (1967) and the book *The Careless Technology* (1972), Newsom documented the detrimental impacts of insecticide misuse.

Perhaps his most important contribution in basic entomological research was the work on boll weevil diapause. With J. R. Brazzel and other co-workers, Newsom investigated the overwintering diapause in the species and identified the environmental cues that triggered diapause. These findings were later incorporated into the reproduction-diapause system of boll weevil control. This system of reduced insecticide use, coupled with cultural control practices, greatly decreased outbreaks of secondary pests such as the bollworm. The Newsom/Brazzel system still remains a highly effective component in the boll weevil management programs of most cotton-producing states.

Although Newsom contributed extensively to knowledge of the biology of insects in cotton and a variety of other crops, he is best known for his leadership in pest management of soybean insects. Soybean acreage in the United States doubled between 1961 and 1974, with the most dramatic increases occurring in the South. Newsom was determined that this relatively new crop would not follow cotton on the pesticide treadmill. He was instrumental in the inclusion of soybean as a subproject of the federally funded multistate Huffaker project. Before this project began in 1970, research on soybean insect pests had received little financial support, and the pest status of most of the insect species that attack soybean was poorly understood. Through the activities of the Huffaker project, research on the crop intensified making soybean IPM one of the world's success stories. Newsom rightfully can be considered the father of soybean entomology in the U.S.

With strong convictions regarding the application of good science to the practice of pest control, Newsom was a fearsome activist for the cause of sound IPM. He decried the practice of recommending the application of pesticides based on plant growth stage or calendar date rather than on economic thresholds following careful monitoring of pest populations. His positions on major eradication programs throughout the Southeast often brought him into conflict with powerful groups. Despite threats to his career, Newsom stood by his convictions. Today he stands with the giants of his generation in the development and establishment of Integrated Pest Management.

Dale Newsom will be best remembered by those who were fortunate to have interacted with him as students, coworkers, or friends as a considerate, ethical, and fair human being who had immense personal integrity and indomitable courage. He led by example, being the first to rush to the field with the sweepnet and the last one to leave. He was forthright and honest, and based his opinions on what he believed was right without regard for how his views would be assessed by others. Newsom was never afraid to take an unpopular stand, but he would not make uninformed challenges of the positions of others. Armed with data, he was a relentless adversary. To him, loyalty to one's profession carried with it the responsibility to question objectively that profession's conventional wisdom. Newsom made outstanding contributions to the field of entomology in teaching, research, extension and administration. However, in the words of one of his many friends, "his greatest contribution did not fit neatly in any of these categories. It was as the conscience of the discipline that his vision, wisdom, and courage towered above his contemporaries and had greatest impact."

Founders' Memorial Award

Marcos Kogan
2000 Founders' Memorial Award Lecturer

Marcos Kogan is an outstanding entomologist of extraordinary breadth. He has contributed significantly to our understanding of insect behavior, ecology, and biocontrol and immensely to our comprehension of quantitative approaches to sampling insects, plant resistance to insects, soybean entomology, and the theory and practice of integrated pest management. His leadership in soybean entomology and integrated pest management follow upon Dale Newsom's earlier leadership in both of these areas and make Marcos an ideal person to honor Dale Newsom. Moreover, Marcos' extensive contributions to entomology make him an exceptionally worthy Founders' Memorial Award recipient.

Marcos was born in 1933 in Rio de Janeiro, Brazil, where he began collecting and identifying insects at the age of ten with a classmate whose father was a well-known Brazilian entomologist. This early interest in entomology never faded, but was put on temporary hold when, at the age of twenty, Marcos married and emigrated to Israel to work in the young state. For the next four years, Marcos was a field worker on a collective farm (kibbutz), driving tractors and combines and acquiring full appreciation of the many challenges associated with practical crop production. Such extensive first-hand experience in the practice of agriculture would serve Marcos well throughout his future by rooting his scientific and pest-management endeavors within a context of real-world understanding.

In 1957, Marcos returned to Brazil with his family and pursued an undergraduate education at the Universidade Rural do Rio de Janeiro, acquiring research experience in insect behavior and control. His first job after graduation was with the Brazilian Ministry of Agriculture, initially to assist visiting professor Paul De Bach of Riverside, California, in studies on biocontrol of scale insects and subsequently to study strepsipterans, buprestids, coleopterous leafminers, and insect-plant interactions. His friendship with De Bach stimulated Marcos to enter graduate school at UC Riverside, where in 1968 he received his Ph.D.

Hired in 1969 as a faculty member of the Illinois Natural History Survey with a joint appointment at the College of Agriculture of the University of Illinois, Marcos embarked on a 22-year career at Illinois that resulted in extensive and profound contributions to entomology. Interacting frequently with Dale Newsom, who headed the soybean component of the nationwide "Huffaker" and "Adkisson" projects in IPM, Marcos initiated and shaped a comprehensive soybean entomology program that included a worldwide survey of arthropod fauna associated with soybeans, research on the bionomics of many pest species, studies of behavioral and physiological bases of arthropod/soybean interactions, establishment of quantitative approaches to sampling soybean insects and plant damage, evaluation of alternatives to insecticides for controlling pest arthropods and development of decision support systems for IPM implementation.

These endeavors gave rise to myriad important advances in basic and applied entomology. For example, in the first program anywhere to investigate intensively mechanisms of soybean resistance to insect pests, Marcos and his associates discovered that soybean phytoalexins have a potent inhibitory effect on the feeding behavior of Mexican bean beetles and other phytophagous insects associated with soybeans, reflecting inducible plant defenses. Marcos' studies of chemical and physical defense mechanisms in soybeans stimulated him to develop a highly-regarded broad conceptual model of the nature of host selection behavior of phytophagous insects. In a more applied vein, Marcos established the first cooperative program for breeding soybeans for resistance to insects in the Midwestern USA. He was also the major force behind conceiving and establishing two broadly-based soybean databases, which, in a pioneering effort, were computerized in 1972 for world-wide access. One of these databases, SIRIC, the Soybean Insect Research Information Center, was developed in collaboration with his wife of 47 years, Jenny Kogan. His intensive interest in applied entomology stimulated Marcos to organize and publish the first comprehensive book dedicated to sampling methods for row-crop arthropods.

Never one to be parochial in his interests and activities, Marcos forged important avenues for international cooperation in soybean research that involved creation of collaborative programs with institutions in Brazil, Korea, and Japan. One of his most significant achievements while at Illinois was his editorship of a 1986 book entitled "Ecological Theory and Integrated Pest Management Practice". For the first time, this book portrayed the vital importance of embracing ecological principles for progressing in IPM.

Valued highly for his integrative and visionary approach to pest management, Marcos became Director of the Center of Integrated Plant Protection and Professor of Entomology at Oregon State University in 1991. The diversity of Oregon's agriculture demanded that Marcos broaden his horizons still further and embrace all aspects of production of a wide variety of crops. At Oregon, Marcos has excelled at promoting interdisciplinary interactions and in advancing pest management to higher levels of integration. Among his more notable accomplishments at Oregon have been his prominent roles in conceiving and implementing IPMnet (a computerized system for IPM information dissemination throughout the internet), establishing a new multi-lingual IPM-education oriented training program for pesticide applicators, building a comprehensive reference library in IPM, and helping plan an area-wide program for mating disruption of codling moths on the West Coast. Currently, Marcos is working on a book, in collaboration with a weed scientist and a plant pathologist that will be one of the very first to expand concepts and practices of IPM across all dimensions of agricultural ecosystems and all disciplinary areas associated with pest management.

During his career, Marcos has received several prestigious honors including two Guggenheim Fellowships, and honorary doctorate from Universidade Federal Rural do Rio de Janeiro, a USDA-ARS recognition award for technology transfer, and special awards from the Brazilian Entomology Society and the Brazilian Soybean Congress for his outstanding contributions to IPM in Brazil. He has authored six books and monographs, 35 book chapters and major reviews, more that 100 journal or proceedings articles on research, and numerous extension publications. Also, Marcos has served our society as a member (coincident with Dale Newsom) of the former long-range goals committee, chair of the Awards Committee, and chair of Section C.

Marcos Kogan, like his predecessor Dale Newsom, whom he honors, is passionate about the ideals which drive him forward, and yet never is overbearing in his working relationships with others. Indeed, he is one of the most modest, self-effacing scientists in our profession, leading by the most gentle kind of persuasion accompanied by a warm human spirit, intellectual excellence, high personal integrity, and a vision that holds forth integration in pest management at every conceivable level as key for future progress and sustainability. Truly, Marcos Kogan is an exceptional and inspirational human being.

Distinguished Speaker

Plenary Session

Modern Entomology, a Social Responsibility

Georges Brossard
Founder of the Montréal Insectarium

Entomology made real progress in the 20th century, and the next one looks promising. There is every reason to be optimistic. As the new millennium dawns, entomologists must give some thought to the future of their very special science. The sky seems clear, but there is one cloud on the horizon—all over the world, fundamental research is facing financial cutbacks.

Entomologists do not have much of a voice in the halls of government, and so they stand on the sidelines, powerless to stop this enormous mistake. Our cries of alarm are too often uttered as individuals, poorly conveyed, and don't reach the decision-makers or, even worse, the general public! Whether we want to or not, we have to make entomology a social responsibility. We have to keep on conducting research, of course, collecting and compiling, interpreting and publishing, but now we must also follow Aristotle's example and make our science more appealing to the public, more accessible, understandable and useful to our fellow citizens.

We have to bring entomology out of the laboratory, the research centre, and the university classroom. We have to take it to the public, by informing people, making them more aware, educating and even entertaining them. We have to be present where things are happening, where the problem lies—in the political world. This means that we have to invest in ordinary people.

Entomologists have a message to convey and influence to bring to bear. We are particularly concerned by the future of the planet Earth and of 90% of its inhabitants. Making entomology a social responsibility means safeguarding it. If people know and understand, they will support us, and the funding…will come.

2001: An Insect Odyssey

"Exploration and Discovery"

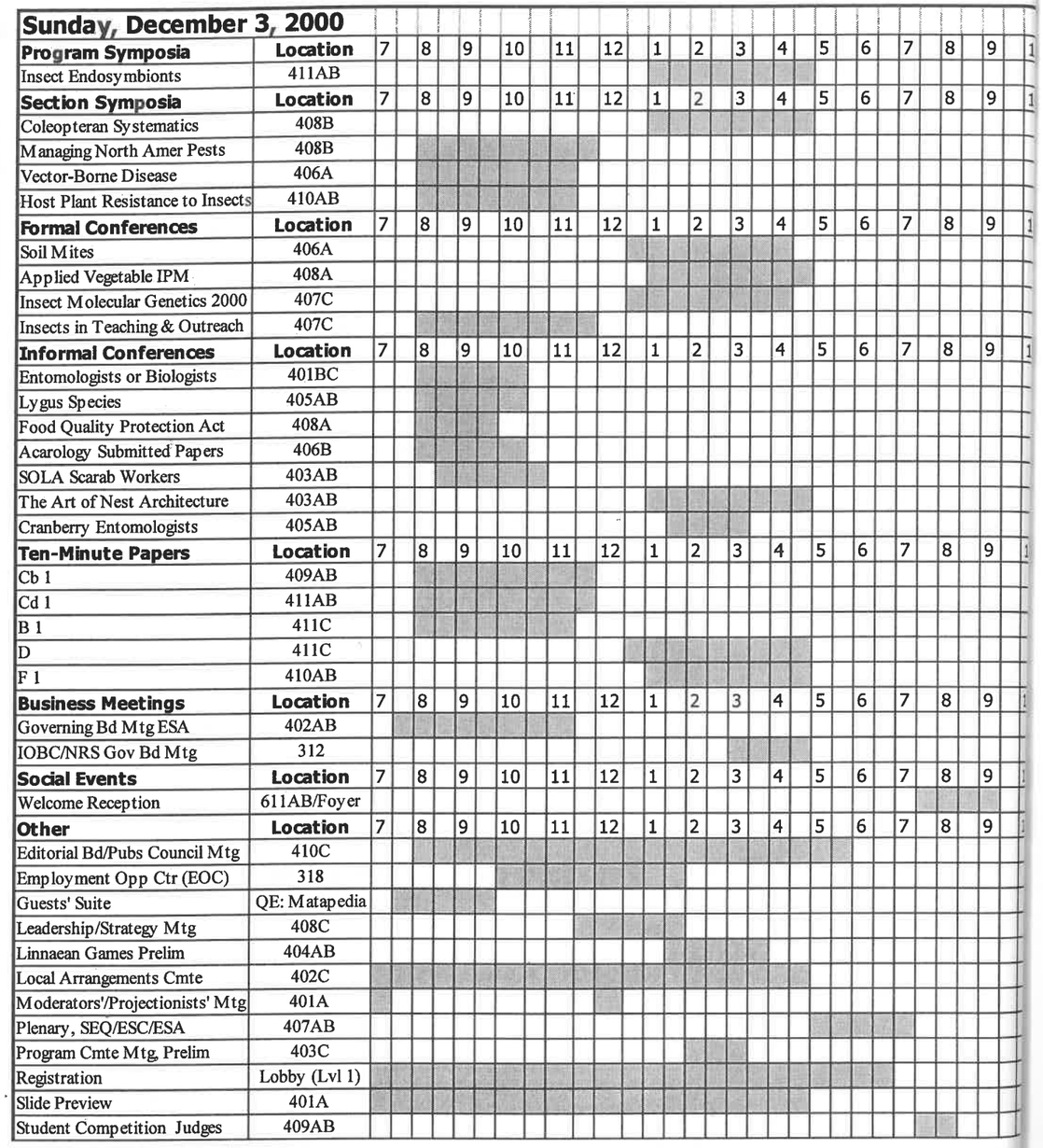
Joint Annual Meeting

Entomological Society of Canada and Ontario
Société d'Entomologie du Canada et de l'Ontario

21-24 October, 2001
Niagara Falls, Ontario, Canada

Sunday, December 3, 2000

Program Symposia	Location
Insect Endosymbionts	411AB
Section Symposia	**Location**
Coleopteran Systematics	408B
Managing North Amer Pests	408B
Vector-Borne Disease	406A
Host Plant Resistance to Insects	410AB
Formal Conferences	**Location**
Soil Mites	406A
Applied Vegetable IPM	408A
Insect Molecular Genetics 2000	407C
Insects in Teaching & Outreach	407C
Informal Conferences	**Location**
Entomologists or Biologists	401BC
Lygus Species	405AB
Food Quality Protection Act	408A
Acarology Submitted Papers	406B
SOLA Scarab Workers	403AB
The Art of Nest Architecture	403AB
Cranberry Entomologists	405AB
Ten-Minute Papers	**Location**
Cb 1	409AB
Cd 1	411AB
B 1	411C
D	411C
F 1	410AB
Business Meetings	**Location**
Governing Bd Mtg ESA	402AB
IOBC/NRS Gov Bd Mtg	312
Social Events	**Location**
Welcome Reception	611AB/Foyer
Other	**Location**
Editorial Bd/Pubs Council Mtg	410C
Employment Opp Ctr (EOC)	318
Guests' Suite	QE: Matapedia
Leadership/Strategy Mtg	408C
Linnaean Games Prelim	404AB
Local Arrangements Cmte	402C
Moderators'/Projectionists' Mtg	401A
Plenary, SEQ/ESC/ESA	407AB
Program Cmte Mtg, Prelim	403C
Registration	Lobby (Lvl 1)
Slide Preview	401A
Student Competition Judges	409AB



QE: Queen Elizabeth Hotel
M: Marriott Chateau Champlain
S: Montreal Sheraton
All other rooms (designated by numbers only) are at the Palais des Congres de Montreal

Section Symposium D 3: Population Dynamics of Vector-Borne Disease

406 A

Organizer and Moderator

Cynthia Lord, Univ. of Florida IFAS, Florida Medical Entomology Lab, 200 9th Street SE, Vero Beach, FL 32962

Introduction. Cynthia Lord, Univ. of Florida IFAS, Florida Medical Entomology Lab, 200 9th Street SE, Vero Beach, FL 32962

8:00 0001 Physiological markers of population processes and epidemiological consequences. **Sarah RANDOLPH,** University of Oxford, Dept. of Zoology, South Parks Rd., Oxford, OX1 3PS, UK

8:30 0002 Population dynamics of onchocerciasis. **Maria-Gloria BASANEZ,** University of Oxford, WCEID, South Parks Road, Oxford, OX1 3PS, UK

9:00 0003 Models of St. Louis encephalitis virus in Florida. **Cynthia LORD,** Florida Medical Entomology Laboratory, 200 9th St. SE, Vero Beach, FL 32962

9:30 Break

9:50 0004 Geospatial and statistical modeling of mosquito distribution in an emerging focus of La Crosse virus. **Sally PAULSON,** Virginia Polytechnic Institute and State University, Dept. of Entomology, 216 Price Hall, Blacksburg, VA 24061; Christopher BAKER, Virginia Polytechnic Institute and State University, Dept. of Entomology, Blacksburg, VA 24061; Carlyle BREWSTER, Virginia Polytechnic Institute and State University, Entomology, Dept. of Entomology, 301C Price Hall, Blacksburg, VA 24061

10:20 0005 How does host diversity affect the dynamics of vector-borne parasites? **Andrew DOBSON,** Princeton University, Dept. of Ecology & Evolutionary Biology, Princeton, NJ

Closing remarks. **Cynthia LORD**, Univ. of Florida IFAS, Florida Medical Entomology Lab, 200 9th Street SE, Vero Beach, FL 32962

Section Symposium C 4: Manipulating Microbes for Managing North American Pests: Hands Across the Border

408 B

Organizers and Moderators

John Vandenberg, USDA ARS, US Plant Soil & Nutrition Lab, Tower Rd, Ithaca, NY 14853; Lawrence Lacey, USDA ARS, 5230 Konnowac Pass Rd, Yakima Ag Res Lab, Wapato, WA 98951-9651; Mark Goettel, Agriculture and Agri-Food Canada; Lethbridge Research Center, P.O. Box 3000, Lethbridge, Alberta Canada T1J 4B1

8:00 0006 Introduction. **Lawrence LACEY,** Agricultural Research Service, Yakima Agricultural Research Laboratory, USDA ARS, Wapato, WA 98951

8:05 0007 Microbial control of insect pests of greenhouse crops in Canada. **Ken FRY,** Agricultural Research Service, Alberta Research Council, P.O. Bag 4000, Vegreville, AB T9C 1T4, Canada

8:21 0008 Microbial control of insect pests of greenhouse crops in the United States. **Stefan JARONSKI,** USDA Agricultural Research Service, Northern Plains Agricultural Research Laboratory, 1500 North Central, Sidney, MT 59270

8:37 0009 Microbial control of insect pests of mushrooms in Canada. **Danny RINKER,** University of Guelph, Dept. of Plant Agriculture, Horticultural Research Institute of Ontario, Vineland Station, ON L0R 2E0, Canada

8:53 0010 Microbial control of insect pests of mushrooms in the United States. **Clifford KEIL,** University of Delaware, Dept. of Entomology & Applied Ecology, Newark, DE 19717-1303

9:09 0011 Microbial control of insect pests of canola and cruciferous vegetables in Canada. **Martin ERLANDSON,** Agriculture and Agri-Food Canada, Saskatoon Research Center, 107 Science Place, Saskatoon, SK S7N 0X2, Canada

9:25 0012, Microbial control of insect pests of canola and cruciferous vegetables in the United States. **John VANDENBERG,** U.S. Plant, Soil & Nutrition Lab, Tower Road, Ithaca, NY 14850

9:41 Break

10:11 0013 Microbial control of insect pests of potatoes in Canada. **Mark GOETTEL,** Agriculture and Agri-Food Canada, Lethbridge Research Center, P.O. Box 3000, Lethbridge, AB T1J 4B1, Canada

10:27 0014 Microbial control of insect pests of potatoes in the United States. **Eleanor GRODEN,** University of Maine, Dept. of Biological Sciences, 306 Deering Hall, Orono, ME 04473

10:43 0015 Microbial control of insect pests of forests in Canada. **Kees VANFRANKENHUYZEN,** Canadian Forest Service, Great Lakes Forestry Research Center, P.O. Box 490, Sault Ste. Marie, ON P6A 5M7, Canada

10:59 0016 Microbial control of insect pests of forests in the United States. **Leah BAUER,** USDA Forest Service, North Central Forest Experiment Station, East Lansing, MI 48824

11:15 0017 Microbial control of insect pests in aquatic habitats in Canada. **Jacques BOISVERT,** Departement de Chimie-Biologie, Universite du Quebec a Trois-Rivieres, CP 500, Trois-Rivieres, Quebec G9A 5H7, Canada

11:31 0018 Microbial control of insect pests in aquatic habitats in the United States. **James BECNEL,** USDA Agricultural Research Service, Center for Medical, Agricultural and Veterinary Entomology, Mosquito and Fly Research Unit, Gainesville, FL 32604

11:47 0019 Conclusions. **Mark GOETTEL,** Agriculture and Agri-Food Canada, Lethbridge Research Center, P.O. Box 3000, Lethbridge, AB T1J 4B1, Canada; John VANDENBERG, USDA Agricultural Research Service, U.S. Plant, Soil & Nutrition Lab, Tower Road, Ithaca, NY 14850

Section Symposium F 2: Specificity of Host Plant Resistance to Insects: How, Why, and Agricultural Implications

410 A/B

Organizer and Moderator

Jennifer Thaler, Univ. of Toronto, Dept. of Botany, 25 Willcocks St, Toronto, ON M5S 3B2 Canada

Introduction. **Jennifer THALER**, Univ. of Toronto, Dept. of Botany, 25 Willcocks St, Toronto, ON M5S 3B2 Canada

8:00 0020 Perspectives on the benefits and drawbacks of targeted plant defenses. **Arthur ZANGERL,** Dept. of Entomology, University of Illinois, Urbana, IL 61801; May BERENBAUM, University of Illinois at Urbana-Champaign, Ecology, Ethology, and Evolution, Liberal Arts and Sciences, Urbana, IL 61801; Paul ODE, Dept. of Entomology, Biol Control Lab, Texas A&M University, College Station, TX 77843 2475

8:25 0021 Broad-spectrum chemical defense systems in aspen. **Richard LINDROTH,** University of Wisconsin-Madison, Entomology, 237 Russell Laboratories, Madison, WI 53706

8:50 0022 The specificity of herbivore elicitation of plant responses. **Gary W. FELTON,** Dept. of Entomology, University of Arkansas, Fayetteville, AR 72701; Q. WANG, Dept. of Entomology, University of Arkansas, Fayetteville, AR 72701; Richard MUSSER, University of Arkansas, Dept. of Entomology, Fayetteville, AR 72701; G. N. ERVIN, Dept. of Entomology, University of Arkansas, Fayetteville, AR 72701

9:15 0023 Differential plant responses to herbivory; crosstalk between signaling pathways. **Wilhelm BOLAND,** Max Planck Institute for Chemical Ecology, Tatzendpromenade 1a, D-07745, Jena, Germany

9:40 Break

9:55 0024 Specificity of induced signals in tritrophic plant-insect interactions. **Consuelo DE MORAES,** CMAVE, USDA, ARS, Gainesville, FL 32608

10:20 0025 The specificity of Mi-mediated aphid resistance. **Fiona GOGGIN,** Dept. of Entomology, One Shields Avenue, Davis, CA 95616; Valerie WILLIAMSON, Dept. of Nematology, One Shields Avenue, Davis, CA 95616; Diane ULLMAN, Dept. of Entomology, One Shields Avenue, Davis, CA 95616

10:45 0026 Insect resistance in potatoes: Morphological and chemical defenses, phylogenetic relationships, and ecogeographical occurrence. **Edward B. RADCLIFFE,** Dept. of Entomology, University of Minnesota, St. Paul, MN 55108-6125; Kathy L. FLANDERS, Dept. of Entomology, Auburn University, Auburn, AL 36849-5629; John G. HAWKES, School of Continuing Studies, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK

10:45 0031 Learning insect behavior through the lens of a videocamera. **Jim MILLER,** Michigan State University, Dept. of Entomology, 203 Center for Integrated Plant Systems, East Lansing, MI 48824; Meghan FRENCH, Michigan State University, Dept. of Entomology, 203 Center for Integrated Plant Systems, East Lansing, MI 48824

11:05 Break

11:20 0032 Computer assisted lecturing in entomology, experiences with mixing the old and the new. **Jon HOUSEMAN,** University of Ottawa, P.O. Box 450 Stn A, Ottawa, ON K1N 6N5, Canada

11:40 0033 Arthropods and enthusiasm - an unbeatable combination. **Richard ZACK,** Washington State University, James Entomological Collection, Dept. of Entomology, Pullman, WA 99164-6382

Informal Conference: Are We Entomologists or Biologists: Can We Be Both?

401 B/C

Organizers and Moderators

Dorothy Feir, #1 Ballas Ct., St. Louis, MO 63131; Sarah Vordtriede, School of Biological Sciences, University of Missouri, 5100 Rockhill Road, Kansas, City, MO 64110

8:00 0034 Outside existing networks. **Dorothy FEIR,** #1 Ballas Ct., St. Louis, MO 63131-3638; Sarah VORDTRIEDE, University of Missouri-Kansas City, Biological Sciences, 012 School of Biological Sciences, 5100 Rockhill Road, Kansas City, MO 64110

Formal Conference: Teaching: Using Live Insects in Teaching and Outreach

407 C

Organizer and Moderator

Dessie L. A. Underwood, California State Univ., Dept. Biologial Sciences, Long Beach, CA 90840

8:00 Winner of the President's Prize for Outstanding Achievement in Primary Teaching

8:20 Winner of the President's Prize for Outstanding Achievement in Secondary Teaching

8:40 0027 The Center for Insect Science Education Outreach program: The ins and outs and ups and downs of developing and disseminating educational materials for grades K-12. **Robin ROCHE,** Center for Insect Science Education Outreach, 800 E. University Blvd., Suite 300, Tucson, AZ 85721

9:10 0028 Spiders in the classroom: Lessons learned. **Robert HOLMBERG,** Athabasca University, Centre for Science, Athabasca, AB T9S 3A3, Canada

9:30 Break

9:45 0029 Interactive remote-access scanning electron microscopy for K-12 students: The Bugscope Project. **Scott ROBINSON,** University of Illinois, Urbana-Champaign, Imaging Technology Group, 405 North Mathews, Urbana, IL 61801

10:05 0030 The South Carolina Butterfly Project. **Joseph CULIN,** Clemson University, Dept. of Entomology, Box 340365, Long Hall, Clemson, SC 29634-0365

10:25 Winner of the ESA Distinguished Achievement Award in Teaching

Informal Conference: Perspectives on the Impact of the Food Quality Protection Act on the Plant Protection and Health Industries

408 A

Organizer and Moderator

Jeff Pinkham, 4718 Middle Road, Gurnee, IL 60031-3222

8:00 Symposium begins

Informal Conference: Biological Control of Lygus Species

405 A/B

Organizers and Moderators

A. Bruce Broadbent, Agriculture and Agri-Food Canada, Southern Crop Protection and Food Research Centre, 1391 Sandford St., London, ON N5V 4T3; Roger Fuester, Beneficial Insects Lab., USDA, 501 S. Chapel St., Newark, DE 19713

8:00 0035 Systematics of *Lygus* parasitoids. **Henri GOULET,** Agriculture and Agri-Food Canada, ECORC, 960 Carling Ave., Ottawa, ON K1A 0C6, Canada

8:35 0036 Foreign exploration for mirid parasitoids. **Kim HOELMER,** USDA, ARS, EBCL, Campus International de Baillarguet, Montferrier, 34988, France

9:10 Break

9:20 0037 Host range of *Lygus* parasitoids. **Peter MASON,** Agriculture and Agri-Food Canada, ECORC, 960 Carling Ave.,

Ottawa, ON K1A 0C6, Canada

9:55 0038 The Californian field experience with *Peristenus* species. **Charles PICKETT,** California Dept. of Food and Agriculture, Biological Control Program, 3288 Meadowview Rd., Sacramento, CA 95832

Informal Conference: Acarology Submitted Papers

406 B

Organizer and Moderator

Lance Durden, Georgia Southern Univ., Inst Arthropod & Parasitol, P.O. Box 8056, Statesboro, GA 30460

8:00 0039 Low-temperature field emission scanning electron microscopy: Uncovering mite morphology in the new millennium. **Ethan C. KANE,** University of Maryland, Dept. of Entomology, College Park, MD 20742; Ronald OCHOA, USDA, ARS, BA, PSI, SEL, BARC-West, Beltsville, MD 20705-2325; William P. WERGIN, USDA, ARS, PSI, NL, EMU, Beltsville, MD 20705

8:12 0040 Interactions between soil mites and entomopathogenic nematodes. **C. Marie NEWMAN,** Entomology Dept., Box 7634, Raleigh, NC 27695; Mary BARBERCHECK, North Carolina State University, Dept. Entomology, Raleigh, NC 27969

8:24 0041 Non-vertebrate associated dermanyssoids of the Edwin S. George Reserve (Livingston County, Michigan). **Ashley DOWLING,** University of Michigan, Biology, 3855 Green Brier Blvd, Ann Arbor, MI 48105-2634

8:36 0042 The identification of 2-hydroxy-6-methylbenzaldehyde in *Archegozetes longisetosus* mites: What is a parthenogenetic species doing with a sex pheromone? **Jennifer MORAN,** Ithaca College, Biology, Ithaca College, 22 Barbara Terrace, Colchester, VT 05446

8:48 0043 Phylogenetic analysis of *Borrelia burgdorferi* sensu lato in southern United States based on restriction fragment length polymorphism of fla- and rrf-rrl intergenic spacer and their sequences. **Tao LIN,** Georgia Southern University, P.O. Box 8056, IAP, GSU, P.O. Box 8056, Statesboro, GA 30460-8056; James H. OLIVER Jr, Georgia Southern University, P.O. Box 8056, IAP, GSU, Statesboro, GA 30460-8056; Lihui GAO, Georgia Southern University, P.O. Box 8056, IAP, GSU, Statesboro, GA 30460-8056

9:00 0044 Recognition of two previously unreported enzootic tick vectors of the Lyme disease spirochete. **James H. OLIVER Jr.,** Georgia Southern University, P.O.Box 8056, IAP, Statesboro, GA 30460-8056; Kerry, L. CLARK, Georgia Southern University, P.O. Box 8056, IAP, Statesboro, GA 30460-8056; Angela M. JAMES, Georgia Southern University, P.O. Box 8056, IAP, Statesboro, GA 30460-8056; Craig W. BANKS, Georgia Southern University, P.O. Box 8056, IAP, Statesboro, GA 30460-8056; Lance DURDEN, Georgia Southern University, Entomology, Institute of Arthropodology & Parasitology, P.O. Box 8056, Statesboro, GA 30460

9:12 Break

9:27 0045 Ticks and spirochetes recovered from birds on a Georgia barrier island. **Lance DURDEN,** Georgia Southern University, Entomology, Institute of Arthropodology & Parasitology, P.O. Box 8056, Statesboro, GA 30460; James OLIVER Jr., Georgia Southern University, Inst. of Arthropodology & Parasitology, P.O. Box 8056, Statesboro, GA 30460

9:39 0046 Impact of reduced abundance of white-tailed deer on *Ixodes scapularis* (Acari: Ixodidae) and the parasitic wasp *Ixodiphagus hookeri* (Hymenoptera: Encyrtidae). **Kirby STAFFORD,** Dept. of For and Horticul, P.O. Box 1106, New Haven, CT 06504-1106; Howard KILPATRICK, Connecticut Dept. Environmental Protection, Franklin Wildlife Mgmt Area, 391 Route 32, N. Franklin, CT 06254; Anthony DeNICOLA, White Buffalo, Inc., 54 Grandview Ave., Hamden, CT 06514

9:51 0047 The diversity of stylostome (feeding tube) structure among parasitic larval water mites (Prostigmata: Hydrachnida). **Bruce P. SMITH,** Ithaca College, Biology Dept., 953 Danby Rd, Ithaca, NY 14850-7278

10:03 0048 Tarsonemid mite associates of *Dendroctonus frontalis*: Implications for the historical biogeography of the southern pine beetle. **John MOSER,** USDA Forest Service, 2500 Shreveport Hwy., Pineville, LA 71360; Jorge MACIAS, Colegio de la Frontera Sur, Carret. Antiguo Aeropuerto Km. 2.5, Apdo. Postal 36, Tapachula, Chiapas 30700, Mexico

10:15 0049 Predation by native phytoseiid mites on the spider mite, *Tetranychus lintearius* (Acari: Tetranychidae), an established biological control agent of gorse (*Ulex europaeus*). **Paul PRATT,** USDA-ARS, 3205 College Ave, Fort Lauderdale, FL 33314-7719

Informal Conference: SOLA Scarab Workers

403 A/B

Organizer and Moderator

William B. Warner, Farnam Companies, 301 W Osborn Rd, Phoenix, AZ 85013

8:30 0050 Introduction. **William WARNER,** Farnam Companies, Inc., 301 West Osborn Road, Phoenix, AZ 85013

8:35 0051 Arthropods and pocket gophers: Developing tunnel vision. **Paul E. SKELLEY,** FSCA FDACS-DPI, P.O. Box 147100, Gainesville, FL 32614-7100

8:55 0052 Carbon fibre and chitin: The beauty of function and design in sports cars and scarabaeines. **Bruce D. GILL,** Entomological Research Services, 4032 Stonecrest Road, RR 2, Woodlawn, ON K0A 3M0, Canada

9:15 0053 A generic level revision of the Macrodactylini, a progress report and commiseration session. **Kerry KATOVICH,** University of Wisconsin-Madison, Dept. of Entomology, 445 Russell Labs, 1630 Linden Drive, Madison, WI 53706

9:35 0054 Identification of chemical defense secretion of the dung beetle *Canthon imitator*. **Alireza ALIABADI,** Illinois State University, 4160 Chemistry, Normal, IL 61790; R. J. BARTELT, USDA, ARS, National Center for Agricultural Utilization Research, Bioactive Agents Research Unit, Peoria, IL 61604; D. W. WHITMAN, Illinois State University, 4120 Biological Sciences, Normal, IL 61790

9:55 0055 A beetle and a ball and the scent of life: Behavioral ecology of *Canton imitator* Brown. **William WARNER,** Farnam Companies, Inc., 301 W. Osborn Road, Phoenix, AZ 85013

10:15 0056 Recent analyses of higher classifications of scarabs: What does it all mean? **Andrew B. T. SMITH,** University of Nebraska, W436 Nebraska Hall, University of Nebraska State Museum, Lincoln, NE 68588-0514

10:35 0057 News and announcements. **William WARNER,** Farnam Companies, Inc., 301 W. Osborn Road, Phoenix, AZ 85013

Section: B. Physiology, Biochemistry, Toxicology, and Molecular Biology

411 C

Organizer and Moderator

Glenn Holbrook, Dept. of Entomology, Pennsylvania State University, 512 ASI Bldg., University Park, PA 16802

8:00 0058 An olfactory receptor protein from tobacco hornworm *Manduca sexta* antennae. **Harland PATCH,** University of Illinois at Urbana-Champaign, Dept. of Entomology, 505 S. Goodwin, Urbana, IL 61801; Kimberly WALDEN, University of Illinois at Urbana-Champaign, Dept. of Entomology, 505 S. Goodwin Ave., Urbana, IL 61801; James NARDI, University of Illinois, Dept. of Entomology, 505 S. Goodwin Ave., Champaign, IL 61801; Hugh ROBERTSON, University of Illinois at Urbana-Champaign, Cell & Structural Biology, Liberal Arts and Sciences, Dept. of Entomology, 505 S. Goodwin Ave., Urbana, IL 61801

8:12 0059 Diversity of odorant binding proteins in antennae of western corn rootworm, *Diabrotica virgifera virgifera*. **Karlene RAMSDELL,** University of Illinois at Urbana-Champaign, Dept. of Entomology, Urbana, IL 61801; Hugh ROBERTSON, University of Illinois at Urbana-Champaign, Dept. of Entomology, Urbana, IL 61801; Stewart BERLOCHER, University of Illinois at Urbana-Champaign, Ecology, Ethology, and Evolution, Liberal Arts and Sciences, Dept. of Entomology, 320 Morrill, 505 S. Goodwin, Urbana, IL 61801

8:24 0060 On-site odor-mixture interactions from heliothine moth antennae II: Physiological characteristics. **Samuel OCHIENG,** Iowa State University, Dept. of Entomology, 411 Science II, Ames, IA 50011; Seong-Gyu LEE, Iowa State University, Dept. of Entomology, 411 Science II, Ames, IA 50011; Thomas BAKER, Iowa State University, Dept. of Entomology, 411 Science II, Ames, Iowa 50011

8:36 0061 Towards development of more discriminative and sensitive electroantennogram. **Kye Chung PARK,** Iowa State University, 411 Science II, Dept. of Entomology, Ames, IA 50011; Samuel OCHIENG, Iowa State University, 1425 Douglas Avenue, Ames, IA 50010; Junwei ZHU, Iowa State University, Dept of Entomology, Iowa State University, Ames, IA 50011; Seong-Gyu LEE, Iowa State University, Dept. of Entomology, 411 Science II, Ames, IA 50011; Thomas BAKER, Iowa State University, Dept. of Entomology, 411 Science II, Ames, IA 50011

8:48 0062 On-site odor-mixture interactions from heliothine moths I: Functional morphology. **Seong-Gyu LEE,** Iowa State University, Entomology, 411 Science II, Ames, IA 50011; Samuel OCHIENG, Iowa State University, 411 Science II, Ames, IA 50011; Thomas BAKER, Iowa State University, Dept. of Entomology, 411 Science II, Ames, IA 50011

9:00 0063 Sex pheromone components of the buck moth, *Hemileuca myia* (Druary) (Lepidoptera: Saturniidae). **J. Steve McELFRESH,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521; Abner HAMMOND, Louisiana State University, Entomology, 552 Life Sciences Building, Baton Rouge, LA 70803; Jocelyn MILLAR, University of California, Riverside, Entomology, Natural and Agricultural Sciences, 100A Chapman Hall, Riverside, CA 92521

9:12 0064 Sex pheromone of an Ontario population of the obliquebanded leafroller, *Choristoneura rosaceana*. **Ashraf EL-SAYED,** Southern Crop Protection and Food Research Centre, Agriculture and Agri-Food Canada, Vineland Station, Vineland, ON L0R 2E0, Canada; H.W. FRASER, Southern Crop Protection and Food Research Centre, Agriculture and Agri-Food Canada, Vineland Station, Vineland, ON L0R 2E0, Canada; R.M. TRIMBLE, Southern Crop Protection and Food Research Centre, Agriculture and Agri-Food Canada, Vineland Station, Vineland, ON L0R 2E0, Canada

9:24 Break

9:36 0065 Pheromone chemistry, pheromone emission and pheromone-mediated behavior in insecticide-susceptible and insecticide-resistance obliquebanded leafrollers *Choristoneura rosaceana*. **R. M. TRIMBLE,** Southern Crop Protection and Food Research Centre, Agriculture and Agri-Food Canada, Vineland Station, Vineland, ON L0R 2E0, Canada; H. W. FRASER, Southern Crop Protection and Food Research Centre, Agriculture and Agri-Food Canada, Vineland Station, Vineland, ON L0R 2E0, Canada; Ashraf EL-SAYED, Southern Crop Protection and Food Research Centre, Agriculture and Agri-Food Canada, Vineland Station, Vineland, ON L0R 2E0, Canada

9:48 0066 Regulation of sex pheromone biosynthesis in the female yellow mealworm, *Tenebrio molitor* (Coleoptera: Tenebrionidae). **Desiree VAN DERWEL,** University of Winnipeg, Dept. of Chemistry, 515 Portage Ave, Winnipeg, MB R3B 2E9, Canada; Raymond BACALA, University of Winnipeg, Dept. of Chemistry, 515 Portage Avenue, Winnipeg, MB R3B 2E9, Canada

10:00 0067 Plant perception of insect attack: The interaction of volicitin and plant oxylipin signals associated with induced volatile production in corn (*Zea mays*). **Eric SCHMELZ,** University of Florida, USDA-ARS, P.O. Box 14565, Gainesville, FL 32604-2565; James TUMLINSON, 1700 SW 23re Drive, Gainesville, FL 32608

10:12 0068 A functional genomics analysis of plant chitinases. **Donald WARKENTIN,** Michigan State University, Entomology, 1108B University Village, East Lansing, MI 48823-6009

10:24 0069 Effects of diflubenzuron and hexaflumoron on internal cuticular structures of *Coptotermes formosanus* (Isoptera: Rhinotermitidae). **Maria ROJAS,** USDA ARS, P.O. Box 19687, New Orleans, LA 70179-0687; Juan MORALES-RAMOS, USDA ARS SRRC, 1100 Robert E Lee Blvd, New Orleans, LA 70124-4305; Helga SITTERTZ-BHATKAR, Texas A&M University, Electron Microscopy Center, College Station, TX 77843

10:36 0070 Cannabis as a botanical pesticide: Are cannabinoid receptors involved? **John MCPARTLAND,** University of Vermont, Dept. of Family Practice, College of Medicine, 53 Washington Street Extension, Middlebury, VT 05753; Michelle GLASS, NIDOCD, 5 Research Court, Rockville, MD 20850; Alison MERCER, University of Otago, Zoology, P.O. Box 56, Dunedin, New Zealand

10:48 0071 Sex-related susceptibility of Oriental fruit moth to organophosporus and carbamate insecticides. **Peter SHEARER,** Rutgers, The State University of New Jersey, Agricultural Research & Extension Center, 121 Northville Rd, Bridgeton, NJ 08302-5919; Khawja USMANI, Dept. of Toxicology, North Carolina State University, P.O. Box 7633, Raleigh, NC 27695

11:00 0072 Expression and induction of three family 4 cytochrome P450 (CYP4) genes cloned from insecticide resistant and susceptible western corn rootworms. **Michael SCHARF,** Cornell University, Entomology, Barton Laboratory, New York State Agriculture Experiment Station, Geneva, NY 14456; Srinivas PARIMI, University of Nebraska, Dept. of Entomology, Lincoln, NE 68583; Blair SIEGFRIED, University of Nebraska, 202 Plant Industry Bldg., Lincoln, NE 68583-0812; Lance MEINKE, University of Nebraska, Dept. of Entomology, Lincoln, NE 68583-0816

Section: Cb. Apiculture and Social Insects

409 A/B

Organizer and Moderator

Robert Jeanne, Dept. of Entomology, University of Wisconsin, Madison, WI 53706

8:00 0073 Sex determination and multiple mating in honey bees. **David TARPY,** Univ. of California, Dept. of Entomology, Davis, CA 95616; Robert PAGE, University of California, Davis, Univ. of California, Dept. of Entomology, Davis, CA 95616-8584

8:12 0074 Queen and pheromonal factors influencing comb construction by simulated honey bee (*Apis mellifera*) swarms. **Monique LEDOUX,** Simon Fraser University, Dept. of Biological Sciences, Burnaby, BC V5A 1S6, Canada; Mark WINSTON, Simon Fraser University, Biological Sciences, Burnaby, BC V5A 1S6, Canada; Heather HIGO, Simon Fraser University, Dept. of Biological Sciences, Burnaby, BC V5A 1S6, Canada; Christopher KEELING, Simon Fraser University, Chemistry, Burnaby, BC V5A 1S6, Canada; Keith SLESSOR, Simon Fraser University, Chemistry, Burnaby, BC V5A 1S6, Canada; Yves LECONTE, I.N.R.A., Unite de Zoologie, Laboratoire de Biologie de L'Abeille, Avignon France

8:24 0075 Effects of queenlessness and queen mandibular pheromone (QMP) on comb construction by honey bees (*Apis mellifera* L.). **G. W. OTIS,** University of Guelph, Environmental Biology, Guelph, ON N1G 2W1, Canada; S. MAKVANDI-NEJAD, University of Guelph, Environmental Biology, Guelph, ON N1G 2W1, Canada; H. MATTILA, University of Guelph, Dept. of Environmental Biology, Guelph, ON N1G 2W1, Canada; H. Khalegi MOGHADAM, University of Guelph, Dept. of Mathematics and Statistics, Guelph, ON N1G 2W1, Canada

8:36 0076 Modulation of sucrose response thresholds and foraging behavior. **Tanya PANKIW,** University of California, Davis, Dept. of Entomology, Davis, CA 95616; Robert E. Page, University of California, Dept. of Entomology, Davis, CA 95616

8:48 0077 The behavior of workers in queenless Africanized honey bee colonies. **Gloria DEGRANDI-HOFFMAN,** USDA ARS, 2000 E Allen Rd, Tucson, AZ 85719-1520; Stanely SCHNEIDER, University of North Carolina at Charlotte, Dept. Biology, Charlotte, NC 28223

9:00 0078 Age or experience: Foraging performance of honey bees. **Tugrul GIRAY,** University of Puerto Rico, Dept. of Biology, P.O. Box 23360, San Juan, PR 00931-3360; Lori STEVENS, University of Vermont, Dept. of Biology, 120A Marsh Life Sciences Building, Burlington, VT 05405

9:12 0079 Learning and memory in honey bee nestmate recognition. **Michael BREED,** University of Colorado at Boulder, Environmental, Population, and Organismic Biology, Boulder, CO 80309

9:24 0080 Behavior of African vs. North American honey bee subspecies toward the small hive beetle. **Patti ELZEN,** USDA ARS, 2413 E US Highway 83, Weslaco, TX 78596-8344; James BAXTER, USDA-ARS, 2413 E. Hwy. 83, Weslaco, TX 78596; Peter NEUMANN, Rhodes University, Dept. Entomology and Zoology, Grahamstown, South Africa; Alex SOLBRIG, Rhodes University, Dept. Entomology and Zoology, Grahamstown, South Africa; Christian PIRK, Rhodes University, Dept. Entomology and Zoology, Grahamstown, South Africa; Randall HEPBURN, Rhodes University, Dept. Entomology and Zoology, South Africa

9:36 0081 Factors affecting oviposition by the small hive beetle *Aethina tumida*. **Jeff PETTIS,** USDA ARS Bee Research Lab, Bldg 476 Barc-E, Beltsville, MD 20705

9:48 0082 The honey bee brain EST project: Tools for sociogenomics. **Gene ROBINSON,** University of Illinois at Urbana-Champaign, 505 S. Goodwin, Urbana, IL 61801

10:00 Break

10:12 0083 Adult mortality rates and the costs of swarm emigration in a swarm-founding social wasp. **Andrew BOUWMA,** University of Wisconsin-Madison, 1630 Linden Drive, Madison, WI 53706; Peter BOUWMA, Calvin College, Grand Rapids, MI ; Kory KRAMER, Kalamazoo College, Kalamazoo, MI ; Andrew CARMICHAEL, University of Wisconsin, Madison, WI; Robert JEANNE, University of Wisconsin-Madison, Dept. of Entomology, Madison, WI 53706

10:24 0084 Colony status and its effect on adult size in males of the wasp *Polistes metricus* (Say). **Sean COLLINS,** University of Illinois at Urbana-Champaign, 320 Morrill Hall, 505 South Goodwin Avenue, Urbana, IL 61801

10:36 0085 The evolution of caste dimorphism in epiponine wasps (Vespidae: Polistinae). **Fernando NOLL,** The Ohio State University, Entomology, Museum of Biological Diversity, 1315 Kinnear Road, Columbus, OH 43212

10:48 0086 Are mass-recruiting ants best at retrieving big food? A test of foraging models with the argentine ant, *Linepithema humile*. **T'ai ROULSTON,** North Carolina State University, Dept. of Entomology, Raleigh, NC 27695-7613; Jules SILVERMAN, North Carolina State University, Dept. of Entomology, 3314 Gardner Hall, Raleigh, NC 27695

11:00 0087 The effect of cue-transfer modality on the dynamics of gestalt odor formation in ants. **Victoria SOROKER,** Volcani Center, Institute for Plant Protection, Dept. of Entomology, Beit Dagan, 50250, Israel; Tovit SIMON, Tel Aviv University, Dept. of Zoology, Ramat Aviv, Tel Aviv, 69978, Israel; Alain LENOIR, Universite Francois Rabelais, Faculte des Sciences, IRBI-CNRS, UPRES A 6053, Tours, 37000, France; Abraham HEFETZ, Tel Aviv University, Ramat Aviv, Tel Aviv, 69978, Israel

11:12 0088 Social separation increases brain level of dopamine in *Solenospsis invicta* virgin females. **Raphael BOULAY,** Louisiana State University, Entomology, 402 Life Science Building, Baton Rouge, LA 70803

Section: Cd. Behavior and Ecology

411 A/B

Organizers and Moderators

Vince Nealis, Canadian Forest Service, Pacific Forestry Centre, 506 West Burnside Road, Victoria, BC, Canada V8Z 1M5; Elizabeth Tomlin, University of North Carolina at Greensboro, Dept. of Biology, P.O. Box 26174, Greensboro, NC 27402-6174

8:00 0089 Development of a satellite-based risk rating system for southern pine beetle. **Shane CHERRY,** University of Idaho, Dept. of Geography, Moscow, ID 83844; Stephen COOK, University of Idaho, University of Idaho, Dept. Forest Resources, Moscow, ID 83844-1133; Karen HUMES, University of Idaho, Dept. of Geography, Moscow, ID 83844; James GULDIN, USDA-Forest Service, Southern Research Station, P.O. Box 1270, Hot Springs, AR 71902

8:12 0090 The role of Armillaria root rot in host selection by the pine engraver, *Ips pini*. **Allan CARROLL,** Canadian Forest Service, Pacific Forestry Centre, 506 W. Burnside Rd., Victoria, BC V8Z 1M5, Canada

8:24 0091 Effects of predators on the population dynamics and forest impact of the pine engraver, *Ips pini* (Coleoptera: Scolytidae). **Nadir ERBILGIN,** University of Wisconsin-Madison, Entomology, 1630 Linden Drive, Russell Laboratories 345, Madison, WI 53706; Kenneth RAFFA, University of Wisconsin-Madison, Dept. of Entomology, Madison, WI 53706

8:36 0092 Within-tree impacts of *Thanasimus dubius* on the bark beetle *Ips pini* under experimentally controlled predator and herbivore densities. **Brian AUKEMA,** University of Wisconsin-Madison, Dept. of Entomology, 345 Russell Laboratories, Madison, WI 53706; Kenneth RAFFA, University of Wisconsin-Madison, Dept. of Entomology, Madison, WI 53706

8:48 0093 Diversity of bark beetle-associated yeasts. **Diana SIX,** Univ. of Montana, School of Forestry, Missoula, MT 59812

9:00 0094 Biotic and abiotic elicitors of traumatic resinosis in leaders of Sitka spruce. **Elizabeth TOMLIN,** University of North Carolina at Greensboro, P.O. Box 26174, Dept. of Biology, Greensboro, NC 27402-6174; John BORDEN, Simon Fraser University, Dept. of Biological Sciences, 8888 University Dr., Burnaby, BC V5A 1S6, Canada; Rene ALFARO, Canadian Forest Service, Pacific Forestry Centre, 506 West Burnside Dr., Victoria, BC V8Z 1M5, Canada; Andrea TANAKA, Simon Fraser University, Dept. of Biological Sciences, 8888 University Dr., Burnaby, BC V5A 1S6, Canada

9:12 0095 Étude de la ponte du charancon du pin blanc (*Pissodes strobi*) sur des flèches terminales d'épinette de Norvège (*Picea abies*) récoltées en hiver. **Katherine SIOUÏ,** Centre de Foresterie des Laurentides, Entomologie forestière, Université Laval, 1055, rue du PEPS, C.P. 3800, Sainte-Foy, Québec G1V 4C7, Canada; Robert LAVALLEE, Canadian forestry service, P.O. Box 3800, 1055 du PEPS, Ste-Foy, Quebec G1V4C7, Canada

9:24 0096 Is the colonial behavior of balsam fir sawfly adaptive? **Lynne ANSTEY,** Population Ecology Group, Faculty of Forestry and Environmental Management, University of New Brunswick, Fredericton, NB E3B-6C2, Canada

9:36 Break

9:48 0097 Volatile emissions of slash and loblolly pines during the first growing season and their relationship to damage by the Nantucket pine tip moth. **Christopher ASARO,** University of Georgia, 413 Biological Sciences, Athens, GA 30602

10:00 0098 Consequences of variation in phenolic compounds: Preference and performance of herbivores on turkey oak. **Rebecca KLAPER,** University of Georgia, Institute of Ecology, Athens, GA 30602; Mark HUNTER, University of Georgia, Ecology, Boyd Grad Stud Res Center, Athens, GA 30602

10:12 0099 The impact of the introduced basswood thrips (*Thrips calcaratus* Uzel) on forest health in the Great Lakes region. **Shahla WERNER,** University of Wisconsin, Entomology, Ag and Life Sciences, 345 Russell Labs, 1630 Linden Drive, Madison, WI 53706; Kenneth RAFFA, University of Wisconsin-Madison, Entomology, College of Agricultural and Life Sciences, Madison, WI 53706

10:24 0100 A density-dependent host-plant interaction for the jack pine budworm, *Choristoneura pinus*. **Vince NEALIS,** Canadian Forest Service, Pacific Forestry Centre, 506 W. Burnside Road, Victoria, BC V8Z 1M5, Canada; Steen MAGNUSSEN, Canadian Forest Service, Pacific Forestry Centre, 506 W. Burnside Road, Victoria, BC V8Z 1M5, Canada; Anthony HOPKIN, Canadian Forest Service, Great Lakes Forestry Centre, P.O. Box 490, Sault Ste-Marie, ON P6A 5M7, Canada

10:36 0101 Effect of plantation forestry on arthropod assemblages. **Neil HOLLIDAY,** University of Manitoba, Dept. of Entomology, Winnipeg, MB R3T 2N2, Canada; Brent ELLIOTT, University of Manitoba, Dept. of Entomology, Winnipeg, Manitoba R3T 2N2, Canada; Rheal LAFRENIERE, University of Manitoba, Dept. of Entomology, Winnipeg, Manitoba R3T 2N2, Canada; Richard WESTWOOD, University of Winnipeg, Dept. of Biology, 515 Portage Avenue, Winnipeg, Manitoba R3B 2E9, Canada

10:48 0102 Mortality in longleaf pine stands: Interactions among prescribed fire, bark beetles and pathogenic root fungi. **Christopher FETTIG,** Univ. of Georgia, 413 Biological Sci Bldg, Athens, GA 30605

11:00 0103 Hosts and seasonal activity of cedar-boring beetles (Coleoptera: Cerambycidae) in southern New England. **Chris MAIER,** Conn Agric Exp Stn, P.O. Box 1106, New Haven, CT 06504-1106

11:12 0104 Coleoptera biodiversity in *Pinus radiata* plantations in New Zealand. **Eckehard BROCKERHOFF,** New Zealand Forest Research Institute, P.O. Box 29237, Christchurch, 8004, New Zealand; Chris ECROYD, New Zealand Forest Research Institute, Private Bag 3020, Rotorua, New Zealand; Alan LECKIE, New Zealand Forest Research Institute, P.O. Box 29237, Christchurch, New Zealand; Diane JONES, University of Canterbury, School of Forestry, Private Bag 4800, Christchurch, New Zealand

11:24 0105 Formosan termites (*Coptotermes formosanus*) in trees. **Adrian JUTTNER,** Adrian's Tree Service, Inc., 2031 Farragut St, New Orleans, LA 70114

Linnaean Games—Preliminary Round

404AB

1:30p.m. - 4:00p.m.

Program Symposium: Insect Endosymbionts: Critical Roles

411 A/B

Organizers and Moderators

Tom Miller, Univ. of California, Dept. of Entomology, Riverside, CA 92521; Lowell R. Nault, Ohio Ag. Research and Development Center, Ohio State University, Wooster, OH

1:00 0106 Introduction. **Lowell NAULT,** Ohio State University, Entomology, College of Biological Sciences, 1680 Madison Avenue, Columbus, OH 43210

1:02 0107 Mechanisms of selection of endosymbiotic bacteria by their hosts. **Margaret MCFALL-NGAI,** Pacific Biomedical Research Center, University of Hawaii, Honolulu, HI 96813

1:27 0108 Mutualism between endosymbiotic bacteria and weevils. **Abdelaziz HEDDI,** Biologie Appliquee, INSA de Lyon, bat. 406, 20, Av. Albert Einstein, Villeurbanne, 69621, France

1:52 0109 Diversity and origin of insect endosymbionts. **Takema FUKATSU,** National Institute of Bioscience and Human-Technology, Higashi, Tsukuba, Ibaraki, Tsukuba, Ibaraki 305-8566, Japan

2:17 0110 The function of symbiotic bacteria in aphids. **Angela DOUGLAS,** University of York, Dept. of Biology, P.O. Box 373, York, YO1 5DD, United Kingdom

2:42 Break

2:52 0111 Co-localization and other interactions between enteric bacteria in the tephritid gut. **Carol LAUZON,** California State University, Hayward, Dept. of Biological Sciences, 25800 Carlos Bee Blvd., Hayward, CA 94542

3:17 0112 Tsetse flies: A haven for microorganisms. **Serap AKSOY,** Yale University, Epidemiology & Public Health, School of Medicine, 333 Cedar Street, 604 LEPH, New Haven, CT 06520

3:42 0113 Wolbachia endosymbionts. **Stephen DOBSON,** University of Kentucky, S225 Ag Science Center North, Lexington, KY 40546

4:07 0114 Paratransgenesis. **Frank RICHARDS,** Yale University, Internal Medicine/Immunology, MacArthur Center, 700 LEPH, New Haven, CT 06511-1333

Concluding remarks. **Lowell NAULT,** Ohio State University, Entomology, College of Biological Sciences, 1680 Madison Avenue, Columbus, OH 43210

Formal Conference: Acarology: Soil Mites: Systematics, Biodiversity and Ecology in Four Dimensions

406 A

Organizers and Moderators

Hans Klompen, Ohio State Univ., Museum of Biol Diversity, 1315 Kinnear Rd, Columbus, OH 43212; Valerie Behan-Pelletier, Systematic Acarology Unit, Biodiversity Program, ECORC, Agriculture and Agri-Food Canada, K.W. Neatby Bldg., 960 Carling Ave., Ottawa, ON Canada K1A 0C6

12:30 0115 Ascid mites (Acari: Mesostigmata) of soil and adjacent habitats in lowland tropical rainforest of La Selva, Costa Rica: An example of underestimated acarine biodiversity. **Evert LINDQUIST,** Agriculture and Agri-Food Canada, Eastern Cereal and Oilseed Research Centre, K.W. Neatby Building, Ottawa, ON K1A 0C6, Canada

1:00 0116 Soil-dwelling astigmatid mites: Ecological shifts from patchy to continuous habitats. **Barry OCONNOR,** University of Michigan, Museum of Zoology, Ann Arbor, MI 48109-1079

1:30 0117 Constraint and adaptation in the evolution of oribatid mite defense. **Roy NORTON,** State University of New York, College of Environmental Science & Forestry, 1 Forestry Drive, Syracuse, NY 13210

2:00 0118 Patterns of diversity in the Ceratozetoidea (Acari: Oribatida): A global assessment. **Valerie BEHAN-PELLETIER,** Agriculture and Agri-Food Canada, Biodiversity Program, Research Branch, Ottawa, ON K1A 0C6, Canada

2:30 Break

2:40 0119 Mites on a rampage: Exploration of arboreal suspended soils in ancient rainforests. **Neville WINCHESTER,** University of Victoria, Dept. of Biology, P.O. Box 3020, Victoria, British Columbia V8W 3N5, Canada

3:10 0120 The oribatid mite assemblage of decomposing litter: Maintaining diversity in a dynamic landscape. **Randi HANSEN,** University of South Carolina, Dept. Biological Sciences, Columbia, SC 29208,

3:40 0121 The creative mosaic - microarthropods as contributors to plant assemblage structure. **Liam HENEGHAN,** DePaul University, Environmental Science Program, 2325 North Clifton Avenue, Chicago, IL 60614-3207

Formal Conference: Genetic and Molecular Biology: Insect Molecular Genetics 2000: Transforming Entomology

407 C

Organizers and Moderators

John J. Peloquin, Univ. of California, Dept. of Entomology, Riverside, CA 92521; Mark Q. Benedict, CDC/NCID/DPD, Entomology MS F-22, Chamblee, GA 30341

12:30 0122 Transgenesis of insects-introduction. **John PELOQUIN,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521

12:40 0123 The piggyBac transposon: A transformation vector for the new millenium. **Malcolm FRASER,** University of Notre Dame, Biological Sciences, Notre Dame, IN

1:20 0124 Engineering mosquito resistance to malaria parasites. **Anthony JAMES,** University of California, Irvine, Molecular Biology and Biochemistry, 7700\380 University Tower, Irvine, CA 92697; Margareth de la CAPURRO, Dept. of Molecular Biology and Biochemistry, University of California, Irvine, CA ; J. COLEMAN, Dept. of Molecular Biology and Biochemistry, University of California, Irvine, CA ; K. E. OLSON, Dept. of Microbiology, Colorado State University, Ft. Collins, CO ; B. BEERNSTEN, Dept. of Molecular Biology and Biochemistry, University of California, Irvine, CA ; E. ROCHA, Departomento de Patologia, Universidad Federal de Alagoas, Maceio, Algoas, Brazil; A. U. KRETTLI, Centro de Pesquisas, Rene Rachou, FIOCRUZ, Belo Horizonte, M.G., Brazil

2:00 0125 You got the transformation working, so what comes next? **Alexander RAIKHEL ,** Michigan State University, Plant Biology, S 134 Plant Biology Lab, East Lansing, MI 48824

2:40 0126 The *Anopheles gambiae* genome: A missing link in the malaria triad. **Charles ROTH,** Lab de Biochimie & Biol. Molec. des Insectes, Institut Pasteur, Paris, cedex 15 75724, France

3:20 0127 Using *Minos* as a genetic engineering vector in insects. **Charalambos (Babis) SAVAKIS,** Crete Medical School/IMBB-FORTH, P.O. Box 1527, Heraklion, Crete 71110, Greece

4:00 0128 Genetic transformation of *Anopheles gambiae*. **Mark BENEDICT,** Center for Disease Control, Div. Parasitic Diseases, MS F-22, 4770 Buford Hwy., Atlanta, GA 30341; Genelle GROSSMAN, CDC/NCID/DPD, Entomology Branch, Chamblee, GA ; Christina RAFFERTY, CDC/NCID/DPD, Entomology Branch, Chamblee, GA ; Theresa DEAREN, CDC/NCID/DPD, Entomology Branch, Chamblee, GA ; Malcolm FRASER, University of Notre Dame, Biological Sciences, Notre Dame, IN

Section Symposium A1: Coleopteran Systematics: Perspectives and Philosophical Approaches

408 B

Organizers and Moderators

Paul Johnson, South Dakota State Univ., Insect Research Collection, Box 2207-A, Brookings, SD 57007; Robert Anderson, Canadian Museum of Nature, P.O. Box 3443, Station D., Ottawa, ON Canada K1P 6P4

1:00 0129a Introduction. **Paul JOHNSON,** Insect Research Collection, Box 2207A, South Dakota State University, Brookings, SD 57007

1:10 0129b Scientific contributions by John F. Lawrence. **Adam SLIPINSKI,** CSIRO Division of Entomology, GPO Box 1700, Canberra ACT 2601, Australia

1:55 0129c Biodiversity studies in Coleoptera: What is out there? **Terry ERWIN,** Department of Entomology, Smithsonian Institution, Washington, D.C. 20560

2:40 Break

2:55 0129d Impact and value of molecular studies in Coleopteran systematics. **Brian FARRELL,** Department of Entomology-MCZ, 26 Oxford St., Harvard University, Cambridge, MA 02138

3:40 0129e Mycological oddballs: An introduction to the Laboulbeniales and their beetle hosts. **Alex WEIR**, Faculty of Environmental and Forest Biology, State University of New York, Syracuse, NY 13210

4:25 0129f What's on the Horizon?: Coleopteran systematics in the 21st Century. **Robert ANDERSON,** Entomology Department, Canadian Museum of Nature, P.O. Box 3443, Stn. D, Ottawa, ON K1P 6P4

Formal Conference: Vegetable Entomology: Applied Vegetable IPM Relative to Crop Management

408 A

Organizer and Moderator

David Riley, Costal Plain Stn, P.O. Box 748, Dept. of Entomology, Tifton, GA 31793

1:00 0130 Introduction. **David Riley,** University of Georgia, Dept. of Entomology, P.O. Box 748, Tifton, GA 31793

1:05 0131 Implementing cabbage IPM: The value of on-farm research. **Eric BURKNESS,** 3050 Old Highway 8, Apt 112, Roseville, MN 55113; William HUTCHISON, University of Minnesota, Extension Entomology, 219 Hodson Hall 1980 Folwell Ave., St. Paul, MN 55108; Gary PAHL, Pahl's Market, Apple Valley, MN

1:23 0132 IPM/ICM in Ontario's vegetable crops. **Jim CHAPUT,** Ontario Ministry of Agriculture, Food & Rural Affairs, 1 Stone Rd. W., Guelph, ON N1G4Y2, Canada

1:41 0133 Pest management in vegetable crops in Israel. **Dan GERLING,** Dept. of Zoology, The George S. Wise Faculty of Life Sciences, Tel Aviv University, Ramat Aviv, 69978, Israel; Reuben AUSHER, Dept. of Crop Protection, Extension Service, Ag. Rural Development, P.O. Box 28, Bet Dagan, 50250, Israel

1:59 0134 Pest management for intergrated and organic vegetable cropping systems in the Desert Southwest. **John PALUMBO,** University of Arizona, Yuma Valley Ag. Center, 6425 W 8th St., Yuma, AZ 85364; Nick TOSCANO, University of California, Dept. of Entomology, Riverside, CA 92521; David KERNS, University of Arizona, Yuma Agricultural Center, 6425 W. 8th St., Yuma, AZ 85364; Eric NATWICK, University of California, Cooperative Extension, Imperial County, 1050 E. Holton Road, Holtville, CA 92250

2:17 0135 Potato crop management - new approaches for achieving reductions in pesticide reliance. **Jeff WYMAN,** University of Wisconsin, Dept. of Entomology, Madison, WI 53706; Walter STEVENSON, University of Wisconsin, Agriculture and Agribusiness, Cooperative Extension, Dept. of Plant Pathology, Madison, WI 53706

2:35 0136 IPM for onions: Present and future challenges. **Michael HOFFMANN,** Cornell University, Dept. of Entomology, Insectary Bldg., Ithaca, NY 14853-0999

2:53 Break

3:08 0137 Sweet potato insect management in the Southeastern U.S.A. **Geoff ZEHNDER,** Clemson University, Dept. of Entomology, Clemson, SC 29634; Kenneth SORENSEN, North Carolina State University, Box 7626, Dept. of Entomology, Raleigh, NC 27695; Richard STORY, Louisiana State University, Dept. of Entomology, 402 Life Science Bldg., Baton Rouge, LA 70803

3:26 0138 Evaluation of various control tactics in managing populations of the pepper weevil, *Anthonomus eugenii* Cano, (Coleoptera: Curculionidae). **Dakshina SEAL,** University of Florida, TREC IFAS, 18905 SW 280 St., Homestead, FL 33031; Philip STANSLY, University of Florida, Immokalee, FL 32142; David SCHUSTER, University of Florida, Gulf Coast Research & Education Center, 60th Street East, Bradenton, FL 34253

3:40 0139 Using trap crops to manage insect pests in bell pepper in New England. **Jude BOUCHER,** University of Connecticut, Cooperative Extension System, 24 Hyde Ave., Vernon, CT 06066

3:54 0140 Integrated management for cucurbit crops: A national center for cucurbit research and education. **Jonathan EDELSON,** Oklahoma State University, Wes Watkins Ag. Res. & Ext. Center, P.O. Box 128, Lane, OK 74555; Sam PAIR, USDA ARS SCARL P.O. Box 159, Lane, OK 74555

4:08 0141 Impact and management of tomato yellow leafcurl virus (TYLCV) in southwest Florida. **Phil STANSLY,** University of Florida, Dept. of Entomology, 2686 State Rd. 29 N, Immokalee, FL 34142-9515

4:22 0142 Management of thrips - vectored tomato spotted wilt tospovirus in tomato. **David RILEY,** University of Georgia, Dept. of Entomology, P.O. Box 748, Tifton, GA 31793; Hanu PAPPU, University of Georgia, CPES Dept. Plant Pathology, P.O. Box 748, Tifton, GA 31793

4:36 0143 Kaolin particle film application for suppressing boll weevil, *Anthonomus grandis* Boheman (Coleoptera: Curculionidae), injury to cotton. **Allan SHOWLER,** Kika De La Garza, 2413 E US Highway 83 # 201, Weslaco, TX 78596-8344

4:48 0144 Final business meeting of the Formal Vegetable Conference. **David KERNS,** University of Arizona, Dept. of Entomology, Yuma Agricultural Center, 6424 W 8th Street, Yuma, AZ 85364

Informal Conference: Cranberry Entomologists

405 A/B

Organizer and Moderator

Sheila Fitzpatrick, Agriculture and Agri-Food Canada, Pacivic Agri-Food Research Centre, P.O. Box 1000, 6947 Hwy. 7, Agassiz, B.C.

1:30 0145 Introduction and discussion. **Sheila FITZPATRICK,** Pacific Agric Food Res Ctr, P.O. Box 1000, Agassiz, BC V0M 1A0, Canada

Informal Conference: The Art of Nest Architecture

403 A/B

Organizers and Moderators

Holly Downing, Black Hills St Univ., Dean College of Arts And Sci, P.O. Box 9003, Spearfish, SD 57799; Theresa Pitts-Singer, U.S. Forest Service, Southern Research Lab., 320 Green St., Athens, GA 30602

1:00 0146 Introduction. **Holly DOWNING,** 1200 University, Unit 9003, Spearfish, SD 57799-9003

1:10 0147 Insect construction: Messages from an architectural menagerie. **Mike HANSELL,** Institute of Biology and Life Sciences, University of Glasgow, Glasgow, Scotland G128QQ, United Kingdom

1:30 0148 The silken houses of the Lepidoptera. **Dessie UNDERWOOD,** Dept. of Biological Sciences, California State University, Long Beach, Ca 90840; Terrence FITZGERALD, Suny Cortland, P.O. Box 2000, Cortland, NY 13045

1:50 0149 The diversity of nest architecture of silk wasps. **Robert MATTHEWS,** Dept. of Entomology, University of Georgia, Athens, GA 30602

2:10 0150 Pattern formation processes in the nests of social insects. **Scott CAMAZINE,** Dept. of Entomology, Pennsylvania State University, University Park, PA 16802

2:30 0151 Decentralized control in nest construction: Decisions on the basis of limited intelligence and local information. **Istvan KARSAI,** Dept. of Biology, 8001 Nat. Bridge, St. Louis, MO 63121

2:50 0152 Nest construction in *Polybia occidentalis*. **Robert JEANNE,** Dept. of Entomology, 237 Russell Labs, Madison, WI 53706

3:10 Break

3:30 0153 Nest architecture and windows to society. **John WENZEL,** Dept. of Entomology, Ohio State University, Columbus, OH 43210-1220

3:50 0154 Subterranean ant nests: The art of creating nothing out of something. **Walter TSCHINKEL,** Dept. of Biological Sciences, Florida State University, Tallahassee, FL 32306

4:10 0155 Fire ant mounds: Solar collectors for thermoregulation of a subtropical ant. **Sanford PORTER,** USDA ARS CMAVE, P.O. Box 14565, Gainsville, FL 32604

4:30 0156 Keep cool?: Thermoregulation in mound-building termites, trade-offs between ambient conditions and gas exchange. **Judith KORB,** CSIRO, Tropical Ecosystems Research Centre, Winnellie, NT 0822, Australia

4:50 0157 Concluding remarks. **Theresa PITTS-SINGER,** U.S. Forest Service, Southern Research Laboratory, Athens, GA 30602

Section: D. Medical and Veterinary Entomology

411 C

Organizers and Moderators

Steven A. Juliano, Dept. of Biological Sciences, FHS 206, Illinois State University, Normal, IL 61780; Roger D. Moon, Dept. of Entomology, 219 Hodson Hall, University of Minnesota, 1980 Folwell Ave., St. Paul, MN

12:45 0158 Genetic diversity among populations of *Ixodes scapularis* ticks in Baltimore County, Maryland. **Douglas NORRIS,** Johns Hopkins University, 615 N Wolfe St Rm 5008, Baltimore, MD 21205-2103

12:57 0159 A risk map for *Ixodes scapularis* and Lyme disease in the north-central U.S. **Marta GUERRA,** Univesity of Illinois at Urbana Champaign, College of Veterinary Medicine, 2001 S. Lincoln, Urbana, IL 61802; Cortinas ROBERTO; Carl JONES, University of Illinois at Urbana-Champaign, College of Veterinary Medicine, 2001 S. Lincoln, Urbana, IL 61802,; Ashley STANCIL, University of Wisconsin-Madison, Dept. of Entomology, Madison, WI 53703-2318; Edward WALKER, Michigan State University, Natural Science, East Lansing, MI 48824; Susan PASKEWITZ, University of Wisconsin-Madison, Dept. of Entomology, Madison, WI 53703; Beck LOUISA, NASA Ames Research Center; Matt BOBO, NASA Ames Research Center; Uriel KITRON, University of Illinois at Urbana-Champaign, 2001 S Lincoln Ave, College of Vet Med, Urbana, IL 61802-6178

1:09 0160 Purification, identification and characterization of a small antimicrobial peptide from the hemolymph of a tick, *Dermacentor variabilis* active against *Borrelia burgdorferi* and *Bacillus subtilis*. **Daniel SONENSHINE,** Old Dominion University, Biological Sciences, College of Sciences, Norfolk, VA 23529; Wayne HYNES, Old Dominion University, Biological Sciences, MGB, 202F, Norfolk, VA 23529-0266; Robert JOHNS, Old Dominion University, Norfolk, VA 23529

1:21 0161 An interactive online database for secure storage and reporting of arbovirus information. **Dawn WESSON,** Tulane University, Public Health & Tropical Medicine, Tulane Medical Center, New Orleans, LA 70112; Bryan SHELBY, Tulane Medical Center, Dept. Tropical Medicine, 1430 Tulane Ave., SL-29A, New Orleans, LA 70112

1:33 0162 *Drosophila melanogaster* as a model to study mosquito/*Plasmodium* interactions. **Adriana COSTERO,** NIAID, National Institutes of Health, 4 Center Drive, MSC 0425, Bethesda, MD 20892-0425; Mohammed SHAHABUDDIN, NIAID, National Institutes of Health, 4 Center Drive, MSC 0425, Bethesda, MD 20892-0425

1:45 0163 The cost of malaria to mosquitoes: A co-evolutionary game. **Bernard ROITBERG,** Simon Fraser University, Dept. of Biol Sci, Burnaby, BC V5A 1S6, Canada; Robert ANDERSON, Simon Fraser University, Biosciences, 8888 Univ. Dr., Burnaby, BC V5A 1S6, Canada

1:57 0164 Spatial heterogeneity in *Aedes aegypti* population density and dengue virus transmission in Iquitos, Peru. **Thomas W. SCOTT,** University of California, Dept. of Entomology, Davis, CA 95616; Amy MORRISON, University of California, Dept. of Entomology, Davis, CA 95616; Kevin RUSSELL, NAMRID, Virology Dept., Unit 3800, APO AA 34031, Lima, Peru; Doug WATTS, NAMRID, Virology Dept., Unit 3800, APO 34031, Lima, Peru; Arthur GETIS, San Siego State University, Dept. of Geography, San Diego, CA ; Dana FOCKS, USDA, 1600/1700 SW 23rd Drive, Gainesville, FL 32604; Carlos CALAMPA, Direccion de Salud de Loreto, Av. 28 de Julio, Iquitos, Peru; Carla BLOCK, NAMRID, Virology Dept., Unit 3800, APO AA 34031, Lima, Peru

2:09 0165 Lab evaluation of a novel control method for *Aedes albopictus* and *Aedes triseriatus*. **Charles APPERSON,** North Carolina State University, Dept. of Entomology, Campus Box 7647, Raleigh, NC 27695-7647; Billy CHISM, North Carolina State University, 3101 Walnut Creek Pkwy, Apt P, Raleigh, NC 27606-3604

2:21 0166 A test for differential competitive effects of *Aedes albopictus* on *Aedes aegypti* at multiple sites in Florida. **Steven A. JULIANO,** Illinois State University, Dept. of Biological Sciences, Normal, IL 61790-4120; L. Philip LOUNIBOS, University of Florida, AREC-Vero B, College of Agriculture, Florida Medical Entomology Laboratory, 200 9th St SE, Vero Beach, FL 32962-4699; George F. O'MEARA, University of Florida, FMEL/VB, College of Agriculture, Florida Medical Entomology Laboratory, 200 9th St SE, Vero Beach, FL 32962-4699

2:33 0167 Field evaluation of cuticular hydrocarbons for age grading *Aedes aegypti*. **John EDMAN,** Center for Vector-Borne Disease Research and Dept. of Entomology, 1 Shields Avenue, University of California, Davis, CA 95616; Sihyeock LEE, Dept. of Entomology, University of Massachusetts, Amherst, MA 01003; Thomas SCOTT, Dept. of Entomology, Briggs Hall Room 367, Davis, CA 95616; Laura HARRINGTON, 1 Shields Ave, Dept. of Entomology, Davis, CA 95616; John CLARK, Dept. of Entomology, University of Massachusetts, Amherst, MA 01003

2:45 0168 Comparison of VNTR and STR loci for profiling degraded human DNA in mosquito blood meals. **Laura C. HARRINGTON,** University of California at Davis, Entomology, 1 Shields Avenue, Davis, CA 95616; Esther CHOW-SHAFFER, Dept. of Entomology, University of Maryland, College Park, MD 20742; John A. DEBENEDICTIS, University of California, 1 Shields Avenue, Davis, CA; Thomas SCOTT, University of California, Dept. of Entomology, Davis, CA 95616

2:57 Break

3:09 0169 A glowing recommendation. **M. Lee GOFF,** Dept. of

Entomology, University of Hawaii at Manoa, 3050 Maile Way, Honolulu, HI 96822

3:21 0170 The effects of herding on the feeding of tsetse: Who are the winners and the losers? **Stephen TORR,** Natural Resources Institute, University of Greenwich, Central Avenue, Chatham Maritime, Kent ME4 4TB, UK; Steve SCHOFIELD, Pest Management Regulatory Agency, Health Canada, 2250 Promenade Riverside Drive, Ottawa, ON K1A 0K9, Canada; Paul WILSON, Trent University, 1600 West Bank Drive, Peterborough, ON K9J 7B8, Canada

3:33 0171 The effect of horn flies *Haematobia irritans* (L.) on cow body condition and calf weights of summer born calves. **John CAMPBELL,** University of Nebraska, RR 4 Box 46A, North Platte, NE 69101-0425; David BOXLER, University of Nebraska, West Central Res & Ext Ctr, North Platte, NE 69101

3:45 0172 Can we suppress *Fannia* spp. via moisture control in poultry waste? **Bradley MULLENS,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001; Coralie SZIJJ, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001; Nancy HINKLE, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001

3:57 0173 Efficiency of alternative traps for assessing abundance of house flies (*Musca domestica* L.) in outdoor environments. **Roger MOON,** University of Minnesota, Entomology, 1980 Folwell Ave, Saint Paul, MN 55108-1037; Sarah KUHA, University of Minnesota, 1222 Timbershore Ln., Eagan, MN 55123

4:09 0174 Evaluation of commercially available attractants for house fly management. **Jerome HOGSETTE,** University of Florida, USDA ARS, P.O. Box 14565, Gainesville, FL 32604-2565; David CARLSON, USDA ARS CMAVE, P.O. Box 14565, Gainesville, FL 32604-2565

4:21 0175 *Culicoides* trap out studies in N. Florida. **James CILEK,** Florida A&M University, 4000 Frankford Ave, Panama City, FL 32405-1933

4:33 0176 Temperature effects on parasitism rates and progeny production of *Muscidifurax raptor* and *Muscidifurax raptorellus* (Hymenoptera: Pteromalidae) in a simulated dairy barn and calf hutch. **Phillip KAUFMAN,** Dept. of Entomology, Cornell Univ., Ithaca, NY 14853; Donald RUTZ, Cornell University, 5123 Comstock Hall, Ithaca, NY 14853-2601

4:45 0177 Cockroach infestations in swine facilities: Health implications and pest management. **Ludek ZUREK,** North Carolina State University, Entomology, Gardner Hall, Box 7613, Raleigh, NC 27695; David W. WATSON, North Carolina State University, Entomology, Grinnells Labs, Box 7626, Raleigh, NC 27696; Coby SCHAL, North Carolina State University, Entomology, Agriculture & Life Sciences, Box 7613, Raleigh, NC 27695-7613

Section: F. Crop Protection Entomology

410 A/B

Organizers and Moderators

Rick Foster, Purdue University, Dept. of Entomology, 1158 Smith Hall, W. Lafayette, IN 47907; Sue Blodgett, Dept. of Entomology, MSU, Bozeman, MT 59717

1:00 0178 Does canola compensate for lygus bug damage? **James JONES,** Alberta Agriculture, Food & Rural Development, Agronomy Centre, 6903 - 116 St, Edmonton, AB T6H 5Z2, Canada; Hector CARCAMO, Agriculture and Agri-Food Canada, Lethbridge Research Centre, P.O. Box 3000, Lethbridge, AB T1J 4B1, Canada; Jennifer OTANI, Agriculture & Agri-Food Canada, Beaverlodge Research Farm, P.O. Box 29, Beaverlodge, AB T0H 0C0, Canada; Rick BUTTS, Agriculture & Agri-Food Canada, Lethbridge Research Station, P.O. Box 3000, Lethbridge, AB T1J 4B1, Canada; Ross MCKENZIE, Alberta Agriculture, Food & Rural Development, Agriculture Centre, Bag 3014, Lethbridge, AB T1J 4C7, Canada; Elston SOLBERG, Alberta Agriculture, Food & Rural Development, Agronomy Centre, 6903 - 116 St., Edmonton, AB T6H 5Z2, Canada; Jill DEMULDER, Alberta Agriculture, Food & Rural Development, Agronomy Centre, 6903 - 116 St., Edmonton, AB T6H 5Z2, Canada

1:12 0179 Using randomization tests as an aid in the development of insect sampling plans. **Robert HOLLINGSWORTH,** U.S. Pacific Basin Agricultural Research Center, USDA-ARS, P.O. Box 4459, Hilo, HI 96720-0459

1:24 0180 Use of soybean leaf area to redefine management strategies for defoliating insect pests. **Sean MALONE,** Virginia Polytechnic Institute and State University, 300 B Price Hall, Blacksburg, VA 24061; D. HERBERT, Virginia Polytechnic Institute and State University, Tidewater Agric Res & Ext Cent, Suffolk, VA 23437; David HOLSHOUSER, Virginia Polytechnic Institute and State University, Tidewater AREC, College of Agriculture and Life Sciences, Mail code 0512, Blacksburg, VA 24061

1:36 0181 Seasonal fluctuations of the wheat shoot-fly new species *Atherigona tritici* Pont and Deeming (Diptera: Muscidae) and parasitism. **S. EL-SERWY,** Plant Protection Research Institute, 7 Nadi El-Seid Street, Dokki, Cairo, Giza 12311, Egypt

1:48 0182 Use of sticky tape for sampling for *Dysmicoccus* mealybug crawlers on pineapple plants. **Marshall JOHNSON,** University of Hawaii at Manoa, Dept. of Plant & Environmental Protection Sciences, Honolulu, HI 96822; Wendy JONES, University of Hawaii at Manoa, Dept. of Plant & Environmental Protection Sciences, Honolulu, HI 96822

2:00 0183 Impact of insects on nut drop and kernel quality in pecan orchards. **James DUTCHER,** Coastal Plain Experiment Station, Univ. of Georgia, P.O. Box 748, Tifton, GA 31793-0748

2:12 0184 Preliminary economic impacts of corn leaf aphids and European corn borer on high-oil corn in Kentucky. **Grayson BROWN,** University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0091; Scott QUENTIN, University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0091; Ricardo BESSIN, University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0001; Douglas JOHNSON, University of Kentucky, Research and Education Center, P.O. 469, Princeton, KY 42445-0469

2:24 0185 Synergistic effects of selective pesticides and weedy field margins in integrated pest management. **John BANKS,** University of Washington-Tacoma, Interdisciplinary Arts & Sciences, 1900 Commerce Street, Tacoma, WA 98402-3100; John STARK, Washington State University, Entomology, Puyallup Research and Extension Center, 7612 Pioneer Way E, Puyallup, WA 98371-4989

2:36 0186 Frequency of resistance to Bt cotton in field populations of pink bollworm. **Bruce TABASHNIK,** University of Arizona, Dept. of Entomology, Tucson, AZ 85721-0001; Amanda PATIN, University of Arizona, Dept. of Entomology; Timothy DENNEHY, University of Arizona, Dept. of Entomology, Tucson, AZ 85721-0001; Yves CARRIERE, University of Arizona, Dept. of Entomology, Tucson, AZ 85721-0036; Yongbiao LIU, University of Arizona, Dept. of Entomology, Tucson, AZ 85721-0001; Larry ANTILLA, Arizona Cotton Research and Protection Council, Phoenix, AZ 85040

2:48 0187 Deployment of external refuges for management of resistance to Bt cotton in pink bollworm. **Yves CARRIERE,** University of Arizona, Entomology, Marley Building, Room 741A, Tucson, AZ 85721; Brent PETERSON; Shirley HALLER; Christa ELLERS-KIRK, University of Arizona, Dept. of Entomology, Tucson, AZ 85721-0036; Larry ANTILLA; Timothy DENNEHY, University of Arizona, Dept. of Entomology, Tucson, AZ 85721-0001; Bruce TABASHNIK, University of Arizona, Dept. of Entomology, Tucson, AZ 85721-0001

3:00 Break

3:12 0188 A model simulating integrated control of European red mite on apple trees in eastern North America. **John HARDMAN,** Agriculture Canada, Research Stn, Kentville, NS B4N 1J5, Canada; Jan NYROP, Cornell University, Entomology, Agriculture and Life Sciences, Dept. of Entomology, Geneva, NY 14456

3:24 0189 Exploiting agro-biodiversity and chemical ecology for the management of cereal stemborers and striga weed in maize-based farming systems in eastern Africa. **Zeyaur KHAN,** Intl Ctr Insect Phyl & Ecol, Field Station P.O. 30, Mbita Point, Kenya; William OVERHOLT, ICIPE, P.O. Box 30772, Nairobi, Kenya; Ahmed HASSANALI, ICIPE, P.O. Box 30772, Nairobi, Kenya; John PICKETT, Institute of Arable Crops Research, Insecticides and Fungicides, Harpenden, Hertfordshire AL5 2JQ, United Kingdom

3:36 0190 The effect of shading on the acceptability and suitability of azalea as a host to the azalea lace bug and on the abundance of general predators. **Jo-Ann BENTZ,** Dept. of Agriculture, USDA ARS, U.S. National Arboretum, Beltsville, MD 20705

3:48 0191 Evaluation of watermelon germplasm for resistance to *Bemisia*. **Alvin M. SIMMONS,** USDA, ARS, U.S. Vegetable Laboratory, 2875 Savannah Highway, Charleston, SC 29414; Amnon LEVI, USDA, ARS, U. S. Vegetable Laboratory, 2875 Savannah Highway, Charleston, SC 29414

4:00 0192 An allyl cyanoglucoside from *Alliaria petiolata*, as a feeding deterrent for larvae of *Pieris napi*. **Meena HARIBAL,** Boyce Thompson Institute, Tower Road, Ithaca, NY 14853; Zhicai YANG, Deparment of Chemistry and Chemical Biology, Cornell University, Ithaca, NY 14853; Athula ATTYGALLE, Department of Chemistry and Chemical Biology, Cornell University, Ithaca, NY 14853; Alan RENWICK, Boyce Thompson Institute, Tower Road, Ithaca, NY 14853; Jerrold MEINWALD, Cornell University, Chemistry and Chemical Biology, Arts and Sciences, 582 Baker LAB, Ithaca, NY 14853

4:12 0193 Identifying sources and mechanisms of resistance in crucifers for control of the cabbage maggot. **Jawahar JYOTI,** Cornell University, Dept. of Entomology, NYSAES, Geneva, NY 14456; Anthony SHELTON, Cornell University, Dept. of Entomology, Geneva, NY 14456; Elizabeth EARLE, Cornell University, Plant Breeding, Agriculture and Life Sciences, 252 Emerson Hall, Ithaca, NY 14853

4:24 0194 Reducing the risks of tomato spotted wilt virus infection on flue-cured tobacco with selected thrips management practices. **Robert M. MCPHERSON,** University of Georgia, Dept. of Entomology, Coastal Plain Experiment Station, Tifton, GA 31793; David C. JONES, University of Georgia, Dept. of Entomology, Coastal Plain Experiment Station, Tifton, GA 31793; J. Michael MOORE, University of Georgia, Dept. of Crop & Soil Sci, Coastal Plain Experiment Station, Tifton, GA 31793

4:36 0195 Repellency and repulsiveness of common powdery mildew fungicides to two-spotted spider mites. **Douglas WALSH,** Dept. of Entomology, Washington State University, 24106 North Bunn Rd, Prosser, WA 99350; Molly OLMSTEAD, Dept. of Entomology, Washington State University, 24106 North Bunn Rd, Prosser, WA 99350

4:48 0196 Efficacy of Canadian "soft" insecticides for control of cabbage seedpod weevil in canola. **David BRAGG,** Washington State University, Mail Stop 6230, Pullman, WA 99164

Plenary
North American Meeting of the SEQ, ESC, and ESA

407AB

5:00 p.m. - 7:30 p.m.

Call to Order and Introduction of ESA Officers, ESA Governing Board and Meeting Contributors by ESA President Sharron Quisenberry

Introduction of and Remarks by ESC President, Dan L. Johnson

Introduction of and Remarks by SEQ President, François Lorenzetti

General Announcements and Remembrance

Introduction of and Remarks by James E. Olmes, ESA Executive Director

Presentation of Winning Slides from 42nd National Insect Photographic Salon, James E. Appleby

Presentation of the 2000 ESA Fellows and Awards Program, Joan A. Lasota, Chair

- ESA Award for Excellence in Integrated Pest Management (Sponsored by Novartis Crop Protection, Inc., formerly Sandoz Agro, Inc.)
- ESA Recognition Award in Entomology (Sponsored by Novartis Crop Protection, Inc., formerly CIBA- GEIGY Corporation)
- ESA Distinguished Achievement Award in Teaching
- ESA Distinguished Achievement Award in Extension Entomology
- ESA Distinguished Achievement Award in Regulatory Entomology (Sponsored by the American Nursery and Landscape Association)
- ESA Recognition Award in Urban Entomology (Sponsored by S. C. Johnson's Wax)
- ESA Recognition Award in Insect Physiology, Biochemistry, and Toxicology (Sponsored by The Rohm and Haas Company)

Presentation of SEQ's Léon-Provencher Prix, François Lorenzetti

Presentation of ESC's C. Gordon Hewitt Award, Dan L. Johnson

Presentation of ESC's Gold Medal Award and Address

Plenary Address: "Modern Entomology, A Social Responsibility", Georges Brossard, Montréal Insectarium

Remarks on the Entomological Foundation, James L. Frazier

Introduction and Presentation of Founders' Memorial Award to Marcos Kogan

Founders' Memorial Lecture Honoring L. Dale Newsom: "On Integration and Integrity in IPM: The Legacy of Leo Dale Newsom"

Introduction of and Remarks by 2001 ESA President, Larry L. Larson

Adjourn

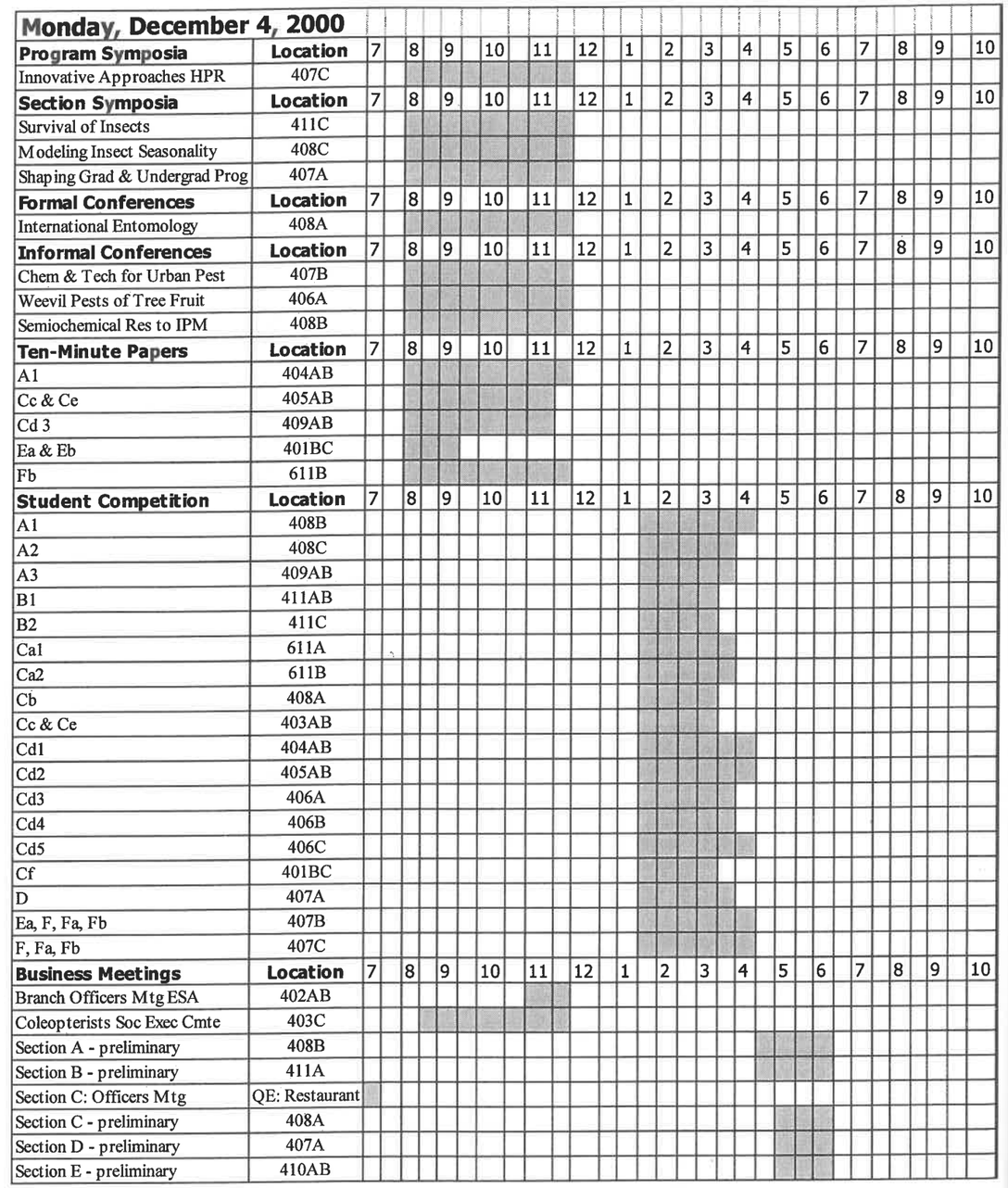
ESA Welcome Reception

611A/B

7:30 p.m. - 9:30 p.m.

Monday, December 4, 2000

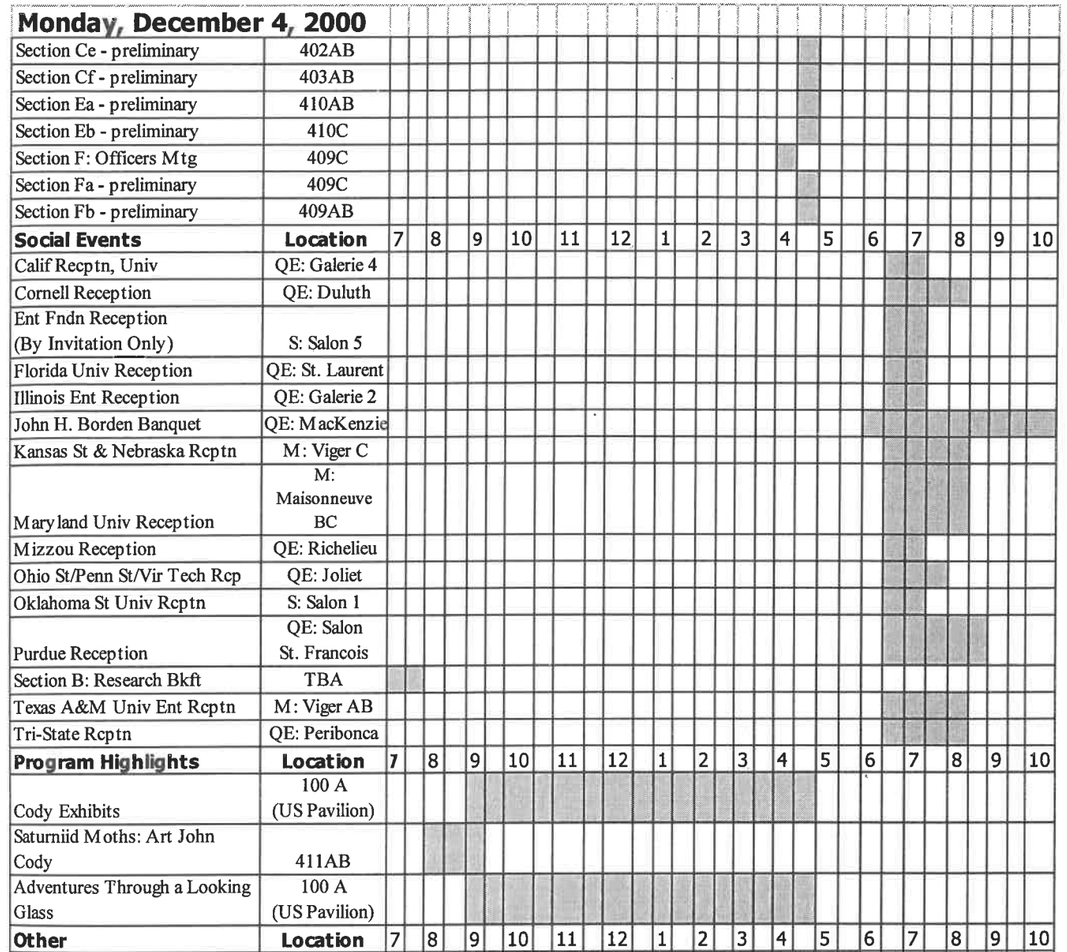
Program Symposia	Location
Innovative Approaches HPR	407C
Section Symposia	**Location**
Survival of Insects	411C
Modeling Insect Seasonality	408C
Shaping Grad & Undergrad Prog	407A
Formal Conferences	**Location**
International Entomology	408A
Informal Conferences	**Location**
Chem & Tech for Urban Pest	407B
Weevil Pests of Tree Fruit	406A
Semiochemical Res to IPM	408B
Ten-Minute Papers	**Location**
A1	404AB
Cc & Ce	405AB
Cd 3	409AB
Ea & Eb	401BC
Fb	611B
Student Competition	**Location**
A1	408B
A2	408C
A3	409AB
B1	411AB
B2	411C
Ca1	611A
Ca2	611B
Cb	408A
Cc & Ce	403AB
Cd1	404AB
Cd2	405AB
Cd3	406A
Cd4	406B
Cd5	406C
Cf	401BC
D	407A
Ea, F, Fa, Fb	407B
F, Fa, Fb	407C
Business Meetings	**Location**
Branch Officers Mtg ESA	402AB
Coleopterists Soc Exec Cmte	403C
Section A - preliminary	408B
Section B - preliminary	411A
Section C: Officers Mtg	QE: Restaurant
Section C - preliminary	408A
Section D - preliminary	407A
Section E - preliminary	410AB



QE: Queen Elizabeth Hotel
M: Marriott Chateau Champlain
S: Montreal Sheraton
All other rooms (designated by numbers only) are at the Palais des Congres de Montreal

Monday, December 4, 2000

Section Ce - preliminary	402AB
Section Cf - preliminary	403AB
Section Ea - preliminary	410AB
Section Eb - preliminary	410C
Section F: Officers Mtg	409C
Section Fa - preliminary	409C
Section Fb - preliminary	409AB
Social Events	**Location**
Calif Recptn, Univ	QE: Galerie 4
Cornell Reception	QE: Duluth
Ent Fndn Reception (By Invitation Only)	S: Salon 5
Florida Univ Reception	QE: St. Laurent
Illinois Ent Reception	QE: Galerie 2
John H. Borden Banquet	QE: MacKenzie
Kansas St & Nebraska Rcptn	M: Viger C
Maryland Univ Reception	M: Maisonneuve BC
Mizzou Reception	QE: Richelieu
Ohio St/Penn St/Vir Tech Rcp	QE: Joliet
Oklahoma St Univ Rcptn	S: Salon 1
Purdue Reception	QE: Salon St. Francois
Section B: Research Bkft	TBA
Texas A&M Univ Ent Rcptn	M: Viger AB
Tri-State Rcptn	QE: Peribonca
Program Highlights	**Location**
Cody Exhibits	100 A (US Pavilion)
Saturniid Moths: Art John Cody	411AB
Adventures Through a Looking Glass	100 A (US Pavilion)
Other	**Location**
Editorial Bd/Pubs Council Mtg	410C
Ent Fndn Info & Promo Exhibit	100 A (US Pavilion)
Ent Fndn Counselors Mtg	409C
Ent Fndn Members (Estate Plan & Retirement Plan)	409C
Employment Opp Ctr (EOC)	318
EOC Interview Room	317
Exhibits	100A
Guests Suite	QE: Matapedia
Insect Photo Salon	411A
Local Arrangements Cmte	402C
Moderators'/Projectionists' Mtg	401A
Posters	100B
Registration	Lobby (Lvl 1)
Sales Booth (ESA)	100A
Slide Preview	401A
Student Competition Judges	409AB
Town Meeting-Meet the GB	611A



Functions listed on this summary page were correct as of August 15, 2000. Section chairs and symposia organizers may have made modifications. Consult Announcements Board near the LAC Office (402C, Palais, Level 4).

Program Highlights: Saturniid Moths of the World: The Art and Science of John Cody

411 A/B

8:00 a.m. - 9:30 a.m.

Introduction.

Saturniid moths of the world: The art and science of John Cody. **John CODY**, 2704 Woodrow Ct., Hays, KS 67601

Program Highlights: Adventures Through a Looking Glass

U.S. Pavilion- Exhibit Hall 100 A/B

Ralph W. HOWARD, USDA ARS, 1515 College Ave, U. S. Grain Marketing Res. Lab., Manhattan, KS 66502

Program Symposium: Innovative Approaches in Host Plant Resistance

407 C

Organizers and Moderators

Bradley Binder, Iowa State University, USDA ARS MWA, Corn Insects Res Unit-Insect Bldg, Ames, IA 50011; John Arnason, Biology Dept., University of Ottawa, Ottawa, ON K1N 6N5, Canada

8:00 0197 Introduction. **Brad BINDER,** USDA-ARS, 110 Genetics Lab, Ames, IA 50010

8:15 0198 Combining resistance and natural enemies: An ecological approach. **Francois LORENZETTI,** Dept. of Biological Sciences, University of Quebec at Montreal, Montreal, Quebec H3C 3P8, Canada

8:40 0199 Industry needs and approaches for novel host plant resistance mechanisms. **L. Von KASTER Jr.,** Garst Seed Company, 2369 330th Street, Slater, IA 50244

9:05 0200 Resistance mapping in *Helicoverpa.* **Elizabeth LEE,** Plant Agriculture Dept., Crop Science Building, Guelph, ON N1G 2W1, Canada

9:30 Break

9:45 0201 Novel screening techniques for host resistance in maize. **David BERGVINSON,** CIMMYT, International Apdo Postal 6-641, Mexico DF, 6600, Mexico

10:10 0202 Chemical ecology of maize resistance: Applications that mediate European corn borer reproduction. **Brad BINDER,** USDA-ARS, 110 Genetics Lab, Ames, IA 50010

10:35 0203 Induction of crop volatiles to attract and manage beneficial insects. **Jim TUMLINSON III,** USDA-ARS, Insect Attractants Laboratory, Gainsville, FL 32604

11:00 0204 Floral scent molecular biology and pest control. **Eran PICHERSKY,** Dept. of Biology, Natural Sciences Building, Ann Arbor, MI 48109-1048

11:25 0205 Phytochemistry of host plant resistance. **John ARNASON,** Biology Dept., University of Ottawa, Ottawa, ON K1N 6N5, Canada

Section Symposium B 3: Water Relations and Winter Survival of Insects

411 C

Organizers and Moderators

Richard E. Lee, Miami University, Dept. of Zoology, Oxford, OH 45056; Hugh V. Danks, Biological Survey of Canada, Canadian Museum of Nature, P.O. Box 3443, STN "D", Ottawa, ON Canada K1P 8P4

Introduction **Richard E. LEE**, Miami University, Dept. of Zoology, Oxford, OH 45056

8:00 0206 Water balance in insects dormant for the winter. **H. V. DANKS,** Biological Survey of Canada (Terrestrial Arthropods), Canadian Museum of Nature, P.O. Box 3443 Station D, Ottawa, Ont K1P 6P4, Canada

8:30 0207 Role of dehydration in promoting winter survival. **Martin HOLMSTRUP,** National Environmental Research Institute, Dept. of Terrestrial Ecology, Vejlsøvej 25, P.O. Box 314, Silkeborg, DK-8600, Denmark

9:00 0208 Waterproofing properties of cuticular lipids: Implications for low temperature. **Allen G. GIBBS,** Dept. of Ecology and Evolution, Biological Sciences West, University of Arizona, Tuscon, AZ 85721

9:30 Break

9:45 0209 Gas exchange and water balance in normal and metabolically suppressed arthropods. **John R. B. LIGHTON,** Dept. of Biological Sciences, University of Nevada, Las Vegas, NV 89154

10:15 0210 Water relations, biological ice nucleation and inoculative freezing in overwintering insects. **Richard E. LEE, Jr.,** Miami University, Dept. of Zoology, Oxford, OH 45056

Questions. **Hugh V. DANKS,** Biological Survey of Canada, Canadian Museum of Nature, P.O. Box 3443, STN "D", Ottawa, ON Canada K1P 8P4

Section Symposium C 1: Modeling Insect Seasonality

408 C

Organizers and Moderators

J. A. Logan, USDA Forest Service, Logan Forestry Sciences Lab., 860 N. 1200 East, Logan, UT 84321; J. C. Allen, Dept. of Entomology & Nematology, University of Florida, Gainesville, FL 32611; Jacques Régnière, Canadian Forest Service, 1055 rue du PEPS, Sainte Foy, Quebec, Canada G1V 4C7

8:00 0211 The physiological basis of insect seasonality. **David DENLINGER,** Dept. of Entomology, Ohio State University, Columbus, OH 43210

8:25 0212 The mathematical basis for modeling insect seasonality. **James POWELL,** Dept. of Mathematics & Statistics, Utah State University, Logan UT 84322

8:50 0213 Climate change induced invasion of bark beetles into high elevation ecosystems. **Jesse LOGAN,** Forestry Sci Lab 860 North 1200 East, Logan, UT 84321

9:15 0214 Modeling gypsy moth diapause: The key to a geographically robust phenology? **David GRAY,** Canadian Forest Service, Atlantic Forestry Centre, P.O. Box 4000, Fredericton, NB E3B 5P7, Canada

9:40 Break

9:50 0215 Matlab, maggots and murder: Insect phenology at the scene of the crime. **Jon ALLEN,** Dept. of Entomology & Nematology, Gainesville, FL 32611

10:15 0216 Phenology and diapausing strategies in grape berry moth *Endopiza viteana* (Clemens) populations. **Michael SAUNDERS,** Dept. of Entomology, Pennsylvania State University, University Park, PA 16802

10:40 0217 Grasshopper seasonality in the Northern Great Plains. **Dan JOHNSON,** Agriculture Canada, Research Center, P.O. Box 3000, Lethbridge, AB Canada

11:05 0218 The stability of gypsy moth seasonality in coastal British Columbia: A study of persistence. **Jacques RÉGNIÈRE,** Canadian Forest Service, 1055 rue du PEPS, Sainte Foy, QC G1V 4C7, Canada

Section Symposium E2: Shaping Graduate and Undergraduate Programs to Keep Pace with Today's Job Market

407 A

Organizers and Moderators

Sujaya Udayagiri, U.C. Cooperative Extension, 1432 Freedom Blvd., Watsonville, CA 95076; Gwen Pearson, Dept. of Biology, Albion College, Albion, MI 49224; Susan P. Whitney, Univ. of Delaware, Townsend Hall Rm 254, Newark, DE 19717; Sandy M. Smith, Faculty Forestry, University of Toronto, 33 Willocks St., Toronto, ON M55 3B3 Canada

8:00 0219 Why modify our graduate programs when we dislike change? **Sujaya UDAYAGIRI,** University of California Cooperative Extension, Watsonville, CA 95076

8:22 0220 Embracing change: The private-sector entomologist's job in the new millennium. **Larry LARSON,** Dow AgroSciences, 9330 Zionsville Road, Indianapolis, IN 46268; Scott HUTCHINS, Dow AgroSciences, 9330 Zionsville Road, Indianapolis, IN 46268

8:44 0221 Communication skills work wonders in extension entomology. **Susan WHITNEY,** Dept. of Entomology and Applied Ecology, University of Delaware, Newark, DE 19717-1303

9:06 0222 A big fish in a small pond: The challenges of teaching in a small college. **Gwen A. PEARSON**, Dept. of Biology, Albion College, Albion, MI 49224

9:28 0223 Science writing: The what, when, why, and how. **Jessa NETTING,** 410 Heller Dr., Santa Cruz, CA 95064

9:50 0224 Museums and zoos as entomological embassies. **Nate ERWIN,** Insect Zoo, Smithsonian Institute, Washington, DC 20560

10:12 0225 Take forensic entomolgy for an exciting career with the FBI. **Jack WEBB,** Federal Bureau of Investigation, 2500 E. TC Jester, Houston, TX 77008-1300

10:34 0226 Policy, planning, regulating: You can make a difference. **Daniel FIESELMANN,** APHIS Center for Plant Health Science and Technology, USDA, Raleigh, NC

10:56 0227 Be your own boss: Words of wisdom for an entomology entrepreneur. **Pamela MARRONE,** Agraquest, 1530 Drew Avenue, Davis, CA 95616

11:18 0228 Think globally: International opportunities for entomologists and scientists of all disciplines. **Alan SCHROEDER,** ID/AFR/SD/CMR Emergency Locust & Grasshopper Assistance (AELGA) Project, 1325 G Street NW, Washington, DC 20005

11:40 0229 Summary & conclusion. **Sandy SMITH,** Faculty Forestry, University of Toronto, Toronto, ON M55 3B3, Canada

Formal Conference: International Affairs: International Entomology: Past, Present and Future

408 A

Organizers and Moderators

Adriana Costero, NIH NIAID LPD, 4 Center Dr, MSC 0425, Bethesda, MD 20892; Mike Cohen, Entomology and Plant Pathology Division, International Rice Research Institute, MCPO Box 3127, Makati City 1271, Philippines

Introduction. **Adriana COSTERO**, NIH NIAID LPD, 4 Center Dr, MSC 0425, Bethesda, MD 20892

8:00 0230 The emerging discipline of biological informatics: New tools for liberating, integrating and utilizing entomological information. **Larry SPEERS,** Agriculture and Agri-Food, Biodiversity-Information Systems Analyst, Biodiversity Section, ECORC, Ottawa, ON K1A 0C6, Canada

8:25 0231 Bt corn: The truth and the consequences. **Jeanne ROMERO-SEVERSON,** Purdue University, Departments of Agriculture and Forestry, Room 206C WSLR, West Lafayette, IN 47907-1159

8:50 0232 Tropical insect science research for sustainable development. **Hans HERREN,** International Center of Insect Physiology and Ecology, P.O. Box 30772, Kasarani, Thika Road, Nairobi, 00000, Kenya

9:15 Break

9:30 0233 The role of social and behavioral sciences on vector-borne disease control: Impact on international entomology. **Linda LLOYD,** The Johns Hopkins University, 3443 Whittier Street, San Diego, CA 92106; Elli LEONTSINI, The Johns Hopkins University, School of Hygiene and Public Health, Dept. of International Health, Baltimore, MD 21205

9:55 0234 Funding international linkage for Extension entomology. **Clifford HOELSCHER,** Texas A&M University, Dept. of Entomology, College Station, TX 77843

10:20 0235 Past achievements and future opportunities for host-plant resistance in maize: An international center's perspective. **David BERGVINSON,** CIMMYT, Mexico City, 06600, Mexico

10:45 0236 Phase characteristics in relation to albinism and geographical strain in *Locusta migratoria.* **Yoram YERUSHALMI,** The Hebrew University of Jerusalem, Dept. of Cell and Animal Biology, Jerusalem, 91904, Israel; Eran TAUBER, The Hebrew University of Jerusalem, Dept. of Cell and Animal Biology, Jerusalem, 91904, Israel; Meir Paul PENER, The Hebrew University of Jerusalem, Dept. of Cell and Animal Biology, Jerusalem, 91904, Israel

10:57 Business Meeting. **Adriana COSTERO**, NIH NIAID LPD, 4 Center Dr, MSC 0425, Bethesda, MD 20892; Mike Cohen, Entomology and Plant Pathology Division, International Rice Research Institute, MCPO Box 3127, Makati City 1271, Philippines

Informal Conference: Weevil Pests of Fruit

406 A

Organizers and Moderators

Gerald Chouinard, IRDA, 3300 Sicotte, CP 480, St-Hyacinthe, Quebec, Canada J2S 7B8; Ronald J. Prokopy, Fernald Hall, University of Massachusetts, Amherst, MA 01003

Introduction. **Gerald CHOUINARD**, IRDA, 3300 Sicotte, CP 480, St-Hyacinthe, Quebec, Canada J2S 7B8

8:00 0237 Researches on plum curculio management: A historical perspective. **Charles VINCENT,** McGill University, Natural Resource Sciences, Horticultural Research and Development Centre, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, Quebec J3B 3E6, Canada

8:15 0238 Dispersal behavior and underlying mechanisms in the curculionid *Anthonomus pomorum.* **Silvia DORN,** Institute of Plant Science/Applied Entomology, Swiss Fed Inst of Technology (ETH), Clausiusstrasse 25 / NW, Zurich, Switzerland

8:30 0239 Optimization of management of plum curculio using border sprays, an oviposition model, and new insecticides. **W. REISSIG,** Cornell University, 325 Barton Lab, Dept. of Entomology, Geneva, NY 14456; Richard STRAUB, Cornell University, Entomology, Hudson Valley Laboratory, Highland, NY 12528

8:45 0240 Implications of trapping weevils in pecan and fruit culture - utilities for IPM. **Phillip MULDER Jr.,** Dept. of Entomology and Plant Pathology, Oklahoma State Univ., 127 Noble Res Cent, Stillwater, OK 74078; Donn JOHNSON, Dept. Entomology, 321 Agric Bldg, Univ. of Arkansas, Fayetteville, AR 72701

9:00 0241 Entomological aspects of semiochemically-based trapping of plum curculio. **Daniel CORMIER,** IRDA, 3300, rue Sicotte, C.P. 480, Saint-Hyacinthe, Québec J2S 7B8, Canada; Gerald CHOUINARD, 3300 Sicotte, I.R.D.A., St-Hyacinthe, Quebec J2S 7B8, Canada

9:15 Break

9:30 0242 Modeling nocturnal activity: A tool for plum curculio monitoring and control strategies. **Gerald CHOUINARD,** 3300 Sicotte, I.R.D.A., St-Hyacinthe, Quebec J2S 7B8, Canada; Gaétan BOURGEOIS, CRDH, 360 boul. Gouin, St-Jean-sur-Richelieu, QC J3B 3E6, Canada; Daniel CORMIER, Institut de recherche et de développement en agroenvironnement, 3300, rue Sicotte, C.P. 480, Saint-Hyacinthe, Québec J2S 7B8, Canada

9:45 0243 Visual ecology of plum curculio. **Tracy LESKEY,** Univ. of Mass Amherst, Fernald Hall, Amherst, MA 01003; Ronald PROKOPY, University of Massachusetts Amherst, Entomology, Fernald Hall, Amherst, MA

10:00 0244 Chemical ecology of plum curculio. **Ronald PROKOPY,** University of Massachusetts Amherst, Entomology, Fernald Hall, Amherst, MA; Tracy LESKEY, University of Massachusetts Amherst, Entomology, Fernald Hall, Amherst, MA 01003; J. PINERO

10:15 0245 Phenology of plum curculio damage on various species of fruit tree hosts. **M. W. BROWN,** Applachian Fruit Res, 45 Wiltshire Road, Kearneysville, WV 25430

10:30 0246 Life history, trapping and distribution of plum curculio in Utah. **Diane ALSTON,** Dept. of Biology, Utah State University, Logan, UT 84322-5303; Anchalee V. STARK, Dept. of Biology, Utah State University, Logan, UT 84322-5305

10:45 0247 Implementing and improving a plum curculio monitoring program in peaches in the southern U.S. **Donn JOHNSON,** Dept Entomology, 321 Agric Bldg, Univ. of Arkansas, Fayetteville, AR 72701; Russell MIZELL III, University of Florida, AREC-Montice, College of Agriculture, AREC-MONTIC, Monticello, FL 32344; Bobby BOOZER, Auburn University, Dept. of Horticulture, Chilton Area Hort Substation, Clanton, AL 35045; Wheeler FOSHEE, Auburn University, Entomology, Auburn, AL 36849; John MCVAY, Auburn University, Entomology, 207 Extension Hall, Auburn, AL 36849; Dan HORTON, UGA Entomology, 463 Bio Sci Bldg, Athens, GA 30602; Harald SCHERM, Dept. of Plant Pathology, University of Georgia, Athens, GA 30602; Phillip MULDER Jr., Dept of Entomology, Oklahoma State Univ., 127 Noble Res Cent, Stillwater, OK 74078; Dean McCRAW, Oklahoma State University, Cooperative Extension Service, Stillwater, OK 74078; Clyde GORSUCH, Dept. of Entomology, 109 Long Hall, Clemson Univ., Box 340365, Clemson, SC 29634-0365; Dale LINVILL, Clemson University, Agricultural Meteorology, 230 McAdams Hall, Clemson, SC 29634

Informal Conference: From Basic Semiochemical Research to Integrated Pest Management in Honour of the Lifetime Contributions of John H. Borden

408 B

Organizers and Moderators

John McLean, Forest Sciences UBC, 2424 Main Mall, Vancouver, BC, V6T 1Z4 Canada ; David L. Wood, Division of Entomology, University of California at Berkeley, 26 Hardie Drive, Morage, CA 94556

8:00 0248 The road to applied research. **John MCLEAN,** 2004-2424 Main Mall, Vancouver, B.C. V6T 1Z4, Canada

8:10 0249 The evolution and devolution of a kairomone-based trap for the onion maggot *Delia antigua* (Meigen) (Diptera:Anthomyiidae). **Robert VERNON,** Pacific AgriFood Research Centre, P.O. Box 1000, Agassiz, B.C. V0M 1A0, Canada

8:20 0250 The eagle still soars: Looking back at 23 years as a student and colleague of John Borden. **Staffan LINDGREN,** University of Northern British Columbia, Forestry, 3333 University Way, Prince George, B.C. V2N 4Z9, Canada

8:30 0251 Cucujid and silvanid beetle pheromones: An (over)simplified overview. **Désirée VANDERWEL,** University of Winnipeg, Chemistry, 515 Portage Avenue, Winnipeg, MB R3B 2E9, Canada

8:40 0252 From the Borden Lab to the marketplace: Some experiences of Phero Tech Inc. **Ian WILSON,** 7572 Progress Way, Delta, B.C. V4G 1E9, Canada

8:50 0253 Borden's Bureaucrats: Taking pest management into government. **Laura DOLINER,** Pest Management Regulatory Agency, Health Canada, Ottawa, ON K1A 0K9, Canada

9:00 0254 Tree fruit IPM making cents for B.C. growers: Applying natural scents seems common sense. **Gary JUDD,** Pacific Agri-Food Research Centre, Agriculture and Agri-Food Canada, Summerland, B.C. V0H 1Z0, Canada; Maya EVENDEN, Dept. of Entomology, S-225 Agric Sci Bldg N, Univ. of Kentucky, Lexington, KY 40546-0091

9:10 0255 The pain of variation in giving birth to semiochemical-based tactics for bark beetles. **Daniel MILLER,** Forestry Sciences Laboratory, USDA Forest Service, Athens, GA 30602-2044

9:20 0256 Sex pheromone of the pandora moth, *Coloradia pandora* (Lepidoptera: Saturniidae), an outbreak pest in pine forests. **Jocelyn MILLAR,** University of California, Riverside, Entomology, 100A Chapman Hall, Riverside, CA 92521; Steven McELFRESH, Dept. Entomology, University of California, Riverside, CA 92521-0314; Xin CHEN, Dept. Medicinal Chemistry, University of North Carolina, Durham, NC 27705; Darrell ROSS, Oregon State University, 20 Forestry Sciences Lab, Oregon State University, Corvallis, OR 97331-7501

9:30 0257 Destiny-determining conference and its semiochemical consequences. **Gerhard GRIES,** Dept. Biological Sciences, Simon Fraser University, Burnaby, B.C. V5S 1S6, Canada

9:40 Break

9:50 0258 Partly kept promises: Semiochemical threads in agricultural pest management. **Howard THISTLEWOOD,** Pacific Agri-Food Research Centre, Highway 97 N, Summerland, BC V0H 1Z0, Canada

10:00 0259 From systematics to semiochemicals: Discoveries with John Borden along the seed and cone trail. **Peter de GROOT,** Great Lakes Forestry Centre, Canadian Forest Service, Sault Ste Marie, ON P6A 5M7, Canada

10:10 0260 Degregarisation as a strategy for locust control: Prospects for novel use of pheromones. **Ahmed HASSANALI,** International Centre for Insect Physiology and Ecology, P.O. Box 30772, Nairobi, Kenya

10:20 0261 Update on pine shoot beetle research and quarantine issues in the Lake States. **Therese POLAND,** USDA Forest Serv, NCRS, 1407 S Harrison Rd, Rm 220, East Lansing, MI 48823; Robert HAACK, , USDA Forest Serv, NC Forest Exp Stn, 1407 S Harrison Rd, #220 NISBET MIC, East Lansing, MI 48823

10:30 0262 Developing chemical ecology in the Mexican tropics. **Jorge MACIAS,** El Colegio de la Frontera Sur, ECOSUR, Carretera Antigua, Aeropuerto km 2.5, Chiapas, Mexico

10:40 0263 Finding gems in the steppingstones: The impact of John Borden's research on recent results in pine bark beetle pheromone biosynthesis. **Steven SEYBOLD,** Dept of Entomology, Univ. of Minnesota, 219 Hodson Hall, St. Paul, MN 55108-6125

10:50 0264 Ecological aspects of pheromone biosynthesis and response in bark beetles. **Kenneth RAFFA,** University of Wisconsin-Madison, Entomology, 345 Russell Laboratories, Madison, WI 53706

11:00 0265 Orientation of flying beetles to stimuli – responses and outcomes. **Tristram WYATT,** Dept. of Zoology, Oxford University, Oxford, OX1 3PS, United Kingdom; Wladimir ALONSO, Dept. for Continuing Education, Oxford University, Oxford, OX1 3PS, United Kingdom

11:10 0266 Concluding remarks. **David L. WOOD,** Division of Entomology, University of California at Berkeley, 26 Hardie Drive, Morage, CA 94556

Informal Conference: New Chemistries and Technologies for Urban Pest Management

407 B

Organizers and Moderators

Mark A. Coffelt, Aventis Environmental Science, Kansas City, MO 64118; Shripat T. Kamble, Dept. of Entomology, University of Nebraska, Lincoln, NE 68583

8:00 Symposium begins

Section A. Systematics, Morphology, and Evolution

404 A/B

Organizers and Moderators

John Heraty, Dept. of Entomology, University of California, Riverside, CA 92521; Stewart B. Peck, Dept. of Biology, Carleton University, 1125 Colonel By Dr., Ottawa, ON K1S 5B6, Canada

8:00 0267 Reconciling phylogenetic incongruence: Sub-optimal nucleotide alignment and saturation in a multiple gene analysis of *Ips.* **Anthony COGNATO,** The Natural History Museum, Dept. of Entomology, London, SW7 5BD, UK; Alfried VOGLER, Natural History Museum, Dept. Entomology, London, SW7 5BD, United Kingdom

8:12 0268 Higher-level molecular phylogeny and evolution of host associations of inquiline Cynipidae (Hymenoptera). **Zhiwei LIU,** Division of Insects, Field Museum of Natural History, 1400 S. Lake Shore Drive, Chicago, IL 60605

8:24 0269 The phylogeny of the Plenitentoria (Trichoptera). **Karl KJER,** Rutgers, Cook College, Dept. of Entomology, 93 Lipman Dr., New Brunswick, NJ 08901; Kavitha NARAYAN, Rutgers, Eentomology, 93 Lipman Dr., Blake Hall, New Brunswick, NJ 08901; Roger BLAHNIK, University of Minnesota, Dept. Entomology, Hodson Hall, St. Paul, MN

8:36 0270 Ancestral polymorphism, introgression, and/or geographic subdivision: Interpreting patterns of nuclear and mtDNA sequence variation in the genus *Rhagoletis.* **Jeffrey FEDER,** University of Notre Dame, Biological Sciences, Notre Dame, IN 46556-0369; Joseph ROETHELE, University of Notre Dame, Biological Sciences, 107 Galvin Life Science Center, Notre Dame, IN 46556; James SMITH, Michigan State University; Stewart BERLOCHER, University of Illinois at Urbana-Champaign, Ecology, Ethology, and Evolution, Urbana, IL 61801; Vesna GAVRILOVIC, Michigan State University; William PERRY, Illinois State University; Hattie DAMBROSKI, University of Notre Dame

8:48 0271 Molecular evidence of cryptic species within polyphagous pest *Liriomyza* species (Diptera: Agromyzidae). **Sonja SCHEFFER,** USDA ARS Sys Ent Lab, Bldg 046 Barc West, Beltsville, MD 20705

9:00 0272 Basal evolution of dragonflies (Odonata: Anisoptera): Molecules and morphology. **Frank Louis CARLE,** Rutgers, Cook College, Dept. of Entomology, 93 Lipman Dr., New Brunswick, NJ 08901; Karl M. KJER, Rutgers, Cook College, Dept. of Entomology, 93 Lipman Dr., Blake Hall, New Brunswick, NJ 08901

9:12 0273 Relationships of *Chrysina* (Coleoptera: Scarabaeidae), and a comparative method for building character state trees. **David HAWKS,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001; Christina BABCOCK, University of California, Riverside, Dept. of Entomology, Riverside, CA 92507; John HERATY, University of California, Riverside, 212 Entomology Bldg., Riverside, CA 92521

9:24 0274 A phylogeny of the *Oedionychina* (Coleoptera: Chrysomelidae; Galerucinae; Alticini) and preliminary analyses of the Galerucinae. **Catherine DUCKETT,** University of Puerto Rico at Rio Piedras, P.O. Box 23360, Dept. of Biology, San Juan, PR 00931; Karl KJER, Dept. of Entomology, Rutgers Univ., Cook College, New Brunswick, NJ 08901; Joseph GILLESPIE, University of Delaware, Dept. of Entomology and Applied Ecology, Newark, DE 19717-1303; Douglas TALLAMY, University of Delaware, Entolomogy & Applied Ecology, Newark, DE 19717-1303

9:36 0275 Molecular systematics of Ithomiinae (Nymphalidae). **Andrew BROWER,** Oregon State University, Dept. of Entomology, Corvallis, OR 97331-2907,

9:48 0276 Molecular phylogeny of certain Eurasian podismine grasshoppers. **William CHAPCO,** University of Regina, Biology, Dept. of Biology, University of Regina, Regina, SK S4S 0A2, Canada; Greg LITZENBERGER, Dept. Biology, Univ.. Regina, 3737 Wascana Parkway, Regina, SK S4S 0A2, Canada

10:00 Break

10:12 0277 Phylogeny of the *Papilio machaon* species group: Are *P. joanae* and *P. brevicauda* hybrid species? **Andrew MITCHELL,** University of Alberta, CW-405 Biological Sciences Building, Edmonton, AB T6G 2E9, Canada; Felix SPERLING, University of Alberta, Dept of Biological Science, CW 405 Biol Sciences Centre, Edmonton, AB, T6G 2E9 Canada

10:24 0278 Molecular evidence for new species of *Nicrophorus* in the Asian *nepalensis* group. **Derek SIKES,** University of Connecticut, Ecology & Evolutionary Biology, U-43, Dept. of Ecology & Evolutionary Biology, Storrs, CT 06269

10:36 0279 Utility and evolution of cytochrome b in insects. **Susan WELLER,** University of Minnesota, 1980 Folwell Ave, 219 Hodson Hall, St. Paul, MN 55108-6125; Rebecca SIMMONS, University of Minnesota, 1980 Folwell Ave, 219 Hodson Hall, St Paul, MN 55108

10:48 0280 Genealogical structure and patterns of introgression between races of European corn borers (*Ostrinia nubilalis*). **Steven BOGDANOWICZ,** Cornell University, Ecology and Evolutionary Biology, E344 Corson Hall, Ithaca, NY 14853; Christopher WILLETT; Luisa PEREZ; Richard HARRISON

11:00 0281 Biological assessment of the link between mitochondrial DNA sequences, *Dioryctria* morphology and larval host. **Felix SPERLING,** University of Alberta, Dept of Biological Science, CW 405 Biol Sciences Centre, Edmonton, AB T6G 2E9, Canada; Geraldine ROUX, University of Orleans, Laboratoire de Biologie des Ligneux, BP 6759 45067 Orleans, France; Nancy RAPPAPORT, U.S. Forest Service, PSW Research Station, P.O. Box 245, Berkeley, CA 94701; John STEIN, USDA Forest Service, 180 Canfield St., Morgantown, WV 26505; Gary GRANT, Canadian Forest Service, 1219 Queen Street E, Sault Ste Marie, ON P6A 5M7, Canada

11:12 0282 Inferring phylogenetic relationships among basal taxa of the tribe Luperini, or "rootworms" (Coleoptera: Chrysomelidae; Galerucinae) from the analysis of mitochondrial and nuclear DNA sequences. **Joseph GILLESPIE,** University of Delaware, Entomology and Applied Ecology, 531 So. College Ave., 250 Townsend Hall, Newark, DE 19717-1303

11:24 0283 Hybrid zones, character displacement, and reconstruction of ancestral gene flow between two periodical cicada species (Hemiptera: *Magicicada* spp.). **John COOLEY,** University of Connecticut, Ecology and Evolutionary Biology, Dept. EEB, U-43, Storrs, CT 06269

11:36 0284 Phylogeography of the longhorn cactus beetle *Moneilema appressum* LeConte (Coleoptera: Cerambycidae) and the Pleistocene history of the Sonoran Desert. **Christopher SMITH,** Harvard University, Museum of Comparative Zoology, 26 Oxford Street, Cambridge, MA 02138

11:48 0285 Character variations of the vegetable pest, *Liriomyza* spp. (Diptera: Agromyzidae) in Java. **Purnama HIDAYAT,** Jurn HPT, Faperta, Kampus IPB, Baranangsiang, Bogor, West Java 16144, Indonesia; Nur ROCHMAN; Alfia AWALIA

Section Cc. Insect Vectors in Relation to Plant Disease, Ce. Insect Pathology and Microbial Control

405 A/B

Organizers and Moderators

Dawn Cooper, University of British Columbia, 6270 University Blvd., Vancouver, BC V6T 1Z4, Canada; Wendy Gelernter, Pace Consulting, 1267 Diamond St., San Diego, CA 92109

8:00 0286 Aphid monitoring and insecticide treatments: Implications for management of BYDV in wheat. **D. HERBERT,** Virginia Polytechnic Institute and State University, Tidewater Agric Res & Ext Cent, Virginia Tech, Suffolk, VA 23437; R. ECKEL, RVWE Consulting, 53 Everittstown Road, Frenchtown, NJ 08825; P. SFORZA, Virginia Polytechnic Institute and State University, PPWS, 413 Price Hall, Blacksburg, VA 24061

8:12 0287 Identifying the insect vector of the Australian grapevine yellows phytoplasma. **LeAnn BEANLAND,** Dept. of Natural Resources and Environment, Sunraysia Horticultural Centre, P.O. Box 905, Mildura, Victoria 35 02, Australia

8:24 0288 Transmission of Indonesian isolate of tobacco leaf curl geminivirus by *Bemisia tabaci* Gennadius (Homoptera: Aleyrodidae). **Sri HIDAYAT,** Bogor Agricultural University, Plant Pests and Diseases, Kampus IPB Baranangsiang, Jl. Raya Pajajaran, Bogor, West Java 16144, Indonesia; Noor AIDAWATI; Rusmilah SUSENO; Soemartono SOSROMARSONO

8:36 0289 Identifying inoculum sources of *Xylella fastidiosa* in southern California. **Carmen GISPERT,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521; Heather COSTA, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521; Donald COOKSEY, University of California, Riverside, Dept. of Plant Pathology, Riverside, CA 92521

8:48 0290 Adoption of microbial insecticides in the developing world: The role of quality control. **Wendy GELERNTER,** PACE Consulting, 1267 Diamond Street, San Diego, CA 92109

9:00 0291 Bt efficacy against spruce budworm in previously defoliated and healthy stands. **Nathalie CARISEY,** Société de protection des forêts contre les insectes et maladies, 1780 rue Semple, QC G1N 4B8, Canada; Éric BAUCE, Universite Laval, Forestry Sciences, QC, G1K 7P4, Canada; Alain DUPONT, Société de protection des forêts contre les insectes et maladies, QC G1N 4B8, Canada

9:12 0292 Effect of a pyrethroid insecticide on noctuid (Lepidoptera) larvae fed *Bacillus thuringiensis*-treated transgenic and non-transgenic cotton. **Muhammad ASHFAQ**, University of Arkansas, Dept. of Entomology, Fayetteville, AR 72701; Seth YOUNG, University of Arkansas, Dept. of Entomology, Fayetteville, AR 72701

9:24 Break

9:36 0293 Different cross-resistance patterns in the diamondback moth resistant to transgenic broccoli expressing Cry1C toxin of *Bacillus thuringiensis*. **Jian-Zhou ZHAO,** Dept. of Entomology, Cornell University-NYSAES, Geneva, NY 14456; Ya-Xin LI, Dept. of Entomology, Cornell University-NYSAES, Geneva, NY 14456; Hilda L. COLLINS, Dept. of Entomology, Cornell University-NYSAES, Geneva, NY 14456; Jun CAO, Dept. of Plant Breeding, Cornell University, Ithaca, NY 14853; Elizabeth D. EARLE, Dept. of Plant Breeding, Cornell University, Ithaca, NY 14853; Anthony M. SHELTON, Dept. of Entomology, Cornell University-NYSAES, Geneva, NY 14456

9:48 0294 Improving the activity of *Bacillus thuringiensis* insecticidal proteins by gene shuffling. **David CERF,** Maxygen, 515 Galveston Dr, Redwood City, CA 94063-4720; Takashi YAMAMOTO, Maxygen Corporation, 515 Galveston Dr., Redwood City, CA 94063; Ruth CONG, Maxygen Corporation, 515 Galveston Drive, Redwood City, CA 94063; Brian CARR, Maxygen Corporation, 515 Galveston Drive, Redwood City, CA 94063

10:00 0295 Mode of action studies of optical brighteners as viral enhancers: Inhibitors. **Martin SHAPIRO,** Insect Biocontrol Laboratory, 10300 Baltimore Ave., Beltsville, MD 20705

10:12 0296 Efficacy of stored TM Biocontrol-1®. **Barbara KUKAN,** Natural Resources Canada, Canadian Forest Service, Pacific Forestry Centre, 506 West Burnside Road, Victoria, BC V8Z 1M5, Canada; Imre OTVOS, Canadian Forest Service Pfc, 506 W Burnside Rd, Victoria, BC V8Z 1M5, Canada; Richard REARDON, 180 Canfield St, Morgantown, WV 26505; Iral RAGENOVICH, 119 Touchstone Terrace, Lake Oswego, OR 97035

10:24 0297 Activation of a latent virus from field larvae of *Malacosoma disstria*: Evidence from cross infections. **Dawn COOPER,** University of British Columbia, 6270 University Blvd, Vancouver, BC V6T 1Z4, Canada; Judith MYERS, University of British Columbia, Vancouver, BC V6T 1Z1, Canada

10:36 0298 Conditions for endemic disease transmission in the silverleaf whitefly. **Rosalind JAMES,** USDA Agric Res Service, Beneficial Insects Res Unit, 2413 E US Highway 83, Weslaco, TX 78596-8344

10:48 0299 Further observations on the impact of *Nosema carpocapsae* on the codling moth, *Cydia pomonella*. **Joel SIEGEL,** USDA ARS HCRL, 2021 S Peach Ave, Fresno, CA 93727-5951; Lawrence LACEY, USDA ARS, 5230 Konnowac Pass Rd, Wapato, WA 98951-9651

11:00 0300 The effect of *Thelohania* sp. on hemolymph proteins and egg production of the red imported fire ant (*Solenopsis invicta*). **Johnny CHEN,** Texas A&M University, Dept. of Entomology, College Station, TX 77843; Tamara COOK, Sam Houston State University, Dept. of Biological Sciences, Huntsville, TX 77341; S. VINSON, Texas A&M University, Dept. of Entomology, College Station, TX 77843

Section: Cd. Behavior and Ecology

409 A/B

Organizers and Moderators

Micky Eubanks, Dept. of Entomology and Plant Pathology, 301 Funchess Hall, Auburn University, AL 36849; Martha Hunter, University of Arizona, Entomology, Marley Bldg., Room 641 C, P.O. Box 210036, Tucson, AZ 85721

8:00 0301 Novel, vertically-transmitted, bacterial symbiont in a parthenogenetic whitefly parasitoid, *Encarsia pergandiella*. **Martha HUNTER,** University of Arizona, Entomology, Marley Building, Room 641C, Tucson, AZ 85721; Yuval GOTTLIEB, The University of Chicago, Dept. of Organismal Biology and Anatomy, 1027 E 57th St., Chicago, IL 60637; Einat ZCHORI-FEIN, Dept. of Plant Sciences, University of Arizona, Tucson, AZ 85721; Suzanne KELLY, Dept. of Entomology, 410 Forbes Building, University of Arizona, Tucson, AZ 85721

8:12 0302 Regulation of caste fate in the polyembryonic wasp *Copidosoma floridanum*. **Laura CORLEY,** University of Wisconsin-Madison, 237 Russell Labs, Dept. of Entomology, Madison, WI 53706; Michael STRAND, University of Wisconsin-Madison, Entomology, 237 Russell Laboratories, Madison, WI 53706

8:24 0303 Host selection by the heteronomous hyperparasitoid *Encarsia pergandiella*. **Carlos BOGRAN,** Texas A&M University, Dept. of Entomology, College Station, TX 77843 2475; Kevin HEINZ, Texas A&M University, Biol Control Lab, College Station, TX 77843-2475; Walker JONES, Texas A&M University, USDA ARS SARL BCPRU, 2413 E US Highway 83, Weslaco, TX 78596-8344

8:36 0304 Chemical cues mediating host specificity in the egg parasitoid *Trissolcus basalis*. **Stefano COLAZZA,** Univ. of Palermo, Agric Entomology Inst, 90128 Palermo, 90128, Italy; Ezio PERI, Inst. of Agricultural Entomology, University of Palermo, Viale delle Scienze, Palermo, 90128, Italy; Gianandrea SALERNO, Dept. of Arboriculture and Plant Protection, University of Perugia, borgo XX Giugno, Perugia, 06121, Italy; Eric CONTI, Univ. of Perugia, Dept. Arboriculture & Plant Prot, Perugia, 061 21, Italy; Ferdinando BIN, Dept. of Arboricultural and Plant protection, University of Perugia, Borgo XX Giugno, Perugia, 06121, Italy

8:48 0305 Putative cues used by *Petermalus cerealellae* to locate its bruchid host. **George MBATA,** Oklahoma State University, Dept. Entomology & Plant Path, Stillwater, OK 74078-0001; Sonny RAMASWAMY, Kansas State University, Dept. of Entomology, 123 Water Hall, Manhattan, KS 66506; Thomas PHILLIPS, Oklahoma State Univ., Dept. of Entomology, Stillwater, OK 74078

9:00 0306 Evolution of high temperature tolerance in an introduced parasitoid. **Keith R. HOPPER,** USDA ARS BIIRL, University of Delaware, 501 S Chapel St, Newark, DE 19713-3814

9:12 0307 The effect of domestication in sunflowers: Decoupling of parasitoid and herbivore responses to wild and agricultural plant genotypes. **Yolanda CHEN,** University of California, Berkeley, 201 Wellman Hall # 3112, Berkeley, CA 94720-3112; Stephen WELTER, University of California, Berkeley, 201 Wellman Hall, Berkeley, CA 94720

9:24 0308 The affect of relative dispersal ability on the population dynamics of two parasitoids and their shared host. **Saskya VAN NOUHUYS,** University of Helsinki, Dept. of Ecology and Systematics, Helsinki, FIN-00014 H, Finland

9:36 Break

9:48 0309 Contrasting frequencies of phorid (Diptera, Phoridae) and conopid (Diptera, Conopidae) parasitism among four bumble-bee species. **Michael OTTERSTATTER,** 2500 University Dr. NW., Calgary, AB T2N 1N4, Canada

10:00 0310 Bionomics of *Neodryinis floridensis* (Dryinidae), a primary parasitoid of *Ormenaria rufufascia* (Flatidae). **Jeffrey BRUSHWEIN,** 517 Lake Avenue, Lehigh Acres, FL 33972-4041

10:12 0311 Pervasive invasives and complex trophic interactions: Fire ants and biological control. **Micky EUBANKS,** Auburn University, Dept. of Entomology, Auburn, AL 36849; Stuart BLACKWELL, Auburn University, 301 Funchess Hall, Auburn, AL 36849; Christa PARRISH, Auburn University, 301 Funchess Hall, Auburn, AL 36849; Zandra DELAMAR, Auburn University, Entomology, 301 Funchess Hall, Auburn, AL 36849

10:24 0312 Acarodomatia mediate antagonistic interactions between beneficial mites. **Andrew NORTON,** Colorado State University, Dept. of Bioagricultural Sciences and Pest Management, Fort Collins, CO 80523; Gregory ENGLISH-LOEB, Cornell University, Dept. of Entomology, Geneva, NY 14456

10:36 0313 Biocontrol in the periodically disturbed alfalfa-pea aphid system. **Anthony IVES,** University of Wisconsin-Madison, Zoology, College of Letters and Science, 459 Birge Hall, Madison, WI 53706

10:48 0314 Impact of syrphid predation on production of migrants in colonies of the brown citrus aphid, *Toxoptera*

citricida (Homoptera: Aphididae). **J. P. MICHAUD,** University of Florida, 700 Exp. St. Rd., Lake Alfred, FL 33850

11:00 0315 Do generalist predators contribute to pea aphid biocontrol? **William SNYDER,** University of Wisconsin-Madison, Dept. of Zoology, 460 Birge Hall, Madison, WI 53706

Section: Ea. Extension, Eb. Regulatory

401 B/C

Organizers and Moderators

Clifford Hoelscher, 4906 Firestone Drive, College Station, TX 77845; Ames Herbert, Tidewater Agric. Res. & Ext. Center, Virginia Tech, 6321 Holland Rd., Suffolk, VA 23437; Alan Schreiber, Agriculture Development Group, 2011 West Pears, Ste. B., Pasco, WA 99301

8:00 0316 Establishing a grower-driven IPM program for Salinas Valley lettuce: Does a participatory research approach work? **William CHANEY,** University of California Cooperative Extension, 1432 Abbott St., Salinas, CA 93901; Lynn WUNDERLICH, University of California Cooperative Extension-Monterey, 1432 Abbott St., Salinas, CA 93901-4507

8:12 0317 Evaluating the economics of an IPM program for Salinas Valley lettuce: Can we afford to use "soft" insecticides? **Lynn WUNDERLICH,** University of California Cooperative Extension-Monterey, 1432 Abbott St., Salinas, CA 93901-4507; William CHANEY, Monterey County Coop Ext, 1432 Abbott St., Salinas, CA 93901

8:24 0318 Compounds 'Generally Recognized as Safe' for quarantine insect control. **Xenia MEIER,** HortResearch, Private Bag 92169, Auckland, New Zealand; Lisa JAMIESON, HortResearch, Private Bag 92169, Auckland, New Zealand; Sonya LEWTHWAITE, HortResearch, Private Bag 92169, Auckland, New Zealand; Karen SMITH, HortResearch, Private Bag 92169, Auckland, New Zealand; Peter DENTENER, HortResearch, Private Bag 92169, Auckland, 1004, New Zealand

8:36 0319 Japanese beetle harmonization plan: Harmonization or chaos? **Shashank NILAKHE,** Texas Dept. of Agric, P.O. Box 12847, Austin, TX 78711-2847; Awinash BHATKAR, Texas Dept. of Agriculture, 2913 Rayado Ct, College Station, TX 77845

8:48 0320 Radio frequency: A practical approach to postharvest pest treatments for agricultural commodities. **James HANSEN,** Agricultural Research Service, Yakima Agricultural Research Laboratory, 5230 Konnowac Pass Road, Wapato, WA 98951; Juming TANG, Washington State University, Dept. Biol. Sys. Eng., P.O. Box 646120, Pullman, WA 99164; Julian IKEDIALA, Washington State University, Dept. Biol. Sys. Eng., P.O. Box 646120, Pullman, WA 99164; Shaojin WANG, Washington State University, Dept. Biol. Sys. Eng., P.O. Box 646120, Pullman, WA 99164

9:00 0321 Varietal testing of a methyl bromide quarantine treatment to control codling moth in nectarines exported to Japan. **Victoria Y. YOKOYAMA,** USDA, ARS, Horticultural Crops Research Laboratory, 2021 S. Peach Ave., Fresno, CA 93727; Gina T. MILLER, USDA, ARS, Horticultural Crops Research Laboratory, 2021 S. Peach Ave., Fresno, CA 93727; James G. LEESCH, USDA, ARS, Horticultural Crops Research Laboratory, 2021 S. Peach Ave., Fresno, CA 93727

Section: Fb. Urban Entomology

611 B

Organizers and Moderators

D. Michael Chambers, Dow AgroSciences, 9330 Zionsville Road, Indianapolis, IN 46268; Don Allemann, P.O. Box 10765, Greesboro, NC 27404

8:00 0322 Trail following behavior of Formosan and eastern subterranean termites. **Mary CORNELIUS,** USDA ARS, 1100 Robert E Lee Blvd, New Orleans, LA 70124-4305

8:12 0323 Density effect on tunnel formation of subterranean termites. **Helena PUCHE,** University of Florida, FLREC. 3205 College Avenue, Fort Lauderdale, FL 33314; Nan-Yao SU, University of Florida, FLREC, College of Agriculture, FLREC, 3205 College Ave., Ft. Lauderdale, FL 33314

8:24 0324 Insecticide tolerance in *Coptotermes formosanus.* **Weste OSBRINK,** USDA-ARS, USDA ARS SRRC, Southern Regional Res Ctr, New Orleans, LA 70124

8:36 0325 Preliminary results of the Louisiana tree treatment program for management of Formosan subterranean termites. **Gregg HENDERSON,** Louisiana State University, Dept. of Entomology, Baton Rouge, LA 70803; Dennis RING, Louisiana State University, P.O. Box 25100, Baton Rouge, LA 70894-5100

8:48 0326 Search tunnel sequence of the Formosan subterranean termite in a heterogeneous environment. **Cory CAMPORA,** University of Hawaii, Dept. of Entomology, Honolulu, HI 96822; J. Kenneth GRACE, University of Hawaii, Dept. of Entomology, Honolulu, HI 96822-2271

9:00 0327 A computerized remote monitoring system for subterranean termites. **Nan-Yao SU,** University of Florida, FLREC, College of Agriculture, 3205 College Ave., Ft. Lauderdale, FL 33314; Rudolf SCHEFFRAHN, University of Florida, Entomology and Nematology, Fort Lauderdale Rec, 3205 College Ave, Davie, FL 33314-7719

9:12 0328 Introduction of genetically tagged gut microbes in Formosan subterranean termites. **Claudia HUSSENEDER,** University of Hawaii at Manoa, Entomology, 3050 Maile Way, Gilmore 310, Honolulu, HI 96822; Darcy E. OISHI, University of Hawaii at Manoa, Entomology, 3050 Maile Way, Gilmore 310, Honolulu, HI 96822; J. Kenneth GRACE, University of Hawaii at Manoa, Entomology, 3050 Maile Way, Gilmore 310, Honolulu, HI 96822

9:24 0329 Effect of the growth regulator halofenozide on reproduction in the Formosan subterranean termite, *Coptotermes formosanus.* Yong PARK, USDA-ARS-SRRC, 1100 Robert E Lee Blvd, New Orleans, LA 70124; **Ashok RAINA,** USDA, ARS, SRRC, 1100 Robert E Lee Blvd., New Orleans, LA 70124

9:36 0330 Termite response to hemp and bagasse composite building materials. **J. Kenneth GRACE,** University of Hawaii, Dept. of Entomology, Honolulu, HI 96822-2271; Robert J. OSHIRO, University of Hawaii, Dept. of Plant & Environmental Protection Sciences, 3050 Maile Way, Rm. 310, Honolulu, HI 96822; Robin T. YAMAMOTO, University of Hawaii, Dept. of Plant & Environmental Protection Sciences, 3050 Maile Way, Rm. 310, Honolulu, HI 96822

9:48 0331 A novel method for evaluating factors affecting toxicant transfer from exposed drywood termite psuedergates to unexposed nestmates. **Betty FERSTER,** 76 NE 17th St., Homestead, FL 33030; Ellen THOMS, Dow AgroSciences, 3225 S MacDill Ave, Tampa, FL 33629-8171; Rudolf SCHEFFRAHN, University of Florida, Entomology and Nematology Dept., Fort Lauderdale Rec, 3205 College Ave, Davie, FL 33314-7719; Peter SCHERER, Dow AgroSciences, 9330 Zionsville Road, Indianapolis, IN 46268

10:00 Break

10:12 0332 Exterior-only termite treatments: Structural protection and effects on subterranean termite (Isoptera: Rhinotermitidae) populations. **Anne HILLERY,** University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0091; Michael POTTER, University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0091

10:24 0333 Long-term control of subterranean termites in the Midwest with Sentricon and considerations for baiting programs. **Michael F. POTTER,** University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0091; Eileen A. ELIASON, Purdue University, Entomology, 1158 Smith Hall, W. Lafayette, IN 47907-1158; Kevin DAVIS, Dept. of Entomology, University of Kentucky, S-225 Agricultural Science Bldg. N, Lexington, KY 40546-0091

10:36 0334 The distribution of termite species in Louisiana - a survey. **Matthew MESSENGER,** New Orleans Mosquito & Termite Control Board, 6601 Stars & Stripes Blvd., New Orleans, LA 70126; Nan-Yao SU, University of Florida, Ft. Lauderdale Res. & Education Center, 3205 College Ave., Ft. Lauderdale, FL 33314; Rudolf SCHEFFRAHN, University of Florida, Entomology and Nematology Dept., Ft. Lauderdale Res. & Education Center, 3205 College Ave, Ft. Lauderdale, FL 33314

10:48 0335 IMPASSE termite barrier: A major advance in pre-construction termite protection. **Philip WEGE,** Zeneca Professional Products, Entomology Section, Jealott's Hill Research Station, Bracknell, Berks RG42 6ET, UK

11:00 0336 Electronic detection of subterranean termite feeding in Sentricon Termite Colony Elimination System stations. **Joseph DEMARK,** Dow Agrosciences, 876 Buckeye Lane West, Jacksonville, FL 32259; A. Sterett ROBERTSON, Dow AgroSciences, 9330 Zionsville Road, Indianapolis, IN 46268

11:12 0337 Evaluation of commercial baiting systems for pest management of the eastern subterranean termite, *Reticulitermes flavipes* (Kollar) (Isoptera: Rhinotermitidae). **Grady J. GLENN,** Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475; Roger E. GOLD, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475

11:24 0338 Baiting structures with subterranean termites using a wick system for indoor monitoring. **Janet MCALLISTER,** City of New Orleans Mosquito and Termite Control Board, 6601 Stars and Stripes Blvd, New Orleans, LA 70126-8012; Edward FREYTAG, City of New Orleans Mosquito and Termite Control Board, 6601 Stars and Stripes Blvd., New Orleans, LA 70126-8012; Damon SHODROCK, Dow AgroSciences LLC, 9330 Zionsville Road, Indianapolis, IN 46268; Claudia RIEGEL, Dow AgroSciences LLC, Professional Pest Management, 8733 Siegen Lane, PMB 372, Baton Rouge, LA 70810

11:36 0339 Effect of construction on the efficacy of termiticides. **Dina RICHMAN,** Entomology & Nematology, University of Florida, P.O. Box 110620, Natural Area Drive, Bldg. 970, Gainesville, FL 32611; Philip KOEHLER, University of Florida, Dept. of Entomology & Nematology, Gainesville, FL 32611

11:48 0340 Canine termite detection. **Shawn BROOKS,** University of Florida, Entomology and Nematology, Bldg. 970, Surge Area Dr., P.O. 110620, Gainesville, FL 32611-0620

Town Meeting: Meet the Governing Board

611A

12:00 noon - 1:00 p.m.

Student Competition Section A: Systematics, Morphology, and Evolution

408 C

Moderator

John Wenzel, Dept. of Entomology, 103 Botany & Zoology Bldg., Columbus, OH 43210-1220

1:30 0341 Phylogenetic relationships of the genus *Thricops* Rondani and the status of *Alloeostylus* Schnabl (Diptera: Muscidae). **Jade SAVAGE,** McGill University, Macdonald Campus, Ste-Anne-de-Bellevue, Quebec H9X 3V9, Canada

1:42 0342 Leptoceroid caddisflies: Phylogenetic analysis of combined morphological and molecular data. **Aysha PRATHER,** University of Minnesota, Dept. of Entomology, St Paul, MN 55108

1:54 0343 Ecological distribution of asexual oribatid mites: A test of the red queen hypothesis. **Jennifer CIANCIOLO,** SUNY College of Environmental Science and Forestry, Environmental Forest Biology, 1 Forestry Drive, Illick Hall 142, Syracuse, NY 13210

2:06 0344 Conservation conundrums: What mitochondrial phylogenies say about preservation efforts for two threatened *Hemileuca* (Saturniidae). **Daniel RUBINOFF,** Univ. of California, 201 Wellman Hall Espm, Berkeley, CA 94720-0001; Felix SPERLING, University of Alberta, Dept of Biological Science, CW 405 Biol Sciences Centre, Edmonton, AB, T6G 2E9 Canada

2:18 0345 Microevolutionary patterns of COII variation in a eusocial host and parasite system. **Heather ROBERTS,** Texas Tech University, Dept. of Biology, Lubbock, TX 79416-3131; Marilyn HOUCK, Texas Tech University, P.O. Box 4609, Lubbock, TX 79409-4609

2:30 0346 Preliminary phylogenetic analysis of neotropical *Platynota* species (Lepidoptera: Tortricidae). **Joshua HERBECK,** University of California, Berkeley, Division of Insect Biology, 201 Wellman Hall, Berkeley, CA 94720; Jerry POWELL, University of California, Berkeley, 201 Wellman Hall, Berkeley, CA 94720

2:42 Break

2:54 0347 Queens smaller than workers: Morphological and molecular phylogeny of *Apoica* (Lepeletier) (Hymenoptera: Vespidae; Polistinae, Epiponini). **Kurt PICKETT,** Museum of Biological Diversity, 1315 Kinnear Road, Columbus, OH 43212; John Wenzel, Ohio State University, Museum of Biological Diversity, 1315 Kinnear Road, Columbus, OH 43212

3:06 0348 Speciation and host plant specialization in Acacia seed beetles. **Geoffrey MORSE,** Harvard University, Museum of Comparative Zoology, Cambridge, MA 02138; Brian FARRELL, Harvard University, Earth and Planetary Sciences, Cambridge, MA 02138

3:18 0349 A phylogeny of *Alphomelon* (Braconidae: Microgastrinae) species using biological, morphological, and molecular evidence. **A. R. DEANS,** University of Arkansas, Dept. of Entomology, Fayetteville, AR 72701; J. B. WHITFIELD, University of Arkansas, Dept. of Entomology, Fayetteville, AR 72701; D. H. JANZEN, University of Pennsylvania, Dept. of Biology, 102 Leidy Laboratories, Philadelphia, PA 19104

3:30 0350 Systematics and biogeography of the Synteliidae (Coleoptera: Hydrophiloidea). **Christopher MARSHALL,** Cornell University, Dept. of Entomology, Comstock Hall, Ithaca, NY 14853; Alfred NEWTON, Field Mus of Natural Hist, Roosevelt Rd at Lakeshore Dr, Chicago, IL 60607-7005

3:42 0351 Unravelling the systematics of a diverse clade of big-headed flies (Diptera, Pipunculidae, Eudorylini). **Jeff SKEVINGTON,** University of Queensland, Dept. of Zoology and Entomology, Brisbane, Queensland 4072, Australia; David YEATES, University of Queensland, Dept. of Zoology and Entomology, Brisbane, Queensland 4072, Australi

Student Competition Section A: Systematics, Morphology, and Evolution

408 B

Moderator

Jacqueline Miller, Allyn Museum of Entomology, 3621 Bay Shore Road, Sarasota, FL 34234

1:30 0352 A taxonomic revision of North American members of *Gyretes* Brullé (Coleoptera: Gyrinidae), North of Mexico. **Jennifer BABIN,** Laurentian University, Sudbury, ON P3E 2C6, Canada; Yves ALARIE, Laurentian University, Biology, Sciences and Professions, Sudbury, ON P3E 2C6, Canada

1:42 0353 Cladistics of the Tryphoninae (Hymenoptera: Ichneumonidae) with comments on tribal relationships, classification and adaptive radiation. **Andrew BENNETT,** Royal Ontario Museum, 100 Queen's Park, Toronto, ON M6E 2X6, Canada

1:54 0354 The systematics and biogeography of Phalangogoniina (Coleoptera: Scarabaeidae: Rutelinae: Anoplognathini), a subtribe endemic to Central America. **Andrew SMITH,** University of Nebraska, Univ. of Nebr. State Museum, W436 Nebraska Hall, Lincoln, NE 68588-0514

2:06 0355 Drumming, skimming, and evolution of flight: A new phylogeny of Plecoptera. **Matthew TERRY,** Brigham Young University, 574 WIDB, Provo, UT 84602

2:18 0356 The higher Diptera community of sedge meadows (Carex: Cyperaceae) in southern Quebec. **Frederic BEAULIEU,** McGill University, Natural Resource Sciences, Agricultural and Environmental Sciences, 21111 Lakeshore, Ste-Anne-de-Bellevue, Quebec H9X 3V9, Canada

2:30 0357 Phylogeny of the North American *Archips xylosteana* (Lepidoptera: Tortricidae) species group based on combined morphological and mitochondrial DNA data sets. **James KRUSE,** University of California, Berkeley, Division of Insect Biology, 201 Wellman Hall, Berkeley, CA 94720-3112; Felix SPERLING, University of Alberta, Dept of Biological Science, CW 405 Biol Sciences Centre, Edmonton, AB, T6G 2E9 Canada

2:42 Break

2:54 0358 Very hungry caterpillar or turned-on larva? **Martha LUTZ,** 302 Richards St, Iowa City, IA 52246

3:06 0359 Molecular phylogeny and history of host plant affiliation in North American *Trirhabda* (Coleoptera, Chrysomelidae) leaf beetles. **Zuzana SWIGONOVA,** Rutgers University, Dept. of Entomology, Blake Hall, New Brunswick, NJ 08901-8524; Karl KJER, Rutgers University, Dept. of Entomology, Blake Hall, New Brunswick, NJ 08901

3:18 0360 Phylogeny and evolution of subsocial behavior in the New World treehopper subfamily Membracinae (Homoptera: Membracidae). **Chung Ping LIN,** Dept. of Entomology, Comstock Hall, Cornell University, Ithaca, NY 14850

3:30 0361 Phylogenetic relationships of the Australasian Coelometopini (Coleoptera: Tenebrionidae: Coelometopinae), with an emphasis on the North Queensland wet tropics fauna. **Patrice BOUCHARD,** University of Queensland, Dept. of Zoology and Entomology, Brisbane, Queensland 4072, Australia; David YEATES, University of Queensland, Dept. of Zoology and Entomology, Brisbane, Queensland 4072, Australia

3:42 0362 Some influential factors in the reproductive success of *Hypothyce mixta* Howden Coleoptera – Scarabaeidae. **Kimberly OSBORNE,** Stephen F. Austin State University, Biology, P.O. Box 13003, Nacogdoches, TX 75962; William W. GIBSON, Stephen F. Austin State University, P.O. Box 13003, Nacogdoches, TX 75962

3:54 0363 Preliminary results of a cladistic analysis of *Plecia* (Diptera: Bibionidae). **Scott FITZGERALD,** Oregon State University, Dept. of Entomology, Corvallis, OR 97331-2907

Student Competition Section A: Systematics, Morphology, and Evolution

409 A/B

Moderator

Susan J. Weller, Dept. of Entomology, 219 Hodson Hall, University of Minnesota, St. Paul, MN 55108

1:30 0364 The phylogeny and nectar feeding of *Agathirsia* (Braconidae: Hymenoptera). **Thomas PUCCI,** University of Kentucky, S-225 Agricultural Science Building North, Lexington, KY 40546; Michael SHARKEY, University of Kentucky, Entomology, S-225 Agricultural Science Building North, Lexington, KY 40546; Gretchen JONES, USDA, ARS, APMRU, 2771 F Road, College Station, TX 77845

1:42 0365 The use of molecules and morphology in delineating bumble bee species. **Troy WHIDDEN,** University of Calgary, Entomology, Dept. of Biological Sciences, Calgary, AB T2N 1N4, Canada

1:54 0366 Ultrastructure of mirid stylets (Hemiptera: Miridae): A comparative SEM study. **David BOYD,** Clemson University, Urban Entomology Lab, Clemson, SC 29634

2:06 0367 Diversity of Agromyzidae (Diptera) in Canadian tallgrass prairies. **Vanessa CRECCO,** McGill University, Natural Resource Sciences, Ste-Anne-de-Bellevue, QC H9X 3V9, Canada

2:18 0368 Generic relationships of the subfamily Dolichopodinae (Diptera: Dolichopodidae). **Scott BROOKS,** Natural Resource Sciences, McGill University, Ste-Anne-de-Bellevue, QC H9X 3V9, Canada

2:30 0369 What kind of signals do mimetic tiger moths send? A phylogenetic examination of the evolution of mimicry (Arctiidae: Arctiinae: Euchromiini). **Rebecca SIMMONS,** University of Minnesota, Dept. Entomology, St Paul, MN 55108; Susan WELLER, University of Minnesota, 1100 Washington Avenue South, Minneapolis, MN 55415-1226

2:42 Break

2:54 0370 The evolution of novel behaviors and morphologies in army ants: A phylogenetic analysis using molecular and morphological data. **Sean G. BRADY,** University of California, Davis, Entomology, One Shields Avenue, Davis, CA 95616

3:06 0371 Phylogeny of Panorpidae (Mecoptera). **Isaac WINKLER,** Brigham Young University, Zoology, 574 WIDB, Provo, UT 84602; Michael WHITING, Brigham Young University, Dept. of Zoology, Provo, UT 84602

3:18 0372 The Geniatini (Coleoptera: Scarabeidae: Rutelinae) goes cyber: An overview of the geniatine scarab genera. **Karla VILLATORO,** W436 Nebraska Hall, Lincoln, NE 68588-0546

3:30 0373 Morphological discrimination of *Myzus persicae* (Sulzer) and *Myzus nicotianae* Blackman: One species or two? **Joan CLARKE,** Virginia Polytechnic Institute and State University, 216 Price Hall, Blacksburg, VA 24061; Paul SEMTNER, Virginia Polytechnic Institute and State University, 2375 Darvills Rd, Blackstone, VA 23824-3020

3:42 0374 Evolution of life history traits in euptychiine butterfly genera (Nymphalidae: Saytrinae). **Debra MURRAY,** Louisiana State University, Dept. of Entomology, Baton Rouge, LA 70803

Student Competition: Section B. Physiology, Biochemistry, Toxicology, and Molecular Biology

411 A/B

Moderator

Leslie Hickle, 1237 Corte de Vela, Chula Vista, CA 91910

1:30 0375 Caterpillar salivary enzyme: Multi-functional role in herbivore fitness. **Richard MUSSER,** University of Arkansas, Dept. of Entomology, Fayetteville, AR 72701; Gary FELTON, University of Arkansas, Entomology, 321 Agri Bldg, Fayetteville, AR 72704

1:42 0376 Expression of an invertebrate gap junction homologue from the *Campoletis sonorensis* ichnovirus. **Matthew TURNBULL,** University of Kentucky, S-225 Ag Science North, Dept. of Entomology, Lexington, KY 40546-0091; Bruce WEBB, University of Kentucky, S-225 Ag. Sci. Center N., Dept. of Entomology, Lexington, KY 40546-0091

1:54 0377 Chemoreception of sugars by a polyphagous species versus an olygophagous species of *Malacosoma.* **Maria PANZUTO,** 11591 19th Avenue, Montreal, QC H1E 5Z1, . Canada; Yves MAUFFETTE, UQAM, C.P. 8888, Succ. Centre-Ville, Montreal, QC H3C 3P8, Canada; Paul ALBERT, Concordia University, Biology, 1455 De Maisonneuve West, Concordia University, Montreal, QC H3G 1M8, Canada

2:06 0378 cGMP-dependent protein kinase gene expression and behavioral plasticity in honey bees. **Yehuda BEN-SHAHAR,** University of Illinois at Urbana-Champaign, Dept. of Entomology, 320 Morrill Hall, Urbana, IL 61801; Marla SOKOLOWSKI, Biology Group, University of Toronto, 3359 Mississauga Rd, Missisauga, ON L5L1C6, Canada; Gene ROBINSON, University of Illinois at Urbana-Champaign, 505 S Goodwin Ave, Urbana, IL 61801-3707

2:18 0379 Abnormal splicing pattern of the *white eye* gene in a mutant melon fly (*Bactrocera cucurbitae*) strain. **Nathan PEABODY,** University of Hawaii, Dept. of Entomology, 3050 Maile Way, Honolulu, HI 96822-2231; Susan MCCOMBS, University of Hawaii at Manoa, 3050 Maile Way Rm 310, Honolulu, HI 96822-2231

2:30 Break

2:42 0380 Effect of synergists on propoxur pharmacokinetics on German cockroach, *Blattella germanica* L. **Hussein SANCHEZ-ARROYO,** University of Florida, Entomology and Nematology Dept., Building 970 Natural Area Drive, Gainesville, FL 32611; Steven M. VALLES; Phil G. KOEHLER

2:54 0381 Effects of dietary phosphorus on the growth of larval *Manduca sexta* on both an artificial and a natural diet. **Marc PERKINS,** Arizona State University, Dept. of Biology, Tempe, AZ 85287-1501; H. Arthur WOODS, Arizona State University, Dept. of Biology, Tempe, AZ 85287-1501; Jon HARRISON, Arizona State University, Biology, P.O. Box 871501, Tempe, AZ 85287-1501

3:06 0382 Regulation of free arachidonic acid levels in salivary glands of the lone star tick, *Amblyomma americanum* (L.). **Jorge Omero LOPEZ,** Oklahoma State University, Dept. of Entomology & Plant Pathology, Stillwater, OK 74078-3033; James S. TUCKER, Oklahoma State University, Dept. of Entomology & Plant Pathology, Stillwater, OK ; John R. SAUER, Oklahoma State Universtity, Dept. of Entomology & Plant Pathology, Stillwater, OK

3:18 0383 Organophosphate insecticide toxicity to male and female Oriental fruit moth, *Grapholita molesta* (Busck) (Lepidoptera: Tortricidae). **Jeon J. HONG,** Rutgers, The State University of New Jersey, Dept. of Entomology, Blake Hall, 93 Lipman Dr., New Brunswick, NJ 08901; Frederique M. de LAME, Rutgers, The State University of New Jersey, Rutgers Agr Res & Ext Ctr,, 121 Northville Rd., Bridgeton, NJ 08302-5919; Peter W. SHEARER, Rutgers, The State University of New Jersey, Rutgers Agr Res & Ext Ctr,, 121 Northville Rd., Bridgeton, NJ 08302-5919; Lena B. BRATTSTEN, Rutgers, The State University of New Jersey, Dept. of Entomology, Blake Hall, 93 Lipman Dr., New Brunswick, NJ 08901

Student Competition Section B: Physiology, Biochemistry, Toxicology, and Molecular Biology

411 C

Moderator

Glenn Holbrook, Dept. of Entomology, 512 ASI Bldg., University Park, PA 16802

1:30 0384 Reduction of bacterial ß-galactosidase activity and production by burying beetle (Coleoptera: Silphidae) secretions. **Andrew BISHOP,** University of Nebraska at Kearney, Dept. of Biology, 905 West 25th Street, Kearney, NE 68849; Jeremy KROEMER, University of Nebraska at Kearney, Dept. of Biology, 905 West 25th Street, Kearney, NE 68849; William HOBACK, University of Nebraska at Kearney, Dept. of Biology, Kearney, NE 68859; Joanne SCALZITTI, University of Nebraska at Kearney, Dept. of Biology, 905 West 25th Street, Kearney, NE 68849; Julie SHAFFER, University of Nebraska at Kearney, Dept. of Biology, 905 West 25th Street, Kearney, NE 68849

1:42 0385 Elevated insecticide tolerance of an arbovirus-transmitting mosquito, *Aedes albopictus* (Diptera: Culicidae), caused by habitat components. **Chansak SUWANCHAICHINDA,** Rutgers, The State University of New Jersey, Dept. of Entomology, Blake Hall, New Brunswick, NJ 08901; Lena BRATTSTEN, Rutgers, The State University of New Jersey, Dept. of Entomology, Blake Hall, New Brunswick, NJ 08901

1:54 0386 Supercooling capacity and survival of low temperatures by a pyrethroid-resistant strain of *Typhlodromus pyri* Scheuten (Acari: Phytoseiidae). **Debra MOREAU,** Biology Dept., Dalhousie University, Halifax, NS B3H 4H6, Canada; John HARDMAN, Agriculture Canada, Research Stn, Kentville, NS B4N 1J5, Canada; Olga KUKAL, Dartmouth, NS, Canada

2:06 0387 Regulation of substrate-inducible cytochrome P450 monooxygenases of the black swallowtail by xenobiotics. **Rebecca PETERSEN,** Univ. of Illinois, 505 S Goodwin Ave, Urbana, IL 61801-3707; Mary A. SCHULER, University of Illinois at Urbana-Champaign, Urbana, IL 61801; May BERENBAUM, University of Illinois Urbana Champaign, 505 S Goodwin Ave, Urbana, IL 61801-3707

2:18 0388 Hermes regulation through protein-protein interactions? **Kristin MICHEL,** University of California, Riverside, Entomology, 3401 Watkins Drive, Riverside, CA 92521; Peter ATKINSON, University of California, Riverside, 3401 Watkins Drive, Riverside, CA 92521

2:30 Break

2:42 0389 Comparing toxicological effects between neem oil and pure azadirachtin on squash bug *Anasa tristis* (DeGeer). **Onesimus OTIENO,** Oklahoma State University, Dept. of

Entomology and Plant Pathology, 127 Noble Research Center, Stillwater, OK 74078; Jonathan EDELSON, Oklahoma State University, P.O. Box 128, Lane, OK 74555-0128

2:54 0390 Characterization and regulation of heme-binding proteins in the American dog tick. **Nanda GUDDERRA,** North Carolina State University, Dearstyne Entomology Bldg, Raleigh, NC 27695-7647; Daniel SONENSHINE, Old Dominion University, Biological Sciences, Norfolk, VA 23529; Charles APPERSON, North Carolina State University, Dept. of Entomology, Campus Box 7647, Raleigh, NC 27695-7647; Michael ROE, North Carolina State University, Box 7647, Raleigh, NC 27695-7647

3:06 0391 Cloning and transcriptional expression of the first known arthropod leucokinin-like peptide receptor. **Steven HOLMES,** Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475; Patricia PIETRANTONIO, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475

Student Competition Section Ca: Biological Control

611 A

Moderator

Alan Cameron, Penn. State University, University Park, PA 16802

1:30 0393 Prospects for biological control of the whitefly *Bemisia tabaci* with phytoseiid predators. **Maria NOMIKOU,** IBED, University of Amsterdam, Section Population Biology, Postbus 94084, Amsterdam, 1090 GB, The Netherlands; Arne JANSSEN, IBED, Section Population Biology, University of Amsterdam, Postbus 94084, 1090 GB, Amsterdam, The Netherlands; Ruud SCHRAGG, IBED, Section Population Biology, University of Amsterdam, Postbus 94084, 1090 GB, Amsterdam, The Netherlands; Maurice W. SABELIS, IBED, Section Population Biology, University of Amsterdam, Postbus 94084, 1090 GB, Amsterdam, The Netherlands

1:42 0394 *Neoseiulus fallacis* (Garman) as a potential biological control agent of *Panonychus ulmi* (Koch) in Virginia vineyards. **Jessica METZGER,** Virginia Polytechnic Institute and State University, 205C Price Hall, Blacksburg, VA 24061; Douglas PFEIFFER, Virginia Polytechnic Institute and State University, Dept. of Entomology, Blacksburg, VA 24061

1:54 0395 The influence of experience on the foraging behaviour of *Aphelinus abdominalis* and its efficacy as a biological control of the foxglove aphid, *Aulacorthum solani.* **Rebecca BRYDEN,** Simon Fraser University, Biological Sciences, 8888 University Way, Burnaby, BC V5N 1V4, Canada

2:06 0396 Efficacy of the entomopathogenic nematode, *Heterorhabditis marelatus*, for Colorado potato beetle control in the field. **Nathan COTTRELL,** Michigan State University, Dept. of Entomology, 243 Natural Science Building, East Lansing, MI 48824; Haddish MELAKEBERHAN, Michigan State University, Dept. of Entomology, 243 Natural Science Building, East Lansing, MI 48824-1115; Edward GRAFIUS, Michigan State University, Dept. of Entomology, East Lansing, MI 48824

2:18 0397 Realized host range assessment of European *Peristenus* species. **Heather WHITE,** University of Manitoba, Entomology, Rm. 214, Winnipeg, Manitoba R3T 2N2, Canada; Ulrich KUHLMANN, CABI Bioscience, Centre Switzerland, Delemont, CH-2800, Switzerland

2:30 0398 Contributions of neighboring crops to *Hippodamia convergens* populations in cotton. **Jarrad PRASIFKA,** Texas A&M University, Dept. of Entomology Ms 2475, College Station, TX 77843; Kevin HEINZ, Texas A&M University, Entomology, Biol Control Lab, College Station, TX 77843-2475; Kirk WINEMILLER, Texas A&M University, Wildlife & Fisheries Sciences, 210 Nagle Hall, College Station, TX 77843-2258

2:42 Break

2:54 0399 Measuring the impact of natural enemies on an invasive species, the pine false webworm, *Acantholyda erythrocephala* (Hymenoptera: Pamphillidae), in northern New York. **Bonnie MACCULLOCH,** Syracuse University, Entomology, 133 Illick Hall, 1 Forestry Drive, Syracuse, NY 13210; Douglas ALLEN, Syracuse University, Environmental Science and Forestry, 1 Forestry Drive, Syracuse, NY 13210

3:06 0400 Biological control of mites on papaya crop. **Valerie FOURNIER,** Centre de Recherche en Horticulture, Entomology, Departement de Phytologie, Universite Laval, Quebec, QC G1K 7P4, Canada; Jay ROSENHEIM, University of California, Davis, Entomology, College of Agricultural and Environmental Sciences, University of California, 1 Shields Ave, Davis, CA 95616-5270; Marshall JOHNSON, University of Hawaii, Dept. of Entomology, University of Hawaii at Manoa, Manoa, HI 96822; Jacques BRODEUR, Laval University, Dept. De Phytologie, QC G1K 7P4, Canada

3:18 0401 Biological attributes of *Thripinema nicklewoodi*, a potential biological control agent of western flower thrips. **Un Taek LIM,** Dept. Entomology, Fernald Hall, Amherst, MA 01003; Roy VAN DRIESCHE, University of Massachusetts, Dept. of Entomology, Amherst, MA 01003; Kevin HEINZ, Texas A&M University, Biol Control Lab, College Station, TX 77843-2475

3:30 0402 Challenges to mass production of *Anagyrus ananatis* Gahan for augmentative control of pink pineapple mealybugs. **Raju PANDEY,** University of Hawaii, Dept. of Entomology, Honolulu, HI 96822; Marshall JOHNSON, University of Hawaii, Dept. of Entomology, Manoa, HI 96822

3:42 0403 Host specificity of *Laricobius nigrinus* (Coleoptera: Derodontidae): A predatory beetle of the hemlock woolly adelgid. **Gabriella ZILAHI-BALOGH,** Virginia Tech, Dept. of Entomology, Blacksburg, VA 24061; Loke KOK, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061; Scott SALOM, Virginia Polytechnic Institute and State University, Dept. of Entomology, Blacksburg, VA 24061-0319

Student Competition Section Ca: Biological Control

611 B

Moderator

Ted Cottrell, 21 Dunbar Road, Byron, GA 31008

1:30 0404 *Peristenus* parasitism of *Lygus lineolaris* in multiple plant habitats. **Kelley TILMON,** Cornell University, Dept. of Entomology, Ithaca, NY 14853; Michael HOFFMANN, Cornell University, Dept. of Entomology, Ithaca, NY 14853; Bryan DANFORTH, Cornell University, Comstock Hall, Ithaca, NY 14853; William DAY, USDA, Beneficial Insects Research Laboratory, Chapel St., Newark, DE 19717

1:42 0405 Performance of *Iphiseiodes quadripilis* (Banks) (Acari: Phytoseiidae), an important predatory mite in citrus, on various natural diets in the laboratory. **Raul VILLANUEVA,** University of Florida, Entomology, 700 Exp Station Rd, Lake Alfred, FL 33850; Carl CHILDERS, University of Florida, Citrus Research & Education Center, 700 Exp Station Rd, Lake Alfred, FL 33850

1:54 0406 Tritrophic effects of glycoalkaoids on entomopathogenic nematodes attacking Colorado potato beetle (*Leptinotarsa decemlineata*). **Christine ARMER,** Oregon State University, Dept. of Entomology, Corvallis, OR 97331; RALPH BERRY, Oregon State University, Dept. of Entomology, Corvallis, OR 97331-2907

2:06 0407 Field estimation of longevity of *Trichogramma platneri* in a walnut orchard in northern California. **Sarah MANSFIELD,** University of California, Berkeley, Division of Insect Biology, 201 Wellman Hall #3112, Berkeley, CA 94720 3112; Nicholas J. MILLS, University of California, Berkeley, Division of Insect Biology, 201 Wellman Hall #3112, Berkeley, CA 94720-3112

2:18 0408 Assessing the aptitudes of four generalist Heteroptera to be used as a biological control agents of cucumber pest in Mediterranean greenhouses: A behavioral study. **Marta MONTSERRAT,** University of Amsterdam, Population Biology, Kruislaan 320, Amsterdam, 1098 SM, The Netherlands

2:30 0409 Arthropod fauna associated with kudzu (*Pueraria montana* var. *lobata* Willd) in North Carolina. **Melissa THORNTON,** North Carolina State University, 3530-101 Ivy Commons Drive, Raleigh, NC 27606; David ORR, North Carolina State University, Dept. of Entomology, Raleigh, NC 27695; Melinda GIBBS, North Carolina State University, Dept. of Entomology, Raleigh, NC 27695-7613

2:42 Break

2:54 0410 Effects of cover crops on sugar feeding by parasitoids and parasitism rates. **Jana LEE,** Michigan State University, 204 Center for Integrated Plant Sys, East Lansing, MI 48824; George HEIMPEL, University of Minnesota, Dept. of Entomology, St Paul, MN 55108

3:06 0411 Role of glandular-haired alfalfa in alfalfa pest management in Virginia. **Theresa DELLINGER,** Dept. of Entomology, 216 Price Hall, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0319; R. R. YOUNGMAN, Dept. of Entomology, 216 Price Hall, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0319; C. A. LAUB, Dept. of Entomology, 216 Price Hall, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0319

3:18 0412 The search for suitable hosts by larval endoparasitoids. **Nicole LAURO,** University of Manitoba, Dept. of Entomology, Winnipeg, MB R3T 2N2, Canada; Neil HOLLIDAY, University of Manitoba, Dept. of Entomology, Winnipeg, MB R3T 2N2, Canada

3:30 0413 Infochemicals stimuli in *Aleochara bilineata* against onion maggot. **France HANDFIELD,** Natural Resource Sciences, McGill University, 21111 Lakeshore Road, Ste-Anne de Bellevue, Quebec H9X 3V9, Canada

3:42 0414 Evaluating biological control of fire ants using phorid flies: Effects on competitive interactions. **Jason MOTTERN,** Texas A&M University, Biological Control Laboratory, Dept. of Entomology, College Station, TX 77843-2475; Kevin HEINZ, Texas A&M University, Entomology, Biol Control Lab, College Station, TX 77843-2475; Paul ODE, University of Delaware, USDA ARS BIIR, Univ. of Delaware, Newark, DE 19713

Student Competition Section Cb: Apiculture and Social Insects

408 A

Moderator

Robert Kopanic, MS 402, Racine, WI 53403

1:30 0415 Colony foundation in the dampwood termite *Zootermopsis nevadensis*: Is it all in the family? **Mark SUAREZ,** University of Maryland College Park, Dept. of Entomology, Plant Sciences Building, College Park, MD 20742; Barbara THORNE, University of Maryland College Park, Entomology, Room 3102, Plant Sciences Building, College Park, MD 20742; David HAWTHORNE, University of Maryland College Park, Entomology, Plant Sciences Building, College Park, MD 20742; Michael HAVERTY, 941 Carol Lane, Lafayette, CA 94549

1:42 0416 An integrated pest management approach for the control of the parasitic mite, *Varroa jacobsoni* Oud. (Acari: Varroidae), in honey bee, *Apis mellifera* L. (Hymenoptera: Apidae) colonies. **Nathan RICE,** Simon Fraser University, Biological Sciences, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

1:54 0417 The genetic structure of subterranean termites, *Reticulitermes* spp., in northern California. **Kirsten COPREN,** University of California, Davis, Entomology, 1 Shields Ave, Davis, CA 95616-5270

2:06 0418 *Psithyrus* invasions of bumblebee field colonies. **Luc PELLETIER,** Universite Laval, Dept. Biologie, Pav. Vachon, Quebec, QC G1K 7P4, Canada; Jeremy MCNEIL, Universite Laval, Biology, Quebec, QC G1K 7P4, Canada

2:18 0419 Queen honey bee pheromone: New components **I. KEELING,** Dept. of Chemistry, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; Keith N. SLESSOR, Simon Fraser University, Chemistry, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; Heather HIGO, Simon Fraser University, Biological Sciences, Burnaby, BC V5A 1S6, Canada; Mark L. WINSTON, Simon Fraser University, Biological Sciences, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

2:30 Break

2:42 0420 Cultivated raspberry, *Rubus* spp., for building populations of *Osmia lignaria* Say (Hymenoptera: Megachilidae) for apple pollination in Nova Scotia, Canada. **Cory SHEFFIELD,** Dept. of Environmental Biology, University of Guelph, Guelph, ON N1G 2W1, Canada; Peter KEVAN; Robert SMITH

2:54 0421 Honey bee pollination of greenhouse tomatoes. **Holly SABARA,** Simon Fraser University, Biological Sciences, 8888 University Dr., Burnaby, BC V5A 1S6, Canada

3:06 0422 Communication or mechanical aid? Stridulation in the fire ant, *Solenopsis invicta* Buren. **Steven RAUTH,** Texas A&M University, Dept. of Entomology, College Station, TX 77843; S. VINSON, Texas A&M University, Dept. of Entomology, College Station, TX 77843-0001

3:18 0423 Bumble bee, *Bombus impatiens* Cresson (Hymenoptera) pollination of greenhouse tomatoes, *Lycopersicon esculentum* Mill. (Solanaceae). **Lora MORANDIN,** Simon Fraser University, University Drive, Burnaby, BC V5A 1S6, Canada; Terence LAVERTY; Peter KEVAN

Student Competition Section Cc: Insect Vectors in Relation to Plant Disease, Ce. Insect Pathology and Microbial Control

403 A/B

Moderator

Paul Ode, USDA-ARS, BIIR, Neward, DE 19713

1:30 0424 Delaying the time of infection of aphid transmitted *Tobacco etch virus* increases fruit yield in *Capsicum chinense.* **Sharon MCDONALD,** Virginia Polytechnic Institute and State University, 615 Washington St SE Apt 5, Blacksburg, VA 24060-4947; Brian NAULT, Virginia Polytechnic Institute and State

University, 33446 Research Dr, Painter, VA 23420-2826; Sue TOLIN, Virginia Polytechnic Institute and State University, Plant Pathology, Physiology, and Weed Science, 435 Old Glade Rd., Blacksburg, VA 24061

1:42 0425 Pathogenic microorganisms associated with southern pine coneworms (Lepidoptera: Pyralidae) attacking loblolly pine. **Nenad MIHELCIC,** University of Guelph, Dept. of Plant Agriulture, Guelph, ON NIG 2W1, Canada; James HANULA, Forestry Sci Lab, SE Forest Exp Stn, Athens, GA 30602-2044; Gary DEBARR, USDA Forestry Sciences Lab, 320 Green St., Athens, GA 30602 2044

1:54 0426 Ionic selectivity of the pores formed by the *Bacillus thuringiensis* insecticidal toxins Cry1Aa and Cry1Ac in midgut brush border membrane vesicles. **Martin KIROUAC,** Université de Montréal, Groupe de recherche en transport membranaire, Physics, P.O. Box 6128, Centre Ville Station, Montreal, QC H3C 3J7, Canada; Vincent VACHON, Université de Montréal, Groupe de recherche en transport membranaire, P.O. Box 6128, Centre Ville Station, Montreal, QC H3C 3J7, Canada; Jean-François NOËL, Université de Montréal, Groupe de recherche en transport membranaire, P.O. Box 6128, Centre Ville Station, Montreal, QC H7C 3J7, Canada; Frédéric GIRARD, Université de Montréal, Groupe de recherche en transport membranaire, P.O. Box 6128, Centre Ville Station, Montreal, QC H3C 3J7, Canada; Jean-Louis SCHWARTZ, Biotechnology Research Institute, National Research Council and Université de Montréal, Groupe de recherche en transport membranaire, 6100 Royalmount Avenue, Montreal, QC H4P 2R2, Canada; Raynald LAPRADE, Université de Montréal, Groupe de recherche en transport membranaire, P.O. Box 6128, Centre Ville Station, Montreal, QC H3C 3J7, Canada

2:06 0427 Impact of clover root curculio on entomopathogenic nematode persistence. **Lane LOYA,** Pennsylvania State University, Dept. of Entomology, University Park, PA 16802; Arthur HOWER, Pennsylvania State University, Dept. of Entomology, 501 ASI Bldg, University Park, PA, 16802

2:18 Break

2:30 0428 Comparison of Japanese and American strains of *Entomophaga maimaiga*: Are there differences in pathogenicity? **Stephen THOMAS,** Fernald Hall, Amherst, MA 01003

2:42 0429 In search of intraspecific variability in an entomopathogenic fungus: Effect of temperature on growth and germination of the forest tent caterpillar pathogen, *Furia crustosa.* **Melanie FILOTAS,** Dept. of Entomology, Cornell University, ITHACA, NY 14853; Ann HAJEK, Cornell University, Dept. of Entomology, Ithaca, NY 14853

2:54 0430 Plant surface waxes influence infection of the pea aphid by entomopathogenic fungi. **Patrick DUETTING,** University of Idaho, Ag. Sci. 242, Plant, Soil and Entomological Sciences, Moscow, ID 83844-2339; Sanford EIGENBRODE, Plant, Soil, and Entomological Sciences, University of Idaho, Moscow, ID 83844-2339

3:06 0431 Sensitivity of *Beauveria bassiana* to alkaloids found in insect resistant potatoes. **Carl JORGENSEN,** North Dakota State University, Entomology Dept., 202 Hultz Hall, Fargo, ND 58105

Student Competition Section Cd: Behavior and Ecology

404 A/B

Moderator

Gwen Pearson, Dept. of Biology, Albion, MI 49224

1:30 0432 Differential dispersal and resource partitioning explain the coexistence of competing parasitoid species. **Brian VAN HEZEWIJK,** University of Alberta, Dept. of Biological Sciences, Edmonton, AB T6G 2E9, Canada; Jens ROLAND, University of Alberta, Edmonton, AB T6G 2E9, Canada

1:42 0433 Using Eliminade™ to explore foraging in pine canopy, bole or understory by the southern pine beetle parasitoid complex. **Sherah L. VANLAERHOVEN,** University of Arkansas, A-321, Dept. of Entomology, Fayetteville, AR 72701; Frederick M. STEPHEN, University of Arkansas, A-321, Dept. of Entomology, Fayetteville, AR 72701

1:54 0434 Insect succession on pig carrion in Manitoba. **Ginger J. GILL,** University of Manitoba, Dept. of Entomology, 214 Entomology/Animal Science Bldg., Winnipeg, MB R3T 2N2, Canada; Terry GALLOWAY, University of Manitoba, Dept. of Entomology, 214 Entomology/Animal Science Bldg., Winnipeg, MB R3T 2N2, Canada; Gail ANDERSON, Simon Fraser University, School of Criminology, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

2:06 0435 Avoidance of predation by the cassava green mite. **Sara MAGALHAES,** Kruislaan 320, Amsterdam, 1098 SM, The Netherlands

2:18 0436 Differential behavioral responses among cherry fruit fly species (Diptera: Tephritidae) to visual and olfactory stimuli. **Lukasz STELINSKI,** Michigan State University, Dept. of Entomology, Center for Integrated Plant Systems, B-9, East Lansing, MI 48824; Oscar LIBURD, Michigan State University, Dept. of Entomology, Center for Integrated Plant Systems, B-9, East Lansing, MI 48824

2:30 0437 The pollination ecology of cloudberry (*Rubus chamaemorus*). **Adam BROWN,** Laval University, Entomology, Dept. of Biology, Laval University, Ste-Foy, Quebec G1K 7P4, Canada; Jeremy MCNEIL, Universite Laval, Biology, Quebec, Canada

2:42 Break

2:54 0438 Resistance to herbivory in inbred vs. outbred common morning-glories, *Ipomea purpurea.* **Helen HULL-SANDERS,** 301 Funches Hall, Auburn, AL 36849; Micky EUBANKS, Auburn University, Dept. of Entomology, Auburn Univ., AL 36849

3:06 0439 Impact of the spruce budworm, *Choristoneura fumiferana* (Clem.) (Lepidoptera: Tortricidae), on white spruce in north eastern British Columbia. **Jennifer BURLEIGH,** Simon Fraser University, Dept. of Biological Sciences, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; John BORDEN, Simon Fraser University, Dept. of Biological Sciences, Burnaby, BC V5A 1S6, Canada; Rene ALFARO, Pacific Forestry Centre, 506 West Burnside Road, Victoria, BC V8Z 1M5, Canada

3:18 0440 Predator avoidance behavior in the pea aphid: The immediate consequences of dropping. **Erik NELSON,** University of California, Davis, Entomology, 1 Shields Ave., Davis, CA 95616

3:30 0441 Comparing the response of neo-tropical ant communities to major disturbance events: Agricultural conversion and severe hurricane impact. **Richard ALLEN,** Cornell University, E221 Corson Hall, Ithaca, NY 14853; Alison POWER, Cornell University; Alexander FLECKER, Cornell University

3:42 0442 Effects of temperature on the interaction between tent caterpillars and nuclear polyhedrosis virus: Implications for disease dynamics. **Leonardo FRID,** University of British Columbia, Zoology, 6270 University Boulevard, Vancouver, BC V6T 1Z4, Canada; Judith MYERS, University of British Columbia, Dept. of Zoology, Vancouver, BC V6T 1Z4, Canada

3:54 0443 Semiochemical host and mate finding mechanisms of the ambrosia beetle, *Trypodendron retusum* (Coleoptera, Scolytidae, LeConte). **Susanne KÜHNHOLZ,** Simon Fraser University, Biological Sciences, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; John BORDEN, Simon Fraser University, Chemical Ecology Research Group, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; Regine GRIES, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

Student Competition Section Cd: Behavior and Ecology

405 A/B

Moderator

Marianne Robertson, Dept. of Biology, 1184 West Main St., Decatur, IL 62522-2084

1:30 0444 Precipitation and temperature effects on populations of the container-dwelling mosquito *Aedes albopictus*: Implications for range expansion. **Barry ALTO,** University of Florida, P.O. Box 110620, Gainesville, FL 32611; Steven JULIANO, Illinois State University, Dept. of Biological Sciences, Normal, IL 61790-4120

1:42 0445 The effects of tillage and seeding rates on populations of *Delia radicum* (Diptera: Anthomyiidae) on oil seed rape in Manitoba. **Amy HAWKINS-BOWMAN,** University of Manitoba, Dept. of Entomology, 214 Animal Science Bldg, Winnipeg, MB R3T 2N2, Canada; N. J. HOLLIDAY, University of Manitoba, Dept. of Entomology, 214 Animal Science, Winnipeg, MB R3T 2N2, Canada

1:54 0446 Fire ant societies regulate task ratio, worker number, and nutrient distribution in response to changing resource levels. **James MARTIN,** Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475; S. VINSON, Texas A&M University,Dept. of Entomology, College Station, TX 77843-0001

2:06 0447 Productivity of *Pissodes strobi* Peck (Coleoptera: Curculionidae) at three genetic resistance levels of *Picea sitchensis* (Bong). Carr. **Paula CABRERA,** Simon Fraser University, Biological Sciences, 8888 University Drive, Burnaby, BC V5L 1P8, Canada

2:18 0448 Intraspecific competition in the whitefly parasitoid *Encarsia formosa*: Does ovicide matter? **Albert OWEN III,** The University of Arizona, Dept. of Entomology, 410 Forbes Building, Tucson, AZ 85720

2:30 0449 After the 1998 ice storm: Temporal and spatial responses by a scolytid and its associated predators. **Krista RYALL,** University of Toronto, Earth Science Centre, 33 Willcocks St., Toronto, ON M5S 3B3, Canada; Sandy SMITH, University of Toronto, Zoology, 33 Willocks St., Toronto, ON M5S 3B3, Canada

2:42 Break

2:54 0450 Is war a game? **Jabus TYERMAN,** Simon Fraser University, Biological Sciences, 8888 University Way, Burnaby, BC V5A 1S6, Canada

3:06 0451 Optical flying insect detection and identification system (OFIDIS): Callibration and detection of insects in the aquatic and forest-edge setting. **Meghan FRENCH,** Michigan State University, Entomology, 243 Natural Science Building, East Lansing, MI 28824; James MILLER, Michigan State University, 203 Ctr Integrated Plant Syst, East Lansing, MI 48824

3:18 0452 Plume structure from CDC-style traps and orientation behavior of approaching *Culex tarsalis* mosquitoes. **Miriam COOPERBAND,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521

3:30 0453 Change of behavior in diseased grasshoppers. **Jacques BRODEUR,** Universite Laval, Dept. de Phytologie, Quebec, G1K 7P4, Canada; Robert OUEDRAOGO, Université Laval, Dépt. de Phytologie, Centre de Recherche en Horticulture, Québec, QC G1K 7P4, Canada; Mark GOETTEL, Agriculture and Agri-Food Canada, Lethbridge Research Centre, Lethbridge, AB T1J 4B1, Canada

3:42 0454 Modification of egg-laying in the cricket, *Gryllus integer.* **Kelly SHOEMAKER,** Psychology, Dalhousie University, Life Sciences Centre, 1355 Oxford St., Halifax, Nova Scotia B3H 4J1, Canada; Shelley ADAMO, Dalhousie University, Psychology, Life Sciences Centre, 1355 Oxford St., Halifax, Nova Scotia B3H 4J1, Canada

3:54 0455 Food foraging by an adult parasitoid. **Mark SISTERSON,** Univ. of Masschusetts, Dept. of Entomology, Amherst, MA 01003

Student Competition Section Cd: Behavior and Ecology

406 A

Moderator

Shelby Fleischer, Dept. of Entomology, 501 ASI Bldg., University Park, PA 16802

1:30 0456 Does forest fragmentation affect the lepidopteran host assemblages of forest tent caterpillar parasitoids? **Chris SCHMIDT,** University of Alberta, Biological Sciences, Edmonton, AB T6G 2E9, Canada; Jens ROLAND, University of Alberta, Edmonton, AB T6G 2E9, Canada

1:42 0457 Development of an effective flight monitoring system for *Xyleborus dispar* (Coleoptera: Scolytidae) in Nova Scotia apple orchards. **Michelle TROMBLEY,** Atlantic Food and Horticulture Research Centre, Agriculture and Agri-Food Canada, Entomology, Acadia University, 32 Main St., Kentville, NS B4N 1J5, Canada

1:54 0458 Kairomonal response by *Monochamus* spp. to bark beetle pheromones. **Jeremy ALLISON,** Simon Fraser University, Biological Sciences, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; John BORDEN, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

2:06 0459 Olfaction in *Pseudoscymnus tsugae* (Coleoptera: Coccinellidae), a specialist predator of hemlock woolly adelgid, *Adelges tsugae* (Homotera: Adelgidae). **Corey BROECKLING,** Virginia Tech, Dept. of Entomology, 216 Price Hall, Blacksburg, VA 24061; Scott M. SALOM, Virginia Tech, Dept. of Entomology, 216 Price Hall, Blacksburg, VA 24061

2:18 0460 Post-mating sperm dynamics in females of the spruce budworm, *Choristoneura fumiferana* and the obliquebanded leafroller, *C. rosaceana.* **Mireille MARCOTTE,** Laval University, Biology, Cité universitaire, Sainte-Foy, QC G1K 7P4, Canada; Johanne DELISLE, Natural Resources Canada, 1055, P.E.P.S., P.O. Box 3800, Sainte-Foy, QC G1V 4C7, Canada

2:30 0461 A comparative study of the species distributions of braconid wasps (Hymenoptera: Braconidae) from hardwood forests in Arkansas and Oklahoma. **Carolyn LEWIS,** University of Arkansas, 321 Agriculture Building, Fayetteville, AR 72701

2:42 Break

2:54 0462 Implications of habitat loss on the biodiversity and trophic structure of an assemblage of arthropods in a sensitive salt marsh habitat: Patterns and mechanisms. **Maisie MILLER,** University of Maryland College Park, Dept. of Entomology,

4112 Plant Sciences Bldg., College Park, MD 20742; Robert DENNO, University of Maryland College Park, Entomology, Room 4146, Plant Sciences Building, College Park, MD 20742; Claudio GRATTON, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742-4454

3:06 0463 The effect of corn phenology on western corn rootworm (Coleoptera: Chrysomelidae) feeding and dispersal behavior in a corn-soybean landscape. **Matthew O'NEAL,** Michigan State University, 204 Center for Integrated Plant Systems, East Lansing, MI 48824; Douglas LANDIS, Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Chris DIFONZO, Michigan State University, B18 National Food Safety and Toxicology Center, East Lansing, MI 48824

3:18 0464 Patterns of parasitoid pupal predation and mortality. **April A. MITCHELL,** University of Alberta, Dept. of Biological Sciences, Edmonton, AB T6G 2E9, Canada; Jens ROLAND, University of Alberta, Edmonton, AB

3:30 0465 Biodiversity of *Torymus* (Hymenoptera: Torymidae) associated with galls of *Diplolepis* (Hymenoptera: Cynipidae) in western vs eastern Canada. **S. REMPEL,** Laurentian University, Dept. of Biology, Sudbury, ON P3C 2C6, Canada; J. SHORTHOUSE, Laurentian University, Dept. of Biol, Sudbury, ON P3E 2C6, Canada

3:42 0466 Habitat fragmentation, endangered plants, and their pollinators: A case study with *Clematis socialis* Kral (Ranunculaceae). **Michael WALL,** University of Connecticut, Dept. of Ecology and Evolutionary Biology, Storrs, CT 06269; Robert BOYD, Auburn University, Botany and Microbiology, Auburn, AL 36849

Student Competition Section Cd: Behavior and Ecology

406 B

Moderator

Skip Nault, OARDC, Res. Service Bldg., Wooster, OH 44691

1:30 0467 Effect of balsam fir sawfly density on defoliation in young balsam fir. **Ken PARSONS,** Population Ecology Group, University of New Brunswick, Fredericton, NB E3B 6C2, Canada

1:42 0468 Alarm signal-induced life history changes in the pea aphid. **Edward MONDOR,** Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

1:54 0469 Can parasitism by *Dinocampus coccinellae* mediate competition by *Coleomegilla maculata*, a native coccinellid species, and the exotic species *Harmonia axyridis*? **Marlyn HOOGENDOORN,** University of Minnesota, 1034 Dayton Ave, Saint Paul, MN 55104-6501; George HEIMPEL, University of Minnesota, Dept. of Entomology, St Paul, MN 55108

2:06 0470 Implications of spruce budworm management for the ecological diversity of moths and carabid beetles in the boreal forest. **Carla WYTRYKUSH,** University of Manitoba, Dept. of Entomology, Winnipeg, MB R3T 2N2, Canada; Neil HOLLIDAY, University of Manitoba, Dept. of Entomology, Winnipeg, MB R3T 2N2, Canada

2:18 0471 Chemical ecology of the white pine weevil, *Pissodes strobi* Peck: A risky thesis project. **J. Andrea TANAKA,** Simon Fraser University, Dept. of Biological Sciences, Burnaby, BC V5A 1S6, Canada; John BORDEN, Simon Fraser University, Chemical Ecology Research Group, Burnaby, BC V5A 1S6, Canada; Elizabeth S. TOMLIN, University of North Carolina at Greensboro, P.O. Box 26174, Dept. of Biology, Greensboro, NC 27402-6174; Regine GRIES, Simon Fraser University, Dept. of Biological Sciences, Burnaby, BC V5A 1S6, Canada

2:30 0472 Factors influencing choice of oviposition site by females and larval performance in the cranberry fruitworm, *Acrobasis vaccinii* (Lepidoptera: Pyralidae). **David MARCHAND,** Laval University, Biology, Pavillon Vachon, Québec, QC G1K 7P4, Canada; Jeremy MCNEIL, Laval University, Biology, Pavillon Vachon, Québec, QC G1K 7P4, Canada

2:42 Break

2:54 0473 Vertical distribution of grape berry moth at vineyard/wild habitats interface. **Natalia BOTERO-GARCES,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824-1115; Rufus ISAACS, Michigan State University, Entomology, 203 Pesticide Research Center, Michigan State University, East Lansing, MI 48824

3:06 0474 The genetic structure of planthopper populations: Elucidating source populations for colonists of California and Europe. **Matthew WEAVER,** University of Maryland, Dept. of Entomology, 4112 Plant Sciences Building, College Park, MD 20742; David HAWTHORNE, University of Maryland, Dept. of Entomology, College Park, MD 20742; Robert DENNO, University of Maryland, Entomology, Room 4146, Plant Sciences Building, College Park, MD 20742

3:18 0475 Seasonal oviposition behavior of a western corn rootworm (Coleoptera: Chrysomelidae) strain in east central Illinois corn and soybean fields. **Christopher PIERCE,** University of Illinois at Urbana-Champaign, Dept. of Entomology, South-318 Turner Hall MC-046, 1102 South Goodwin Avenue, Urbana, IL 61801; Michael GRAY, University of Illinois at Urbana-Champaign, Economic Entomology, S-320 Turner Hall, Urbana, IL 61801

3:30 0476 Restoration of a longleaf pine savanna: Impacts on native and exotic insects. **Deanna COLBY,** Louisiana State University, Entomology Dept., 402 Life Sciences, Baton Rouge, LA 70803; Dorothy PROWELL, Louisiana State University, Entomology Dept., 402 Life Sciences, Baton Rouge, LA 70803

3:42 0477 A study of behavioral habituation to feeding deterrents in the larvae of a generalist, *Trichoplusia ni* (Lepidoptera: Noctuidae). **Yasmin AKHTARYA,** University of British Columbia, Agricultural Sciences, 2357 Main Mall, Vancouver, BC V6T 1Z2, Canada; Murray ISMAN, University of British Columbia, Plant Science, 2016-1874 East Mall, Vancouver, BC V6T 1Z1, Canada

Student Competition Section Cd: Behavior and Ecology

406 C

Moderator

James Cuda, Entomology and Nematology, P.O. Box 110620, Gainesville, FL 32611-0620

1:30 047 Density dependent guarding of *Aphis fabae* Scop. colonies from coccinellids by *Lasius neoniger* Emery. **Jason HARMON,** University of Minnesota, 219 Hodson Hall, 1980 Folwell Ave., St. Paul, MN 55108; David ANDOW, University of Minnesota, Dept. of Entomology, Saint Paul, MN 55108

1:42 0479 Use of traps to estimate insect population density in concrete silos. **Michael TOEWS,** Oklahoma State University, Dept. of Entomology & Plant Pathology, 127 Noble Research Ctr, Stillwater, OK 74078-3033; Thomas PHILLIPS, Dept. of Entomology and Plant Pathology, Oklahoma State University, 127 Noble Research Center, Stillwater, OK 74078

1:54 0480 Effect of spacing on the population dynamics of the balsam fir sawfly. **Gaétan MOREAU,** Population Ecology Group, Faculty of Forestry and Environmental Management, University of New Brunswick, Fredericton, NB E3B 6C2, Canada

2:06 0481 Aerial dispersal in phytoseiid mites (Acari: Phytoseiidae): Estimating falling speed and dispersal distance of adult female mites. **Chuleui JUNG,** Oregon State University, Dept. of Entomology, Cordley Hall 2046, Oregon State Univeristy, Corvallis, OR 97331; Brian CROFT, Oregon State University, Entomology, Oregon State University, Corvallis, OR 97331

2:18 0482 Distribution of flower thrips *Frankliniella* (Thysanoptera: Thripidae) and the predator *Orius insidiosus* (Say) (Heteroptera: Anthocoridae) in tomato interplanted with pepper. **Ignacio BAEZ,** Perry-Page Bldg. 307 S, Tallahassee, FL 32307; Stuart REITZ, USDA-ARS, Center for Biological Control, Tallahassee, FL 32307; Joseph FUNDERBURK, University of Florida, RR 3 Box 4370, Quincy, FL 32351-9803

2:30 0483 Large-scale population genetic structure of an alpine butterfly: Effects of landscape, dispersal, and population history. **Nusha KEYGHOBADI,** Dept. of Biological Sciences, University of Alberta, Edmonton, AB T6G 2E9, Canada; Jens ROLAND, University of Alberta, Edmonton, AB T6G 2E9, Canada; Curtis STROBECK, University of Alberta

2:42 Break

2:54 0484 Community structure and resource preferences of saprophytic scarab beetle populations in southern Ohio oak forests. **Adrienne SMITH,** Ohio State University, 3051 Oakridge Rd., Dept. of Entomology, 1735 Neil Ave., Columbus, OH 43221-2528; David HORN, Ohio State University, Dept. of Entomology, Columbus, OH 43210

3:06 0485 The potential of complex habitats to diminish cannibalism and enhance prey capture. **Gail LANGELLOTTO,** University of Maryland College Park, Dept. of Entomology, College Park, MD 20742-0001; Robert DENNO, University of Maryland College Park, Entomology, Room 4146, Plant Sciences Building, College Park, MD 20742

3:18 0486 Do inter-specific interactions occur between colonies of red imported fire ant and its competitor ant species? - A greenhouse study. **Asha RAO,** Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475; Bradleigh VINSON, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475

3:30 0487 Soil moisture and predation as potential factors in the skewed distribution of black turf Ataenius, *Ataenius spretulus* (Coleoptera: Scarabaeidae) in golf course fairways and roughs. **Young-Ki JO,** Michigan State University, Entomology, 243 Natural Science Bldg., East Lansing, MI 48824-1115

3:42 0488 Specificity of semiochemical-based host selection: Can bark beetles be "tricked" into attacking the wrong host? **Deepa PURESWARAN,** Simon Fraser University, Biological Sciences, Simon Fraser University, Burnaby, BC V5A 1S6, Canada; John BORDEN, Simon Fraser University, Chemical Ecology Research Group, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

3:54 0489 Flying beetle biodiversity and the effect of integrated pest management in mature northern Interior Douglas-fir, *Dendroctonus pseudotsugae*. **Susanne CARSON,** University of British Columbia, Zoology, UBC, 6270 University Bvld., Vancouver, BC V6T 1Z4, Canada

Student Competition Section Cf: Quantitative Ecology

401 B/C

Moderator

Tim Lockley, 3505 25th Avenue, Gulfport, MS 39501

1:30 0490 Predictive model of *Solenopsis invicta* (Hymenoptera: Formicidae) habitat selection. **M. G. COLACICCO,** Clemson University, Dept. of Entomology, Clemson, SC 29634,

1:42 0491 Modelling the impact of plant structure on host finding of a parasitoid. **Daniel GINGRAS,** Agriculture and Agri-food Canada, 430 boul. Gouin, St-Jean-sur-Richelieu, QC J3B 3E6, Canada; Guy BOIVIN, Agriculture and Agr-food Canada, 430 boul. Gouin, St-Jean-sur-Richelieu, QC J3B 3E6, Canada

1:54 0492 Monitoring and estimation of lingonberry fruitworm, *Grapholita libertina* (Heinr.) (Lepidoptera: Tortricidae) populations using a synthetic sex attractant. **Kirk HILLIER,** Atlantic Cool Climate Crop Research Centre, Agriculture and Agrifood Canada, Biology, Memorial University of Newfoundland, 50 Thorburn Road, St. John's, NF A1B 3M1, Canada; P. DIXON, Atlantic Cool Climate Crop Research Centre, Agriculture and Agrifood Canada, P.O. Box 39088, 308 Brookfield Road, St. John's, NF A1E 5Y7, Canada; D. LARSON, Memorial University of Newfoundland, Biology, P.O. Box 4200, St John's, Canada

2:06 0493 Management regime, scale, and the diversity of leaflitter arthropod communities of an Ozark forest. **Nick SAN DIEGO,** St. Louis University, Dept. of Biology, 3507 Laclede Ave, St. Louis, MO 63103-2010; Gerardo CAMILO, St. Louis University, Dept. of Biology, St. Louis, MO 63103-2010

2:18 0494 Comparison of arthropod abundance, diversity and trophic richness within intercropped agroforestry and monoculture agroecosystems. **Heather MIDDLETON,** Faculty of Forestry, 33 Willcocks Street, Earth Sciences Centre, University of Toronto, Toronto, ON M5S 3B3, Canada; Sandy M. SMITH, Faculty of Forestry, 33 Wilcocks Street, Earth Sciences Centre, Toronto, ON M5S 3B3, Canada

2:30 0495 Diversity and forest maturation: Proposition of a new model. **Pierre PAQUIN,** University of Montreal, Collection Ouellet-Robert, Département de Sciences Biologiques, C.P. 6128, Succ., Montral, QC H3C 3J7, Canada; Nadine DUPÉRRÉ; Harper PIERRE-PAUL

Student Competition Section D: Medical and Veterinary Entomology

407 A

Moderator Bradley Mullens, University of California, Riverside

1:30 0496 Modifying geographic information systems to meet the needs of mosquito control. **Michael PATNAUDE,** Dept. of Entomology and Nematology, Building 970, Natural Area Drive, Gainesville, FL 32611

1:42 0497 Parasitic wasps (Scelionidae, Trichogrammatidae) attacking tabanid eggs in Manitoba, Canada. **Mahmood IRANPOUR,** Entomology, University of Manitoba, Winnipeg, MB R3T 2N2, Canada; Terry GALLOWAY, Entomology, University of Manitoba, Winnipeg, MB R3T 2N2, Canada; Lubomir MASNER, Agriculture and Agri-food Canada, ECORC, Ottawa, ON K1A 0C6, Canada

1:54 0498 Particle selection by larval *Culex quinquefasciatus* (Diptera: Culicidae). **L. Hannah GOULD,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521; William WALTON, University of California, Riverside, Entomology, 206 Entomology Museum, Riverside, CA 92521

2:06 0499 Estimating postmortem intervals of high profile wildlife carcasses using necrophilous insects. **Erin Jean WATSON,** Louisiana State University, Dept. of Entomology, 402 Life Science Bldg, Baton Rouge, LA 70803; C. Lamar MEEK, Louisiana State University, Dept. of Entomology, 402 Life Science Bldg, Baton Rouge, LA 70803

2:18 0500 Age-dependent mosquito mortality alters pathogen

transmission dynamics. **Linda STYER,** University of California, Davis, Dept. of Entomology, One Shields Ave, Davis, CA 95616; James CAREY, University of California, Davis, Dept. of Entomology, One Shields Ave, Davis, CA 95616; Thomas SCOTT, University of California, Davis, Dept. of Entomology, One Shields Ave, Davis, CA 95616,

2:30 0501 Carrion blow fly diversity: Applications to forensic entomology. **Elizabeth RICHARDS,** Texas Tech University, Entomology, Dept. of Biology, Box 43131, Lubbock, TX 79409-3131; Marilyn HOUCK, Texas Tech University, P.O. Box 4609, Texas Tech University, Lubbock, TX 79409-4609

2:42 Break

2:54 0502 Can *Wolbachia* be used as a transgene driver in mosquito populations? **Jason RASGON,** University of California, Davis, Dept. of Entomology, One Shields Avenue, Davis, CA 95616; Michael TURELLI, University of California, Davis, Evolution and Ecology, Center for Population Biology, Davis, CA 95616; Thomas SCOTT, University of California, Davis, Dept. of Entomology, Davis, CA 95616

3:06 0503 Odour mediated host selection in *Anopheles gambiae.* **David HILL,** Simon Fraser University, Biological Sciences, Burnaby, BC, 63 Ridout St., London, ON N6C 3W9, Canada

3:18 0504 The effect of oviposition, egg hatchability, food availability and infection with *Plagiorchis elegans* on the population dynamics of *Aedes aegypti.* **Anne SCHWAB,** McGill University, Dept. of Natural Resource Science, 21111 Lakeshore Road, Ste-Anne-de-Bellevue, QC H9X 3V9, Canada; Manfred RAU, McGill University, Natural Resource Sciences, Macdonald Campus, 845 Sherbrooke St. West, Montreal, QC H3A 2T5, Canada; David J. LEWIS, McGill University, 21111 Lakeshore Rd, Ste-Anne-de Bellevue, QC H9X 3V9, Canada

3:30 0505 How many is too many? Assessing tolerance levels for abundance of house flies (*Musca domestica* L.) in rural Minnesota communities. **Sarah KUHA,** University of Minnesota, 1697 Fry St #4, Falcon Heights, MN 55113; Roger Moon, University of Minnesota, Entomology, 1980 Folwell Ave, St. Paul, MN 55108-1037

3:42 0506 Mosquito host finding as influenced by artificially manipulated wind velocities and vapor phase repellents. **Eric HOFFMANN,** Michigan State University, 243 Natural Science Building, Dept. of Entomology, East Lansing, MI 48824; James MILLER, Michigan State University, 203 Ctr for Integrated Plant Syst, East Lansing, MI 48824

Student Competition Section Ea: Extension, F: Crop Protection Entomology, Fa: Host Plant Resistance, Fb: Urban Entomology

407 B

Moderator

Dennis Ring, P.O. Box 25100, Baton Rouge, LA 70894

1:30 0507 Preventive pest management: Compatibility in a soybean IPM program? **Melissa WILLRICH,** 402 Life Sciences Bldg., Dept. of Entomology, Baton Rouge, LA 70803; David BOETHEL, Louisiana State University, Dept. of Entomology, Baton Rouge, LA 70803

1:42 0508 Patterns of genetic variation among nearby populations of Colorado potato beetle. **Diane KANG**, University of Maryland, Dept. of Entomology, 4112 Plant Sciences Building, College Park, MD 20742; David HAWTHORNE, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742; Soroush RAIS-BAHRAMI, University of Maryland, Dept. of Entomology, 4112 Plant Sciences Building, College Park, MD 20742

1:54 0509 Physical guideline effects on termite foraging activity. **Lois SWOBODA,** Virginia Tech, 1400 C University City Blvd, Blacksburg, VA 24060

2:06 0510 Differential virulence of four greenbug biotypes on sorghum. **Roberto GORENA,** Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475; George TEETES, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475

2:18 0511 Impact of the western conifer seed bug, *Leptoglossus occidentalis*, on lodgepole pine seed production. **Sarah BATES,** Simon Fraser University, Dept. of Biol Sciences, Burnaby, BC V5A 1S6, Canada; Cameron LAIT, Simon Fraser University, 8888 University Way, Burnaby, BC V5A 1S6, Canada; John BORDEN, Simon Fraser University, Chemical Ecology Research Group, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; Allison KERMODE, Simon Fraser University, 8888 University Way, Burnaby, BC V5A 1S6, Canada

2:30 0512 Within field distribution of sunflower midge using geographic information systems. **Erin HODGSON,** North Dakota State University, Dept. of Entomology, Fargo, ND 58105; Ian MACRAE, University of Minnesota, Northwest Exp Stn, Crookston, MN 56716; Gary BREWER, North Dakota State University, Dept. of Entomology, Fargo, ND 58105

2:42 0513 Spatial relationships between garden symphylan, *Scutigerellia immaculata* Newport occurence and sweet corn growth in western Oregon. **Jon UMBLE,** Oregon State University, Dept. of Entomology, Cordley Hall 2046, Corvallis, OR 97330; James FISHER, USDA, ARS, Hort Crop Res Lab, 3420 NW Orchard Ave, Corvallis, OR 97330-5014

2:54 Break

3:06 0514 Effects of row spacing and plant population on corn rootworm larval survival and damage potential to corn. **Timothy NOWATZKI,** Iowa State University, Dept. of Entomology, Ames, IA 50011-3140; Jon TOLLEFSON, Iowa State University, Entomology, 17 Insectary Bldg, Ames, IA 50011-3140

3:18 0515 Southwestern corn borer management using transgenic field corn hybrids. **Boris CASTRO,** Louisiana State University, Entomology, 402 Life Sciences Bldg, Baton Rouge, LA 70803-1710; Thomas RILEY, Louisiana State University, Dept. of Entomology, Baton Rouge, LA 70803; B. LEONARD, Louisiana State University, Entomology, Macon Ridge Branch, Winnsboro, LA 71295

3:30 0516 Investigating the potential of pruning for control of blueberry stem gall. **David HAYMAN,** Acadia University, Biology, Patterson Hall, Wolfville, NS BOP-1XO, Canada; Kenna MACKENZIE, Agric Agri Food Center, 32 Main Street, Kentville, NS B4N 1J5, Canada

3:42 0517 Further studies on the effects of transgenic corn on the stalk borer, *Papaipema nebris.* **Rachel NEWMAN,** Iowa State University, 21 Insectary, Ames, IA 50011; Marlin RICE, Iowa State University, Dept. of Entomology, Ames, IA 50011

3:54 0518 Within orchard movement of adult obliquebanded leafrollers, *Choristoneura rosaceana* (Harris): Implications for the spread of insecticide resistance. **Cynthia HSU,** Cornell University, Dept. of Entomology, NYS Agricultural Exp. Sta., Barton Laboratory, Geneva, NY 14456-0462

4:06 0519 Sequential sampling plans for late-instar European corn borer and corn earworm in corn: Applications for quality control and resistance monitoring. **Patrick O'ROURKE,** University of Minnesota, 219 Hodson Hall, St. Paul, MN 55108; William HUTCHISON, University of Minnesota, Ext Entomology, 1980 Folwell Ave, St. Paul, MN 55108-1037

Protection, Fa: Host Plant Resistance, Fb: Urban Entomology

407 C

Moderator

Kevin Shufran, 1301 N. Western Road, Stillwater, OK 74075

1:30 0520 Bollworm, *Helicoverpa zea* (Boddie), larval movement on genetically modified (GM) *Bacillus thuringiensis* and non-GM cottons. **Jeffrey GORE,** Louisiana State University, Dept. of Entomology, 402 Life Sciences Building, Baton Rouge, LA 70803; B. LEONARD, Louisiana State University, Entomology, Macon Ridge Branch, Winnsboro, LA 71295; Thomas HALL, Louisiana State University, 402 Life Science Bld., Baton Rouge, LA 70803

1:42 0521 Evaluation of insecticide and fungicide combinations for the control of onion maggot, *Delia antiqua* (Meig.) and onion smut, *Urocystis cepulae* Frost, in Ontario. **Christy HOEPTING,** University of Guelph, Environmental Biology, Guelph, ON N1G 2W1, Canada; Cynthia SCOTT-DUPREE, University of Guelph, Entomology, Guelph, ON N1G 2W1, Canada; Ron HARRIS, University of Guelph, Dept. of Environment Biology, Guelph, ON N1G 2W1, Canada; Mary Ruth MCDONALD, University of Guelph, Muck Crops Research Station, H.R.I.O., Dept. of Plant Agriculture, Kettleby, ON L0G 1J0, Canada

1:54 0522 Parasitoids, aphids and vegetable crops. **Thierry POIRÉ,** HDRC-Agriculture and Agri-food Canada, Plant Science, Laval University, 430, boul. Gouin, St Jean Sur Richelieu, PQ J3B 3E6, Canada; Guy BOIVIN, McGill University, Natural Resource Sciences, MacDonald College, Res Stn Agriculture Canada, 430 Boul Gouin, St Jean Sur Richelieu, PQ J3B 3E6, Canada

2:06 0523 Postharvest resistance in hard spring and winter wheat varieties to the lesser grain borer (Coleoptera: Bostrichidae). **Vanessa WATTS,** Montana State University, 333 Leon Johnson, Bozeman, MT 59717; Florence DUNKEL, Montana State University, 333 Leon Johnson Hall, Bozeman, MT, 59718

2:18 0524 Observations on early-season thrips and selected cotton growth parameters in BXN cotton for 1999 and 2000. **Chris MCALLISTER,** Deptartment of Entomology and Plant Pathology, 3700 Sutherland Ave Apt D14, Knoxville, TN 37919-3016; Gary LENTZ, West Tennessee Exp Stn, Jackson, TN 38301

2:30 0525 Insecticide zone treatment efficacy against *Solenopsis invicta* Buren activity around eastern bluebird, *Sialia sialis* boxes. **Anthony PRANSCHKE,** Louisiana State University, 402 Life Sciences Bldg., Dept. of Entomology, Baton Rouge, LA 70803; Linda HOOPER-BUI, Louisiana State University, Dept. of Entomology, Baton Rouge, LA 70803-0001

2:42 Break

2:54 0526 Patterns of genetic diversity near and far from loci conferring insecticide resistance. **Soroush RAIS-BAHRAMI**, University of Maryland, Dept. of Entomology, 4112 Plant Sciences Building, College Park, MD 20742; David HAWTHORNE, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742; Diane KANG, University of Maryland, Dept. of Entomology, 4112 Plant Sciences Building, College Park, MD 20742

3:06 0527 Moth flight prediction and yield-loss relationship by growth stage for univoltine European corn borer in the Northern Great Plains. **Karin GROSS,** North Dakota State University, 40A University Village, Fargo, ND 58102-2245

3:18 0528 Dual corn insect refuge for effective resistance management. **Colothdian TATE**, Iowa State University, Entomology, 118 Genetics Lab, Iowa State University, Ames, IA 50011; Richard L. HELLMICH, USDA-ARS Corn Insects and Crop Genetics Unit, Ames, IA 50011

3:30 0529 Cultural control: A succesful IPM component to control coffee berry borer on coffee crops. **Pablo BENAVIDES,** Purdue University, Entomology, 1158 Smith Hall, West Lafayette, IN 47907; Alex BUSTILLO, Cenicafe-Colombia, AA 2427, Manizales, Caldas Colombia; Esther Montoya, Cenicafe-Colombia, AA 2427, Manizales, Caldas Colombia; Reinaldo CARDENAS, Cenicafe-Colombia, AA 2427, Manizales, Caldas Colombia

3:42 0530 The 3 M's: Management, monitoring, and movement of rose chafer, *Macrodactylus subspinosis* (Coleoptera: Scarabaeidae) in Michigan peach orchards. **Chad PASTOR,** Michigan State University, Entomology, 205 CIPS, East Lansing, MI 48824

3:54 0531 Management of the pepper weevil in Florida. **Marco TOAPANTA,** University of Florida, Dept. of Entomology & Nematology, P.O. Box 110620, Gainesville, FL 32611; David SCHUSTER, University of Florida, Gulf Coast Research & Education Center, Bradenton, FL 34253; Philip STANSLY, University of Florida, SWFREC Immokalee, 2686 State Road 29 N, Immokalee, FL 34142-9515; Ru NGUYEN, Div of Plant Industry, P.O. Box 147100, Gainesville, FL 32614; Joseph EGER, Dow Agro Sciences, 4880 Bay Heron Pl Apt 213, Tampa, FL 33616-2925

Display Presentations, Student Competition: Section A. Systematics, Morphology, and Evolution

100 B

D0008 Developing a phylogenetic classification of the Old World treehoppers (Hemiptera: Membracidae). **Matthew WALLACE,** North Carolina State University, 701 Ryan Ct, Raleigh, NC 27606; Lewis DEITZ, North Carolina State University, Dept. of Entomology, Raleigh, NC 27695-7613

D0009 The New World genera of Anomalini (Coleoptera: Scarabaeidae: Rutelinae) and a description of a new genus from Costa Rica. **Aura PAUCAR-CABRERA,** University of Nebraska, W436 Nebraska Hall, Lincoln, NE 68588-0514

D0010 Biogeography of *Cardiophorus* Eschscholtz (Coleoptera: Elateridae) of eastern North America with two new species and a new synonymy. **Hume DOUGLAS,** York University, 179 Upr. Park Pl., Peterborough, ON K9J 3V9, Canada

D0011 Synopsis of the New World Hybosoridae (Coleoptera: Scarabaeoidea). **Federico OCAMPO,** University of Nebraska, University of Nebraska State Museum, Systematics Collections, Lincoln, NE 68588-0546

D0012 Evidence for sibling speciation in the black fly pest *Simulium slossonae* (Diptera: Simuliidae). **Christopher EVANS,** Clemson University, Dept. of Entomology, Clemson, SC 29634-0365; Peter ADLER, Clemson University, Dept. of Entomology, Clemson, SC 29634-0365,

D0013 A taxonomic study of Eugnamptine weevils (Coleoptera: Rhynchitidae) from the La Selva biological station, Costa Rica. **Andrew NOVINGER,** 6525 North Sheridan Road, Chicago, IL 60626; Robert HAMILTON, Loyola Univ. of Chicago, Dept. of Biol, Chicago, IL 60626,

D0014 Phylogeny of the polyneopterous insect orders. **Matthew GRUWELL,** Brigham Young University, Zoology, Biology and Agriculter, 2170 N. 166 W. #424, Provo, UT 84604; Michael WHITING, Brigham Young University, 574 Widstoe Building, Provo, UT 84602; Matt TERRY, Brigham Young University

D0015 Model 69... a new approach on Mirax? **Alejandro VALERIO,** P.O. Box 1442, 321 Agri Building, U. of Arkansas, Fayetteville, AR 72701; James WHITFIELD, University of Arkansas, Dept. of Entomology, Fayetteville, AR 72701

D0016 Diversity of two beetle taxa (Histeridae and Staphylinidae: Pselaphinae) at a lowland rainforest locality in western Amazonia. **Alexey TISHECHKIN,** Louisiana State University, Dept. of Entomology, Louisiana State University, Baton Rouge, LA 70803; Melissa DEAN, Louisiana State University, 402 Life Science, Dept. of Entomology, Baton Rouge, LA 70803; Chris CARLTON, Louisiana State University, Entomology Dept., 402 Life Sciences Bldg., Baton Rouge, LA 70803

D0017 Parallel patterns in the Pacific? A comparison of phylogenetic diversification in crab spiders. (Araneae: Thomisidae) across three Polynesian archipelagos. **Jessica GARB,** UC Berkeley, 201 Wellman Hall, Division of Insect Biology, Berkeley, CA 94720-3112; Rosemary GILLESPIE, UC Berkeley, 201 Wellman Hall, Division of Insect Biology, Berkeley, CA 94720-3112

D0018 Evolution of male lure response in *Bactrocera* fruit flies (Diptera: Tephritidae): A phylogenetic perspective. **Paul SMITH,** Kansas State University, 1823 Hunting Ave, Manhattan, KS 66502-3617; Srini KAMBHAMPATI, Kansas State University, Dept. of Entomology, Manhattan, KS 66506

D0019 Honeybee wing morphology: Application to multivariate discrimination of populations. **Laura MORRIS-OLSON,** Texas Tech University, Biology, Box 41033, Lubbock, TX 79409-1033; M. A. HOUCK, Texas Tech University, P.O. Box 43131, Lubbock, TX 79409; Gloria DEGRANDI-HOFFMAN, Carl Hayden Bee Research Center, USDA-ARS

D0020 Selfish genes and the evolution of social organization in the fire ant *Solenopsis invicta.* **Mark MESCHER,** University of Georgia, Entomology, 413 Biological Sciences, Athens, GA 30602; Kenneth ROSS, University of Georgia, 413 Biological Sciences, Athens, GA 30602

D0021 Molecular phylogeny of the Erotylidae. **James ROBERTSON,** Brigham Young University, Zoology, 693 WIDB, Provo, UT 84602; Joseph MCHUGH, University of Georgia, Dept. of Entomology, Athens, GA 30602-2603; Michael WHITING, Brigham Young University, Dept. of Zoology, Provo, UT 84602

Display Presentations, Student Competition: Section B. Physiology, Biochemistry, Toxicology, and Molecular Biology

D0022 An investigation of the peritrophic matrix proteins of the crucifer root maggot, *Delia radicum*, and the diamondback moth, *Plutella xylostella.* **Bryan SARAUER,** University of Saskatchewan, Dept. of Biology, 112 Science Place, Saskatoon, SK S7N 5E2, Canada; Michael O'GRADY, Agriculture and Agri-Food Canada, Saskatoon Research Centre, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; Cedric GILLOTT, University of Saskatchewan, Dept. of Biology, 112 Science Place, Saskatoon, SK S7N 5E2, Canada; Lorraine BRAUN, Agriculture and Agri-Food Canada, Saskatoon Research Centre, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; Sean HEMMINGSEN, National Reseach Council, Plant Biotechnology Institute, 110 Gymnasium Place, Saskatoon, SK S7N 0W9, Canada; George KHACHATOURIANS, University of Saskatchewan, Dept. of Applied Microbiology and Food Science, Saskatoon, SK S7N 5A8, Canada; Dwayne D. HEGEDUS, Agriculture and Agri-Food Canada, Saskatoon Research Centre, 107 Science Place, Saskatoon, SK S7N 0X2, Canada

D0023 Two-dimensional electrophoresis of *Plutella xylostella* midgut brush border proteins. **Rebecca MCNALL,** University of Georgia, Entomology, 413 Biological Sciences Building, Athens, GA 30602; Michael ADANG, University of Georgia, Entomology, Athens, GA 30602

D0024 Inhibitory effect of tripeptidyl aldehyde cysteine proteinase inhibitors on phagostimulation and digestive proteolysis in adult western corn rootworm, *Diabrotica virgifera virgifera.* **Jae KIM,** Pennsylvania State University, Dept. of Entomology, Pesticide Res Lab, Univ. Park, PA 16802; Christopher MULLIN, Pennsylvania State University, Entomology, 120 Pesticide Research Laboratory, University Park, PA 16802

D0025 Survey of midgut-associated microorganisms in Bertha armyworm (*Mamestra configurata*) and crucifer root maggot (*Delia radicum*). **Angelina LUKWINSKI,** University of Saskatchewan, Applied Microbiology and Food Science, Agriculture Building, Saskatoon, SK S7N 5A8, Canada; Lorraine BRAUN, Agriculture and Agri-Food Canada, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; Dwayne HEGEDUS, Agriculture and Agri-Food Canada, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; Sean HEMMINGSEN, National Research Council, Plant Biotechnology Institute, 110 Gymnasium Place, Saskatoon, SK S7N 0W9, Canada; Janet HILL, National Research Council, Plant Biotechnology Institute, 110 Gymnasium Place, Saskatoon, SK S7N 0W9, Canada; George KHACHATOURIANS, University of Saskatchewan, Dept. of Applied Microbiology and Food Science, Agriculture Building, Saskatoon, SK S7N 5A8, Canada

D0026 Analysis of potential regulatory sequences in the *ins-a* promoter region of *Manduca sexta.* **Elizabeth NANGLE,** University of Northern Iowa, Dept. of Biology, McCollum Science Hall, Rm. 2438, Cedar Falls, IA 50614-0421; Walter GOODMAN, University of Wisconsin-Madison, Entomology, 740 Russell Laboratories, Madison, WI 53706; Lynn RIDDIFORD, University of Washington, Dept. of Zoology, Seattle, WA 98195-1800; Que LAN, University of Wisconsin-Madison, Dept. of Entomology, 1630 Linden Drive, Madison, WI 53706

D0027 Partial cloning and sequencing of the cytochrome C oxidase subunit Va gene from a phosphine-susceptible strain of the lesser grain borer, *Rhyzopertha dominica* (F.) (Coleoptera: Bostrichidae). **Jorge AYALA,** Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Richard BEEMAN, USDA-ARS, Entomology, Grain Marketing and Production Research Center, 1515 College Ave, Manhattan, KS 66502-2736; Alan DOWDY, USDA-ARS, Entomolgy, Grain Marketing and Production Research Center, 1515 College Ave, Manhattan, KS 66502; Kun Yan ZHU, Kansas State University, Dept. of Entomology, Manhattan, KS 66506

D0028 Detection of genetic variation in screwworm populations by amplified fragment length polymorphism (AFLP) analysis. **Leela ALAMALAKALA,** University of Nebraska, Dept. of Entomology, Lincoln, NE 68583; Steven SKODA, University of Nebraska, Midwest Livestock Ins Res Unit, Lincoln, NE 68583; John FOSTER, 7100 Holmes Park Rd Apt 322, Lincoln, NE 68506-4692

D0029 Monarch butterfly (*Danaus plexippus*) populations of North America. **Sandra PEREZ,** University of Texas at El Paso, 500 W. University Ave., El Paso, TX 79968; Nicole O'LEARY, University of Texas at El Paso, Biology, 500 W. University Ave., El Paso, TX 79968; Miguel GARCIA, University of Texas at El Paso, 500 W. University Ave., El Paso, TX 79968; Angelica MOTTA, University of Texas at El Paso, 500 W. University Ave., El Paso, TX 79968

D0030 Developmentally specific genes from the 4th larvae stage of mosquitoes. **Que LAN,** Univ. of Northern Iowa, Biology Dept., Cedar Falls, IA 50614; Irina VYAZUNOVA, University of Northern Iowa, 326 F Street, Cedar Falls, IA 50613

D0031 Expression of the mosquito insulin receptor in the ovaries of the mosquito *Aedes aegypti.* **Michael RIEHLE,** University of Georgia, Dept. of Entomology, Athens, GA 30602; Mark BROWN, University of Georgia, Dept. of Entomology, Athens, GA 30602

D0032 Prostaglandin biosynthesis by the parasitic screwworm, *Cochliomyia hominivorax.* **Nor Aliza ABDUL-RAHIM,** University of Nebraska-Lincoln, Dept. of Entomology, 202 Plant Industry Bldg., Lincoln, NE 68583-0816; David STANLEY, University of Nebraska, Entomology, 44 Paige Hill Rd, Lincoln, NE 68583; Steven SKODA, University of Nebraska, Midwest Livestock Ins Res Unit, Lincoln, NE 68583; Dennis BERKEBILE, University of Nebraska, Plant Industry, 305a Plant Industry Bldg, Lincoln, NE 68503

D0033 Eicosanoids mediate nodulation reactions to bacterial infections in adults of the American cockroach, *Periplaneta americana* L. **Hasan TUNAZ,** University of Nebraska, Dept. of Entomology, P.O. Box 830816, Lincoln, NE 68583-0816; David STANLEY, University of Nebraska, Entomology, 44 Paige Hill Rd, Lincoln, NE 68583

D0034 Transovarial transmission of a rhabdovirus in the wasp *Diachasmimorpha longicaudata* (Ashmead), a parasite of the Caribbean fruit fly *Anastrepha suspensa* Loew. **Cynthia KHOO,** University of Florida, Entomology & Nematology Dept., P.O. Box 110620, Bldg. 970, Natural Area Drive, Gainesville, FL 32611-0620; Pauline LAWRENCE, University of Florida, Entomology and Nematology Dept., P.O. Box 110620, Bldg. 970, Natural Area Drive, Gainesville, FL 32611-0620

D0035 The biology of tsetse (Diptera: Glossinidae) symbiont, *Sodalis glossinidius*: A novel approach for the intervention of African trypanosomiasis. **Rita RIO,** Yale University, Vector Biology, Epidemiology and Public Health, 60 College Street, 606 LEPH, New Haven, CT 06520; Serap AKSOY, Yale University, Epidemiology & Public Health, School of Medicine, 333 Cedar Street, 606 LEPH, New Haven, CT 06520

D0036 Teratocyte development within novel-associaton lepidopteran hosts (*Diatraea* spp.) after parasitization by *Cotesia flavipes*-complex endoparasitoids. **Marianne ALLEYNE,** University of Illinois at Urbana-Champaign, Dept. of Entomology, 320 Morrill Hall, Urbana, IL 61820; Robert N. WIEDENMANN, Illinois Natural History Survey, Cent. for Econ Entomology, 607 E Peabody Dr, Champaign, IL 61820-6917

D0037 Paradoxical cellular reactions to the lipopolysaccharide components of two algae, *Chlorella* and *Prototheca*, in tobacco hornworms, *Manduca sexta.* **Jon BEDICK,** University of Nebraska, Insect Biochemical Physiology Lab., 311 Plant Industry Building, Lincoln, NE 68583-0816; Katherine BRADY, University of Nebraska, Laboratory for the Biology of Lipopolysaccharides, Lincoln, NE 68588-0118; R. L. PARDY, University of Nebraska, Laboratory for the Biology of Lipopolysaccharides, Lincoln, NE 68588-0118; David STANLEY, University of Nebraska, Entomology, Insect Biochemical Physiology Lab., 311 Plant Industry Bldg., Lincoln, NE 68583-0816

D0038 A novel voltage-gated cation channel in insects. **Inbum CHUNG,** Michigan State University, Entomology, Rm 106 CIPS, East Lansing, MI 48823; Zhiqi LIU, Michigan State University, Entomology Dept., CIPS 106, East Lansing, MI 48824; Ke DONG, Michigan State University, Entomology, 106 Pesticide Res Ctr, East Lansing, MI 48824

D0039 Increased inhibition of acetylcholinesterase in *Chironomus tentans* exposed to atrazine and chlorpyrifos mixtures. **Ying JIN-CLARK,** Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Michael LYDY, Wichita State University, Dept. of Biological Sciences, Wichita, KS 67260; Kun Yan ZHU, Kansas State University, Dept. of Entomology, Manhattan, KS 66506

D0040 Biochemical and molecular analyses of a unique acetylcholinesterase from the greenbug, *Schizaphis graminum* (Homoptera: Aphididae). **Jian-Rong GAO,** Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Kun Yan ZHU, Dept. of Entomology, Kansas State University, 123 Waters Hall, Manhattan, KS 66506

D0041 An investigation of cross-resistance to DDT in fluvalinate resistant varroa mites. **Paula MACEDO,** University of Nebraska, 2224 U St Apt 102, Lincoln, NE 68503-2967; Marion ELLIS, University of Nebraska, Dept. of Entomology, Lincoln, NE 68583; Blair SIEGFRIED, University of Nebraska, 202 Plant Industry Bldg., Lincoln, NE 68583

D0042 Cross-resistance spectrum of imidacloprid resistant populations of Colorado potato beetle to nicotinoid, neonicotinoid, and nereistoxin compounds. **David MOTA-SANCHEZ,** Michigan State University, Entomology, 243 Natural Science, East Lansing, MI 48824-1115; Mark E. WHALON, Michigan State University, B-11 CIPS, East Lansing, MI 48824; Edward J. GRAFIUS, Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Robert M. HOLLINGWORTH, Michigan State University, 106 CIPS, East Lansing, Michigan 48824; Ke DONG, Michigan State University, Entomology, 106 Pesticide Res Ctr, East Lansing, MI 48824

D0043 Osage orange constituents and their repellency to German cockroaches. **Chris PETERSON,** Iowa State University, Dept. of Entomology, Ames, IA 50011; Junwei ZHU, Iowa State University, Dept. of Entomology, Ames, IA 50011; Joel COATS, Iowa State University, Dept. of Entomology, Ames, IA 50011-0001

D0044 Does plant stress improve white pine weevil (*Pissodes strobi* Peck) fecundity? **Marie-Claude NICOLE,** Laval University, Entomology, Natural Resources Canada, 1055 rue du Peps, Sainte-Foy, QC G1V 4C7, Canada; C. COULOMBE, A. SÉGUIN, E. BAUCE, R. LAVALLÉE, Natural Ressources Canada, Canadian Forestry Service, P.O. Box 3800, Sainte-Foy, QC, Canada, G1V 4C7

Display Presentations, Student Competition: Section Ca. Biological Control

D0045 Quality of commercially available whitefly and aphid biological control agents in the United States. **Gissella VASQUEZ,** North Carolina State University, Dept. of Entomology, Box 7613, Raleigh, NC 27695-0001; David ORR, North Carolina State University, Box 7613, Dept. of Entomology, Raleigh, NC 27695; James BAKER, North Carolina State University, Dept. of Entomology, Box 7613, NCSU, Raleigh, NC 27695-7613; Melinda GIBBS, North Carolina State University, Dept. of Entomology, Box 7613, Raleigh, NC 27695

D0046 Potential for biological control of the balsam twig aphid (*Mindarus abietinus* Koch) in Michigan Christmas tree fields. **Abigail J. SOMMERS,** Michigan State University, Dept. of Entomology, 243 Natural Science, East Lansing, MI 48824; Kirsten M. FONDREN, Michigan State University, Dept. of Entomology, 243 Natural Science, East Lansing, MI 48824; Deborah G. MCCULLOUGH, Michigan State University, Dept. of Entomology, 243 Natural Science, East Lansing, MI 48824

D0047 Distribution and abundance of arthropod prey on golf course fairways and roughs as a factor in outbreaks of *Ataenius spretulus* (Haldeman) and *Aphodius granarius* (L.) (Coleoptera: Scarabaeidae). **Breana SIMMONS,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824; David SMITLEY, Michigan State University, Dept. of Entomology, East Lansing, MI 48824-1115

D0048 Intraguild predation among spider mite predators present in apple orchards. **Caroline PROVOST,** Biological Sciences,

Universite du Quebec à Montreal, Case Postale 8888, Montreal, QC H3C 3P8, Canada; Daniel CODERRE, Case Postale 8888, Montreal, QC H3C 3P8, Canada

D0049 The influence of floral resources and prey on the dispersal and foraging behavior of the green lacewing, *Chrysoperla carnea* (Neuroptera: Chrysopidae). **Miles LEPPING,** University of Maryland College Park, Dept. of Entomology, 4112 Plant Sci. Bldg, College Park, MD 20742-4454; Paula SHREWSBURY, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742-0001

D0050 Potential for increased biological control of onion maggot by carabids using habitat manipulation and insect growth regulators in place of standard insecticide treatments. **Brian MCCORNACK,** Michigan State University, Dept. of Entomology, 243 Natural Science, East Lansing, MI 48824; Edward GRAFIUS, Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Maria DAVIS, Olivet College, Dept. of Biology, Olivet, MI 49076; Douglas LANDIS, Michigan State University, Dept. of Entomology, East Lansing, MI 48824

D0051 Evaluation of *Coleomegilla maculata lengi* Timb. (Col : Coccinellidae) as a new predator of the western flower thrips, *Frankliniella occidentalis* Perg. (Thysanoptera : Thripidae). **Mathieu ST-LOUIS,** Universite du Quebec à Montreal, Sciences biologiques, CP 8888 Succ. Centre-Ville, Montreal, QC H3C 3P8, Canada; Daniel CODERRE, Universite du Quebec a Montreal, Sciences biologiques, CP 8888, Succ Centre-ville, Montreal, QC H3C 3P8, Canada

D0052 The natural enemy response to high- and low-density infestations of *Tomicus piniperda* (L.) (Coleoptera: Scolytidae). **Nicholas RUDZIK,** Faculty of Forestry, University of Toronto, 33 Willcocks St., Toronto, ON M5S 3B3, Canada; Krista RYALL, University of Toronto, Earth Science Centre, 33 Willcocks St., Toronto, ON M5S 3B3, Canada; Sandy SMITH, University of Toronto, Zoology, 33 Willocks St., Toronto, ON M5S3B3, Canada

D0053 Ovipositional preferences of *Aphytis* sp. and *Encarsia* sp. nr. *diaspidicola* (Silvestri) (Aphelinidae: Hymenoptera), parasitoids of euonymus scale, *Unaspis euonymi* (Comstock) (Homoptera: Diaspididae).**Deepak MATADHA,** Rutgers, The State University of New Jersey, Dept. of Entomology, New Brunswick, NJ 08901-8524; George HAMILTON, Rutgers, The State University of New Jersey, Pest Mgmt Office, New Brunswick, NJ 08901; James LASHOMB, Rutgers, The State University of New Jersey, Dept. of Entomology, New Brunswick, NJ 08901

D0054 Assessing potential risks and efficacy of *Lipolexis scutellaris* (Mackauer) as a classical biological control agent of the brown citrus aphid, *Toxoptera citricida* (Kirklady). **Shane HILL,** University of Florida, Entomology and Nematology, Surge Area Dr., Building 970, Gainesville, FL 32608; Marjorie HOY, University of Florida, Entomology and Nematology Dept., 4320 SW 83rd Way, Gainesville, FL 32608-4131

D0055 Functional responses of an introduced and an indigenous parasitoid on greenbug at four temperatures. **Douglas JONES,** Oklahoma State University, 127 Noble Research Center, Stillwater, OK 74078; Kristopher GILES, Oklahoma State University, Dept. Entomology & Plant Pathol, Stillwater, OK 74078-3033; Jessica MAYES, Oklahoma State University, 127 Noble Research Center, Stillwater, OK 74078

D0056 Evaluation of corn leaf aphid honeydew as a food source for *Trichogramma ostriniae* (Hymenoptera: Trichogrammatidae). **Jeffrey FUCHSBERG,** Cornell University, Entomology, 705 E. Seneca St. Apt. 1, Ithaca, NY 14850; John LOSEY, Cornell University, Department of Entomology, Ithaca, NY 14853; Maureen CARTER, Cornell University, Ithaca, NY 14853

D0057 *Bracon cephi* (Gahan) and *B. lissogaster* Muesebeck (Hymenoptera: Braconidae), parastioids of the wheat stem sawfly, *Cephus cinctus* Norton (Hymenoptera: Cephidae). **Justin RUNYON,** Montana State University, 801 Nelson Story Tower, Bozeman, MT 59715; Wendell MORRILL, Montana State University, Dept. of Entomology, Bozeman, MT 59717-0001; David WEAVER, Montana State University, Dept. of Entomology, Bozeman, MT 59717-3020

D0058 Oviposition preferences of bertha armyworm (*Mamestra configurata*) on different *Brassica* varieties and growth stages. **Bryan ULMER,** University of Saskatchewan, Dept. of Biology, 112 Science Place, Saskatoon, SK S7N 5E2, Canada; Martin ERLANDSON, Agriculture and Agri-Food Canada, Saskatoon Research Center, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; Cedric GILLOTT, University of Saskatchewan, Dept.of Biology, 112 Science Place, Saskatoon, SK S7N 5E2, Canada

D0059 The foraging behaviour of *Aphidius colemani* (Hymenoptera: Braconidae) at different spatial scales. **Menia TOUSSIDOU,** Dept. of Entomological Sciences, Horticulture Research International, Wellesbourne, Warwick CV35 9EF, UK; Michael DECOURCY WILLIAMS, Dept. of Entomological Sciences, Horticulture Research International, Wellesbourne, Warwick CV35 9EF, UK; Simon LEATHER, Imperial College of Science, Technology and Medicine, University of London, South Kensington, London, SW7 2AZ, UK

D0060 Testing for non-target effects: A practical example using a parasitoid of Mediterranean fruit fly. **Marcia TROSTLE,** Texas A&M University, Dept. of Entomology, College Station, TX 77843; Russell MESSING, University of Hawaii, Entomology, Kauai Agricultural Research Center, Kapaa, HI 96746; Andrei ALYOKHIN, University of Hawaii, PEPS, CTAHR, 3050 Maile Way, Honolulu, HI 96822; Robert WHARTON, Texas A&M University, Dept. of Entomology, College Station, TX 77843-0001

D0061 Chinese insects as potential agents for mile-a-minute weed. **Dana PRICE,** University of Delaware, 4406 Perkins Circle, Belcamp, MD 21017

D0062 Factors influencing the distribution and impact of flea beetles (*Aphthona lacertosa*) on leafy spurge (*Euphorbia esula*) in southern Alberta. **Andrea KALISCHUK,** Dept. of Biological Sciences, University of Lethbridge, Lethbridge, AB T1K 3M4, Canada; Robert BOURCHIER, Agric and Agri-food Canada, Lethbridge Res Cent Box 3000, Lethbridge, AB T1J 4B1, Canada

D0063 The spatial dynamics of *Aphthona* beetle impact on leafy spurge: A landscape perspective. **Ian JONSEN,** University of Alberta, Dept. of Biological Sciences, Lethbridge Research Centre,, 5403 1st Ave S. Box 3000, Lethbridge, AB T1J 4B1, Canada; Robert BOURCHIER, Agriculture and Agri-Food Canada, Lethbridge Research Centre, 5403 1st Ave S. Box 3000, Lethbridge, AB T1J 4B1, Canada; Jens ROLAND, University of Alberta, Biological Sciences, Edmonton, AB T6G 2E9, Canada

D0064 Biological control of purple loosestrife in British Columbia: The good, the bad and the ugly? **Madlen DENOTH,** University of British Columbia, Zoology, 6270 University Boulevard, Vancouver, BC V6T 1Z4, Canada

D0065 Biotic interference of predators in purple loosestrife microcosms. **Amy WIEBE,** Iowa State University, 4 Insectary, Ames, IA 50011-0001; John OBRYCKI, Iowa State University, Dept. of Entomology, Ames, IA 50011-3140

D0066 Influence of temperature on aspects of the reproductive biology of the field bindweed moth, *Tyta luctuosa.* **Soledad VILLAMIL,** Kansas State University, Dept. of Entomology, 123 West Waters Hall, Manhattan, KS 66506; James NECHOLS, Kansas State University, Dept. of Entomology, 123 W. Waters Hall, Manhattan, KS 66506

D0067 Survival of the root mining biological control agents *Agapeta zoegana* and *Cyphocleonus achates* in *Centaurea maculosa* treated with three concentrations of the herbicides Tordon and

Transline. **Dennis VANDER MEER,** School of Forestry, University of Montana, Forestry 109A, Missoula, MT 59812; Diana SIX, School of Forestry, University of Montana, Forestry 109A, Missoula, MT 59812; Nancy STURDEVANT, U.S. Forest Service, Forest Health Protection Lab, 200 E. Broadway, Missoula, MT 59807

D0068 The use of heat and drug therapy for the management of *Nosema* disease in *Muscidifurax raptor* (Hymenoptera: Pteromalidae). **Carl BOOHENE,** University of Florida, Dept. of Entomology and Nematology, Gainesville, FL 32611; Christopher GEDEN, USDA, ARS, CMAVE, P.O. Box 14565, Gainesville, FL 32604; James BECNEL, USDA ARS, P.O. Box 14565, Gainesville, FL 32604-2565

D0069 Effect of a field application of entomopathogenic nematodes on soil organisms. **Raphael CHEVALIER,** Simon Fraser University, Biological Sciences, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; John WEBSTER, Simon Fraser University, Biological Sciences, 8888 University Drive, Burnaby, Burnaby, Canada

D0070 Factors influencing the oral toxicity of spinosad to flea beetles. **Mano BENJAMIN,** University of Saskatchewan, Dept. of Biology, 112 Science Place, Saskatoon, SK S7N 5E2, Canada; Robert ELLIOTT, Agriculture and Agri-Food Canada, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; Cedric GILLOTT, University of Saskatchewan, Dept. of Biology, 112 Science Place, Saskatoon, SK S7N 5E2, Canada

D0071 The impact of variable conditions on the development of larvae and the related effects on the efficacy of B.t.i. **Stephane VILLENEUVE,** Universite du Quebec à Trois-Rivières, 207 Place Barret, L'Assomption, QC J5W 1M5, Canada

D0072 Use of molecular tools in biological control: Identifying cryptic species in *Ageniaspis* (Hymenoptera: Encyrtidae). **Juan ALVAREZ,** University of Florida, Entomology and Nematology, Bldg. 970 Hull Rd., Gainesville, FL 32611; Marjorie HOY, University of Florida, Entomology and Nematology Dept., 4320 SW 83rd Way, Gainesville, FL 32608-4131

D0073 Susceptibility of the tarnished plant bug *Lygus lineolaris* (Palisot de Beauvois) (Hemiptera: Miridae) to five isolates of the entomopathogenic fungus *Beauveria bassiana* (Balsamo) Vuillemin and compatibility test with six commonly use fungicides. **Kouassi MATHIAS,** Universite du Quebec à Montreal, Sciences Biologiques, 1200 St-Alexandre C.P. 8888 Succ. Centre-ville, Montreal, QC H3C3P8, Canada; Daniel CODERRE, Université du Québec A Montréal, 1200 St-Alexandre, Montréal, QC H3C 3P8, Canada; Silvia TODOROVA, Universite du Quebec à Montreal, Sciences Biologiques, C.P.8888, Succ. Centre-Ville, Montreal, QC H3C 3P8, Canada

D0074 Tritrophic interactions between perennial ryegrass, black cutworms, and an entomopathogenic nematode. **Brian KUNKEL,** Ohio State University, 1680 Madison Ave, Wooster, OH 44691; Parwinder GREWAL, Ohio State University, OARDC, Dept. of Entomology, Wooster, OH 44691-4096

D0075 Selection of an artificial diet for rearing of *Hyaliodes vitripennis* Say (Hemiptera: Miridae). **Annabelle FIRLEJ,** Université du Québec à Montréal, Biological sciences, Dépt. des Sciences Biologiques, C.P. 8888, Succ. Centre-ville, Montréal, QC H3C 3P8, Canada; Daniel CODERRE, UniversitéDu Québec à Montréal, Dépt. des Sciences Biologiques, C.P. 8888, Succ. Centre-ville, Montréal, QC H3C 3P8, Canada; Gerald CHOUINARD, Quebec Crop Production Council, 3300 Sicotte, I.R.D.A., St-Hyacinthe, QC J2S 7B8, Canada

Display Presentations, Student Competition: Section Cb. Apiculture and Social Insects

D0076 Impact of methoprene treatments for fire ants in grazed pastures on the associated arthropod community. **Matthew AUBUCHON,** Auburn University, Dept. of Entomology & Plant Pathology, 301 Funchess Hall, Auburn, AL 34849; Gary MULLEN, Auburn University, 301 Funchess Hall, Auburn, AL 36830; Michelle PERDUE, Auburn University, 301 Funchess Hall, Auburn, AL 36830,; Amelia WILLIAMS, Auburn University, 318 Funchess Hall, Auburn, AL 36830

D0077 Optimum timing of fluvalinate treatment for the control of *Varroa jacobsoni* mites (Acari: Varroidae) in *Apis mellifera* (Hymenoptera: Apidae) colonies in Washington state. **James STRANGE,** Washington State University, 1820 SE Bleasner Dr., Pullman, Washington 99163

D0078 Timing and rate of production of winter bees in temperate honey bee (*Apis mellifera*) colonies. **Heather MATTILA,** University of Guelph, Dept. of Environmental Biology, Guelph, ON N1G 2W1, Canada; James HARRIS, 2839 Lakeview Ave., Regina, SK S4S 1G6, Canada; Gard OTIS, University of Guelph, Environmental Biology, Ontario Agricultural College, Guelph, ON N1G2W1, Canada

D0079 Effect of transgenic pollen on worker honey bees. **Anne HANLEY,** Michigan State University, 243 Natural Science, Dept. of Entomology, East Lansing, MI 48824; Walter PETT, Michigan State University, 243 Natural Science, Dept. of Entomology, East Lansing, MI 48824; Zachary HUANG, Michigan State University, Dept. of Entomology, 243 Natural Science, East Lansing, MI 48824

Display Presentations, Student Competition: Section Cc. Insect Vectors in Relation to Plant Disease

D0080 Differential acquisition of tomato spotted wilt virus (TSWV) in *Frankliniella* species in vegetable crops. **Erika YEARBY,** Florida A&M University, Center for Biological Control, College of Engineering Sciences, Technology, and Agriculture, Perry-Page Bldg. 307 S, Tallahassee, FL 32307; Timur MOMOL, University of Florida, North Florida Research and Education Center, 30 Research Road, Quincy, FL 32351; Stuart REITZ, USDA-ARS, Center for Biological Control, Tallahassee, FL 32307

D0081 Vector-specificity of barley yellow dwarf virus transmission: Identification of potential cellular receptors. **Chaoyang LI,** Pennsylvania State University, Dept. of Entomology, 501 ASI, University Park, PA 16802; Diana COX-FOSTER, Pennsylvania State University, Entomology, 536 Agricultural Science & Industry Bldg., University Park, PA 16802; Frederick GILDOW, Pennsylvania State University, Plant Pathology, University Park, PA 16802

D0082 Squash bug (*Anasa tristis*) transmission of the cucurbit yellow vine bacterium in an artificial system. **Blake BEXTINE,** 4100 W 19th St, Apt C105, Stillwater, OK 74074; Astri WAYADANDE, Oklahoma State University, Dept. of Entomology and Plant Pathology, 127 Noble Research Center, Stillwater, OK 74059; Jacqueline FLETCHER, Oklahoma State University, 127 NRC, Stillwater, OK 74078

D0083 Bean leaf beetle flight distance. **Rayda KRELL,** Iowa State University, Dept. of Entomology, Ames, IA 50011-0001; Larry PEDIGO, Iowa State University, Dept. of Entomology, Ames, IA 50011; Marlin RICE, Iowa State University, Dept. of Entomology, Ames, IA 50011-0001; Ted WILSON, Iowa State University, 13 Insectary Bldg, Ames, IA 50011-3222

Display Presentations, Student Competition: Section Cd. Behavior and Ecology

D0084 House fly colonization of media inoculated with black soldier fly larvae. **Jeffrey K. TOMBERLIN,** University of Georgia, Entomology, P.O. Box 7, Tifton, GA 31793-0007; D. Craig SHEPPARD, University of Georgia, Dept. Entomology, Tifton, GA 31794

D0085 Stable fly *Stomoxys calcitrans* (L.) (Diptera:Muscidae) colonization of non-overwintering dairy farms in south-central Ontario: Convergence of theoretical and field investigations. **David BERESFORD,** Trent University, RR #2, Lakefield, ON K0L 2H0, Canada; James SUTCLIFFE, Trent University, Biology, 4800 West Bank Dr., Peterborough, ON K9J 7B8, Canada

D0086 The nesting and foraging behavior of four solitary trap-nesting bees (Megachilidae: Colletidae) in Montana. **Peter JENSEN,** Montana State University, Entomology, 333 Leon Johnson Hall, Bozeman, MT 59715

D0087 Resource use by feral honey bees and non-*Apis* pollinators in south Texas. **Kristen BAUM,** Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475; William RUBINK, USDA/ARS/BIRU Honey Bee Research, 2413 East Highway 83, Bldg 213, Weslaco, TX 78596; Robert COULSON, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475

D0088 Does lava flow impede gene flow? Understanding the potential genetic effects of habitat fragmentation upon remnant populations. **Amy VANDERGAST,** University of California, Berkeley, ESPM, Division of Insect Biology, 201 Wellman Hall, Berkeley, CA 94720-3112; Rosemary GILLESPIE, University of California, Berkeley, ESPM, Divison of Insect Biology, 201 Wellman Hall, Berkeley, CA 94720-3112; George RODERICK, University of California, Berkeley, ESPM, Division of Insect Biology, 201Wellman Hall, Berkeley, CA 94720-3112

D0089 Multiple indicators of fitness used to determine the relative fitness of *Papilio glaucus* and *Papilio canadensis* hybrids (Lepidoptera: Papilionidae) to their parental types. **Jennifer DONOVAN,** Michigan State University, Dept. of Entomology, 243 Natural Science, East Lansing, MI 48824-1115; J. Mark SCRIBER, Michigan State University, Dept. of Entomology, 243 Natural Science, East Lansing, MI 48824-1115

D0090 Introgression of mitochondrial and nuclear *Papilio glaucus* genes into *P. canadensis* populations. **Aram STUMP,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824; J. SCRIBER, Michigan State University, Dept. of Entomology, East Lansing, MI 48824

D0091 Bt pollen and monarch butterflies: Research update. **Patricia ANDERSON,** Iowa State University, Entomology, 110 Insectary, Ames, IA 50011; Richard HELLMICH, Iowa State University, Genetics Lab, USDA ARS, Ames, IA 50011-0001; Leslie LEWIS, Iowa State University, USDA ARS CICGRU, Ames, IA 50011-0001

D0092 Feeding behavior of *Malacosoma disstria* Hbn. (Lepidoptera: Lasiocampidae) on two host plants treated with *Bacillus thuringiensis*. **Simon TAILLEFER,** Groupe de Recherche en Écologie Forestière Interuniversitaire, Département des Sciences Biologiques Université du Québec à Montréal, Biology, C.P. 8888 Succ.Centre-ville, Montreal, QC H3C 3P8, Canada; Marie-Ève GODIN, Département des Sciences Biologiques Université du Québec à Montréal, CP 8888, Succ. Centre-ville, Montréal, QC H3C 3P8, Canada; François LORENZETTI, Département des Sciences Biologiques Université du Québec à Montréal, CP 8888, Succ. Centre-ville, Montréal, QC H3C 3P8, Canada; Yves MAUFFETTE, Département des Sciences Biologiques Université du Québec à Montréal, CP 8888, Succ. Centre-ville, Montréal, QC H3C 3P8, Canada; Claude GUERTIN, Universite du Quebec, Instit Armand Frappier, Case Postale 100, Laval, PQ H7N 4Z3, Canada

D0093 Evidence for an aggregation pheromone in the rose chafer, *Macrodactylus subspinosus* (Coleoptera: Scarabaeidae). **Jeremy J. HEATH,** Ohio State University, OARDC, Dept. of Entomology, Wooster, OH 44691; Roger N. WILLIAMS, Ohio State University, Entomology, Wooster, OH 44691; P. Larry PHELAN, Ohio State University, OARDC, Dept. of Entomology, Wooster, OH 44691

D0094 Attractants and repellants of Colorado potato beetle: A technique for screening natural compounds. **Benjamin WERLING,** Michigan State University, Room B11 Center for Integrated Plant Systems, East Lansing, MI 48824; Andrea COOMBS, Michigan State University, B11 Pesticide Res Center, East Lansing, MI 48824-1311; Mark WHALON, Michigan State University, Pesticide Res Cent, East Lansing, MI 48824

D0095 Sex pheromone of pea aphids - an integrated pest management component as it attracts natural enemies. **Jashim UDDIN,** University of Manitoba, Entomology, Entomology, Winnipeg, MB R3T 2N2, Canada; Neil HOLLIDAY, University of Manitoba, Dept. of Entomology, Winnipeg, MB R3T 2N2, Canada; Patricia MACKAY, University of Manitoba, Entomology, Winnipeg, MB R3T 2N2, Canada; Wilfred POWELL, Institute of Arable Crops Research, Entomology and Nematology, Harpenden, Hertfordshire AL5 2JQ, United Kingdom

D0096 Calling behaviour of the potato aphid, *Macrosiphum euphorbiae* (Homoptera: Aphididae). **Seyed H. GOLDANSAZ,** Laval University, Dept. Biologie, Ste-Foy, QC G1K 7P4, Canada; Jeremy N. MCNEIL, Laval University, Dept. Biologie, Ste-Foy, QC G1K 7P4, Canada

D0097 Major gene control of differences in pheromone blends within a bark beetle hybrid zone. **Michael DOMINGUE,** SUNY College of Environmental Science and Forestry, 133 Illick Hall, 1 Forestry Drive, Syracuse, NY 13210; Stephen TEALE, SUNY College of Environmental Science and Forestry, 133 Illick Hall, 1 Forestry Drive, Syracuse, NY 13210

D0098 Improved techniques for monitoring forest tent caterpillar populations. **Chris SCHMIDT,** University of Alberta, CW 405 Biological Sciences Bldg., Edmonton, AB T6G 2E9, Canada; Jens ROLAND, University of Alberta, Biological Sciences, Edmonton, AB T6G 2E9, Canada; Dave WAKERCHUK, Phero Tech Inc., 7572 Progress Way, Delta, BC V4G 1E9, Canada

D0099 Impact of weed removal, nitrogen addition, and planting location on insect herbivory of transplanted *Quercus agrifolia* seedlings in a southern California oak woodland. **Connell DUNNING,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521; Timothy PAINE, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001; Richard REDAK, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0314

D0100 An evaluation of the gypsy moth pathogen *Entomophaga maimaiga* in Michigan forests. **Nathan SIEGERT,** Michigan State University, 243 Natural Science Bldg, East Lansing, MI 48824-1115; Deborah MCCULLOUGH, Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Ann HAJEK, Cornell University, Dept. of Entomology, Ithaca, NY 14853; Michael WHEELER, Cornell University

D0101 Economic analysis of the circle trap for monitoring plum curculio (Coleoptera: Curculionidae). **Andrea COOMBS,** Michigan State University, B11 Pesticide Res Center, East Lansing, MI 48824-1311; Mark WHALON, Michigan State University, East Lansing, MI 48824; Larry GUT, Michigan State University, Dept. of Entomology, East Lansing, MI 48824

D0102 Using live trees to characterize *Anoplophora glabripennis* preference for popular landscape trees. **Silvia MONTERO,** Pennsylvania State University, Horticulture/Entomology, 310 Tyson Building, University Park, PA 16802; Scott LUDWIG, Pennsylvania State University, Dept. of Entomology, University Park, PA 16802; Kelli HOOVER, Pennsylvania State University, Entomology, Dept. of Entomology, University Park, PA 16802; James SELLMER, Pennsylvania State University, Horticulture, 314 Tyson Building, University Park, PA

D0103 Larval behavior of tufted apple bud moth on apple. **Shawn ROBERTSON,** Pennsylvania State University, Dept. of Entomology, University Park, PA 16802; Larry HULL, Pennsylvania State University, Entomology, Penn State Fruit Res & Ext Ctr, P.O. Box 330, Biglerville, PA 17307-0330

D0104 Investigating cottonwood biomass production clones for insect defoliators in a Missouri flood plain. **Allen NIEDERMANN,** University of Missouri-Columbia, Entomology, 1-87 Agriculture Building, Columbia, MO 65211; Marc LINIT, University of Missouri-Columbia, Dept. of Entomology, Columbia, MO 65211-0001; William STAMPS, University of Missouri-Columbia, 1-87 Agriculture Bldg, Columbia, MO 65211

D0105 The effect of budburst phenology of Norway spruce on the biological performance of the white pine weevil. **Julie POULIN,** Universite du Quebec à Montreal, 5165 Joseph A. Rodier, Montreal, QC H1K 5C8, Canada; Gaëtan DAOUST, Canadian Forestry Service, P.O. BOX 3800 1055 du PEPS, Ste-Foy, QC G1V 4C7, Canada; Robert LAVALLEE, Canadian Forestry Service, P.O. Box 3800, 1055 du PEPS, Ste-Foy, Quebec G1V4C7, Canada; Yves MAUFFETTE, Université du Québec à Montréal, Montréal, QC, Canada

D0106 Alternative strategies for managing balsam twig aphid (*Mindarus abietinus* Koch) in Christmas tree plantations. **Kirsten M. FONDREN,** Michigan State University, Dept. of Entomology, 243 Natural Science, East Lansing, MI 48824; Deborah G. MCCULLOUGH, Michigan State University, Dept. of Entomology, 243 Natural Science, East Lansing, MI 48824

D0107 Arthropod-mediated decomposition of ponderosa pine, Black's Mt. Experimental Forest, California. **Jeff LEMIEUX,** Oregon State University, Entomology, Cordley 2046, Corvallis, OR 97331-2907; Timothy SCHOWALTER, Dept. Entomology, Oregon State University, Cordley 2046, Corvallis, OR 97331-2907; Nancy RAPPAPORT, U.S. Forest Service, Pacific Southwest Research Station, P.O. Box 245, Berkeley, CA 94701

D0108 Impact of foliar nitrogen content on tip moth development in loblolly pine. **J. T. NOWAK,** University of Georgia, Entomology, 413 Bioscience Bldg, Athens, GA 30602; T. B. HARRINGTON, University of Georgia, Athens, GA 30602; Wayne BERISFORD, University of Georgia, Dept. of Entomology, Athens, GA 30602

D0109 Long term responses of aspen to multiple, succesive defoliations and their effects on an outbreak folivore. **Dylan PARRY,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824-1115; Daniel HERMS, Ohio State University, OARDC, Dept. of Entomology, Wooster, OH 44691; William MATTSON, USDA Forest Service, Forestry Sciences Laboratory, 5985 Highway K, Rhinelander, WI 54501

D0110 Insect inferno: Burn baby burn. **Laurie REID,** Clemson University, Dept. of Entomology, 114 Long Hall, Clemson, SC 29634; Joseph CULIN, Clemson University, Dept. of Entomology, Clemson, SC 29634-0001

D0111 Invasion of commercial food packages by the sawtoothed grain beetle, *Oryzaephilus surinamensis* (L.). **Sharon MOWERY,** Kansas State University, 3100 Winston Pl, Apt 9, Manhattan, Kansas 66502-6541; Michael MULLEN, USDA ARS NPA, GMPRC, 1515 College Ave, Manhattan, KS 66502; James CAMPBELL, USDA ARS GMPRC, 1515 College Ave, Manhattan, KS 66502-2736; Alberto BROCE, Kansas State University, Dept. of Entomology, Manhattan, KS 66506

D0112 Is there a nutritional benefit of soybean herbivory for rotation resistant western corn rootworms? **Timothy MABRY,** University of Illinois at Urbana-Champaign, Dept. of Crop Sciences, Urbana, IL 61801; Joseph SPENCER, Illinois Natural History Survey, Crop Sciences, Center for Economic Entomology, 607 E. Peabody Dr., Champaign, IL 61820; Scott ISARD, University of Illinois at Urbana-Champaign, Geography, Urbana, IL 61801; Eli LEVINE, Illinois Natural History Survey, 607 E. Peabody Dr., Champaign, IL 61820-6917

D0113 Rubidium and cesium as markers to study dispersal and movement of southwestern corn borer, *Diatraea grandiosella* Dyar, (Lepidoptera: Pyralidae) in corn. **Jawwad QURESHI,** Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Lawrent BUSCHMAN, Kansas State University, Entomology, Southwest Research Ext Center, 4500 E Mary St, Garden City, KS 67846-9132; Sonny RAMASWAMY, Kansas State University, Entomology, Manhattan, KS 66506

D0114 Reclamation of selenium-contaminated sites: Response of *Spodoptera exigua* to selenium-treated alfalfa *(Medicago sativa)* plants. **Danel VICKERMAN,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001; John TRUMBLE, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001

D0115 Host range and adult host-selection behavior of *Anoplophora glabripennis*. **Laura L. LAZARUS,** Michigan State University, Dept. of Entomology, 243 Natural Science Building, East Lansing, MI 48824; Deborah G. MCCULLOUGH, Michigan State University, Dept. of Entomology, 243 Natural Science Building, East Lansing, MI 48824

D0116 A yellowstriped oakworm, *Anisota peigleri* (Lepidoptera: Saturniidae): An urban shade tree pest. **David SERRANO,** University of Florida, 3611 SW 34th St Apt 70, Gainesville, FL 32608-2583; John FOLTZ, University of Florida, Entomology and Nematology Dept., Gainesville, FL 32611

D0117 Mycorrhizal colonization and insect herbivory in alkaloid producing plants. **Stuart WOOLEY,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521

D0118 Phenology of the black cutworm (*Agrotis ipsilon*) in Ontario no-till corn fields. **Sigrun KULLIK,** Guelph University, Environmental Biology, #6 252 Stone Road West, Guelph, ON N1G 2V7, Canada

D0119 Within- and between-trophic level interactions involving musk thistle weevils. **Lindsey MILBRATH,** Kansas State University, Dept. of Entomology, Manhattan, KS 66506; James NECHOLS, Kansas State University, Dept. of Entomology, Manhattan, KS 66506

D0120 Cold resistance among imported fire ants. **Shannon JAMES,** University of Tennessee, Knoxville, Entomology & Plant Pathology, 205 Ellington Plant Science Bldg., Knoxville, TN 37901; Roberto PEREIRA, University of Tennessee, Knoxville, Dept. Entomology & Plant Pathol, Knoxville, TN 37901-1071; Karen VAIL, University of Tennessee, Knoxville, Ext Ent Plant Path #1071, Knoxville, TN 37901

D0121 Population dynamics and habitat suitability of *Speyeria cybele* (Fabricius). **Lindsay ZEMBA,** Dept. of Biology, Millersville University, Millersville, PA 17551; John R. WALLACE, Dept. of Biology, Millersville University, Millersville, PA 17551

D0122 Soil formation and mite colonization on vegetated mine tailings near Sudbury, Ontario, Canada. **Mark ST. JOHN,**

Colorado State University, Natural Resource Ecology Laboratory, Fort Collins, CO 80523; Giuseppe BAGATTO, Laurentian University, Biology, Sudbury, ON P3E 2C6, Canada; Val BEHAN-PELLETIER, Agriculture and Agri-Food Canada; Evert LINDQUIST, Agriculture and Agri-Food Canada; Joseph SHORTHOUSE, Laurentian University, Biology, Sudbury, ON P3E 2C6, Canada; Ian SMITH, Agriculture and Agri-Food Canada

D0123 Behavioral adaptations increase the value of enemy free space for *Heliothis subflexa*, a specialist herbivore. **Sara OPPENHEIM,** North Carolina State University, 840 Method Road, Unit I, Raleigh, NC 27695

D0124 Oviposition response of the black swallowtail butterfly to volatile host–plant cues. **Cheryl HEINZ,** Cornell University, Dept. of Entomology, Ithaca, NY 14853,

D0125 Effect of water management and ivy geranium cultivar (*Pelargonium peltatum* (L.) L'Her ex Ait.) on twospotted spider mite, *Tetranychus urticae* Koch (Acari: Tetranychidae), population growth and distribution. **George OPIT,** Dept. of Entomology, Kansas State University, Manhattan, KS 66506-4000; Valerie JONAS, Dept. of Horticulture, Kansas State University, Manhattan, KS 66506; David MARGOLIES, Dept. of Entomology, Kansas State University, Manhattan, KS 66506; James NECHOLS, Dept. of Entomology, Kansas State University, Manhattan, KS 66506; Kimberly WILLIAMS, Dept. of Horticulture, Kansas State University, Manhattan, KS 66506

D0126 Effect of temperature on predation of two phenotypes of *Harmonia axyridis* Pallas (Coleoptera: Coccinellidae). **António SOARES,** University of Azores, Dept. of Biology, Rua Mae de Deus, 58, Ponta Delgada, Azores 9502, Ponta, Portugal; Daniel CODERRE, Departement des sciences biologiques, Université du Québec à Montréal, Case postale 8888, succursale Centre-ville, Montréal, QC H3C 3P8, Canada; Henrique SCHANDERL, University of Azores, Rua Mae de Deus, 58, Ponta Delgada, Azores 9502,Ponta, Portugal

D0127 Documenting the decline of C-9: Current status and historical perspective on *Coccinella novemnotata.* **Erin STEPHENS,** Cornell University, Entomology, 2119 Comstock Hall, Ithaca, NY 14853; John LOSEY, Cornell University, 2119 Comstock Hall, Ithaca, NY 14853

D0128 Eggs cannibalism of the coccinellid, *Coleomegilla maculata lengi* neonates: Advantages, preference, and use of chemical cues. **Isabelle GAGNÉ,** Université du Québec à Montréal, Dépt. des Sciences Biologiques, C.P. 8888, Succ. Centre-ville, Montréal, QC H3C-3P8, Canada; Daniel CODERRE, Université du Québec à Montréal, Dépt des Sciences Biologiques, C.P 8888, Succ. Centre-ville, Montréal, QC H3C-3P8, Canada; Mauffette YVES, Université du Québec à Montréal, Dépt. des Sciences Biologiques, C.P. 8888, Succ. Centre-ville, Montréal, QC H3C 3P8, Canada

D0129 Ovipositional preference of a lady beetle *Coleomegilla maculata*, for selected weeds in sweet corn fields. **Marisa GRIFFIN,** University of Kentucky, 151 South Locust Hill Drive Apt. #423, Lexington, KY 40517; Kenneth YEARGAN, University of Kentucky, Dept. of Ent, Lexington, KY 40546-0001

D0130 A test of the benefits of nectar-feeding for the generalist ambush predator, *Phymata americana* (Heteroptera: Phymatidae), under different nectar and prey levels. **Tze-Hei YONG,** Cornell University, Ecology & Evolutionary Biology, Corson Hall, Ithaca, NY 14853

D0131 Vegetarian mantids: Influence of pollen on survivorship and growth of a generalist predator. **Noelle BECKMAN,** Washington & Lee University, Dept. of Biology, Howe Hall, Lexington, VA 24450; Lawrence HURD, Washington & Lee Univ., Dept. of Biol, Lexington, VA 24450

D0132 Behavioral ecology of *Nordus fungicola* (Coleoptera: Staphylinidae). **Stylianos CHATZIMANOLIS,** University of Kansas, Entomology, Snow Entomological Museum, Lawrence, KS 66045

D0133 Left high and dry: A study of the movement of aquatic insects inhabiting ephemeral streams. **Carrie MCMANAMAN,** Pennsylvania State University, 105 W. Bishop St. Apt 7, Bellefonte, PA 16823

D0134 Rice water weevil's preference for aquatic rice weeds as alternate hosts. **Kelly TINDALL,** Louisiana State University, Dept. of Entomology, Baton Rouge, LA 70803; Michael STOUT, Louisiana State University, Dept. of Entomology, Baton Rouge, LA 70803

D0135 Altering plant architecture in leafy spurge, *Euphorbia esula* L. sensu lato infestations as a method for improving *Aphthona* spp. flea beetle establishment. **Vonny BARLOW,** University of Wyoming, Dept. of Renewable Resources, Entomology, Laramie, WY 82071-3354; Chad Prosser, USDA/ARS/NPARL, 1500 North Central, Sidney, MT 59270; Gerry ANDERSON, USDA/ARS/NPARL, 1500 North Central, Sidney, MT 59270; David KAZMER, University of Wyoming, Dept. of Renewable Resources, Entomology, Laramie, WY 82071-3354

D0136 Microhabitat preferences of dragonfly larvae in the western Upper Peninsula of Michigan. **Sean DUNLAP,** University of Notre Dame, Entomology, Dept. of Biological Sciences, Notre Dame, IN 46556; Ronald HELLENTHAL, University of Notre Dame, Biological Sciences, Notre Dame, IN

D0137 Propagation of waves during water strider locomotion and communication. **Jason BOTZ,** University of Kansas, 21 Stouffer Pl, #9, Lawrence, KS 66044-3818; Catherine LOUDON, University of Kansas, Dept. of Entomology, Lawrence, KS 66045-0001

Display Presentations, Student Competition: Section Ce. Insect Pathology and Microbial Control

D0138 Evaluation of rainfall and surface soil residue on dispersal of soil particles and *Beauveria bassiana* conidia to the surface of corn plants. **Denny BRUCK,** Iowa State University, USDA ARS CICGRU, Genetics Laboratory, Ames, IA 50011-0001; Leslie LEWIS, Iowa State University, USDA ARS CICGRU, Ames, IA 50011-0001

D0139 Colonization of corn and tomato plants by *Beauveria bassiana*, and its effect on insect herbivory and survival. **Brian LECKIE,** University of Tennessee, Knoxville, Entomology and Plant Pathology, 1223 Rocky Hill Rd, Knoxville, TN 37919; Roberto PEREIRA, University of Tennessee, Knoxville, Dept. Entomology & Plant Pathol, Knoxville, TN 37901-1071

D0140 Susceptibility of the adult striped cucumber beetle to four isolates of entomopatogenic fungus *Beauveria bassiana*. **Maria GORJELTCHAN,** Universite du Quebec à Montreal, Sciences biologiques, C.P. 8888, Succ. Centre-Ville, Montreal, QC H3C 3P8, Canada; Daniel CODERRE, Université du Québec à Montréal, C.P. 8888, Succ. Centre-Ville, Montreal, QC H3B 3P8, Canada; Silvia TODOROVA, Universite du Quebec à Montreal, Sciences Biologiques, C.P. 8888, Succ. Centre-Ville, Montreal, QC H3C 3P8, Canada

D0141 The impact of *Nosema* sp. (Protozoa: Microspora) on size and sex ratio of its host *Muscidifurax zaraptor* (Hymenoptera: Pteromalidae). **Tanja MCKAY,** Kansas State University, Entomology Dept., Manhattan, KS 66506-4004; Alberto BROCE, Kansas State University, Dept. of Entomology, Manhattan, KS 66506

D0142 *Entomophaga maimaiga* at the southern edge of the gypsy moth infestation **Hilary GILLOCK,** North Carolina State University, Entomology, Box 7613, Raleigh, NC 27695

D0143 Morphological and physiological variability among isolates of mite pathogenic species of *Neozygites* (Zygomycetes: Entomophthorales). **Italo DELALIBERA,** Cornell University, Dept. of Entomology, Ithaca, NY 14853-0901; Ann HAJEK, Cornell University, Dept. of Entomology, Ithaca, NY 14853; Richard HUMBER, USDA/ARS, U.S. Plant, Soil & Nutrition Laboratory, Tower Road, Ithaca, NY 14853

D0144 Formulating *Metarhizium flavoviride* for UVB-protection and effects on virulence to African desert locust, *Shistocerca gregaria* (Forskal). **Jarrod LELAND,** Virginia Polytechnic Institute and State University, Entomology, 1768 Harding Rd, Blacksburg, VA 24060-9122; Donald MULLINS, Virginia Polytechnic Institute and State University, Dept. of Entomology, Blacksburg, VA 24060; Nathalie SMITS, Institut National de la Recherche Agronomique, Montferrier-sur-Lez, 34982, France; Jacques FARGUES, Istitut National de le Recherche Agronomique, Montferrier-sur-Lez, 34982, France; Herman WARREN, Virginia Tech, Dept. of Plant Pathology and Weed Science, Price Hall, Blacksburg, VA 24061; Larry VAUGHAN, Virginia Polytechnic Institute and State University, Office of International Research and Development, Litton Reves Hall, Blacksburg, VA 24061

Display Presentations, Student Competition: Section Cf. Quantitative Ecology

D0145 The effect of grazing on ant (Hymenoptera: Formicidae) biodiversity in the south Okanagan grasslands of British Columbia, Canada. **Jennifer HERON,** University of British Columbia, Zoology, 6270 University Blvd., Vancouver, BC V6T 1Z1, Canada; Geoff G. E. SCUDDER, University of British Columbia, Dept. of Zoology, 6270 University Blvd., Vancouver, BC V6T 1Z1, Canada

D0146 The effects of grazing on Orthopteran and Gryllopteran biodiversity in the Southern Okanagan Valley of British Columbia. **Peggy LIU GRIESDALE,** University of British Columbia, Zoology, 6720 University Blvd, Vancouver, BC V6T 1Z1, Canada; Geoff SCUDDER, University of British Columbia, 6720 University Blvd, Vancouver, BC V6T 1Z1, Canada

D0147 Comparison of insect diversity on post-fire harvested and non-harvested forested landscapes in the Waterton Lakes area of southwestern Alberta. **Erin KINSELLA,** University of Calgary, Biological Sciences, Dept. of Biological Sciences, Calgary, AB T2N 1N4, Canada

D0148 Land management effects on invertebrate diversity in riparian meadows of the Platte River in south-central Nebraska. **Justin KRAHULIK,** University of Nebraska at Kearney, Dept. of Biology, Kearney, NE 68849; William HOBACK, University of Nebraska at Kearney, Dept. of Biology, Kearney, NE 68859; Craig DAVIS, Whooping Crane Maintenance Trust, Inc., Wood River, NE 68883; Jane AUSTIN, USGS- Biological Resources Division, Northern Prairie Wildlife Research Center, Jamestown, ND 58401

D0149 Modeling reproductive plasticity and canalization in lubber grasshoppers. **Crystal A. JONES,** Illinois State University, Dept. of Biological Sciences, J 210, Normal, IL 61790-4120; Steven JULIANO, Illinois State University, Dept. of Biological Sciences, Normal, IL 61790-4120

Display Presentations, Student Competition: Section D. Medical and Veterinary Entomology

D0150 Wolbachia-induced cytoplasmic incompatibility in single- and superinfected *Aedes albopictus* (Asian tiger mosquito). **Eric MARSLAND,** University of Kentucky, Entomology, S225 Ag Science Center North, Lexington, KY 40546; Stephen DOBSON, University of Kentucky, S225 Ag Science Center North, Lexington, KY 40546; Wanchai RATTANADECHAKUL, University of Kentucky, S225 Ag Science Center North, Lexington, KY 40546

D0151 Oviposition response by *Culex pipiens* and *Culex restuans* to ovitraps treated with N,N-diethyl-m-toluamide. **Denise WALTHER,** Southern Illinois University, Dept. of Zoology, Carbondale, IL 62901-6501; Richard WEBER, University of Delaware, Dept. of Entomology and Applied Ecology, Newark, DE 19716

D0152 Do cuticular hydrocarbons play a role in the mating behavior of *Anopheles gambiae* (Diptera: Culicidae)? **Addie POLERSTOCK**, University of Idaho, Dept. of Plant, Soil and Entomological Sciences, Moscow, ID 83844-2339; Marc KLOWDEN, University of Idaho, Plant, Soil, and Entomological Sciences, Moscow, ID 83844-2339

D0153 Natural history of *Cimex adjunctus* (Heteroptera: Cimicidae) in a bat cave. **WILL REEVES,** Clemson University, Entomology, Agriculture, 114 Long Hall, Clemson, SC 29634

Display Presentations, Student Competition: Section Ea. Extension

D0154 Inter-sampler variability, demonstration training, and two sampling methods affect estimation of alfalfa weevil densities. **Kimberly HOFF,** 369 N Hodgeman St, Laramie, WY 82072-2432; Michael BREWER, University of Wyoming, Renewable Resources, P.O. Box 3354, Laramie, WY 82071-3354

D0155 Insects are terrific tools in non-technical, science education for children and adults. **Kirsten HABERKERN,** University of Wisconsin-Madison, 3319 Harvey St, Madison, WI 53705

Display Presentations, Student Competition: Section F. Crop Protection Entomology

D0156 Eriophyid mite densities on wax myrtle (*Myrica cerifera*) in different coastal habitats. **Michael VICKERS,** Clemson University, Entomology, 114 Long Hall, Box 340365, Clemson, SC 29634

D0157 Potential for habituation to azadirachtin in Japanese beetles, *Popillia japonica* Newman. **David HELD,** University of Kentucky, S 225 Agricultural Science Center North, Dept. of Entomology, Lexington, KY 40546-0091; Tyler EATON, University of Kentucky Entomology Dept., S225 Agric Science Ctr. N, Lexington, KY 40546-0091; Daniel POTTER, University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0001

D0158 Occurence and control of coconut scale (*Aspidiotus destructor*) on bananas. **Ming-Yi CHOU,** University of Hawaii, Entomology, College of Tropical Agriculture and Human Resource, 3050 Maile Way, Gilmore 310, Honolulu, HI 96822; Ronald MAU, University of Hawaii, 3050 Maile Way, Honolulu, HI 96822-2231; Laura GUSUKUMA-MINUTO, University of Hawaii, Entomology, 3050 Maile Way Room 310, Honolulu, HI 96822

D0159 Evaluation of biorational and biological control tactics for *Rhyacionia frustrana* suppression in Virginia pine Christmas tree plantations. **Michael PHILIP,** North Carolina State University,

Dept. of Entomology, Raleigh, NC 27695; David ORR, North Carolina State University, Box 7613, Dept. of Entomology, Raleigh, NC 27695; Fred HAIN, North Carolina State University, Dept. of Entomology, Raleigh, NC 27695-7626

D0160 Mating disruption of the Oriental fruit moth (*Grapholita molesta* Busck) in Pennsylvania apples. **Nicolas ELLIS,** Pennsylvania State University, Penn State Fruit Res & Ext Ctr, P.O. Box 309, Biglerville, PA 17307-0309; Larry HULL, Pennsylvania State University, Entomology, Penn State Fruit Res & Ext Ctr, P.O. Box 330, Biglerville, PA 17307-0330

D0161 Turfgrass, crop, and weed hosts of the chinch bug, *Blissus occiduus*. **Thomas EICKHOFF,** University of Nebraska, Dept. of Entomology, 202 Plant Industry Building, P.O. Box 830816, Lincoln, NE 68583; Frederick BAXENDALE, University of Nebraska-Lincoln, Extension Entomology, 210 Plant Industry\East Campus, Lincoln, NE 68583-0816; Terrance RIORDAN, University of Nebraska-Lincoln, 377 Plant Science, Lincoln, NE 68583-0724

D0162 Pest managment of false chinch bugs on canola. **Nihat DEMIREL,** Colorado State University, 905 W Laurel St, Apt. 324, Fort Collins, CO 80521-3573; Whitney CRANSHAW, Colorado State University, Bspm/Entomology, Ft Collins, CO 80523; Loretta MANNIX, Colorado State University, Bioagricultural Sciences and Pest Management, Plant Sciences Bldg. C120, 726 Gregory Road, Fort Collins, CO 80523; Karen KRAMER, Colorado State University, Dept. of Bioagricultural Sciences and Pest Management, Ft. Collins, CO 80523; Matt CAMPER, Colorado State University, Plant Sciences, E17, Fort Collins, CO 80523

D0163 Spatial pattern and decision rules for carrot weevil management in parsley. **Angel TORRES,** Ohio State University, Dept. of Entomology, OARDC, Wooster, OH 44691; Casey HOY, Ohio State University, Entomology, Columbus, OH 43210

D0164 Economic injury level for cereal leaf beetle (*Oulema melanopus*) on Montana barley in association with parasitism by *Tetrastichus julis*. **Katherine MILLER,** Montana State University, Dept. of Entomology, L. Johnson Hall, Bozeman, MT 59717-3020; Sue BLODGETT, Montana State University, Dept. of Entomology, L. Johnson Hall, Bozeman, MT 59717-3020,

D0165 Developing a more specific pheromone for *Helicoverpa zea*. **Todd ADAMS,** Washington State University, Dept. of Entomology, Pullman, WA 99163; Peter LANDOLT, USDA ARS, 5230 Konnowac Pass Rd, Wapato, WA 98951-9651

D0166 Western corn rootworm oviposition in east-central Illinois: Does field crop selection make a difference? **Silvia RONDON,** University of Illinois at Urbana-Champaign, 1102 S Goodwin Ave, 101 AW Turner Hall, Urbana, IL 61801-4730; Michael GRAY, University of Illinois at Urbana-Champaign, Integrated Pest Management, NRES, INHS, Economic Entomology, S-320 Turner Hall, Urbana, IL 61801

D0167 Effect of transgenic corn for corn rootworm on above and below ground nontarget organisms. **Mohammad AL-DEEB,** Kansas State University, Dept. of Entomology, Manhattan, KS 66506-4004; Gerald WILDE, Kansas State University, Dept. of Entomology, Manhattan, KS 66506,

D0168 A comparison of Kansas crop consultant sampling techniques with sampling techniques used in the USDA/KSU Rootworm Areawide Management Project. **Christopher DAVES,** Kansas State University, 123 Waters Hall, Manhattan, KS 66506-4000; Phillip SLODERBECK, Kansas State University, The Forrest Park Bldg, 2510 John Street, Garden City, KS 67846; Randall HIGGINS, Kansas State University, Dept. of Entomology, Manhattan, KS 66506

D0169 An integrated pest management approach to controlling *Acalymma vittatum* (Fabricius), the striped cucumber beetle in southern Ontario. **Jennifer MACINTYRE,** University of Guelph, Dept. of Environmental Biology, Guelph, ON N1G 2W1, Canada; Cynthia SCOTT-DUPREE, University of Guelph, Environmental Biology, Guelph, ON N1G 2W1, Canada; Jeffrey TOLMAN, Agriculture and Agri-Food Canada, SCPFRC, London, ON N5V 4T3, Canada

D0170 The soybean stem borer in Kansas: A research update. **Michelle KACZMAREK,** Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506; Randall HIGGINS, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Phillip SLODERBECK, Kansas State University, The Forrest Park Bldg, 2510 John Street, Garden City, KS 67846; Lawrent BUSCHMAN, Kansas State University, Entomology, Southwest Research Ext Center, 4500 E Mary St., Garden City, KS 67846-9132; William SCHAPAUGH, Kansas State University, Dept. of Agronomy, Throckmorton Hall, Manhattan, KS 66506

D0171 Black cutworm leaf consumption and cutting of corn and soybean: Initial estimates. **Kevin DELANEY,** University of Nebraska, Dept. of Entomology, 202 Plant Industry Bldg, Lincoln, NE 68583-0816; Tulio MACEDO, University of Nebraska, 2224 U Street #102, Lincoln, NE 68503; Tiffany HENG-MOSS, University of Nebraska, P.O. Box 830816, Lincoln, NE 68583-0816; Paul NABITY, University of Nebraska-Lincoln, 202 Plant Industry Bldg., Lincoln, NE 68583-0816

D0172 Evaluation of twospotted spider mite and green cloverworm populations in commercial soybean fields planted with transgenic varieties resistant to Glyphosate and traditional varieties. **Wilmar MORJAN,** Iowa State University, Dept. of Entomology, 110 Insectary Bldg, Ames, IA 50011-0001; Larry PEDIGO, Iowa State University, Dept. of Entomology, Ames, IA 50011

D0173 Early-season colonization patterns of overwintered boll weevils (Coleoptera: Curculionidae) in the Brazos Valley, Texas. **Brendon REARDON,** USDA, APMRU, 2771 F and B Rd, College Station, TX 77845-4966; Dale SPURGEON, Texas A&M University, USDA ARS APMR, 2771 F and B Rd, College Station, TX 77845-4966

D0174 Site specific management of green peach aphids in seed potato-windows of opportunity for targeted application. **Matthew CARROLL,** University of Minnesota, Entomology, 219 Hodson Hall, 1980 Folwell ave., St. Paul, Minnesota 55108; Ian MACRAE, University of Minnesota, Univ. of Minnesota, Northwest Exp Stn, Crookston, MN 56716; David RAGSDALE, University of Minnesota, Dept. of Entomology, St Paul, MN 55108; Edward RADCLIFFE, University of Minnesota, Dept. of Entomology, St Paul, MN 55108

D0175 Site specific management of green peach aphids in seed potato – locations for targeted application. **Robert SURANYI,** University of Minnesota, Dept. of Entomology, St Paul, MN 55108-6125; Ian MACRAE, University of Minnesota, Northwest Exp Stn, Crookston, MN 56716; David RAGSDALE, University of Minnesota, Dept. of Entomology, St Paul, MN 55108; Edward RADCLIFFE, University of Minnesota, Dept. of Entomology, St Paul, MN 55108

D0176 Use of soil applied aldicarb for the control of thrips in cotton. **Kimberly LOHMEYER,** University of Georgia, Dept. of Entomology, 413 BioSciences Bldg., Athens, GA 30602; John ALL, University of Georgia, Dept. of Entomology, 413 BioSciences Bldg., Athens, GA 30602; Phillip ROBERTS, University of Georgia, Dept. of Entomology, P.O. Box 1209, Tifton, GA 31793-1209; Kurk LANCE, University of Georgia, Dept. of Entomology, 413 BioSciences Bldg., Athens, GA 30602

Display Presentations, Student Competition: Section Fa. Host Plant Resistance

D0177 Volatile emissions induced by insect and fungal damage on peanut plants. **Yasmin CARDOZA,** University of Florida, USDA-ARS/CMAVE, 1600 SW 23rd Drive, Gainesville, FL 32604; James TUMLINSON, USDA-ARS/CMAVE, 1600/1700 SW 23rd Drive, Gainesville, FL 32604

D0178 Utility of a laboratory technique to screen varieties of peanuts (*Arachis hypogaea* L.) for resistance to the southern corn rootworm (*Diabrotica undecimpunctata howardi* Barber). **Jeffrey SCOTT,** North Carolina State University, Dept. of Entomology, Campus Box 7613, Raleigh, N.C. 27695-7613; Rick BRANDENBURG, North Carolina State University, Entomology, P.O. Box 7613, Raleigh, NC 27695-7613

D0179 Categories of resistance at different growth stages in three resistant sources in winter wheat to the Russian wheat aphid, *Diuraphis noxia* Mordvilko. **Hayley MILLER,** Colorado State University, Dept. of BSPM-1177, Fort Collins, CO 80523; Frank PEAIRS, Colorado State University, Dept. of Bspm, Fort Collins, CO 80523-1177; Terri RANDOLPH, Colorado State University, 3330 W Cr 54g, Laporte, CO 80535

D0180 Impact of Russian wheat aphid, *Diuraphis noxia* (Mordvilko), on the photosynthetic efficiency of etiolated wheat plants. **Tulio MACEDO,** University of Nebraska, 202 Plant Industry Building, Dept. of Entomology, Lincoln, NE 68583; Leon HIGLEY, University of Nebraska, 202 Plant Industry Bldg, Lincoln, NE 68583

D0181 Genetic mapping of Russian wheat aphid resistance gene Dn6 in wheat accession PI 243781. **Xuming LIU,** Kansas State University, Dept. of Entomology, 123 Waters Hall, Manhattan, KS 66506; C. Michael SMITH, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Bikram S. GILL, Kansas State University, Dept. of Plant Pathology, Manhattan, KS 66506

D0182 Relationship between chlorophyll loss and photosynthetic rate in greenbug damaged sorghum. **Nandi NAGARAJ,** Dept. of, Entomology, Kansas State University, 123 West Waters Hall, Manhattan, KS 66506-4004; John C. REESE, Dept. of Entomology, Kansas State University, 123 West Waters Hall, Manhattan, KS 66506; K. D. KOFOID, Ag. Research Center-Hays, 1232 240th Ave., Hays, KS 67601; M. B. KIRKHAM, Dept. of Agronomy, Kansas State University, Manhattan, KS 66506; Leslie R. CAMPBELL, Dept. of Entomology, Kansas State University, Manhattan, KS 66506

D0183 Chromosomal mapping of a wheat curl mite resistance gene in common wheat. **Renu MALIK,** Kansas State University, Dept. of Entomology, Manhattan, KS 66506-4004; C. Michael SMITH, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Gina BROWN-GUEDIRA, USDA/ARS Plant Science Laboratory, Throckmorton Hall, Kansas State University, Manhattan, KS 66506; Tom HARVEY, Kansas State University, Agric Res Center Hays, Hays, KS 67601-9228

D0184 Chemical defences of the Piperaceae: A case for analogue synergism. **Ian M. SCOTT,** University of Ottawa, Biology, 30 Marie Curie, Ottawa, ON K1N 6N5, Canada; John T. ARNASON, University of Ottawa, Biology, 30 Marie Curie, Ottawa, ON K1N 6N5, Canada; Bernard J. R. PHILOGENE, University of Ottawa, Biology, 30 Marie Curie, Ottawa, ON K1N 6N5, Canada

D0185 Evaluation of lettuce resistance to the banded cucumber, *Diabrotica balteata*, using artificial diet. **Juan HUANG,** University of Florida, Entomology and Nematology Dept., P.O. Box 110620, Gainesville, FL 32611-0620; Heather J. MCAUSLANE, University of Florida, Entomology and Nematology Dept., P.O. Box 110620, Gainesville, FL 32611-0620; Gregg S. NUESSLY, University of Florida, Everglades Research and Education Center, 3200 East Palm Beach Road, Belle Glade, FL 33430-8003

D0186 Effect of silverleaf whitefly, *Bemisia argentifolii*, and squash silverleaf disorder on zucchini plant growth and yield. **Jiang (John) CHEN,** Univ. of Florida, Entomology and Nematology, P.O. Box 110620, Gainesville, FL 32611-0620; Heather J. MCAUSLANE, University of Florida, Entomology and Nematology Dept., P.O. Box 110620, Gainesville, FL 32611-0620; R. Bruce CARLE, Univ. of Florida, Mid-Florida Research and Education Center, 2725 Binion Road, Apopka, FL 32703-8504; Susan E. WEBB, University of Florida, Central Florida Research and Education Center, Dept. of Entomology & Nematology, P.O. Box 110620, Gainesville, FL 32611-0620

D0187 Host plant resistance and defoliation tolerance screening for intensive culture of sweetgum tree crops. **Robert JETTON,** North Carolina State University, Campus Box 8008, Raleigh, NC 27695

D0188 Soil management regimes impact resource allocation and insect resistance of river birch (*Betula nigra* 'Heritage') in ornamental landscapes. **John LLOYD,** Ohio State University-OARDC, Dept. of Entomology, 1680 Madison Ave, Wooster, OH 44691-4096; Daniel HERMS, Ohio State University-OARDC, Dept. of Entomology, Wooster, OH 44691; Benjamin STINNER, Ohio State University-OARDC, Entomology, Wooster, OH 44691; Henricus HOITINK, Ohio State University-OARDC, Dept. of Plant Pathology, Wooster, OH 44691

Display Presentations, Student Competition: Section Fb. Urban Entomology

D0189 Nutrient distribution in *Solenopsis invicta*. **Heather STORY-WHITNEY,** 402 Life Sciences Building, Baton Rouge LA 70808

Display Presentations, Section A. Systematics, Morphology, and Evolution

D0190 An illustrated guide to the Staphylinidae (Coleoptera) of Mexico. **J. L. NAVARRETE HEREDIA,** Centro de Estudios en Zoología, Universidad de Guadalajara, Apdo Postal 234, Zapopan, Jalisco 45100, México; A. F. NEWTON, Field Museum of Natural History, 1400 South Lake Shore Dr., Chicago, IL 60605-2496; M. K. THAYER, Field Museum of Natural History, 1400 South Lake Shore Drive, Chicago, IL 60605-2496; J. S. ASHE, University of Kansas, Div. of Entomology, Snow Hall, Lawrence, KS 66045; D. S. CHANDLER, University of New Hampshire, Dept. of Zoology, Durham, NH 03824

D0191 Taxonomic illustrations for the book "Stink Bugs of Economic Importance in America North of Mexico". **Angelika SCHMID-RILEY,** University of Georgia, 329 E. 30th St., Tifton, GA 31794; D. G. RILEY, University of Georgia, Dept. of Entomology, Coastal Plain Experiment Station, P.O. Box 748, Tifton, GA 31793; R. M. MCPHERSON, University of Georgia, Dept. of Entomology, P.O. Box 748, Tifton, GA 31793; J. E. MCPHERSON, Southern Illinois University, Dept. of Zoology, Carbondale, IL 62901

D0192 Illustrations of insect physio-chemical processes. **David HEADRICK,** California Polytechnic State University, San Luis Obispo, Crop Science Dept., 1 Grand Ave., San Luis Obispo, CA 93407

D0193 Automatic identification of Korean *Limenitis* and *Neptis* (Lepidoptera : Nymphalidae). **Hwang-Yong KIM,** Seoul National University, School of Biotechnology, Suwon, 103,

Suwon, GyungGi 441-744, Republic of Korea; Young June LEE, Seoul National University, Suwon, 103, Suwon, GyungGi 441-744, Republic of Korea; Kun Suk WOO, Seoul National University, Suwon, 103, Suwon, GyungGi 441-744, Republic of Korea

D0194 An online database of the primary types at the MCZ, Harvard. **Piotr NASKRECKI,** University of Connecticut, Ecology and Evolutionary Biology, 75 N Eagleville Rd., Storrs, CT 06269

D0195 Radiation of orb web architecture in Hawaiian spiders. **Todd BLACKLEDGE,** University of California, Division of Insect Biology-ESPM, 201 Wellman Hall, Berkeley, CA 94720-3112

D0196 Spiders of Alberta and Saskatchewan. **Donald BUCKLE,** 620 Albert Avenue, Saskatoon, SK S7N 1G7, Canada; Robert HOLMBERG, Athabasca University, Entomology, Centre for Science, Athabasca, AB T9S 3A3, Canada

D0197 A review of leafrollers (Lepidoptera: Tortricidae) as potential biological control agents against invasive weeds. **John BROWN,** USDA SYS Entomology Lab, National Museum of Natural History, Washington, D. C. 20560

D0198 Early periodical cicada growth, four-year accelerations, and the origin of new broods. **Gene KRITSKY,** Dept. of Biology, College of Mount St. Joseph, Cincinnati, OH 45233-1670; Nicola GALLAGHER, Dept. of Biology, College of Mount St. Joseph, Cincinnati, OH 45233

D0199 Host plant effects on the life history traits, nutritional indices and activity of digestive enzymes in the gypsy moth derived from two populations. **Jelica LAZAREVIC,** Institute for Biological Research, Dept. of Insect Biochemistry and Physiology, 29 Novembra 142, Belgrade, Serbia 11000, Yugoslavia; Vesna PERIC-MATARUGA, Institute for Biological Research, 29 Novembra 142, Belgrade, Serbia 11000, Yugoslavia

D0200 Biology and immature stages of *Ochrotrichia footei* new species (Trichoptera: Hydroptilidae) from a torrential mountain stream. **Joe KEIPER,** Cleveland Museum of Natural History, Dept. of Invertebrate Zoology, Cleveland, OH 44106; Steven HARRIS, Clarion University, Dept. of Biology, Clarion, PA 16214

D0201 Elucidations on morphology and biology of the rust mites (Acari: Eriophyoidea: Eriophyidae). **Ronald OCHOA,** USDA ARS BA PSI SEL, 10300 Baltimore Ave, Beltsville, MD 20705-2325

D0202 Insects associated with forest fires in northern California and Oregon. **Nathan SCHIFF,** USDA Forest Service, Center for Bottomland Hardwoods Research, Southern Research Station, Stoneville, MS 38776

D0203 Diversity of the arthropods in nine habitat sites at the barrens in eastern Tennessee. **Paris LAMBDIN,** University of Tennessee, Knoxville, Entomology & Plant Pathol, Knoxville, TN 37901; Jerome GRANT, University of Tennessee, Knoxville, 205 Ellington Plant Sciences Bldg., Dept. of Entomology and Plant Pathology, Knoxville, TN 37901

D0204 Diversity of the insect fauna associated with yellow-poplar in east Tennessee. **John LAFOREST,** The University of Tennessee, Dept. Entomology. & Pl. Pathol, Knoxville, TN 37901; Paris LAMBDIN, The University of Tennessee, Dept. Entomology. & Pl. Pathol., Knoxville, TN 37901; Jerome GRANT, The University of Tennessee, Dept. Entomology. & Pl. Pathol., Knoxville, TN 37901

D0205 Aquatic beetles of Missouri: State records and range extensions. **Noah WHITEMAN,** University of Missouri, 1-87 Agriculture Bldg., Dept. of Entomology, Columbia, MO 65211; Robert SITES, University of Missouri-Columbia, Dept. of Entomology, Columbia, MO 65211

D0206 Biogeography and evolution of host use in *Araucaria* feeding Gondwanan bark beetles (Curculionidae: Scolytinae). **Andrea SEQUEIRA,** Harvard University, 26 Oxford St., Mus of Comparative Zoology, Cambridge, MA 02138-2902; Brian FARRELL, Harvard University, Organismic and Evolutionary Biology, Cambridge, MA 02138

D0207 Distributional patterns of the Rutelinae (Coleoptera: Scarabaeidae) in Ecuador: A study applying parsimony analysis of endemisity (PAE). **Federico OCAMPO,** University of Nebraska, University of Nebraska State Museum, Systematics Collections, Lincoln, NE 68588-0546; Aura PAUCAR-CABRERA, University of Nebraska, Lincoln, NE 68588-0514

D0208 Endemic or indigenous, invasive or exotic? What is native and does it matter? **George RODERICK,** University of California, Conservation Research & Training Program, Manoa, ESPM - Insect Biology, 201 Wellman Hall, MC 3112, Berkeley, CA 94720-3112; Rosemary GILLESPIE, University of California, 201 Wellman Hall MC 3112, Berkeley, CA 94720-3112

D0209 Insects of the Galapagos Islands, Ecuador. **Stewart PECK,** Dept. of Biol - Carleton Univ., 1125 Colonel By Drive, Ottawa, ON K1S 5B6, Canada

D0210 Galapagos terrestrial invertebrates: Collection rehabilitation, training and research opportunities. **Michael WILSON,** National Museums & Galleries of Wales, Biodiversity & Systematic Biology, Cathays Park, Cardiff, CF10 3NP, UK; Charlotte CAUSTON, Charles Darwin Research Station, Puerta Ayora, Galapagos Ecuador

D0211 Actual knowledge of the predatory wasps in Tamaulipas, México. **Enrique RUÍZ-CANCINO,** Universidad Autónoma de Tamaulipas, UAM Agronomía y Ciencias, Centro Universitario, Cd. Victoria, Tamaulipas 87149, México; Juana CORONADO-BLANCO, Universidad Autónoma de Tamaulipas, UAM Agronomía y Ciencias, Centro Universitario, Cd. Victoria, Tamaulipas 87149, México; Jorge HORTA-VEGA, Instituto Tecnológico de Cd. Victoria, Blvd. Emilio Portes Gil 1301 Pte., Cd. Victoria, Tamaulipas 87010, México

D0212 Thelytoky in *Trichogramma*: When is it adaptive? **François FOURNIER,** Services Bio-Controle Inc., Division lutte biologique, 2300 Sherbrooke Est,, Bureau 400, Montréal, QC H2K 1E5, Canada; Guy BOIVIN, McGill University, Natural Resource Sciences, MacDonald College, Res Stn Agriculture Canada, 430 Boul Gouin, St Jean Sur Richelieu, PQ J3B 3E6, Canada

D0213 Coadaptation of preference and performance in differentially adapated populations of the polyphagous tiger swallowtail butterfly, *Papilio glaucus*. **J. L. BOSSART,** The College of New Jersey, P.O. Box 7718,, Dept. of Biology, Ewing, NJ 08628-0718

D0214 Holometabolic development in the Thrips (Thysanoptera). **Susan BRODA-HYDORN,** 2200 Broening Hwy., Suite 140, Baltimore, MD 21224

D0215 Resolving the warm/temperate Early Tertiary shift in insect/plant assemblages: A view from the shales and amber of the Okanagan Highlands (British Columbia, Washington State). **S. Bruce ARCHIBALD,** Harvard University, Museum of Comparative Zoology, 26 Oxford St., Cambridge, MA 02138; Brian FARRELL, Harvard University, Entomology, MCZ Entomology, 26 Oxford St., Cambridge, MA 02138

D0216 Review of myrmecophilous and termitophilous featherwing beetles (Coleoptera: Ptiliidae). **W. Eugene HALL,** University of Nebraska, St Museum Sys Div of Entomology, Lincoln, NE 68588

D0217 Species composition of lady beetles (Coleoptera: Coccinellidae) on the Barrens in eastern Tennessee. **Jerome GRANTE,** The University of Tennessee, Dept. Entomology. & Pl. Pathol, Knoxville, TN 37901; Paris LAMBDIN, The University of Tennessee, Dept. Entomology. & Pl. Pathol., Knoxville, TN 37901; Adriean MAYOR, The University of Tennessee, Dept. Entomology. & Pl. Pathol., Knoxville, TN 37901; Greg WIGGINS, The University of Tennessee, Dept. Entomology. & Pl. Pathol, Knoxville, TN 37901

D0218 Systematics and ecology of Costa Rican *Euplectrus* (Hymenoptera: Eulophidae). **Michael SCHAUFF,** U.S. National Museum, Systematic Entomology Lab-USD, Washington, DC 20560; Dan Janzen, University of Pennsylvania, Dept. of Biology, Philadelphia, PA

D0219 Systematic study of the genus *Diolcogaster* Ashmead (Hymenoptera: Braconidae: Microgastrinae) from the Neotropical Region. **Won Young CHOI,** University of Arkansas, Dept. of Entomology, 321 Agri. Bldg., Fayetteville, AR 72701; James WHITFIELD, University of Arkansas, Dept. of Entomology, Fayetteville, AR 72701

D0220 Systematics of Asian longhorned beetles of the genus *Anoplophora.* **Steven W. LINGAFELTER,** Systematic Entomology Laboratory, USDA, c/o National Museum of Natural History, MRC-168, Washington, D.C. 20560; E. Richard HOEBEKE, Dept. of Entomology, Cornell University, Ithaca, NY 14853

D0221 Systematics of the Hoplandriini (Coleoptera: Staphylinidae: Aleocharinae). **Rodney HANLEY,** University of Kansas, Snow Entomological Museum, Snow Hall, Lawrence, KS 66045

D0222 The evolution of the sacred scarab and its kin. **T. Keith PHILIPS,** Western Kentucky University, Biology, 1 Big Red Way, Bowling Green, KY 42101; Resia PRETORIUS, University of Pretoria, Dept. of Anatomy, Faculty of Medicine, Pretoria, 0002, South Africa; Clarke SCHOLTZ, University of Pretoria, Zoology and Entomology, Pretoria, 0002, South Africa

D0223 Phylogenetics of the endosymbiont, *Blattabacterium cuenoti*, from the genus *Cryptocercus* (Blattaria: Cryptocercidae): Bacterial species or species complex? **Jeffrey CLARK,** Kansas State University, Entomology, 123 West Waters Hall, Manhattan, KS 66506; Srini KAMBHAMPATI, Kansas State University, Dept. of Entomology, Manhattan, KS 66506

D0224 Evolution of Rhynchophoridae (Dryophthoridae): Phylogeny, host use, and symbionts. **Brian O'MEARA,** Harvard University, Museum of Comparative Zoology, 26 Oxford St., Cambridge, MA 02138; Brian FARRELL, Harvard University, Museum of Comparative Zoology, 26 Oxford St., Cambridge, MA 02138

D0225 The comparative morphology of the sting apparatus of bees. **Laurence PACKER,** York University, Biology, Toronto, ON M3J 1P3, Canada

D0226 Notable structures in Mexican Ichneumonidae (Hymenoptera). **Juana CORONADO-BLANCO,** Universidad Autónoma de Tamaulipas, UAM Agronomía y Ciencias, Centro Universitario, Cd. Victoria, Tamaulipas 87149, Mexico; Enrique RUÍZ-CANCINO, Universidad Autónoma de Tamaulipas, UAM Agronomía y Ciencias, Centro Universitario, Cd. Victoria, Tamaulipas 87149, México

D0227 Morphometrics on wing venation of Agromyzidae (Insecta: Diptera). **Shiuh-Feng SHIAO,** Dept. of Entomology, National Taiwan University, 27 Lane 113, Roosevelt Rd Sec 4, Taipei 106, Taiwan 106, Taiwan; Wen-jer WU, Dept. of Entomology, National Taiwan University, Taipei, Taiwan 106, TAIWAN

D0228 Antennal morphology of the soybean stemborer, *Dectes texanus* (Coleoptera: Cerambycidae). **Damon CROOK,** Kansas State University, Dept. of Entomology, 123 Waters Hall, Manhattan, KS 66506; Randall HIGGINS, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Sonny RAMASWAMY, Kansas State University, Entomology, Manhattan, KS 66506

D0229 Three-dimensional mapping of brain neuropils in the cockroach, *Diploptera punctata.* **Ann-Shyn CHINAG,** Dept. of Life Science, National Tsing Hua University, Hsinchu, Taiwan,; Yee-Chien LIU, Dept. of Life Science, National Tsing Hua University, Hsinchu, Taiwan,; Shu-Ling CHIU, Dept. of Life Science, National Tsing Hua University, Hsinchu, Taiwan; Shu-Hsia HU, Dept. of Life Science, National Tsing Hua University, Hsinchu, Taiwan; Chih-Ying HUANG, Dept. of Life Science, National Tsing Hua University, Hsinchu, Taiwan

D0230 Determination of sex chromosomes in two X-O insects. **Andrea BADGLEY,** University of Maryland College Park, Dept. of Entomology, 4112 Plant Sciences, College Park, MD 20742; David HAWTHORNE, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742,

D0231 Genetic evidence for a recent population expansion in the African malaria vectors *Anopheles gambiae* and *A. arabiensis*. **Martin DONNELLY,** Centers for Disease Control, Division of Parasitic Diseases, Ms F22, 4770, Buford Hwy, Chamblee, GA 30341; Monica LICHT, Centers for Disease Control and Prevention, 4770 Buford Hwy, MS: F22, Chamblee, GA 30341; Tovi LEHMANN, Centers for Disease Control, MS F22, 4770, Buford Hwy, Chamblee, GA 30341

D0232 Coming soon to a tephritid near you: Sequence, synteny, and savoir-faire. **Joseph ROETHELE,** University of Notre Dame, Biological Sciences, 107 Galvin Life Science Center, Notre Dame, IN 46556; Jeffrey FEDER, University of Notre Dame, Biological Sciences, Notre Dame, IN 46556-0369

D0233 Nuclear and mitochondrial variation in *Bactrocera* (Tephritidae) fruit flies. **Andrew J. BOHONAK,** San Diego State University, Dept. of Biology, San Diego, CA 92182-4614; Jeom-Hee MUN, University of California, Insect Biology, 201 Wellman Hall #3112, Berkeley, CA 94720-3112; George K. RODERICK, University of California, Insect Biology, 201 Wellman Hall #3112, Berkeley, CA 94720-3112

D0234 Molecular evidence for a species complex in the genus *Aphelinus* (Hymenoptera: Aphelinidae). **Yi CHEN,** USDA, ARS, PSWCRL, 1301 N Western Rd., Stillwater, OK 74075-2714; Kristopher GILES, Oklahoma State University, Dept. Entomology & Plant Pathol, Stillwater, OK 74078-3033; Matthew GREENSTONE, USDA ARS PSRL, 1301 N Western Rd., Stillwater, OK 74075-2714

D0235 Diversity of ribosomal RNA spacers in boll weevils and corn rootworms. **Richard ROEHRDANZ,** USDA ARS RRVARC, 1605 Albrecht Blvd., P.O. Box 5674, Fargo, ND 58105; Patti SENECHAL WILLIS, North Dakota State University, Biochemistry Dept., Loftsgard Hall, Fargo, ND 58105

D0236 Patterns of nuclear and mtDNA sequence variation in the genus *Rhagoletis*. **Hattie DAMBROSKI,** University of Notre Dame, Dept. of Biological Sciences, 107 Galvin Life Science Center, Notre Dame, IN 46556; Joseph ROETHELE, University of Notre Dame, Biological Sciences, 107 Galvin Life Science Center, Notre Dame, IN 46556; Jeffrey FEDER, University of Notre Dame, Biological Sciences, Notre Dame, IN 46556-0369; James SMITH, Michigan State University ; Stewart BERLOCHER, University of Illinois at Urbana-Champaign, Ecology, Ethology, and Evolution, Urbana, IL 61801; Vesna GAVRILOVIC, Michigan State University; William PERRY, Illinois State University

D0237 A preliminary molecular phylogeny for the Neuropterida. **Troy WAITE,** Brigham Young University, Zoology, 693 WIDB, Provo, UT 84602; Michael WHITING, Brigham Young University, 574 Widstoe Building, Provo, UT 84602

Display Presentations, Section Cb. Apiculture and Social Insects

D0238 Melatonin and division of labor in honey bee workers. **Zachary HUANG,** Michigan State University, Dept. of Entomology, 243 Natural Science, East Lansing, MI 48824; Ronglin YU, Michigan State University, 243 Natural Science, Dept. of Entomology, E. Lansing, MI 48824; Ron Huarong LIN, Michigan State University, 243 Natural Science, Dept. of Entomology, East Lansing, MI 48824

D0239 The nature of nurture: Foraging behavior in honey bees. **Robert E PAGE,** University of California, Dept. of Entomology, Davis, CA 95616; Tanya PANKIW, University of California, Davis, Dept. of Entomology, Davis, CA 95616; David, R. TARPY, Cornell University, Dept. of Neurobiology and Behavior, W3O1 Seeley G. Mudd Hall, Ithaca, NY 14853-2801; M. Kim FONDRK, University of California, Dept. of Entomology, Davis, CA 95616

D0240 Role of the vibration signal during temporary polygyny in honey bee colonies. **Stanely SCHNEIDER,** University of North Carolina at Charlotte, Biology, University City Blvd, Charlotte, NC 28223; Sandy PAINTER-KURT, University of North Carolina, Dept. of Biology, Charlotte, NC 28223; Gloria DEGRANDI-HOFFMAN, Carl Hayden Bee Research Center, 2000 E. Allen Rd., Tucson, AZ 85719

D0241 Selection of recipients by honey bees that perform vibration signals. **Lee LEWIS,** 1235-E East Blvd, PMB 277, Charlotte, NC 28203; Stanley SCHNEIDER, University of North Carolina, Dept. of Biology, Charlotte, NC 28223

D0242 Assessment of pollen stores by honey bee colonies. **Nicholas CALDERONE,** Cornell University, Dept. of Entomology, Comstock Hall, Ithaca, NY 14853; Sisi LIN, Dept. of Entomology, Comstock Hall, Cornell University, Ithaca, NY 14853

D0243 Earlier foraging in carbon dioxide anesthetized bees: Is it juvenile hormone mediated? **Erik FOSTER,** Michigan State University, 243 Natural Science, Dept. of Entomology, East Lansing, MI 48824; Zachary HUANG, Michigan State University, Dept. of Entomology, East Lansing, MI 48824

D0244 Responses of *Varroa jacobsoni* to worker and drone larvae of the honey bee, *Apis mellifera*, at varied ages. **Sisi LIN,** Cornell University, Dept. of Entomology, Comstock Hall, Ithaca, NY 14853; Nicholas CALDERONE, Cornell University, Dept. of Entomology, Comstock Hall, Ithaca, NY 14853

D0245 Does *Nosema apis* affect age of first foraging via juvenile hormone? **Ron Huarong LIN,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Zachary HUANG, Michigan State University, Dept. of Entomology, East Lansing, MI 48824

D0246 Efficacy of formic acid and essential oils on controlling *Varroa jacobsoni* in northern climates. **Medhat NASR,** Ontario Beekeepers' Association, University of Guelph, Dept. Environmental Biology, Guelph, ON N1G 2W1, Canada; Geoffrey WILSON, University of Guelph, Dept. Environmental Biology, Guelph, ON N1G 2W1, Canada; Janet TAM, Ontario Beekeepers' Association, Dept. Env. Biology, Unversity of Guelph, Guelph, ON N1G 2W1, Canada

D0247 Molecular and functional analysis of a sodium channel gene of the varroa mite, *Varroa jacobsoni*. **Ruiwu WANG,** Michigan State University, Integrated Plant Systems, Entomology, CIPS 106, East Lansing, MI 48824; Ke DONG, Michigan State University, Entomology, 106 Pesticide Res Ctr, East Lansing, MI 48824; Zachary HUANG, Michigan State University, Dept. of Entomology, 243 Natural Science, East Lansing, MI 48824

D0248 Application of key factor analysis to the management of alkali bees, *Nomia melander*. **Richard RUST,** University of Nevada-Reno, Reno, Nevada 89557

D0249 A web-based guide to the pest ants of the northeastern United States. **Gary ALPERT,** MCZ, Harvard University, 26 Oxford Street, Cambridge, MA 02138; Barry SELLO, MCZ, Harvard University, 26 Oxford Street, Cambridge, MA 02138; John MATHEW, MCZ, Harvard University, 26 Oxford Street, Cambridge, MA 02138; Stefan COVER, MCZ, Harvard University, 26 Oxford Street, Cambridge, MA 02138; Brian FARRELL, Harvard University, MCZ Entomology, 26 Oxford Street, Cambridge, MA 02138

D0250 Diversity of ant species attracted to four different food baits in Georgia. **Mark BRINKMAN,** Georgia Experiment Station, 1109 Experiment Street, Griffin, GA 30223; Wayne GARDNER, University of Georgia, Dept. of Entomology, Griffin, GA 30223; Reid IPSER, University of Georgia, Dept. of Entomology, Athens, GA 30605; Stanley DIFFIE, University of Georgia, Dept. of Entomology, Tifton, GA 31793; Jeremy DAVIDSON, University of Georgia, Dept. of Entomology, Griffin, GA 30223

D0251 Effects of bait quality on foraging patterns in an ant community. **Michael BALAS,** Thiel College, Biological Sciences, St. John's College of Liberal Arts and Sciences, 75 College Avenue, Greenville, PA 16125

D0252 Queen-worker conflict over life history decisions. **Joan HERBERS,** Colorado State University, Dept. of Biology, Fort Collins, CO 80523; Christopher DeHeer, Colorado State University, Dept. of Biology, Fort Collins, CO 80523; Susanne FOITZIK, Colorado State University, Dept. of Biology, E 108 Anatomy/Zoology, Fort Collins, CO 80523

D0253 Tool use during foraging by a forest ant, *Aphaenogaster rudis*: Interspecific competition and division of labor. **Valerie BANSCHBACH,** Saint Michael's Coll, Dept. of Biology, Colchester, VT 05439; Kristen Bartlett, Saint Michael's College, Dept. of Biology, Colchester, VT 05439; Judy Grivetti, Saint Michael's College, Dept. of Biology, Colchester, VT 05439

D0254 Analysis of antennal proteins of the red imported fire ant. **Robert RENTHAL,** University of Texas at San Antonio, Life Science, San Antonio, TX 78249; Daniel VELASQUEZ, University of Texas at San Antonio, Division of Life Sciences, 6900 N. Loop 1604 W., San Antonio, TX 78249; Stephen HOOG, University of Texas at San Antonio, Division of Life Sciences, 6900 N. Loop 1604 W., San Antonio, TX 78249; Susan T. WEINTRAUB, University of Texas Health Science Centrer at San Antonio, Dept. of Biochemistry, 7703 Floyd Curl Dr., San Antonio, TX 78284

D0255 Response of *Pseudacteon* phorid flies to fire ant, *Solenopsis invicta*, semiochemicals. **Robert VANDER MEER,** USDA/ARS, CMAVE, 1600 SW 23rd Drive, Gainesville, FL 32608; Sanford PORTER, USDA/ARS, CMAVE, 1600 SW 23rd Drive, Gainesville, FL 32608

D0256 Subterranean termites in young loblolly pine plantations in relation to site disturbances caused by logging practices. **Marita LIH,** USDA Forest Service, 101-A G. T. Thames Drive, Starkville, MS 39759; Allan TIARKS, USDA Forest Service, 2500 Shreveport Hwy, Pineville, LA 71360; Bradford KARD, USDA Forest Service, 101-A G. T. Thames Drive, Starkville, MS 39759

D0257 Cues used by the dampwood termite *Zootermopsis angusticollis* to initiate infection control. **Rebeca ROSENGAUS,** Boston University, 5 Cummington St, Boston, MA 02215-2406; David RHODES, Boston University, 5 Cummington Street, Boston, MA 02215; James TRANIELLO, Harvard University, Museum of Comparative Zoology, Dept. of Biology, Boston University, Boston, Massachusetts 02215

Display Presentations, Section Eb. Regulatory

D0258 The phytosanitary alert system of the North American Plant Protection Organization: **www.pestalert.org . Daniel FIESELMANN,** USDA, APHIS, PPQ, Center for Plant Health Science and Technology, 1017 Main Campus Drive Suite 2500, Raleigh, NC 27606-5202; Woodward BAILEY, USDA-APHIS-PPQ, Entomology, Center for Plant Health Science and Technology, 1017 Main Campus Drive Suite 2500, Raleigh, NC 27606-5202; Raul SANTIBANEZ, Comision Nacional de Sanidad Agropecuaria, Guillermo Perez Valenzuela No. 127, Col. El Carmen, Coyoacan, Mexico; Robert FAVRIN, Canadian Food Inspection Agency, 3851 Fallowfield Road, Nepean, ON K2H 8P9, Canada; Ian MCDONELL, North American Plant Protection Organization, Observatory Cres. Gldg. #3, Central Experimental Farm, Ottawa, ON K1AOC6, Canada

D0259 The New Pest Advisory Group: A component of safeguarding U.S. agricultural and natural ecosystems. **Scott REDLIN,** USDA-APHIS-PPQ, Center for Plant Health Science and Technology, 1017 Main Campus Drive Suite 2500, Raleigh, NC 27606-5202; Lawrence BROWN, USDA-APHIS-PPQ, Center for Plant Health Science and Technology, 1017 Main Campus Drive Suite 2500, Raleigh, NC 27606-5202; Woodward BAILEY, USDA-APHIS-PPQ, Entomology, Center for Plant Health Science and Technology, 1017 Main Campus Drive Suite 2500, Raleigh, NC 27606-5202; Robert SCHALL, USDA-APHIS-PPQ, 69 Thomas Johnson Drive Suite 100, Frederick Village, MD 21702; Daniel FIESELMANN, USDA, APHIS, PPQ, Center for Plant Health Science and Technology, 1017 Main Campus Drive Suite 2500, Raleigh, NC 27606-5202

D0260 New format for nursery inspections yields database on Michigan's plant pests. **Amy KENNEDY,** Michigan Dept. of Agriculture, 463 Ivy Wood Ct, Rochester Hills, MI 48307-2842

D0261 Asian longhorned beetle (*Anoplophora glabripennis*) in the timeline of history and key detection/interception events. **E. Richard HOEBEKE,** Dept. of Entomology, Comstock Hall, Cornell University, Ithaca, NY 14853

D0262 Ecological risk of transgenic insect resistance. **Peter MASON,** Agriculture and Agri-Food Canada, Eastern Cereal and Oilseeds Research Centre, K. W. Neatby Building, Ottawa, ON K1A 0C6, Canada; Lorraine BRAUN, Agriculture and Agri-Food Canada, Saskatoon Research Centre, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; Anne LÉGÈRE, Agriculture and Agri-Food Canada, Soils and Crops Research and Development Centre,, 2560, Boulevard Hochelaga, Sainte-Foy, Québec G1V 2J3, Canada; Neal STEWART, University of North Carolina at Greensboro, Biology, Greensboro, North Carolina 27402; Suzanne WARWICK, Agriculture and Agri-Food Canada, Eastern Cereal and Oilseeds Research Centre, K. W. Neatby Building, Ottawa, ON K1A 0C6, Canada

D0263 Irradiation and hot-water immersion as potential postharvest quarantine treatments for the pink hibiscus mealybug. **Arnold HARA,** University of Hawaii at Manoa, Dept. of Plant & Environmental Protection Sciences, 461 W. Lanikaula St, Hilo, HI 96720; Christopher JACOBSEN, University of Hawaii at Manoa, Dept. of Plant & Environmental Protection Sciences, 461 W. Lanikaula St., Hilo, HI 96720

Display Presentations, Section Fa. Host Plant Resistance

D0264 Collection and identification of volatiles from flea beetle-(*Phyllotreta cruciferae*) (Coleoptera: Chrysomelidae) susceptible and resistant crucifer species. **Ning XU,** Agriculture and Agri-Food Canada, Saskatoon Research Centre, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; Julie SOROKA, Agriculture and Agri-Food Canada, Saskatoon Research Centre, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; Margaret GRUBER, Agriculture and Agri-Food Canada, Saskatoon Research Centre, 107 Science Place, Saskatoon, SK S7N 0X2, Canada

D0265 Factors influencing systemic induction of terpenoid aldehydes in cotton by beet armyworm larval feeding. **Heather MCAUSLANE,** University of Florida, Entomology and Nematology Dept., P.O. Box 110620, Gainesville, FL 32611-0620; Hans ALBORN, USDA ARS CMAVE, 1600/1700 SW 23rd Dr., P.O. Box 14565, Gainesville, FL 32604

D0266 Sources of resistance against *Aphis gossypii* Glover (Homoptera: Aphididae) in taro, *Colocasia esculenta* (L.). **Ross H. MILLER,** University of Guam, CALS-AES, Mangilao, Guam 96923; George C. WALL, University of Guam, CALS-AES, Mangilao, Guam 96923

D0267 In vitro evidence of enzymatic chlorophyll catabolism caused by cereal aphids (Hemiptera: Aphididae) and aphid-infested wheat leaves. **Xinzhi NI,** Montana State University, Dept. of Entomology, Bozeman, MT 59717-0001; Sharron QUISENBERRY, Montana State University, College of Agriculture, Bozeman, MT 58717-2860; John MARKWELL, University of Nebraska, Department of Biochemistry, Lincoln, NE 68588; Tiffany HENG-MOSS, University of Nebraska, P.O. Box 830816, Lincoln, NE 68583-0816; Leon HIGLEY, University of Nebraska, 202 Plant Industry Bldg, Lincoln, NE 68583; Frederick BAXENDALE, University of Nebraska-Lincoln, Extension Entomology, 210 Plant Industry\East Campus, Lincoln, Nebraska 68583-0816; Gautam SARATH, University of Nebraska, Dept. of Biochemistry, Licoln, NE 68588; Robert KLUCAS, University of Nebraska, Dept. of Biochemistry, Lincoln, NE 68588

D0268 A 1980 greenbug biotype I? **David PORTER,**Dept. of Agriculture, Agricultural Research Service, 1301 N. Western Rd., Stillwater, OK 74075-2714; John BURD, 1301 N. Western Rd., Stillwater, OK 74075-2714; Kevin SHUFRAN, USDA ARS, 1301 N. Western Rd., Stillwater, OK 74075-2714; James WEBSTER, USDA ARS, 1301 N. Western Rd., Stillwater, OK 74075-2714

D0269 A new greenbug biotype: Evidence for non-cultivated grasses as a source of greenbug biotypic variation. **John BURD,** USDA, ARS, PSWCRL, 1301 N. Western Rd., Stillwater, OK 74075-2714; David PORTER,Dept. of Agriculture, Agricultural Research Service, 1301 N. Western Rd., Stillwater, OK 74075-2714; Kevin SHUFRAN, USDA ARS, 1301 N. Western Rd., Stillwater, OK 74075-2714; James WEBSTER, USDA ARS, 1301 N. Western Rd., Stillwater, OK 74075-2714; George TEETES, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475

D0270 Evaluation of cereal-aphid resistant wheat accessions against *Rhopalosiphum padi*. **L. S. HESLER,** USDA ARS NGIRL, 2923 Medary Ave, Brookings, SD 57006; W.E. RIEDELL, USDA ARS NGIRL, 2923 Medary Ave., Brookings, SD 57006; R.W. KIECKHEFER, USDA ARS NGIRL, 2923 Medary Ave., Brookings, SD 57006; S. D. HALEY, Colorado St. Univ., Dept. Soil & Crop Sciences, Ft. Collins, CO 80523

D0271 Cereal and grass hosts of the rice root aphid, *Rhopalosiphum rufiabdominalis*. **Dean KINDLER,** 1301 N. Western Street, Stillwater, OK 74075; Louis HESLER, USDA ARS NGIRL, 2923 Medary Ave, Brookings, SD 57006-4267; Kevin SHUFRAN, USDA ARS, 1301 N. Western Rd., Stillwater, OK 74075-2714; Norman ELLIOTT, USDA ARS PSRL, 1301 N. Western, Stillwater, OK 74075

D0272 Hesssian fly incidence in the eastern U.S. soft winter wheat region, 1999-2000. **Roger RATCLIFFE,** Purdue University, USDA ARS, Dept. of Entomology, West Lafayette, IN 47907-1158

D0273 The effect of plant age on rice plant resistance to the rice water weevil, *Lissorhoptrus oryzophilus*. **Michael STOUT,** Louisiana State University, Dept. of Entomology, Baton Rouge, LA 70803-0001; William RICE, Louisiana State University, USDA ARS, P.O. Box 1429, Crowley, LA 70527-1429; Dennis RING, Louisiana State University, P.O. Box 25100, Baton Rouge, LA 70894-5100

D0274 Plum pox virus (PPV) in stone fruits and its nonpersistent transmission by aphids. **Manya STOETZEL,** USDA ARS, Systematic Entomology Lab, Beltsville, MD 20705

D0275 Bean leaf beetle, *Cerotoma trifurcata*, populations and injury on resistant soybeans. **Ronald HAMMOND,** Ohio State University, Entomology, OARDC, 1680 Madison, Wooster, OH 44691

D0276 Photosynthetic response of buffalograss to chinch bug injury. **Tiffany HENG-MOSS,** University of Nebraska-Lincoln, Entomology, 202 Plant Industry, Lincoln, NE 68583-0816; Frederick BAXENDALE, University of Nebraska, 202 Plant Industry Building, Lincoln, NE 68583; Leon HIGLEY, University of Nebraska, 202 Plant Industry Bldg, Lincoln, NE 68583; Terrance RIORDAN, University of Nebraska-Lincoln, Lincoln, NE 68583-0724

D0277 Resistance ot three wild tuber-bearing potatoes to the Colorado potato beetle. **Yvan PELLETIER,** Potato Research Centre, AAFC, P.O. Box 20280, Fredericton, NB E3B 4Z7, Canada; Catherine CLARK, Potato Research Centre, AAFC, P.O. Box 20280, Fredericton, NB Canada

D0278 Field evaluation of natural and engineered potato (*Solanum tuberosum* L.) resistance mechanisms for control of Colorado potato beetle (*Leptinotarsa decemlineata* Say). **Joseph COOMBS,** Michigan State University, Dept. of Crop and Soil Sciences, A499B Plant and Soil Sciences Bldg, East Lansing, MI 48824; David DOUCHES, Michigan State University, Dept. of Crop and Soil Sciences, A499 B Plant and Soil Sciences Bldg, East Lansing, MI 48824; Edward GRAFIUS, Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Walter PETT, Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Dale MOYER, Cornell University, Long Island Horticultural Research and Extension Center, 3059 Sound Ave., Riverhead, NY 11901

D0279 A model system using tobacco for investigation of tritrophic interactions in transgenic plants. **Marvin HARRIS,** Texas A&M University, Dept. of Entomology, College Station, TX 77843-0001; Craig Nessler, Texas A&M University, College Station, TX 77843; Walker Jones, USDA-ARS, 2301 S. International Blvd., Weslaco, TX 78596; C. Wayne SMITH, Texas A&M University, College Station, TX 77843; Tzu-yin LI, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475

D0280 Effect of Bt rice on *Nilaparvata lugens* (Homoptera: Delphacidae) and its predator *Cyrtorhinus lividipennis* (Hemiptera: Miridae). **Carmen BERNAL,** International Rice Reserach Institute, MCPO Box 3127, Makati City, Philippines; Michael COHEN, Entomology & Plant Pathology Division, International Rice Research Institute, MCPO Box 3127, Makati City, 1271, Philippines

D0281 Caterpillar saliva suppresses inducible plant defences. **Richard MUSSER,** University of Arkansas, Dept. of Entomology, Fayetteville, AR 72701; Gary FELTON, Fayetteville, AR 72701

Société d'entomologie du Québec

ANNONCE PRELIMINAIRE DES PROCHAINES REUNIONS ANNUELLES

OCTOBRE 2001 - 128ème REUNION ANNUELLE

La prochaine Réunion Annuelle de la SEQ, organisée par les membres de l'Institut de Recherche et de Développement en Agroenvironnement (IRDA), se tiendra à St-Hyacinthe, en Montérégie.

Principal organisateur et contact

Dr. Gérald Chouinard
IRDA
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Saint-Hyacinthe, Québec, J2S 7B8
(450) 778-6522, poste 249
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irda
INSTITUT DE RECHERCHE ET DE DÉVELOPPEMENT EN AGROENVIRONNEMENT

JUILLET 2002 - 129ème REUNION ANNUELLE

REUNION CONJOINTE
5E CONFERENCE INTERNATIONALE FRANCOPHONE D'ENTOMOLOGIE (CIFE) & SEQ

La SEQ est heureuse d'être l'hôte des entomologistes francophones du monde entier. Cette réunion, qui a lieu à tous les quatre ans, se tiendra à l'Université du Québec à Montréal, du 14 au 18 juillet 2002 (dates provisoires).

Organisateurs et contacts

Dr. Daniel Coderre
Département des Sciences Biologiques
Université du Québec à Montréal
C.P. 8888, Succ. Centre-ville
Montréal, Québec, H3C 3P8
(514) 987-3000, poste 3367
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Dr. Guy Boivin
CRDH, Agriculture et Agroalimentaire Canada
430, Boul. Gouin
Saint-Jean-sur-Richelieu, Québec, J3B 3E6
(450) 346-4494, poste 210
boiving@em.agr.ca

Surveillez les prochains numéros d'*Antennae* pour de plus amples informations au sujet des Réunions Annuelles.

Tuesday, December 5, 2000

Program Symposia	Location
Insects Art & Illustration	407C
Section Symposia	**Location**
Mining the Coleopteran	407A
The Insect Integument	408B
Apple Pest Management	408B
Mosquito Vectors	407A
Infectious Disease Vectors	407C
IPM Game Plan	408A
Pesticide Regulation/US/Canada	408A
Advances in Biological Control	411AB
Formal Conferences	**Location**
Insect Avail and the End User	410AB
Ornamental Plant & Turfgrass	406A
Molecular Methods	408C
Control of Invasive Species	404AB
Informal Conferences	**Location**
Innovative Arthropod Mgmt	408A
N. A. Dipterists SOC	611 B
Dryland Cropping Systems	406A
Coleopteriests Society	407A
Stored Product Entomology	611B
Lily Leaf Beetle	406B
Dynamic Interactions-IOBC	411C
Interviewing Skills Workshop	404AB
Contrib. of Thomas R. Yonke	409AB
Pest Management Tools	411AB
Overseas Chinese Ent Asso	410AB
Ten-Minute Papers	**Location**
B2	411C
Ca 1	409AB
Cb 2	406B
Cd 2	411C
Cd 4	611B
F3	408C
Business Meetings	**Location**
BCE Business Mtg	403AB
ESC Ann Gen Mtg	406B
FNDN Bd Dir	403C
NAS/IUSSI Bus Mtg	408C
Standing Cmte Chairs' Mtg	401BC
Social Events	**Location**
Gov Bd Rcptn, ESA	QE: St. Francois
IOBC/NRS IFC22 & Rcptn	411C
Poster Symposium & Rcptn: M. Locke Tribute (Section B)	408B

Tuesday, December 5, 2000

Program Highlights	Location
Genetic Engineering Mosquitoes	407C
Adventures Through a Looking Glass	100 A (US Pavilion)
Other	**Location**
ARS Scientists Mtg	611A
Editorial Bd/Pubs Council Mtg	410C
Employment Opp Ctr (EOC)	318
EOC Interview Room	317
Ent Fndn Info & Promo Exhibit	100 A (US Pavilion)
Exhibits	100A
Guests' Suite	QE: Matapedia
Linn Games (Final Round)	404AB
Local Arrangements Cmte	402C
Moderators'/Projectionists' Mtg	401A
Posters	100B
Registration	Lobby (Lvl 1)
Sales Booth (ESA)	100A
Slide Preview	401A
Town Meeting-Meet the GB	611A

Functions listed on this summary page were correct as of August 15, 2000. Section chairs and symposia organizers may have made modifications. Consult Announcements Board near LAC Office (402C, Palais, Level 4).

QE: Queen Elizabeth Hotel
M: Marriott Chateau Champlain
S: Montreal Sheraton
All other rooms (designated by numbers only) are at the Palais des Congres de Montreal

Program Symposium: Insects, Art & Illustration: Will We Always Need Scientific Illustrators?

407 C

Organizers and Moderators

Gail E. Kampmeier, Illinois Natural History Survey, 136 NSRC, 1101 W. Peabody, Urbana, IL 61801; Henri Goulet, ECORC/CRECO, K.W. Neatby Bldg., Central Exp. Farm, Ottawa, ON, Canada K1A 0C6

8:00 0532 Introduction. **Gail KAMPMEIER,** Illinois Natural History Survey, Box 5 NSRC, 1101 W. Peabody, Urbana, IL 61801

8:05 0533 The history of scientific illustration and the role of the scientific illustrator vs. the scientist. **Scott RAWLINS,** Beaver College, 450 S. Easton Rd., Glenside, PA 19038; Marc EPSTEIN, Smithsonian Institution, Dept. of Entomology, MRC 105, National Museum of Natural History, Washington, DC 20560

8:35 0534 Scientific illustration in the computer age: How it's done, advantages and disadvantages. **George VENABLE,** Smithsonian Institution, National Museum of Natural History, Washington, DC 20560

9:05 Break

9:20 0535 Combining digital images in a computer layering technique for viable 3-D images: Manually. **Henri GOULET,** ECORC/CRECO, K. W. Neatby Bldg., Central Exp. Farm, Ottawa, ON K1A 0C6, Canada

9:45 0536 Combining digital images in a computer layering technique for viable 3-D images: Automated turn-key operation. **James ASHE,** University of Kansas, Division of Entomology, Snow Hall, Lawrence, KS 66045

10:05 0537 SEM and ESEM: Imaging into the future. **Martin HAUSER,** University of Illinois, Dept. of Entomology, Box 5 NSRC, Urbana, IL 61801; Scott J. ROBINSON, University of Illinois, Beckman Institute, 405 N. Mathews, Urbana, IL 61801

10:35 Break

10:50 0538 Illustration for the non-professional. **Jill Marie MULLETT,** University of Illinois, Dept. of Natural Resources & Environ. Sci., Box 5 NSRC, Urbana, IL 61801; Mark METZ, University of Illinois at Urbana-Champaign, 131 NSRC, Box 5, 1101 West Peabody Drive, Urbana, Illinois 61801

11:20 0539 Insects in art: The art of marketing bugs. **Jeremy MCNEIL,** Laval University, Dept. of Biology, Sainte-Foy, PQ G1K 7P4, Canada

11:50 0540 Conclusions: Will we always need scientific illustrators? **Marc EPSTEIN,** Smithsonian Institution, Dept. of Entomology, MRC 105, National Museum of Natural History, Washington, DC 20560

Section Symposium C 2: Can Apple Pest Management be Sustainable?

408 B

Organizers and Moderators

M. W. Brown, USDA-ARS Appalachian Fruit Res. Station, 45 Wiltshire Rd., Kearneysville, WV 25430; Charles Vincent, Hort. Res. And Dev. Center, Agriculture & Agri-Food Canada, 430 Boul. Gouin, St. Jean sur Richelieu, QC J3B 3E6 Canada; Noubar J. Bostanian, Hort. Res. And Dev. Center, Agriculture & Agri-Food Canada, 430 Boul. Gouin, St. Jean sur Richelieu, QC J3B 3E6 Canada

8:00 0541 What is sustainable apple pest management? **Mark BROWN,** U.S. Dept. Agriculture, Agricultural Research Service, Appalachian Fruit Res. Sta., 45 Wiltshire Road, Kearneysville, WV 25430; Charles VINCENT, McGill University, Natural Resource Sciences, Horticultural Research and Development Centre, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, QC J3B 3E6, Canada; Noubar J. BOSTANIAN, Agriculture and Agri-Food Canada, Horticultural Research and Development Centre, 430 Boul. Gouin,, St. Jean sur Richelieu, QC J3B 3E6, Canada

8:05 0542 Incorporating insect growth regulators into orchard pest management. **Larry A. Hull,** Pennsylvania State University, Pennsylvania State Fruit Res. & Ext. Center, Box 309, Biglerville, PA 17307-0309; David J. BIDDINGER, Rohm & Haas, 260 Toftrees Ave #318, State College, PA 16803

8:25 0543 Management of tephritid fruit flies. **Starker WRIGHT,** Dept. of Entomology, University of Massachusetts, Amherst, MA 01003; Ronald J. PROKOPY, Dept. of Entomology, University of Massachusetts, Amherst, MA 01003

8:45 0544 Non-chemical methods for insect management. **Charles VINCENT,** Agriculture and Agri-Food Canada, Horticultural Research and Development Center, 430 Boul. Gouin, Saint-Jean sur Richelieu, QC J3B 3E6, Canada

9:05 0545 Resistance management in orchard Lepidoptera. **Michael SMIRLE,** Agriculture and Agri-Food Canada, Research Centre, Summerland, BC V0H 1Z0, Canada

9:25 0546 Managing secondary pests without codling moth sprays. **Elizabeth Beers PERYEA,** Washington State University, Tree Fruit Research and Extension Center, 1100 N. Western Ave., Wenatchee, WA 98801

9:45 Break

10:00 0547 Effects of a number of pesticides used in apple orchards on predaceous mites. **Noubar J. BOSTANIAN,** Agriculture and Agri-Food Canada, Horticultural Research and Development Center, 430 Boul. Gouin, Saint Jean sur Richelieu, QC J3B 3E6, Canada; N. LAROCQUE, Agriculture and Agri-Food Canada, Horticultural Research and Development Center, 430 Boul. Gouin, Saint Jean sur Richelieu, QC J3B 3E6, Canada

10:20 0548 New technologies as alternatives to conventional insecticides for orchard pest management. **Gary J. PUTERKA,** U.S. Dept. Agriculture, Agricultural Research Service, Appalachian Fruit Res. Sta., 45 Wiltshire Road, Kearneysville, WV 25430

10:40 0549 The potential of entomopathogens for control of insect pests of apple. **Lawrence A. LACEY,** U.S. Dept. Agriculture, Agricultural Research Service, Yakima Agricultural Research Lab, 5230 Konnowac Pass Road, Wapato, WA 98951; Charles VINCENT, McGill University, Natural Resource Sciences, Horticultural Research and Development Centre, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, QC J3B 3E6, Canada

11:00 0550 Integrated fruit production guidelines in Europe, do they work? **Jesus AVILLA,** Centre UdL-IRTA, Univeristy of Lleida, Lleida, 177.25198, Spain

11:20 Discussion.

Section Symposium D 1: Physiological Systems in Mosquito Vectors; Contributions to Vector Ability

407 A

Organizer and Moderator

Marc J. Klowden, Division of Entomology, University of Idaho, Moscow, ID 83844-2339

8:00 0551 Introduction. **Marc KLOWDEN,** Dept. of Plant, Soil and Entomological Sciences, 233 AgSci Bldg, Moscow, ID 83844-2339

8:05 0552 Evolution and molecular systematics of anophelines. **Nora BESANSKY,** University of Notre Dame, Biological Sciences, Notre Dame, IN

8:35 0553 Saliva: Biochemical bridge between biter and bitee. **Donald CHAMPAGNE,** University of Georgia, 413 Cedar Street, Bio Scis Bl, Athens, GA 30602-2603

9:05 0554 Molecular and physiological analysis of the mosquito peritrophic matrix. **Marcelo JACOBS-LORENA,** Case Western Reserve Univ., Dept. of Genetics, 10900 Euclid Ave., Cleveland, OH 44106 4955

9:35 Break

9:50 0555 Cultured cells as a window on physiological processes in the mosquito. **Ann FALLON,** University of Minnesota, 1980 Folwell Avenue, St Paul, MN 55108

10:20 0556 Blood-meal activated genes and engineering systemic immunity in the mosquito vector. **Alexander RAIKHEL,** Michigan State University, Plant Biology, Dept. of Entomology, East Lansing, MI 48824

10:50 0557 Regulation of steroidogenesis during a reproductive cycle in mosquitoes. **Mark BROWN,** University of Georgia, Dept. of Entomology, Athens, GA 30602

11:20 0558 Effects of mating on the physiological systems of mosquito vectors. **Marc KLOWDEN,** University of Idaho, Dept. of Plant, Soil and Entomological Sciences, 233 AgSci Bldg, Moscow, ID 83844-2339

Section Symposium E 1: Designing an Ecologically-Grounded IPM Game Plan: Development, Adoption, and Implementation

408 A

Organizers and Moderators

Tom A. Royer, Dept. of Entomology and Plant Pathology, 127 NRC, Oklahoma State University, Stillwater, OK 74074; Phil Mulder, Dept. of Entomology and Plant Pathology,127 NRC, Oklahoma State University, Stillwater, OK 74074

8:00 0559 Color commentator. **Phillip MULDER Jr.,** Dept. of Entomology, Oklahoma State Univ., 127 Noble Res Cent, Stillwater, OK 74078

8:05 0560 A fan's perspective. **Julia LANGER,** World Wildlife Fund Canada, 245 Eglinton Avenue East, Suite 410, Toronto, ON M4P 3J1, Canada

8:25 0561 A coach's perspective. **Howard THISTLEWOOD,** Agriculture & Agri-Food Canada, Pacific Agri-Food Research Centre, Highway 97 N, Summerland, BC V0H 1Z0, Canada

8:45 0562 A coach's view. **Barry JACOBSEN,** Montana State University, 205 AgBioScience Bldg, Bozeman, MT 59717

9:05 0563 A quarterback's perspective. **Debbie HENDERSON,** EF Crop Consult LTD, 3041-33rd Ave. West, Vancouver, BC V6N 2G6, Canada

9:25 Break

9:35 0564 Player support. **Paula DAVIS,** Pioneer Hi-Bred International, P.O. Box 1150, Johnston, IA 50131

9:50 0565 Team support. **Thomas GREEN,** IPM Institute of North America, 2322 Keyes Ave., Madison, WI 53711

10:05 0566 A referee's perspective. **Charles BENBROOK,** Benbrook Consulting, 5085 Upper Pack River Road, Sandpoint, ID 83864

10:25 0567 A player agent's perspective. **Frank ZALOM,** University of California, Davis, Entomology, Statewide IPM Project, Davis, CA 95616

11:05 0568 Post-game analysis. **Tom ROYER,** Oklahoma State University, Entomology, 127 Noble Research Center, Stillwater, OK 74078

Formal Conference: Insect Rearing: Insect Availability and the End User: Impact on Research and Action Programs

410 A/B

Organizers and Moderators

Gary Bernon, USDA, APHIS, Otis Plant Protection Center, Bldg. 1398, Otis ANGB, MA 02542-5008; James E. Carpenter, USDA-ARS, Insect Biology and Population Management Research Lab., P.O. Box 748, Tifton, GA 31793-0748

8:00 0569 Introduction. **Gary BERNON,** Dept. of Agriculture, Building 1398, Otis Air Base, Cape Cod, MA 02542

8:05 0570 Cooperative research on Asian longhorned beetle in China. **Baode WANG,** USDA APHIS PPQ, Otis Plant Protection Center Bldg. 1398, Otis ANGB, MA 02542-5002

8:25 0571 Use of laboratory reared Asian longhorned beetle, *Anoplophora glabripennis*, for research. **Melody KEENA,** USDA Forest Service, USDA Forest Service, 51 Mill Pond Road, Hamden, CT 06514

8:45 0572 How reared gypsy moths help me study its pathogenic fungus. **Ronald WESELOH,** Dept. of Entomology, Connecticut Agric Exp Stn, P.O. Box 1106, New Haven, CT 06504

9:05 0573 The role of reared gypsy moths in the USDA mating disruption program. **Kevin THORPE,** USDA ARS Insect Biocontrol Lab Bldg. 402 BARC-East, Beltsville, MD 20705

9:25 Break

9:40 0574 Using mass reared spined soldier bugs to advance research in the management of insects. **Thomas COUDRON,** USDA ARS Biol Control of Insects Lab, 1503 S. Providence, Columbia, MO 65203-3535; Kent SCHELBY, Biological Control of Insects Lab, 1503 S. Providence Road, Research Park, Columbia, MO 65203-3535

10:00 0575 The relative success of field and lab reared insects used for weed biocontrol in western North America. **Richard HANSEN,** USDA, APHIS, Forestry Science Laboratory, Montana State University, Bozeman, MT 59717-0278

10:20 0576 Use of reared, reproductively sterilized fruit flies to prevent exotic fruit fly establishment in California. **Kevin HOFFMAN,** Cooperative Medfly Project, 5600 Rickenbacker

Rd. #7, Bell, CA 90201-6418; David RUMSEY, Cooperative Medfly Project, 5600 Rickenbacker Rd. #7, Bell, CA 90201-6418 Eileen SMITH, Cooperative Medfly Project, 5600 Rickenbacker Rd. #7, Bell, CA 90201-6418

10:40 0577 Mass reared parasitoids for fruitfly control: Desirable attributes for optimal field performance. **Pablo MONTOYA,** Moscamed, Tapachula, Chiapas, Mexico; Jorge CANCINO, Moscamed, Tapachula, Chiapas, Mexico

11:00 0579 Business meeting. **James CARPENTER,** Crop Protection and Management Unit, USDA ARS, P.O. Box 748, Tifton, GA 31793 0748

Informal Conference: Interviewing Skills Workshop: A Three Act Play

404 A/B

Organizers and Moderators

Gerald L. Jubb, Jr., Virginia Agriculutral Experiment Station, 104C Hutcheson Hall, Virginia Tech, Blacksburg, VA 24061-0402; Maryann Frazier, Dept. of Entomology, 501 ASI Bldg., The Pennsylvania State University, University Park, PA 16802

8:00 0580 Interviewing skills workshop: A three act play. **Gerald JUBB Jr.,** 104 Hutcheson Hall, Blacksburg, VA 24061-0402

Act I – University Position

Interview Committee members:

Tim Mack, Virginia Tech

Donald A. Rutz, Cornell University

Cynthia Scott-Dupree, University of Guelph

Student Interviewees:

Lane Loya, Penn State University

Mark Sisterson, University of Massachusetts

Act II – Government Position

Interview Committee members:

Michael E. Montgomery, U. S. Forest Service

William F. Gimple, Jr., Maryland Dept. of Agriculture

Roger W. Fuester, USDA-ARS, Beneficial Insects Research Lab

Student Interviewees:

Shawn Robertson, Penn State University

Tracy Leskey, University of Massachusetts

Act III –Private Sector Position

Interview Committee members:

David Biddinger, Rohm & Haas Co.

Jim Frazier, Penn State University

Jim Steffel, LABServices

Student Interviewees:

Carrie McManaman, Penn State University

Lois E. Swoboda, Virginia Tech

Alternate: Jennifer MacIntyre, University of Guelph

Informal Conference: Arthropod Diversity and Management in Dryland Cropping Systems

406 A

Organizer and Moderator

Greg Johnson, Dept. of Entomology, Montana State University, Bozeman, MT 59717

8:00 0581 Introduction. **Greg JOHNSON,** Montana State University, Dept. of Entomology, Bozeman, MT 59717

8:05 0582 Assessment of arthropod biodiversity and pest dynamics in various production input levels and cropping system strategies. **Owen OLFERT,** Saskatoon Research Centre, Agriculture & Agri-Food Canada, Saskatoon, SK S7N 0X2, Canada; M. BRAUN, Saskatoon Research Centre, Agriculture & Agri-Food Canada, Saskatoon, SK S7N 0X2, Canada; R. WEISS, Saskatoon Research Centre, Agriculture & Agri-Food Canada, Saskatoon, SK S7N 0X2, Canada

8:25 0583 Intercropping and its impact on beneficial and pest insects on the Great Plains. **R. BUTTS,** Agriculture & Agri-Food Canada Research Centre, Lethbridge, AB T1J 4B1, Canada; H. A. CARCAMO, Agriculture & Agri-Food Canada Research Centre, Lethbridge, AB T1J 4B1, Canada; K. D. FLOATE, Agriculture & Agri-Food Canada Research Centre, Lethbridge, AB T1J 4B1, Canada; M. J. WEISS, Dept. of Plant, Soil & Entomological Sciences, University of Idaho, Moscow, ID 83844

8:45 0584 Impacts of crop rotation on arthropod pests in dryland crops. **G. L. HEIN,** University of Nebraska, Panhandle Research and Extension Center, Scottsbluff, NE 69361

9:05 0585 Influence of tillage systems on arthropod diversity and pest levels. **G. D. JOHNSON,** Dept. of Entomology, Room 333 LJH, Bozeman, MT 59717; M. G. ROLSTON, Montana State University, Dept. of Entomology, Bozeman, MT 59717

9:25 0586 Biological control (parasitic microhymenoptera) as a management tool in dryland cropping systems. **K. S. PIKE,** Washington State University, Irrigated Agriculture Research and Extension Center, Prosser, WA 99350

9:45 Break

10:05 0587 Seeding date as an arthropod management tool. **J. P. MCCAFFREY,** Dept. of Plant, Soil and Entomological Sciences, University of Idaho, Moscow, ID 83844

10:25 0588 Carabid assemblages in northern Great Plains cropping systems. **S. L. BLODGETT,** Dept. of Entomology, Room 333 LJH, Bozeman, MT 59717; C. A. MILLER, Dept. of Entomology, Room 333 LJH, Bozeman, MT 59717; P. M. DENKE, Dept. of Entomology, Room 333 LJH, Bozeman, MT 59717

10:45 0589 Incorporation of resistant cultivars into dryland cropping systems in Colorado. **F. B. PEAIRS,** Dept. of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO 80523; T. O. HOLTZER, Dept. of Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO 80523

11:05 0590 Site specific pest management in dryland cropping systems in the Great Plains: Not applicable or a matter of spatial scale? **N. ELLIOTT,** USDA-ARS, Plant Science and Water Conservation Research Lab, Stillwater, OK 74075

Informal Conference: A New Millennium for Pest Management Tools

411 A/B

Organizer and Moderator

Larry L. Larson, Dow AgroSciences, 9330 Zionsville Road, Indianapolis, IN 46268

8:00 0591 Introduction to a new millennium for pest management tools. **Larry LARSON,** Dow AgroSciences, 9330 Zionsville Rd, Indianapolis, IN 46268

8:05 0592 New transgenic crop alternatives and their place in integrated pest management. **Graham HEAD,** Monsanto Co., GG3E 700 Chesterfield Pkwy N., St. Louis, MO 63198; Walt MULLINS, Monsanto, Chesterfield Parkway, St. Louis, MO

8:25 0593 Pro-active stewardship of MAC insecticides globally: A common sense resistance management approach for the new millennium. **Richard JANSSON,** Rohm and Haas Co., 727 Norristown Road, Spring House, PA 19477-0904

8:45 0594 The IR-4 Project: New pest management tools for minor crops. **Keith DORSCHNER,** Rutgers University, IR-4 Headquarters, 681 Highway 1, New Brunswick, NJ 08901

9:05 0595 Thiamethoxam: An insecticide for pest management in the 21st century. **J. P. KOENIG,** Novartis, P.O. Box 18300, Greensboro, NC 27419; S. M. WHITE, Novartis, P.O. Box 18300, Greensboro, NC 27419; D. S. LAWSON, Novartis, P.O. Box 18300, Greensboro, NC

9:25 Break

9:40 0596 Corn rootworm: New options for management with transgenic corn. **Paul BYSTRAK,** 301 Campus Dr., Mycogen Seeds, Huxley, IA 50124

10:00 0597 Managing mite pests with novel chemistry in western agriculture. **Rodney KEPNER,** Gowan Co., 409 Mainberry Dr., Madera, CA 93637; James BRAZZLE, UCCE - KERN 1031 S., Mt. Vernon Ave., Bakersfield, CA 93307; N. WILSON, Gowan Co., P.O. Box 5569, Yuma, AZ

10:20 0598 Stewardship of indoxacarb in global IPM and resistance management programs based on it's unique attributes. **John ANDALORO,** DuPont Ag Products, 45 Staten Dr., Hockessin, DE 19707; Steven L. RILEY, DuPont Crop Protection, Wilmington, DE; David MARSDEN, DuPont Crop Protection, Wilmington, DE; Daniel SHERROD, DuPont Ag Products, 2650 Thousand Oaks Blvd. Memphis, TN 38118

10:40 0599 New chemistry from Bayer for mite and insect control in fruits and nuts. **Robert STEFFENS,** Bayer AG, 123 Main St., Kansas City, MO; Phil S. MCNALLY, Bayer AG, 123 Main St., Kansas City, MO

11:00 0600 Calypso - a new foliar applied insecticide in pome fruits and cotton. **Henchen LIN,** Bayer AG, Hawthorne Road, Kansas City, MO; Robert STEFFENS, Bayer AG, Hawthorne Road, Kansas City, MO

11:20 0601 Where do we go from here? **Larry LARSON,** DowAgro Sciences, 9330 Zionsville Rd, Indianapolis, IN 46268

Section: B. Physiology, Biochemistry, Toxicology, and Molecular Biology

411 C

Organizer and Moderator

Leslie Hickle, AgriLynx Corporation, 1237 Corte de Vela, Chula Vista, CA 91910

8:00 0602 Tryptophan metabolism in mosquitoes. **Jianyong LI,** Dept. of Pathobiology, 2001 South Lincoln Avenue, Urbana, IL 61802

8:12 0603 Identification of factors involved in exocytosis of salivary gland proteins in the lone star tick (*Amblyomma americanum*). **Shahid KARIM,** Oklahoma State University, Dept. of Entomology and Plant Pathology, 127 NRC, Stillwater, OK 74078; James TUCKER, Oklahoma State University, Dept. of Entomology and Plant Pathology, 127 NRC, Stillwater, OK 74078; Richard ESSENBERG, Oklahoma State University, Dept. of Biochemistry and Molecular Biology, 357A NRC, Stillwater, OK 74078; John SAUER, Oklahoma State University, Dept. of Entomology & Plant Pathology, 127 NRC, Stillwater, OK 74078-3033

8:24 0604 Protein synthesis changes induced in the host, *Heliothis virescens* by the endoparasitoid, *Cardiochiles nigriceps*. **Fernando L. CONSOLI,** Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475; S. B. VINSON, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475

8:36 0605 A novel ABC (ATP binding cassette) transporter from the lone star tick, *Amblyomma americanum*. **Catherine HILL,** Elanco Animal Health, Eli Lilly and Company, 2001 West Main Street, P.O. Box 708, Greenfield, IN 46140; Jesus GUTIERREZ, Elanco Animal Health, Eli Lilly and Company, 2001 West Main Street, P.O. Box 708, Greenfield, IN 46140

8:48 0606 Expression of a heat shock protein 70 family protein in prepupae of the alfalfa leaf-cutter bee, *Megachile rotundata*. **John BARTHELL,** University of Central Oklahoma, Biology, 100 N University Drive, Edmond, OK 73034; John HRANITZ, University of Central Oklahoma, 100 N University Drive, Edmond, OK 73034

9:00 0607 Clues to ice binding activity in spruce budworm antifreeze protein isoforms. **Virginia WALKER,** Queen's University at Kingston, Biology, Kingston, ON K7L 3N6, Canada; Daniel DOUCET, Queen's University at Kingston, Biology, Kingston, ON K7L 3N6, Canada; Michael TYSHENKO, Queen's University at Kingston, Biology, Kingston, ON K7L 3N6, Canada; Michael KUIPER, Queen's University at Kingston, Biology, Kingston, ON K7L 3N6, Canada; Steffen GRAETHER, Queen's University at Kingston, Biochemistry, Kingston, ON K7L 3N6, Canada; Brian SYKES, University of Alberta, Biochemistry, Medicine and Oral Health Sciences, 4-19B MSB, Edmonton, AB T6G 2H7, Canada; Zongchao JIA, Queen's University at Kingston, Biochemistry, Kingston, ON K7L 3N6, Canada; Peter DAVIES, Queen's University at Kingston, Biochemistry and Biology, Kingston, ON K7L 3N6, Canada

9:12 0608 Cloning and characterization of a family of peritrophin-like cDNAs from the cat flea, *Ctenocephalides felis*. **Patrick GAINES,** Heska Corporation, 1613 Prospect Parkway, Fort Collins, CO 80525; Scott WALMSLEY, Heska Corporation, 1719 Prospect Parkway, Fort Collins, CO 80526; Kevin BRANDT, Heska Corporation, 1613 Prospect Parkway, Fort Collins, CO 80525; Nancy WISNEWSKI, Heska Corp, 1613 Prospect Pkwy, Fort Collins, CO 80525-9769

9:24 Break

9:36 0609 Cloning, characterization and regulation of *Heliothis virescens* trypsin and chymotrypsin genes. **Dov BOROVSKY,** University of Florida, IFAS, 200 9th St SE, Vero Beach, FL 32962-4699; Joeri AUWREX, University of Florida, IFAS, FMEL, 200 9th St SE, Vero Beach, FL 32962; Andreas STERNER, University of Florida, IFAS, FMEL, 200 9th St, Vero Beach, FL 32962; Katleen BUTAYE, University of Florida, IFAS, FMEL, 200 9th St SE, Vero Beach, FL 32962; Liesbeth VANZEIR, University of Florida, IFAS, FMEL, 200 9th St SE, Vero Beach, FL 32962

9:48 0610 Genetic engineering of TMOF into *Saccharomyces cerevisiae* and *Pichia pastoris*. **Sabine NAUWELAERS,** University of Florida, 200 9th Street S.E., Vero Beach, FL 32962; Dov BOROVSKY, University of Florida, 200 9th St. S.E., Vero Beach, FL 32962; Charles POWELL, University of Florida, IFAS, Fort Pierce, FL; Anne NIVARD, University of Florida, IFAS, FMEL, 200 9th St. S.E., Vero Beach, FL 32962

10:00 0611 Myostimulatory factors affecting alimentary tissues in *Phormia regina* (Diptera:Calliphoridae). **Aaron HASELTON,** University of Massachusetts, Dept. of Entomology, Amherst, MA 01003; John STOFFOLANO, University of Massachusetts Amherst, Dept. of Entomology, Amherst, MA 01003-2410

10:12 0612 *Ctenocephalides felis* GABA receptor subunit Rdl: Cloning and survey of the cyclodiene resistance allele in fleas. **Kevin BRANDT,** Heska Corp., 1613 Prospect Parkway, Fort Colllins, CO 80525; Patrick GAINES, Heska Corporation, 1613 Prospect Parkway, Fort Collins, Colorado 80525; Scott WALMSLEY, Heska Corp., 1613 Prospect Pkwy, Fort Collins, CO 80525; Gary SILVER, Hesak Corp., 1825 Sharp Point Dr., Ft. Collins, CO 80525; Nancy WISNEWSKI, Heska Corp, 1613 Prospect Pkwy, Fort Collins, CO 80525-9769

10:24 0613 Male caterpillars are from Mars and females from Jupiter: How females grow larger and accumulate more reserves than males. **Aparna TELANG,** University of Arizona, IDP Insect Science, 410 Forbes Bldg, Tucson, AZ 85721-0001; Reginald CHAPMAN, University of Arizona, Arizona Research Labs-Interdisciplinary, Gould-Simpson, Room 627, Tucson, AZ 85721; Diana WHEELER, University of Arizona, Dept. of Entomology, 410 Forbes Bldg, Tucson, AZ 85721

10:36 0614 Comparison of juvenile hormone synthesis in wild-type and several mutant strains of *Drosophila*. **Meng-Ping TU,** Brown University, Dept. of Ecology and Evolutionary Biology, Box G-W, Providence, RI 02912; Marc TATAR, Brown University; Chih Ming YIN, University of Massachusetts Amherst, Entomology, Fernald Hall, Amherst, MA 01003

10:48 0615 Do octopamine and juvenile hormone interact to control division of labor in honey bee colonies? **David SCHULZ,** University of Illinois at Urbana-Champaign, Dept. of Entomology, 320 Morrill Hall, Urbana, IL 61801; Gene ROBINSON, University of Illinois at Urbana-Champaign, 505 S Goodwin Ave, Urbana, IL 61801-3707; Joseph SULLIVAN, University of Illinois at Urbana-Champaign, 508 W Union St., Champaign, IL 61820

Section: Ca. Biological Control

409 A/B

Organizers and Moderators

Marshall Johnson, Dept. of Entomology, Univ.. of Hawaii, Honolulu, HI 96822; Dan Mahr, Dept. of Entomology, Univ. of Wisconsin, Madison, WI 53706

8:00 0616 Biological control of wheat midge in Saskatchewan: A success story. **Owen O. OLFERT,** Agriculture and Agri-Food Canada, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; Murray P. BRAUN, Agriculture and Agri-Food Canada, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; Lori-Ann KAMINSKI, Agriculture and Agri-Food Canada, 107 Science Place, Saskatoon, SK S7N 0X2, Canada; David GIFFEN, Agriculture and Agri-Food Canada, 107 Science Place, Saskatoon, SK S7N 0X2, Canada

8:12 0617 Establishing *Pseudoscymnus tsugae* (Coleoptera: Coccinellidae) for biological control of hemlock woolly adelgid, *Adelges tsugae* (Homoptera: Adelgidae). **Mark MCCLURE,** Connecticut Agricultural Experiment Station, Valley Laboratory, 153 Cook Hill Road, Windsor, CT 06095; Carole CHEAH, Connecticut Agricultural Experiment Station, Valley Laboratory, 153 Cook Hill Road, Windsor, CT 06095

8:24 0618 Biological control of the pink hibiscus mealybug in the U.S. Territories in the Caribbean and Belize, Central America. **Dale MEYERDIRK,** USDA APHIS PPQ, 4700 River Rd, Riverdale, MD 20737-1228

8:36 0619 Hot weather and establishment of phorid-fire ants in Texas. **Richard PATROCK,** Section of Integrative Biology, School of Biological Sciences, University of Texas at Austin, Austin, TX 78756; Clare WUELLNER, University of Texas at Austin, Dept. of Zoology, Austin, TX 78712; Larry GILBERT, Section of Integrative Biology, University of Texas at Austin, Austin, TX 78756

8:48 0620 Conservation biological control of pine needle scale (Homoptera: Diaspididae) in a Christmas tree plantation. **Peter REAGEL,** University of Illinois at Urbana-Champaign, Dept. of Entomology, 320 Morrill Hall, Urbana, IL 61801; Lawrence HANKS, University of Illinois at Urbana-Champaign, Dept. of Entomology, Urbana, IL 61801

9:00 0621 Enhancing biological control in fruit orchards with varying degrees of plant diversity. **Clarissa MATHEWS,** U.S. Dept. of Agriculture, Agricultural Research Service, Appalachian Fruit Research Station, 45 Wiltshire Rd., Kearneysville, WV 25430; Mark BROWN, U.S. Dept. Agriculture, Agricultural Research Service, Appalachian Fruit Res. Sta., 45 Wiltshire Road, Kearneysville, WV 25430

9:12 0622 Evaluating the efficacy of varying release rates and frequencies of *Neoseiulus californicus* for biological control of *Oligonychus perseae* on avocados. **Mark HODDLE,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001

9:24 0623 *Feltiella insularis* (Diptera:Ceidomyiidae) a predator of two-spotted spider mites, *Tetranyychus urticae*. **Sylvia JOSEPH,** 982 W Brevard St, Apt A-19, Tallahassee, FL 32304-7730

9:36 0624 Potential for biological control of the greenhouse whitefly with *Encarsia formosa* in the field: The strawberry experience. **Sujaya UDAYAGIRI,** University of California Cooperative Extension, 1432 Freedom Blvd., Watsonville, CA 95076-274; Riesa BIGELOW, University of California Cooperative Extension, 1432 Freedom Blvd., Watsonville, CA 95076

9:48 Break

10:00 0625 Laboratory evaluations of four entomopathogenic nematodes for control of subterranean termites. **Changlu WANG,** Mississippi State University, Coastal Research & Extension Center, USDA ARS BCMRRU, P.O. Box 225, Stoneville, MS 38776-0225; Janine POWELL, USDA, ARS, Stoneville Research Quarantine Facility, P.O. Box 225, Stoneville, MS 38776-0225; Khuong NGUYEN, University of Florida, Entomology & Nematology Dept., Gainesville, FL 32611-0620

10:12 0626 Field evaluation of purple loosestrife biological control in Michigan. **William KAUFFMAN,** USDA APHIS PPQ, 2534 S 11th St, Niles, MI 49120-4416

10:24 0627 Establishment of three insect biocontrol agents against scentless chamomile in western Canada. **Alec MCCLAY,** Alberta Research Council, P.O. Bag 4000, Vegreville, AB T9C 1T4, Canada

10:36 0628 The Brazilian pepper seed feeder *Megastigmus transvaalensis* (Hymenoptera: Torymidae): Florida distribution and impact. **Gregory WHEELER,** USDA/ARS, Invasive Plant Res. Lab, 3205 College Ave, Ft. Lauderdale, FL 33314

10:48 0629 Biological control of kudzu in the United States? **David ORR,** North Carolina State University, Box 7613, Dept. of Entomology, Raleigh, NC 27695; Kerry BRITTON; Jianghua Sun

Section: Cb. Apiculture and Social Insects

406 B

Organizers and Moderators

Scott Camazine, Dept. of Entomology, Penn. State University, Univesity Park, PA 16802; Steven Pernal, Simon Fraser University, Dept. of Biol. Sciences, Burnaby, BC, Canada, V5A 1S6

8:00 0630 Changes in ovarian maturation of the dampwood termite *Zootermopsis angusticollis* in response to enhanced dietary nitrogen. **Colin BRENT,** Boston University, Dept. of Biology, 5 Cummington St., Boston, MA 02215; James TRANIELLO, Dept. of Biology, Boston University, Boston, MA 02215

8:12 0631 Fecundity and survival of incipient colonies of *Coptotermes forosanus* feeding on 12 different wood species. **Juan MORALES-RAMOS,** USDA ARS SRRC, 1100 Robert E Lee Blvd, New Orleans, LA 70124-4305; Maria ROJAS, USDA ARS, P.O. Box 19687, New Orleans, LA 70179-0687

8:24 0632 Investigation of colony and population genetic structure of the eastern subterranean termite, *Reticulitermes flavipes*, using molecular markers. **Edward VARGO,** North Carolina State University, Dept. of Entomology, Raleigh, NC 27695-7613

8:36 0633 Ants as predators of the root weevil, *Diaprepes abbreviatus* (Coleoptera: Curculionidae), in Florida citrus. **Robin STUART,** University of Florida, Citrus Research and Education Center, Lake Alfred, FL 33850; Ian JACKSON, University of Florida, Citrus Research and Education Center, Lake Alfred, FL 33850; Clayton MCCOY Jr., University of Florida, Citrus Research and Education Center, Lake Alfred, FL 33850

8:48 0634 15 years of commercial bumblebee rearing - current structure of the industry and its future. **Jonathan CNAANI,** USDA-ARS Carl Hayden Bee Research Center, 2000E. Allen Rd., Tucson, AZ 85719

9:00 0635 Factors affecting bumble bee pollination of greenhouse tomatoes. **Robin WHITTINGTON,** Simon Fraser University, Biological Sciences, 8888 University Drive,, Burnaby, BC V5B 1S6, Canada; Mark L. WINSTON; Hien NGO

9:12 0636 Resource overlap and competitive interactions between introduced honey bees and *Bombus impatiens*. **Elaine EVANS,** University of Minnesota, Dept. of Entomology, 219 Hodson Hall, 1980 Folwell Ave, St Paul, MN 55108

9:24 0637 Honey bee pollination of hybrid canola. **Lynn WESTCOTT,** Agriculture and Agri-Food Canada, Box 224, Hudsons Hope, BC V0C 1V0, Canada; Don L. NELSON, Agriculture and Agri-Food Canada, Box 29, Beaverlodge, AB T0H 0C0, Canada

9:36 0638 Effect of honey bee colony density and distance on stigma loading of blueberry and cranberry flowers. **Margriet DOGTEROM,** Simon Fraser University, 641 Claremont St, Coquitlam, BC V3J 3T5, Canada

9:48 0639 Guk's bee–frame and highly economical hive for areas with severe weather conditions. **Dmitro GUK,** Zaporizhzhya Beekeepers Society, Magistralna St. 88 Flat 12, Zaporizhzhya, 69098, Ukraine

10:00 Break

10:12 0640 Semiochemical basis for host-finding by *Varroa jacobsoni* Oud. **Stephen PERNAL,** Simon Fraser University, Dept. Biol Sciences, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; Scott BAIRD, Simon Fraser University, Dept. Chemistry, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; Keith SLESSOR, Simon Fraser University, Dept. Chemistry, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; Mark WINSTON, Simon Fraser University, Dept. Biol Sciences, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

10:24 0641 A comparative analysis of sampling methods for the varroa mite (*Varroa jacobsoni*) on honey bees (*Apis mellifera*). **Shawn DEVLIN,** Simon Fraser University, 9083 Briar Road, Burnaby, BC V3N 4W8, Canada

10:36 0642 The distribution of *Varroa jacobsoni* in swarms, afterswarms and remaining bees in the Western honey bees, *Apis mellifera*. **Joerg SCHMIDT-BAILEY**, Michigan State University, 243 Natural Science, Dept. of Entomology, East Lansing, MI 48824; Zachary HUANG, Michigan State University, Dept. of Entomology, 243 Natural Science, East Lansing, MI 48824

10:48 0643 A novel invention for controlling *Varroa jacobsoni*, a parasite of the honey bees. **Zachary HUANG,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824

11:00 0644 Sequence analysis of deformed wing virus of honeybees. **Miaoqing SHEN,** Penn State University, 501 ASI Building, University Park, PA 16802; Joachim de MIRANDA, Penn State University, 501 ASI Building, University Park, PA 16802; Scott CAMAZINE, Penn State University, Entomology, 501 ASI Building, University Park, PA 16802

11:12 0645 Molecualr characterization of deformed wing virus. Joachim DE MIRANDA, Penn State University, 501 ASI Building, University Park, PA 16802; Miaoqing SHEN, Penn State University, 501 ASI Building, University Park, PA 16802; **Scott CAMAZINE,** Penn State University, Entomology, 501 ASI Building, University Park, PA 16802

Section: Cd. Behavior and Ecology

611 B

Organizers and Moderators

Paul Robbins, Cornell Univesity, NYSAES, Dept. of Entomology, Geneva, NY 14456; Joanna Wisniewska, University of California, Dept. of Entomology, Riverside, CA 92521

8:00 0646 First identification, synthesis, and biological assay of a sex pheromone in a praying mantid. **Frederick R. PRETE,** Vision Tech, Inc., 7833 Lotus Ave., Morton Grove, IL 60053; Lawrence E. HURD, Washington & Lee University, Dept. of Biology, Lexington, VA 24450; Tappey JONES, Virginia Military Institute, Biology Dept., Lexington, VA 24450; Richard PORTMAN, University of Tulsa, Dept. of Biological Sciences, 600 S. College Ave., Tulsa, OK; T. B. SINGH, Washington & Lee University, Dept. of Biology, Lexington, VA 24450; J. E. CO, Virginia Military Institute, Biology Dept., Lexington, VA 24450

8:12 0647 Artificial feeding on non-blood media can induce pheromone production in ticks. **Yigal RECHAV,** Truman State University, Science Division, Kirksville, MO 63501; Chad DREY, Berry College, Dept. of Chemistry, Mount Berry, GA 30149; Laura FIELDEN, Truman State Univ., Science Division, Kirksville, MO 63501; Martin GOLDBERG, Berry College, Dept. of Animal Sciences, Mount Berry, GA 30149

8:24 0648 Field attraction of consperse stink bug, *Euschistus conspersus*, to synthetic sources of aggregation pheromone. Jay BRUNNER, Washington State University, Tree Fruit Research

Center, 1100 N. Western Ave, Wenatchee, WA 98801-1230; **Christian KRUPKE,** Washington State University, 1100 N. Western Ave, Wenatchee, WA 98801

8:36 0649 Host plant effects on *Acalymma vittatum* (F.) male-produced aggregation pheromone. **Rebecca SMYTH,** Cornell University, Dept. of Entomology, Ithaca, NY 14853; Michael HOFFMANN, Cornell University, Dept. of Entomology, Ithaca, NY 14853

8:48 0650 Geographic variation in male sex pheromone response and female sex pheromone production in *Phyllophaga anxia* (Coleoptera: Scarabaeidae). **Paul ROBBINS,** Cornell University, NY State Agriculture Exp. Station, Dept. of Entomology, Geneva, NY 14456; Michael VILLANI, Cornell University, NYSAES, Dept. of Entomology, Geneva, NY 14456

9:00 0651 Comparison of sprayable pheromone and point-source dispensers for mating disruption of Oriental beetle, *Exomala orientalis*. **Sridhar POLAVARAPU,** Rutgers, The State University of New Jersey, Rutgers Blueberry and Cranberry Res Cent, Chatsworth, NJ 08019; Markus WICKI, 3M Canada Corporate R&D, Oxford Street, London, ON Canada; Kim VOGEL, 3M Corporate Laboratories, St. Paul, MN; Jim JOHNSON, Rutgers Cooperative Extension, Milleville, NJ ; Jim LASHOMB, Rutgers Coperative Extension, New Brunswick, NJ 08903; Tom BAKER, Iowa State University, Ames, IA 50014

9:12 0652 Efficiency of pheromone traps for monitoring key Lepidopteran pests in Minnesota apple orchards. **Henry Y. FADAMIRO,** Minnesota Dept. of Agriculture, Plant Pest Survey & Biological Control Program, 90 West Plato Boulevard, St. Paul, MN 55107-2094; Dharma D. SREENIVASAM, Minnesota Dept. of Agriculture, Plant Pest Survey & Biological Control Program, 90 West Plato Boulevard, St. Paul, MN 55107-2094

9:24 0653 Monitoring and estimation of lingonberry fruitworm, (*Grapholita libertina* (Heinr.) (Lepidoptera: Tortricidae) populations using a synthetic sex attractant. **Kirk HILLIER,** Memorial University of Newfoundland, Biology, Atlantic Cool Climate Crop Research Centre, 50 Thorburn Road, St. John's, NF A1B 3M1, Canada; P. DIXON, Atlantic Cool Climate Crop Research Centre, Agriculture and Agrifood Canada, P.O. Box 39088, 308 Brookfield Road, St. John's, NF A1E 5Y7, Canada; D. LARSON, Memorial University of Newfoundland, Biology, P.O. Box 4200, St John's, Canada

9:36 0654 Attraction of male obliquebanded leafroller to females from three North American geographical origins and synthetic pheromone blends. **Diana MCKENZIE,** Michigan State University, 2705 Greencliff Dr., East Lansing, MI 48823; Larry GUT, Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Rufus ISAACS, Michigan State University, Entomology, 203 Pesticide Research Center, East Lansing, MI 48824

9:48 Break

10:00 0655 The evolution of male moth response to female-produced sex pheromone in *Trichoplusia ni*. **Kenneth HAYNES,** University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0091; Maya EVENDEN, University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0091

10:12 0656 Course setting by *Cadra cautella* males flying in a wide turbulent pheromone plume in wind and in zero wind. **Joanna WISNIEWSKA,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521; Ring CARDE, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001

10:24 0657 Orientation behavior of two moth species in a structurally depauperate pheromone cloud. **Kris JUSTUS,** University of California, Riverside, Entomology, 134 Entomology, Riverside, CA 92521; John MURLIS, University College, London, UK; Steve SCHOFIELD, University of California, Riverside, Riverside, CA 92521; Ring CARDE, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001

10:36 0658 Flight responses of female codling moths (*Cydia pomonella* L.; Lepidoptera: Tortricidae) in a wind tunnel. **Hal REED,** Oral Roberts University, Biology Dept., Tulsa, OK 74171; Peter LANDOLT, USDA ARS, 5230 Konnowac Pass Rd, Wapato, WA 98951-9651

10:48 0659 Attraction of apple maggot flies *Rhagoletis pomonella* (Walsh) to ripening apples in the presence and absence of competing synthetic lures. **Juan RULL,** Univ. of Massachusetts, Dept. of Entomology, Amherst, MA 01003; Ronald PROKOPY, University of Massachusetts Amherst, Dept. of Entomology, Amherst, MA 01003

11:00 0660 Different phagostimulants in potato foliage for *Manduca sexta* and *Leptinotarsa decemlineata*. **Caroline MÜLLER,** Boyce Thompson Institute for Plant Research, Tower Rd, Ithaca, NY 14853; Alan RENWICK, Boyce Thompson Institute, Tower Road, Ithaca, NY 14853

11:12 0661 Chemical cues at the leaf surface stimulating oviposition by the diamondback moth. **J. Alan RENWICK,** Boyce Thompson Institute, Tower Road, Ithaca, NY 14853; Meena HARIBAL, Boyce Thompson Institute, Ithaca, NY 14853; Patrick R. HUGHES, Boyce Thompson Institute, Tower Road, Ithaca, NY 14853

11:24 0662 Improved feeding attractants for noctuid moths. **Peter LANDOLT,** USDA ARS, 5230 Konnowac Pass Rd, Wapato, WA 98951-9651

11:36 0663 The role of conophthorin and other angiosperm bark volatiles in the avoidance of nonhosts by *Ips pini* (Say) (Coleoptera: Scolytidae). **Dezene HUBER,** Simon Fraser University, Dept. of Biological Sciences, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; John BORDEN, Simon Fraser University, Chemical Ecology Research Group, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

11:48 0664 Behavioral effects of vetiver oil and nootkatone on Formosan subterranean termites. **Lara MAISTRELLO,** Louisiana State University, Entomology, 402, Life Sciences Bldg, Baton Rouge, LA 70803; Gregg HENDERSON, Dept. of Entomology, Louisiana State University, Baton Rouge, LA 70803

Section: F. Crop Protection Entomology

408 C

Organizers and Moderators

Jon Tollefson, 17 Insectary Bldg., ISU, Ames, IA 50011-3140; Rick Foster, Dept. of Entomology, 1158 Smith Hall, Purdue University, W. Lafayette, IN 47907-1158; Sue Blodgett, Dept. of Entomology, MSU, Bozeman, MT 59717

8:00 0665 Mating disruption of three common orchard pests in Michigan peach orchards: A possible relationship to pheromone chain length. **Piera GIROUX,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824; James MILLER, Michigan State University, 203 Ctr for Integrated Plant Syst, East Lansing, MI 48824; Peter MCGHEE, Michigan State University, Dept. of Entomology, East Lansing, MI 48824-1311; Larry GUT, Michigan State University, Dept. of Entomology, East Lansing, MI 48824

8:12 0666 Effect of visual and olfactory stimuli and fruit

maturity on trap captures of Oriental fruit flies. **Andrei ALYOKHIN,** University of Hawaii at Manoa, PEPS, CTAHR, 3050 Maile Way, Honolulu, HI 96822; Russell MESSING, University of Hawaii, Entomology, Kauai Agricultural Research Center, Kapaa, HI 96746; Jian DUAN, Monsanto Company, Ecological Tech Ctr/V2C, Saint Louis, MO 63167-0001

8:24 0667 Identification and development of the sex pheromone of the Douglas-fir cone gall midge, *Contarinia oregonensis* (Diptera: Cecidomyiidae). **Robert BENNETT,** British Columbia Ministry of Forests, Tree Improvement Branch, 7380 Puckle Road, Saanichton, BC V8M 1W4, Canada; G. GRIES, Simon Fraser University, Biological Sciences, 8888 University Drive, Burnaby, Canada; R. GRIES, Simon Fraser University, Burnaby, BC V5A 1S6, Canada; G. KHASKIN, Simon Fraser University, Burnaby, BC V5A 1S6, Canada; S. KING, Simon Fraser University, Burnaby, BC V5A 1S6, Canada; P. MOREWOOD, Simon Fraser University, Burnaby, BC V5A 1S6, Canada; D. MOREWOOD, Simon Fraser University, Burnaby, BC V5A 1S6, Canada; K. N. SLESSOR, Simon Fraser University, Burnaby, BC V5A 1S6, Canada; D. HOLDEN, Simon Fraser University, Burnaby, BC V5A 1S6, Canada

8:36 0668 Mating disruption of codling moth using alternative dispensing technologies. **Stephen WELTER,** 201 Wellman Hall, University of California, Berkeley, CA 94720; Frances CAVE, 201 Wellman Hall, University of California, Berkeley, CA 94720

8:48 0669 a-Pinene plus ethanol as the optimal bait for trapping large woodboring insects. **Dean MOREWOOD,** Simon Fraser University, Biological Sciences, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; Rory MCINTOSH, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; Regine GRIES, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; John BORDEN, Simon Fraser University, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

9:00 0670 Mating disruption of Michigan apple pests: Comparison of Paramount Farming "Puffer" with Michigan State University microsprayer. **James MILLER,** Michigan State University, 203 Ctr for Integrated Plant Syst, East Lansing, MI 48824; Piera GIROUX, Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Peter MCGHEE, Michigan State University, Dept. of Entomology, East Lansing, MI 48824-1311; Larry GUT, Michigan State University, Dept. of Entomology, East Lansing, MI 48824

9:12 0671 Using solid phase microextraction technique to identify fruit fly attractants. **Junwei ZHU,** Iowa State University, 411 Science II Building, Ames, IA 50014; Kye-Chung PARK, Iowa State University, Dept. of Entomology, Ames, IA 50011; Thomas C. BAKER, Iowa State University, Dept. of Entomology, Ames, IA 50014

9:24 0672 Evaluation of new insecticide-baits for management of northern and western corn rootworm. **Laurence CHANDLER,** USDA ARS NCSL, P.O. Box 5677, Fargo, ND 58105-5677

9:36 0673 Effects of oil concentration, water volume and copper applications on Agri-Mek® efficacy against *Phyllocoptruta oleivora*. **Michael GREEN,** Novartis Crop Prot Inc, 7145-58th Ave, Vero Beach, FL 32967; J. Scott FERGUSON, Novartis Crop Protection, 7145 58th Ave., Vero Beach, FL 32967; Stephen WHITE, Novartis Crop Protection Inc, P.O. Box 18300, Greensboro, NC 27419-8300

9:48 0674 Efficacy of Proclaim® insecticide compared to other new lepidoptericides. **John KOENIG,** Novartis Crop Protection, 410 Swing Rd., Greensboro, NC 27419; J. FERGUSON, Novartis Crop Protection Vero Beach Research Center, Vero Beach, FL 32967; Stephen WHITE, Novartis Crop Protection, 410 Swing Rd., Greensboro, NC 27419

10:00 Break

10:12 0675 Ovicidal activity of acetamiprid on economic pests of cotton and vegetables. **Mark PARRISH,** Aventis CropScience, 2 TW Alexander Dr., Research Triangle Park, NC 27709; Hafez AYAD, Aventis CropScience, 2 TW Alexander Dr., Research Triangel Park, NC 27709; Keith HOLMES, Aventis CropScience, 2 TW Alexander Dr., Research Triangle Park, NC 27709

10:24 0676 Trapping and sampling stored product insects before and after fumigation treatments. **Thomas PHILLIPS,** Oklahoma State Univ., Dept. of Entomology, Stillwater, OK 74078; Carl DOUD, Navy Disease Vector Ecology Control Center, P.O. Box 43, Jacksonville, FL 32212-0043; Michael TOEWS, Oklahoma State University, Dept. of Entomology & Plant Pathology, 127 Noble Research Ctr, Stillwater, OK 74078-3033

10:36 0677 Searching for alternative wood preservative. **Xing Ping HU,** Louisiana State University, Dept. of Entomology, P.O. Box 25100, Baton Rouge, LA 70894-5100; Dennis RING, Louisiana State University, P.O. Box 25100, Baton Rouge, LA 70894-5100; Gregg HENDERSON, Louisiana State University, Dept. of Entomology, Baton Rouge, LA 70803

10:48 0678 The FFAST way to control pests with space and surface sprays. **John LUCAS,** Aventis Environmental Science, 95 Chestnut Ridge Rd, Montvale, NJ 07645-1801; Jing ZHAI, Aventis Environmental Science, 95 Chestnut Ridge Rd, Montvale, NJ 07645-1801

11:00 0679 FFAST - A new formulation technology for pest management professionals. **Jing ZHAI,** Aventis Environmental Science, 95 Chestnut Ridge Rd, Montvale, NJ 07645-1801; John LUCAS, Aventis Environmental Science, 95 Chestnut Ridge Road, Montvale, NJ 07645

11:12 0680 Habitat characterization of the Florida carpenter ant, *Camponotus floridanus* (Buckley). **Jonathan SARGENT,** Clemson University, 114 Long Hall, Clemson, SC 29634; Eric BENSON, Clemson University, Dept. of Entomology, 105 Long Hall, Clemson, SC 29634-0364; Patricia ZUNGOLI, Clemson University, Urban Entomology Res Lab, Clemson, SC 29634-0365

11:24 0681 Nutrition affects olfactory responses of the German cockroach (*Blattella germanica* L.) to food odors. **Godfrey NALYANYA,** North Carolina State University, Apt M24, E S King Village, Raleigh, NC 27607; Coby SCHAL, North Carolina State University, Dept. of Entomology, Raleigh, NC 27695-7613

11:36 0682 Nonrepellent, delayed-action soil termiticides: Results of field tests. **Bradford KARD,** Mississippi State University, P.O. Box 10234 Gmf, Gulfport, MS 39505

Town Meeting: Meet the Governing Board

611A

12:00 noon - 1:30 p.m.

Program Highlights: Genetic Engineering of Mosquitoes

407C

1:30 p.m. - 2:30 p.m.

Introduction.

Genetic engineering of mosquitoes-new approaches to controlling disease transmission. **Peter ATKINSON**, University of California, Dept. of Entomology, Riverside, CA 92521-0001

Section Symposium A 2: Mining the Coleopteran Holomorph

407 A

Organizers and Moderators

Joe McHugh, Dept. of Entomology, University of Georgia, Athens, GA; Yves Alaire, Dept. of Biology, Laurentian University, Sudbury, ON, Canada P3E 2C6

1:30 0683a Introduction. **Joe MCHUGH,** Department of Entomology, University of Georgia, Athens, GA 30602-2603

1:35 0683b Phylogenetic relationships among major lineages of Pselaphinae (Staphylinidae). **Chris CARLTON,** Louisiana State Arthropod Museum, 402 Life Science, Louisiana State University, Baton Rouge, LA 70803

2:53 0683c The worldwide clan of a temperate subfamily: Phylogenetic and biogeographic studies of the staphylinid beetle tribe Omaliini. **Margaret THAYER,** Field Museum of Natural History, 1400 South Lake Shore Drive, Chicago, IL 60605-2496

2:11 0683d Phylogenetic relationships of the endemic Australian tribe Cuneipectini (Coleoptera: Carabidae). **Kipling WILL,** Department of Entomology, University of Arizona, Tucson, AZ 85721

2:29 0683e Phylogenetic relationships in Dascilloidea. **Michael A. IVIE,** Department of Entomology, Montana State University, Bozeman, MT 59717

2:47 0683f Sampling and estimation of biodiversity in Buprestidae. **Henry HESPENHEIDE,** Dept. of Organismic Biology, Ecology and Evolution, University of California, Los Angeles Box 951606, Los Angeles, CA 90095-1606

3:05 0683g Why Strepsiptera cannot possibly be close relatives of Diptera. **Jarmila KUKALOVA-PECK,** Department of Biology, Carleton University, Ottawa, ON K1S 5B6

3:23 Break

3:38 0683h Phylogenetic resolution in Adephaga using larval chaetotaxy: Two examples from Dytiscidae. **Yves ALARIE,** Department of Biology, Laurentian University, Ramsey Lake Rd., Sudbury, ON P3E 2C6

4:56 0683i Phylogenetic resolution in Staphylinidae using larval chaetotaxy. **Steve ASHE,** Division of Entomology, KU Natural History Museum, Kansas University, Lawrence, KS 66045

4:14 0683j Phylogenetic significance of some pupal characters in Coleoptera, especially Staphylinoidea. **Alfred NEWTON,** Zoology Department, Field Museum of Natural History, 1400 South Lake Shore Drive, Chicago, IL 60605

4:32 0683k Phylogenetic problems in the Hispinae. **Donald WINDSOR,** Smithsonian Tropical Research Institute, Apartado 2072, Balboa-Ancon, Panama

4:50 0683l The Dynastinae (Coleoptera: Scarabaeidae) of Central America. **Brett RATCLIFFE,** Systematics Research Collections, W-436 Nebraska Hall, University of Nebraska, Lincoln, NE 68588-0514

5:08 0583m Ecology and Tenebrionidae: A case study on islands in Baja California. **Rolf AALBU,** 7600 Greenhaven Drive #4-157, Sacramento, CA 95831

Section Symposium B 2: The Insect Integument: Nature and Nurture-A Tribute to Michael Locke

408 B

Organizers and Moderators

Stanley Caveney, Dept. of Zoology, University of Western Ontario, London, Canada N6A 5B7; Lynn M. Riddiford, Dept. of Zoology, University of Washington, Seattle, WA 98195; Judith H. Willis , Dept. of Cellular Biology, University of Georgia, Athens, GA 30602

1:30 0684 Introductory comments. **Judith H. WILLIS,** University of Georgia, Dept. of Cellular Biology, Athens, GA 30602

1:35 0685 Gradients in pattern formation, from then until now. **Peter LAWRENCE,** Medical Research Council, Laboratory of Molecular Biology, Cambridge, CB2 2QH, England

2:00 0686 Morphogenesis between the basal lamina and apical cuticle: Shaping the monolayer of the developing moth wing. **James NARDI,** University of Illinois, Dept. of Entomology, Urbana, IL 61801

2:25 0687 Protein-chitin interactions in insect cuticle. **Oana MARCU,** Developmental Biology Center, University of California, Irvine, CA 92697

2:50 0688 Hormonal regulation of epidermal metamorphosis. **Lynn M. RIDDIFORD,** University of Washington, Dept. of Zoology, Box 351800, Seattle, WA 98195-1800

3:15 Break

3:25 0689 Molecular analysis of ecdysone response and its utility in pest control and gene switch applications. **Reddy PALLI,** Rohm and Haas Company, Spring House, PA 19447

3:50 0690 Moulting fluid retrieval by a lepidopteran pupa. **Stanley CAVENEY,** University of Western Ontario, Dept. of Zoology, London, ON N6A 5C1, Canada

4:15 0691 Instar-specific properties of the tracheal system. **Lutz T. WASSERTHAL,** University Erlangen-Nurnberg, Institute of Zoology, Erlangen D-91058, Germany

4:40 0692 Cell-cell interaction in ovary differentiation. **Erwin HUEBNER,** Faculty of Science, University of Manitoba, Dept. of Zoology, Winnipeg, MB R3T 2N2, Canada

5:05 0693 Iron metabolism in insects. **Helen NICHOL,** University of Arizona, Dept. of Nutritional Sciences, Tucson, AZ 85721; Joy WINZERLING, University of Arizona, Dept. of Nutritional Sciences, Tucson, AZ 85721; John LAW, University of Arizona, Dept. of Biochemistry, Tucson, AZ 85721

Display Presentation

5:23 D0001 Cyclic CO2 release and water loss in alates of the eastern subterranean termite, *Reticulitermes flavipes* (Kollar). **Thomas SHELTON,** Auburn University, Dept. Entomology, Auburn, AL 36849; Arthur APPEL, Auburn University, Entomology, 301 Funchess Hall, Auburn, AL 36849

5:24 D0002 A conserved domain in arthropod cuticular proteins binds chitin. **John E. REBERS,** Northern Michigan University, Dept. of Biology, Marquette, MI 49855; Judith H. WILLIS, University of Georgia, Dept. of Cellular Biology, Athens, GA 30602

5:25 D0003 Immunocytochemical localization and quantification by ELISA of *Manduca sexta* allatotropin-like neuropeptide in *Heliothis virescens*. **Anna RACHINSKY,** Kansas State University, Dept. of Entomology, 123 W Waters Hall, Manhattan, KS 66506; Sonny RAMASWAMY, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Asoka SRINIVASAN, Tougaloo College, Dept. of Biology, Tougaloo, MS

5:26 D0004 *Drosophila melanogaster* secreted ferritin: Developmental and tissue specific expression of both subunits. **Teodora GEORGIEVA,** University of Arizona, Dept. of Biochemistry and the Center for Insect Science,, BSW 351, Tucson, Arizona 85721-0088; Boris DUNKOV, University of Arizona, Dept. of Biochemistry and the Center for Insect Science,, BSW 351, Tucson, AZ 85721-0088; John LAW, University of Arizona, Dept. of Biochemistry and the Center for Insect Science, BSW 345a, P.O. Box 210088, Tucson, AZ 85721-0088

5:27 D0005 Characterization of a puptative juvenile hormone response element and its binding proteins in locusts. **S. ZHOU,** Queen's University, Dept. of Biology, Kingston, ON K7L 3N6, Canada; M. TEJADA, Queen's University, Dept. of Biology, Kingston, ON K7L 3N6, Canada; J. ZHANG, Queen's University, Dept. of Biology, Kingston, ON K7L 3N6, Canada; G. WYATT, Queen's University, Dept. of Biology, Kingston, ON K7L 3N6, Canada; V. WALKER, Queen's University, Dept. of Biology, Kingston, ON K7L 3N6, Canada

5:28 D0006 Multiple isoforms of USP in *Drosophila melanogaster*? **Qisheng SONG,** University of Missouri-Columbia, Entomology, 1-87 Agriculture Building, Columbia, MO 65211; James WARREN, Dept. of Biology, University of North Carolina, Chapel Hill, NC 27599-3280; Lawrence Gilbert, Dept. of Biology, University of North Carolina, Chapel Hill, NC 27599-3280

5:29 D0007 Disruptive effects of methoprene application on parasitoid emergence and host ecdysteroid titers in host tobacco hornworm larvae. **Nancy BECKAGE,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001; Dale GELMAN, Insect Biocontrol Lab, USDA ARS, 10300 Baltimore Ave, Beltsville, MD 20705-2325; Frances TAN, University of California-Riverside, Dept. of Entomology, 5419 Boyce Hall, Riverside, CA 92521-0001; Regina FOREMAN, University of California-Riverside, Dept. of Entomology, 5419 Boyce Hall, Riverside, CA 92521-0001; Jing HU, Insect Biocontrol Laboratory USDA/ARS, 10300 Baltimore Avenue, Bldg 306 Rm 323 BARC E, Beltsville, MD 20705-2325

Section Symposium D 2: Population Genetics of Infectious Disease Vectors

407 C

Organizer and Moderator

Jan E. Conn, Dept. of Biology, University of Vermont, Burlington, VT 05405-0086

2:30 0694 Variability across vector populations and the evolution of arthropod-born diseases. **Dina FONSECA,** Walter Reed Army Institute of Research, Dept. of Entomology, Smithsonian Institution, Washington, DC 20307-5100; Richard WILKERSON, Walter Reed Army Institute of research, Dept. of Entomology, Smithsonian Institution, Washington, DC 20307-5100; Robert FLEISCHER, Molecular Genetics Laboratory, National Zoological Park, Smithsonian Institution, Washington, DC 20008

2:50 0695 The population genetic structure of the *Culicoides variipennis* complex in North America: Insight gained on bluetongue disease epidemiology. **Walter TABACHNIK,** Florida Medical Entomology Laboratory, 299 Southwest 9th Street, Vero Beach, FL 32962

3:10 0696 Interspecific hybridisation in Simuliidae. **Rory POST,** The Natural History Museum, Dept. of Entomology, Cromwell Rd., London, SW7 5BD, UK

3:30 0697 Population structure of the Neotropical malaria vector *Anopheles darlingi*: A comparison of mtDNA COI sequences and microsatellite DNA analyses. **Jan CONN,** University of Vermont, 321 Marsh Life Sciences Bldg, Dept. of Biology, Burlington, VT 05405

3:50 Break

4:10 0698 Population genetics of a phenotype controlled by multiple loci: Vector competence for dengue susceptibility *among Aedes aegypti* populations in Mexico. **William C. BLACK IV,** Colorado State University, Dept. of Microbiology, Fort Collins, CO 80523

4:30 0699 The effect of past demographic events on the population structure of *Anopheles gambiae*. **Tovi LEHMANN,** Centers for Disease Control, Division of Parasitic Diseases, Chamblee, GA 30341

4:50 0700 Tracking the spread of the horn and buffalo fly *Haematobia irritans irritans* and *H. i. exigua* using *Wolbachia* and mitochondria. **Rosanna GIORDANO,** University of Vermont, 321 Marsh Life Sciences Bldg, Dept. of Biology, Burlington, VT 05405; S. R. JONES, USDA/ARS, U.S. Livestock Insects research Lab, Kerrville, TX 78028; S. MIHOOK, International Centre of Insect Physiology and Ecology, Nairobi, Kenya; A. C. PONT, University Museum, Natural History, Oxford, UK

5:10 0701 Genetic variation among populations of *Lutzomyia longipalpis*. **John Paul MUTEBI,** University of Texas, Medical Branch, Center for Tropical Diseases, Dept. of Pathology, Galveston, TX 77555-0609; Gregory LANZARO, University of Texas Medical Branch at Galveston, 301 University Blvd, University of Texas Medical Branch at Galveston, Galveston, TX 77555-0605

Section Symposium E 4: Harmonization of Pesticide Registrations Between the U.S. and Canada

408 A

Organizers and Moderators

Michel Letendre, Direction des services technologiques, MAPAQ 200, chemin Sainte-Foy, 9e etage Quebec, Canada G1R 4X6; Alan Schreiber, Agriculture Development Group, Inc., 2011 West Pearl Street, Suite B, Pasco WA 99301

1:30 0702 Introduction. **Michel LETENDRE,** Quebec Dept. Agriculture, Fisheries and Food, 200 ch. Sainte-Foy, 9th floor, Quebec City, QC GIR 4X6, Canada

1:45 0703 Where are we now regarding pesticide harmonization? The point of view of the U.S. EPA. **Jay ELLENBERGER,** U.S. EPA, Ariel Rios Building, Room 7506C, 1200 Pennsylvania Ave., NW, Washington, D.C. 20460

2:10 0704 Where are we now regarding pesticide harmonization? The point of view of the Pest Management Regulatory Agency. **Wendy SEXSMITH,** Pest Management Regulatory Agency, Health Canada, Sir Charles Tupper Building, Room D730, Ottawa, ON K1A 0K9, Canada

2:35 0705 Experiences of a manufacturer. **Laura A. SEARS,** BASF Corporation, P.O. Box 13528, 26 Davis Drive, Research Triangle Park, NC 27572

3:00 0706 Opportunities for small biopesticide companies.

Imme GERKE, Biotepp Inc, 1290 Ampere Ave., Charlesbourg, QC G2L 1V2, Canada

3:25 0707 Pesticide harmonization: The extension and research perspective. **Jim CHAPUT,** Ontario Ministry of Agriculture, Food and Rural Affairs, 1 Stone Road West, 3rd Floor South, Guelph, ON N1G 4Y2, Canada

3:50 Break

4:05 0708 Cranberry production: A joint Canada-U.S. venture. **Jere D. DOWNING,** Cranberry Institute, P.O. Box 535, East Wareham, MA 02538

4:30 0709 The Canadian and U.S. potato industry: Competing and cooperating. **Alan SCHREIBER,** Agriculture Development Group Inc., 2011 West Pearl Street, Suite B, Pasco, WA 99301

4:55 0710 Pesticide harmonization and the Canadian tree fruit industry. **Dean THOMSON,** Quebec Apple Growers Federation, 460 rang de la Montagne, Saint-Paul d'Abbotsford, QC J0E 1A0, Canada

5:20 0711 Summary. **Alan SCHREIBER,** Agriculture Development Group Inc., 2011 West Pearl Street, Suite B, Pasco, Washington 99301

Section Symposium F 1: Beyond Pesticides: Advances in Biological Control Research and Implementation in Greenhouses and Conservatories (Co-Sponsored by Section C)

411 A/B

Organizers and Moderators

Michael P. Parrella, Dept. of Entomology, University of California, Davis, CA 95616; Susan Johnson, BIODOME de Montreal, 4777 Avenue Pierre-De Coubertin, Montreal, QC H1V 1B3; Les Shipp, Agriculture and Agri-Food Canada, Greenhouse and Processing Crops Research Centre, Harrow, ON N0R 1G0

1:30 0712 Introduction. **Michael PARRELLA,** University of California, Davis, Entomology, Davis, CA 95616

1:40 0713 Glasshouses without pesticides: A vision for the future. **Joop VAN LENTEREN,** Wageningen Agricultural University, Dept. of Entomology, Wageningen, 6700 AK, The Netherlands

2:10 0714 Intraguild predation in the greenhouse: Model for field systems. **Jacques BRODEUR,** Universite Laval, Entomology, Dept. de Phytologie, Sainte-Foy, QC G1K 7P4, Canada

2:35 0715 Developing biological control programs for greenhouse crops using indigenous parasitoids and predators. **David GILLESPIE,** Agriculture and Agri-Food Canada, Entomology, Pacific Agriculture Research Centre, Agassiz, BC V0M 1A0, Canada

3:00 0716 New biological control possibilitiesfor western flower thrips in greenhouses. **Kevin HEINZ,** Texas A&M University, Dept. of Entomology, College Station, TX 77843; Roy VAN DRIESCHE, University of Massachusetts, Dept. of Entomology, Amherst, MA, 01003

3:25 Break

3:40 0717 The role of extenion in implementing biological control in greenhouses and other interior plantscapes. **Raymond CLOYD,** University of Illinois, Entomology, Dept. of Natural Resources and Environmental Sciences, Urbana, IL 61801

4:05 0718 Tales from the front line: Successes and failures in consevatory IPM. **Casey SCLAR,** Longwood Gardens, Entomology, College of Agricultural and Environmental Sciences, P.O. Box 501, Kennett Square, PA 19348

4:30 0719 IPM of greenhouse vegetables: A truly integrated approach. **Les SHIPP,** Agriculture and Agri-Food Canada, Entomology, Greenhouse Processing Crops Research Centre, Harrow, ON M5N 1A8, Canada

4:55 0720 Area wide implementation of IPM/biological control strategies in glasshouse cut roses. **Chris CASEY,** University of California, Davis, Dept. of Entomology, Davis, California 95616; Christine CASEY, University of California, 1 Shields Ave, Davis, CA 95616-5270

Formal Conference: Arthropod Pests of Ornamentals: New Frontiers in Ornamental Plant and Turfgrass Pest Management

406 A

Organizers and Moderators

Casey Sclar, Longwood Gardens, P.O. Box 501, Kennett Square, PA 19348; John Sanderson, Dept. of Entomology, 2130 Comstock Hall, Cornell University, Ithaca, NY 14853

1:00 0721 Introduction. **Casey SCLAR,** Longwood Gardens, Kennett Square, PA 19348

1:05 0722 Assessing intra- and inter-regional variation in phenological indicators for predicting insect pest activity. **Daniel HERMS,** Ohio State Univ. OARDC, Dept. of Entomology, 1680 Madison Ave., Wooster, OH 44691

1:20 0723 The Midway emerald beetle - another Japanese beetle? **Michael KLEIN,** USDA-ARS, Horticultural Insects Research Lab., 1680 Madison Ave, Wooster, OH 44691; Catharine MANNION, University of Florida, TREC, 18905 SW 280th St., Homestead, FL 33031; Walter LEAL, University of California, Dept. of Entomology, One Shields Ave, Davis, CA 95616; Norm GARON, USDOI-Fish and Wildlife Service, Midway Atoll NWR, P.O. Box 29460, Honolulu, HI 96820; Nancy HOFFMAN, USDOI-Fish and Wildlife Service, Midway Atoll NWR, P.O. Box 29460, Honolulu, HI 96820; Adam ASQUITH, University of Hawaii, Sea Grant Program, 4654 Hauaala Rd., Kapaa, HI 96746

1:35 0724 New exotic pests of ornamental plants in the U.S. northeast region. **Daniel GILREIN,** Cornell Cooperative Extension, Long Island Hort. Res. & Ext. Center, 3059 Sound Ave, Riverhead, NY 11901-1115

1:50 0725 A review of the pest problems in production nurseries in southern Florida. **Catharine MANNION,** University of Florida, 18905 SW 280th St., Homestead, FL 33031

2:05 0726 Factors associated with resistance of viburnums to colonization by viburnum leaf beetle, *Pyrrhalta viburni*. **Paul WESTON,** Cornell University, Dept. of Entomology, Ithaca, NY 14853; Joel BAIRD, Cornell University, Dept. of Entomology, Ithaca, NY 14853

2:20 0727 Conservation biological control of evergreen bagworms (Lepidoptera: Psychidae) in ornamental landscapes. **Jodie ELLIS,** University of Illinois at Urbana-Champaign, Dept. of Entomology, 320 Merrill Hall, 505 S Goodwin Ave, Urbana, IL 61802; Lawrence Hanks, University of Illinois at Urbana-Champaign, Dept. of Entomology, 505 S Goodwin Ave, Urbana, IL 61801

2:35 0728 Mite control on landscape ornamentals. **Jack FINLEY,** TruGreen-Chemlawn, 135 Winter Road, Delaware, OH 43015

2:50 0729 Evaluation of pyrethroids for control of chinch bugs in turfgrass. **Amy SUGGARS,** Trugreen-Chemlawn, 135 Winter Rd, Delaware, OH 43015

3:05 Break

3:20 0730 Neonicotinoids for ornamentals, 2001 and beyond. **David COX,** Novartis, 36141 Ave. 12, Suite 103, Madera, CA 93638; Chuck BUFFINGTON, Novartis, 410 Swing Road, Greensboro, NC 27419; Joe YODER, Novartis, 410 Swing Road, Greesboro, NC 27419

3:35 0731 Life cycle and control of the China mark moth, *Nymphuliella daeckealis* (Haimbach), in aquatic nurseries. **Stanton GILL,** CMREC-University of Maryland, Maryland Cooperative Extension, 11975 Homewood Road, Ellicott City, MD 20742; Michael RAUPP, University of Maryland, Dept. of Entomology, Plant Science Bldg, College Park, MD 20742; Raymond BOSMANS, HGIC-University of Maryland, Maryland Cooperative Extension, 11975 Homewood Road, Ellicott City, MD 20742; Rondalyn REESER, CMREC-University of Maryland, 11975 Homewood Road, Ellicott City, MD 21042

3:50 0732 Potential of molluscicidal nematodes for slug control on hostas. **Parwinder GREWAL,** Ohio State Univ.-OARDC, Dept. of Entomology, Wooster, OH 44691-4096

4:05 0733 Overwintering and comparative sampling of *Neoseiulus fallacis* (Acari: Phytoseiidae) on ornamental nursery plants. **Paul PRATT,** USDA-ARS, 3205 College Ave, Fort Lauderdale, FL 33314-7719

4:17 0734 Degree days and phenological indicators for 5 species of scale insects in the urban landscape of Georgia. **Greg HODGES,** University of Georgia, 124 E Paces Dr, Athens, GA 30605-5280

4:29 0735 Does use of organic fertilizers encourage outbreaks of black turfgrass ataenius grubs on golf courses? **Daniel A. POTTER,** University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0001; David W. HELD, University of Kentucky, Dept. of Entomology, S-225 Agric. Sci. Bldg. N., Lexington, Ky 40546-0091; Michael ROGERS, University of Kentucky, Dept. of Entomology, S-225 Agric. Sci. Bldg. N., Lexington, KY 40546-0091; Jerome GELS, University of Kentucky, Dept. of Entomology, S-225 Agric. Sci. Bldg. N., Lexington, KY 40546-0091

4:41 0736 Feeding preferences of adult and larval *Listronotus maculicollis* Dietz. **Nikki ROTHWELL,** 104 Agriculture Engineering, Amherst, MA 01003; Patricia VITTUM, University of Massachusetts Amherst, Dept. of Entomology, Amherst, MA 01003

4:53 0737 Response of the parasitic wasps *Tiphia vernalis* and *Tiphia pygidialis* to root-feeding scarabaeid grubs in turf. **Michael ROGERS,** University of Kentucky, Dept. of Entomology, S-225 Agric. Science Bldg. N., Lexington, KY 40546-0091; Daniel POTTER, University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0001

5:05 0738 Residual control of the fall armyworm in turfgrass. **James A. REINERT,** Texas A&M University, Res & Ext Ctr, 17360 Coit Rd, Dallas, TX 75252-6599; Billy WISEMAN, 217 Fulwood Blvd. Tifton, GA 31794

5:17 0739 Novaluron: A new broad-spectrum benzoylurea insect growth regulator for management of insect pests on ornamentals. **Robert EVERICH,** Makhteshim-Agan of North America, 551 5th Ave Rm 1100, New York, NY 10176-1199; James WHITEHEAD, Makhteshim-Agan of North America, 128 Chinguipin Cove, Ridgeland, MS 39157; Kevin DONOVAN, CKWitco Corp-Uniroyal Chemical, 199 Benson Road, Middlebury, CT 06749

5:29 0740 Evaluation of green lacewing eggs for control of woody plant pests. **Loretta MANNIX,** Colorado State University, Bioagricultural Sciences and Pest Management, Plant Sciences Bldg. C120, Fort Collins, CO, 80523-1177; Whitney CRANSHAW, Colorado State University, Bspm/Entomology, Ft. Collins, CO 80523

Informal Conference: North American Dipterists Society (NADS)

611 B

Organizers and Moderators

Jade Savage & Scott Brooks, Dept. of Natural Resource Science, McGill University, Ste-Anne-de-Bellevue, QC H9X 3V9 Canada

1:30 0741 Diversity of ant-decapitating flies (Diptera: Phoridae) from the ALAS project: New results and projections. **Brian V. BROWN,** Natural History Museum of Los Angeles County, Los Angeles, CA 90007

1:45 0742 A cladistic classification of the Empidoidea (Diptera: Eremoneura). **Jeffrey M. CUMMING,** Systematic Entomology Section, ECORC, Agriculture and Agri-Food Canada, Ottawa, ON K1A 0C6, Canada; Bradley J. SINCLAIR, Zoologisches Forschunginstitut und Museum Alexander Koenig, Bonn, D-53113, Germany

2:00 0743 Survey of stream-inhabiting invertebrates along the Niagara Escarpment as indicators of water quality. **Fiona HUNTER,** Brock University, Biological Sciences, Mathematics and Science, Saint Catharines, ON L2S 3A1, Canada

2:15 0744 Selected inventories and selected flies: Sphaerocerids and micropezids in temperate and tropical surveys. **Steve MARSHALL,** Dept. of Environmental Biology, University of Guelph, Guelph, ON N1G 2W1, Canada

2:30 0745 Molecular systematics of *Simulium* s. str. (Diptera: Simuliidae). **Miranda SMITH,** Dept. of Entomology, Royal Ontario Museum, Toronto, ON M5S 2C6, Canada

2:45 0746 Diptera in the Great Smoky Mountains National Park ATBI: Progress and prospecting. **Brian WIEGMANN,** Box 7613, North Carolina State Univ., Raleigh, NC 27695-7613

Formal Conference: Student Affairs: Student Debates on the Control of Invasive Species

404 A/B

Organizer and Moderator

Jeff Tomberlin, University of Georgia, P.O. Box 7, Dept. of Entomology, Tifton, GA 31793

1:30 Symposium begins

LOCAL COMMUNITIES SHOULD BE ABLE TO BLOCK EFFORTS TO CONTROL INVASIVE EXOTIC SPECIES WITHIN THEIR BOUNDARIES, IF THEY CONSIDER THE METHODS TO BE USED UNACCEPTABLE

Pro: Brad Goettle — Clemson University goettle@CLEMSON.EDU

Michelle Colacicco — mcolaci@CLEMSON.EDU

Con: Nilsa A. Bosque-Perez — University of Idaho nbosque@uidaho.edu

CLASSICAL BIOLOGICAL CONTROL OF EXOTIC INSECT PESTS INVOLVES UNACCEPTABLE ECOLOGICAL RISK TO NATIVE INSECT SPECIES

Pro: Scott Ferrenberg — Maryland ferrens@wam.umd.edu

Ethan Kane eckane@wam.umd.edu

Con: Tammy Roush UC Davis tlroush@ucdavis.edu

CLASSICAL BIOLOGICAL CONTROL OF EXOTIC WEED SPECIES INVOLVES UNACCEPTABLE RISK TO NATIVE PLANT SPECIES

Pro: T. E. Reagan Louisiana State treagan@unix1.sncc.lsu.edu

Seth Johnson sjohnso@unix1.sncc.lsu.edu

Con: David Held Kentucky dwheld@pop.uky.edu

BECAUSE INCREASINGLY OPEN TRADE (NAFTA) INCREASES THE RISK THAT INVASIVE EXOTIC SPECIES WILL BE INTRODUCED INTO THE UNITED STATES, AN ENVIRONMENTAL IMPACT ASSESSMENT SHOULD BE REQUIRED PRIOR TO APPROVAL OF ALL FORMAL INTERNATIONAL TRADE AGREEMENTS

Pro: John Rumph Washington State jrumph@wsu.edu

Con: Tree Dellinger Virginia Tech tdellin@vt.edu

Formal Conference: Urban Entomology: Molecular Methods: New Approaches to Termite Biology

408 C

Organizers and Moderators

Tracie M. Jenkins, Dept. of Entomology, University of Georgia, Research Station, Griffin, GA 30223-1797; Claudia Husseneder, Dept. of Entomology, Univ. of Hawaii at Manoa, 3050 Maile Way, Room 310, Honolulu, HI 96822

1:30 0747 New molecular approaches to termite biology: An introduction. **Claudia HUSSENEDER,** Dept. of Entomology, University of Hawaii at Manoa, Honolulu, HI 96822

1:35 0748 Termite evolution: Inference from molecular phylogenetic analysis. **Srini KAMPHAMPATI,** Dept. of Entomology, Kansas State University, Manhattan, KS 66506

2:05 0749 Molecular phylogenetic insights into the evolution of termite life patterns. **Graham THOMPSON,** School of Tropical Biology, James Cook University, Townsville, Queensland 4811 Australia

2:35 0750 Sibling species and sociogenetics in European termites of the genus *Reticulitermes*. **Jean-Luc CLEMENT,** Centre National De La Recherche Scientifique, Laboratoire De Neurobiologie, UPR9, 13402 Marseille, Cedex France

3:05 Break

3:15 0751 Termite biology: Insights from molecular markers and immunology. **Mark BULMER,** Dept. of Biology, 5 Cummington Street, Boston, MA 02215; Rebeca ROSENGAUS, Biology Dept., Boston Univ., 5 Cummington St., Boston, MA 02215; James TRANIELLO, Dept. of Biology, Boston University, Boston, Massachusetts 02215

3:45 0752 A phylogenetic analysis of colony queen number and genetic structure in the termite genus *Nasutitermes*. **Lynn ATKINSON,** School of Tropical Biology, James Cook University, Townsville, Queensland 4811 Australia

4:15 0753 Polygyny in termites: Reproductive cooperation or conflict. **Manfred KAIB,** Dept. of Animal Physiology, University of Bayreuth, D-95440, Bayreuth, Germany

4:37 0754 A summary of molecular approaches to termite biology. **Tracie JENKINS,** Dept. of Entomology, University of Georgia, Research Station, Griffin, GA 30223-1797

Section: Cd. Behavior and Ecology, Cf. Quantitative Ecology

411 C

Organizers and Moderators

Paul Blom, Dept. of Entomology, 501 Agricultural Sciences and Industries Bldg., Pennsylvania State University, University Park, PA 16802-3508; Heather McBrien, University of California, Dept. of Entomology, Riverside, CA 92521

1:30 0755 Subtle copulatory courtship conveys good genes benefits for spotted cucumber beetles (*Diabrotica undecimpunctata howardi* (Coleoptera: Chrysomelidae). **Douglas TALLAMY,** University of Delaware, Entolomogy & Applied Ecology, Newark, DE 19717-1303; Mark DARLINGTON, University of Delaware, Dept. of Entomology & Appl Ecol, Newark, DE 19717

1:42 0756 Lek size and female visitation in two species of tephritid fruit flies. **Todd SHELLY,** USDA-APHIS, P.O. Box 1040, Waimanalo, HI 96795

1:54 0757 Morphological changes during ovariole development in the grasshopper *Romalea microptera*. **Steven SUNDBERG,** Illinois State University, 4120 Biological Sciences, Normal, IL 61790-4120; Jeff BERGMAN, Illinois State Uiversity, 4120 Biological Sciences, Normal, IL 61790-4120; My-Hanh LUONG-SKOVMAND, Cirad-amis, Avenue Agropolis, BP 5035, 34032 Montpellier, Cedex 1, France; Douglas WHITMAN, Illinois State Univ., 4120 Dept. of Biol, Normal, IL 61790

2:06 0758 Effects of moisture on egg survivorship and hatching time in two species of lubber grasshopper. **Timothy STAUFFER,** Illinois State Univ., 4120 Biol Sciences, Normal, IL 61790-4120; Douglas WHITMAN, Illinois State Univ., 4120 Dept. of Biol, Normal, IL 61790

2:18 0759 Proximate factors maintaining maternal care in the lace bug, *Gargaphia solani* (Heidemann) (Hemiptera: Tingidae). **Annika PARR,** University of Delaware, 1425 Thompson Stn Rd, Newark, DE 19711

2:30 0760 Does sex make you sick? Changes in immunocompetence in male and female crickets (*Gryllus integer*) from the last larval instar to senescence. **Shelley ADAMO,** Dalhousie University, Psychology, Life Sciences Centre, 1355 Oxford St., Halifax, NS B3H 4J1, Canada

2:42 0761 Effects of age, sex, sexual development, and diet on boll weevil flight behavior. **Thomas W. SAPPINGTON,** USDA-ARS, Integrated Farming & Natural Resources Research Unit, 2413 E. Hwy. 83, Weslaco, TX 78596-8344

2:54 0762 Substrate-borne vibrational signaling in the stink bugs *Acrosternum hilare* (Say) and *Nezara viridula* (L.) (Hemiptera: Pentatomidae). **Heather MCBRIEN,** University of California, Dept. of Entomology, Riverside, CA 92521; Andrej COKL, Dept. for Invertebrate Physiology, National Institute of Biology, Ljubljana, Slovenia; Jocelyn MILLAR, University of California, Riverside, Entomology, 100A Chapman Hall, Riverside, CA 92521

3:06 0763 Spatial representation and foraging in German cockroach. **Virginie DURIER,** UMR 6552, CNRS-Universite de Rennes1, Campus de Beaulieu, Rennes Cedex, 35042, FRANCE; Colette RIVAULT, UMR 6552, CNRS-Universite de Rennes1, Campus de Beaulieu, Rennes Cedex, 35042, FRANCE

3:18 Break

3:30 0764 Traps for intercepting plum curculio immigrating into orchards. **Jaime PINERO,** University of Massachusetts, Dept.

of Entomology, Agriculture, Fernald Hall, Amherst, MA 01003; Ronald PROKOPY, University of Massachusetts Amherst, Entomology, Dept. of Entomology, Amherst, MA 01003

3:42 0765 Effect of live hedgerow barriers on the flight behavior of the Oriental fruit moth (*Grapholitha molesta* (Busck)) in an apple production system. **Carlos GARCIA-SALAZAR,** Michigan State University, Plant Systems, East Lansing, MI 48824-1311; Larry GUT, Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Mark WHALON, Michigan State University, East Lansing, MI 48824

3:54 0766 Development of an optical flying insect detection and identification system (OFIDIS). **Aubrey MOORE,** 57 Belmont Ave., Ottawa, ON K1S 0V2, Canada

4:06 0767 Electronic tags for the tracking of insects in flight: Effect of weight on flight performance of adult Colorado potato beetles. **Gilles BOITEAU,** Agric & Agri-food Canada, P.O. Box 20280, Fredericton, NB E3B 4Z7, Canada; Bruce G. COLPITTS, Dept. of Electrical Engineering, UNB, P.O. Box 4400, Head Hall, Fredericton, NB E3B 5A3, Canada; David McG. Luke, Dept. of Electrical Engineering, UNB, P.O. Box 4400, Room D41, Head Hall, Fredericton, NB E3B 5A3, Canada; Gary BOUZANNE, Cadmi Microelectronics Inc., P.O. Box 4400, Room H109, Head Hall, Fredericton, NB E3B 5A3, Canada

4:18 0768 Dispersal of adult Colorado potato beetles (Coleoptera: Chrysomelidae) in regular and Bt transgenic potato fields. **Nsitu MBUNGU,** McGill University, Entomology, 21111 Lakeshore Rd., Ste Anne de Belle Vue, QC H9X 3V9, Canada; Gilles BOITEAU, Agric & Agri-food Canada, P.O. Box 20280, Fredericton, NB E3B 4Z7, Canada; R. K. STEWSART, McGill University, Entomology, Ste Anne de Belle Vue, QC H9V 3X3, Canada

4:30 0769 Colorado potato beetle populations and potato yields in open vs. enclosed plots. **Mark HEADINGS,** Ohio State University, 1328 Dover Rd, Wooster, OH 44691-8905

4:42 0770 Dynamics in the spatial structure of Colorado potato beetle, *Leptinotarsa decemlineata* (Say). **Paul BLOM,** Dept. of Entomology, 501 Ag Sci & Ind Bldg, University Park, PA 16802-3508; Shelby J. FLEISCHER, Pennsylvania State University, Dept. of Entomology, 501 ASI Bldg, University Park, PA 16802-3508

4:54 0771 Quantifying and modelling crop-weed-herbivore interactions from spatially-registered data: Wild oat and wheat stem sawfly impacts on spring wheat yield. **Sharlene SING,** Montana State University, Dept. of Land Resources and Environmental Sciences, Bozeman, MT 59717-3120; Greg JOHNSON, Montana State University, Dept. of Entomology, Bozeman, MT 59717; Bruce MAXWELL, Montana State University, Dept. of Land Resources and Environmental Sciences, Bozeman, MT 59717

5:06 0772 Fitting population dynamics models to spatial insect data: Scaling dispersal to landscape structure at multiple spatial scales. **Jens ROLAND,** University of Alberta, Edmonton, Biological Sciences, AB T6G 2E9, Canada; Subhash LELE, Dept. of Mathematical Sciences, University of Alberta, Edmonton, AB T6G, Canada; Brian VAN HEZEWIJK, Dept. of Biological Sciences, University of Alberta, Edmonton, AB T6G 2E9, Canada

Informal Conference: IOBC/NRS: Dynamic Interactions: Behavior and Evolution in Biological Control Communities

411 C

Organizer and Moderator

Martha S. Hunter, Dept. of Entomology, 410 Forbes Bldg., University of Arizona, Tucson, AZ 85721

6:00 Distinguished Scientist in Biological Control Award

6:20 0773 The role of evolution and adaptation in biological control. **Judith MYERS,** Depts. Zoology and Faculty of Agricultural Sciences, University of British Columbia, 6270 University Blvd, Vancouver, BC V6T 1Z4, Canada

6:40 0774 Enemy-induced foraging changes in biological control agents. **Jacques BRODEUR,** Dept. de Phytologie, Université Laval, Sainte-Foy, Quebec G1K 7P4, Canada

7:00 Break

7:15 0775 Interference competition among whitefly parasitoids: Consequences for pest suppression. **Timothy COLLIER,** University of Arizona, 410 Forbes Bldg, Tucson, AZ 85721

7:35 0776 Evolution of invasive plants in enemy-free space and it's impact on biological weed control agents. **Bernd BLOSSEY,** Cornell University, Biological Control of Non-indigenous Plant Species Program, Dept. of Natural Resources, Ithaca, NY 14853

7:55 0777 Using foraging behavior to predict the ecological roles of generalist predators. **Jay ROSENHEIM,** University of California, Davis, Dept. of Entomology, One Shields Ave., Davis, CA 95616

8:15 IOBC Business Meeting

8:35 IOBC Mixer

Informal Conference: Innovative Arthropod Management for Small Fruits

408 A

Organizers and Moderators

Don Weber, Agricultural Research Group, Ocean Spray Cranberries, Lakeville MA 02349; Sheila Fitzpatrick, Agriculture and Agri-food Canada, Pacific Agri-Food Research Centre, P.O. Box 1000, 6947 Highway 7, Agassiz BC V0M 1A0; Rufus Isaacs, Dept. of Entomology, 209 Center for Integrated Plant Systems, Michigan State University, East Lansing, MI 48824; Michèle Roy, Ministère de Agriculture, des Pêcheries, et de l'Alimentation du Québec, Complexe Scientifique D.1.110, 2700 Rue Einstein, Ste.-Foy, QC G1P 3W8

6:30 0778 Small fruit: Innovations needed! **Donald C. WEBER,** Ocean Spray Cranberries, Agricultural Research Group, Lakeville, MA 02349

6:35 0779 Small fruits, big differences: Comparing strawberry and grape pest management in California. **Frank ZALOM,** University of California, Davis, Entomology, Statewide IPM Project, Davis, California 95616

6:55 0780 Interactions between mites and plant pathogens: Implications for biological control in grapes. **Gregory ENGLISH-LOEB,** Cornell University, Dept. of Entomology, NYSAES, Geneva, NY 14456; Andrew NORTON, Cornell University, Dept. of Entomology, NYSAES, Geneva, NY 14456; Jan NYROP, Cornell University, Entomology, Agriculture and Life Sciences, 324 Barton Laboratory, NYSAES, Geneva, NY

14456; Wayne WILCOX, Cornell University, Dept. Plant Pathology, NYSAES, Geneva, NY 14456; David GADOURY, Cornell University, Dept. Plant Pathology, NYSAES, Geneva, NY 14456; Robert SEEM, Cornell University, Dept. Plant Pathology, NYSAES Geneva, NY 14456

7:15 0781 Strawberry disease management with antagonistic fungi and pollinators. **Joseph KOVACH,** Ohio State University, Entomology, IPM Program, Ohio State University, Wooster, OH 44691

7:35 0782 Managing root weevils in Washington berries. **Lynell K. TANIGOSHI,** Washington State University, Dept. of, Entomology, Vancouver Research & Extension Center, 1919 N.E. 78th Street, Vancouver, WA 98665

7:55 0783 Low-input IPM for raspberries in Québec. **Michèle ROY,** Ministère de l'Agriculture, des Pêcheries, et de l'Alimentation du Québec, Laboratoire de diagnostic en phytoprotection, Complexe-Scientifique, 2700 rue Einstein, Sainte-Foy, QC G1P 3W8, Canada

8:15 Break

8:30 0784 Pollination as a key consideration in small-fruit IPM. **Kenna MACKENZIE,** Agriculture and Agri-Food Canada, Atlantic Food and Horticulture Research Centre, 32 Main Street, Kentville, NS B4N 1J5, Canada

8:50 0785 Potential for *Beauveria bassiana* in the control of the blueberry flea beetle and the blueberry spanworm in lowbush blueberry in Maine. **Francis A. DRUMMOND,** University of Maine, 313 Deering Hall, Dept. of Biological Sciences, Orono, ME 04469; Eleanor GRODEN, University of Maine, Dept. of Biological Sciences, Orono, ME 04469; Constance STUBBS, University of Maine, Ecology Dept., 5722 Deering Hall, Orono, ME 04469

9:10 0786 Developing a new IPM program for lepidopteran pests in Michigan blueberries. **Rufus ISAACS,** Dept. of Entomology, Entomology, 203 Pesticide Research Center, Michigan State University, East Lansing, MI 48824; Nikhil MALLAMPALLI, Michigan State University, Dept. of Entomology, East Lansing, MI 48824; John C. WISE, Michigan State University, Dept. of Entomology, East Lansing, MI 48824

9:30 0787 Management of highbush blueberry pests in the Northeast. **Sridhar POLAVARAPU,** Rutgers University, Blueberry and Cranberry Research Ctr., Penn State Forest Road, Chatsworth, NJ 08019

9:50 0788 Addressing grower priorities for low-risk alternatives in cranberries. **Donald C. WEBER,** Ocean Spray Cranberries, Agricultural Research Group, 1 Ocean Spray Drive, Lakeville, MA 02349; Scott R. ROSKELLEY, Ocean Spray Cranberries, Agricultural Research Group, 1 Ocean Spray Drive, Lakeville, MA 02349

10:10 0789 Cranberries in the Pacific Northwest: Pheromone-based IPM for a major pest. **Sheila FITZPATRICK,** Agriculture and Agri-Food Canada, Pacific Agri-Food Research Centre, P.O. Box 1000, Agassiz, BC V0M 1A0, Canada

Linnaean Games: Final Round

404A/B

7:00 p.m. - 9:30 p.m.

Informal Conference: Stored Product Entomology

611 B

Organizer and Moderator

James F. Campbell, USDA-ARS, Grain Marketing and Production Research Center, 1515 College Ave, Manhattan, KS, 66502

7:00 0790 Introduction. **James CAMPBELL,** Kansas State University, USDA ARS GMPRC, 1515 College Ave, Manhattan, KS 66502

7:05 0791 Characterizing phosphine gas diffusion in concrete silos. **Paul FLINN,** USDA ARS Grain Marketing & Production Research Cent., 1515 College Ave., Manhattan, KS 66502

7:17 0792 *Tribolium* genomics and pest biology. **Richard BEEMAN,** USDA Grain Res Lab, 1515 College Ave., Manhattan, KS 66502

7:29 0793 Implementing the phase out of methyl bromide in developing countries. **David MUELLER,** Insects Limited Inc., 16950 Westfield Park Rd., Westfield, 46074

7:39 0794 Towards a better understanding of effects of high temperature on stored-product insects. **Bhadriraju SUBRAMANYAM,** Kansas State University, Dept. of Grain Science and Industry, Manhattan, KS 66502

7:51 0795 Targeting digestion in stored product pests. **Brenda OPPERT,** USDA-ARS Grain Marketing & Prod Res Ctr, 1515 College Ave, Manhattan, KS 66502

8:03 0796 Engineering EGPIC for commercialization. **Dennis SHUMAN,** USDA ARS 1700 SW 23 Dr., Gainesville, FL 32608; Nancy EPSKY, 1700 SW 23rd Drive, Gainesville, FL 32608

8:15 0797 The pea extract controls stored-product insects. **Xingwei HOU,** Cereal Research Centre, Agriculture and Agri-Food Canada, Winnipeg, MB R3T 2M9, Canada; Paul FILEDS, 195 Dafoe Rd., Cereal Research Centre, Winnipeg, Manitoba R3T 2M9, Canada

8:27 0798 Trap interpretation - a problem with many faces. **Richard ARBOGAST,** USDA ARS CMAVE, #14565, 1200 SW 23RD Dr., Gainesville, FL 32604

8:39 0799 *Bacillus thuringiensis* and transgenic Bt corn to manage insect pests of stored grain. **John SEDLACEK,** Comm Res Svc, Atwood Res Fac, Kentucky State Univ., Frankfort, KY 40601; Anthony HANLEY, Community Research Service, 400 E. Main, Frankfort, KY 40601; Bryan PRICE, Community Research Service, E. Main St., Frankfort, KY 40601

8:51 0800 Open discussion. **James CAMPBELL,** Kansas State University, GMPRC, 1515 College Ave, Manhattan, KS 66502

Informal Conference: Biological Control of the Lily Leaf Beetle, *Lilioceris lilii*

406 B

Organizers and Moderators

R.A. Casagrande, Dept. of Plant Sciences, Univ. of Rhode Island, Kingston, RI 02881; Marc Kenis, CABI Bioscience Centre, 1 Rue des Grillons, Delemont, Switzerland CH-2800

7:00 0801 Introduction. **Richard CASAGRANDE,** University of Rhode Island, Dept. of Plant Sciences, Kingston, RI 02881

7:05 0802 Biology, spread, and impact in of the lily leaf beetle in Canada. **Laurent LESAGE,** E. Cereal & Oilseed Res. Centre, K.W. Neatby Dldg. C.E.F., 960 Carling Ave., Ottawa, ON K1A 0C6, Canada

7:20 0803 Host plant preferences of the lily leaf beetle. **Cor G. M. CONJIN,** Bulb Research Centre, Postbus 85, Lisse, 2160AB, The Netherlands

7:35 0804 Lily leaf beetle parasitoid/host ecology in Europe. **Marc KENIS,** CABI Bioscience Centre, 1 Rue des Grillons, Delemont, CH-2800, Switzerland

7:55 0805 Lily leaf beetle parasitoid behavioral cues & host specificity. **Urs SCHAFFNER,** CABI Bioscience, Centre Switzerland 1 Chemin, des Grillons CH-2800, Delemont, Switzerland

8:10 0806 Lily leaf beetle/parasitoid ecology in the Netherlands: Initial efforts. **Jacques J. M. VAN ALPHEN,** Leiden University, Section of Animal Ecology, Institute of Evolutionary and Ecological Sciences, Leiden, 2300 RA, The Netherlands

8:25 0807 The lily leaf beetle: A UK perspective on distribution and control. **Andrew SALISBURY,** The RHS Garden Wisley, Woking, Surrey, GU23 6QB, Great Britain

8:40 0808 Lily leaf beetle parasitoid selection: Choosing among six species. **Marion GOLD,** URI CE ED Center, 3 East Alumni Ave, Kingston, RI 02881; Richard CASAGRADE, University of Rhode Island, Dept. of Plant Sciences, Kingston, RI 02881

8:55 0809 Field results with *Tetrastichus setifer*, a parasitoid of the lily leaf beetle. **Lisa TEWKSBURY,** University of Rhode Island, Plant Sciences Dept., Kingston, RI 02813; Richard CASAGRANDE, University of Rhode Island, Dept. of Plant Sciences, Kingston, RI 02881

9:10 0810 Lily leaf beetle conference discussions. **Mark KENIS,** CABI Bioscience Centre, 1 Rue des Grillons, Delemont, CH-2800, Switzerland; Richard CASAGRANDE, University of Rhode Island, Dept. of Plant Sciences, Kingston, RI 02881

9:20 0811 Public education in biological control: Lily leaf beetle as an example. **James LASHOMB,** Rutgers University, Dept. of Entomology, Blake Hall 92 Lipman Dr, New Brunswick, NJ 08901

Informal Conference: Overseas Chinese Entomologists Association

410 A/B

Organizer and Moderator Zachary Huang, Michigan St Univ., 243 Natural Science, Dept. of Entomology, East Lansing, MI 48824

7:00 Symposium begins

Informal Conference: Coleopterists Society-The Systematics of Coleoptera: A Millennium View

407 A

Organizer and Moderator

Brett C. Ratcliffe, Systematics Research Collections, W436 Nebraska Hall, University of Nebraska, Lincoln, NE 68588-0514

7:00 0812 The systematics of Coleoptera: A millennium view. **John Lawrence,** CSIRO, Canberra, A.C.T. Australia

8:00 Break

8:15 Business meeting

Informal Conference: Heteropterist's Society: Contributions of Thomas R. Yonke to Hemipterology in Collaboration with His Students and Colleagues

409 A/B

Organizer and Moderator

Donald B. Thomas, Subtropical Agriculture Research Lab, 2301 S. International Blvd., Weslaco, TX 78596

7:30 Introduction.

7:35 0813 Pronotal appreciation. **Dennis KOPP,** U.S. Dept. of Agriculture, Research & Education, Washington, D.C. 78596

7:50 0814 Biological significance of some specialized features of Cicadellidae. **Charles MASON,** University of Deleware, Dept. of Entomology, Newark, DE 78596

8:05 0815 Taxonomy from the lab to the field. **Ronald OETTING,** University of Georgia, Georgia Agricultural Experiment Station, Griffin, GA 78596

8:20 0816 Sex and the Heteropteran genome. **Donald THOMAS,** Subtropical Agriculture Research Lab, 2301 S. International Blvd, Weslaco, TX 78596

8:35 Break

8:45 0817 Yes, Tom, bugs do have sex pheromones. **Jeff ALDRICH,** U.S. Dept. of Agriculture, Agricultural Research Service, Beltsville, MD 78596

9:00 0818 Imprint of a Hemipterist. **Sharron QUISENBERRY,** Montana State University, Dept. of Entomology, Bozeman, MT 78596

9:15 0819 Tiring the sun with talking: Recollections of Tom Yonke. **Carl SCHAEFER,** University of Connecticut, Dept. Biology & Evolutionary Ecology, Storrs, CT 78596

Display Presentations, Section Cc. Insect Vectors in Relation to Plant Disease

100 B

D0282 Ecology and management of corn flea beetle and Stewart's wilt in New York sweet corn. **Thomas KUHAR,** Cornell University, Dept. of Entomology, Ithaca, NY 14853; Michael HOFFMANN, Cornell University, Dept. of Entomology, Ithaca, NY 14853; Lydia STIVERS, Cornell Cooperative Extension, New York Crop Research Facility, 7939 Bank Street Road, Batavia, NY 14020; Mark WRIGHT, Cornell University, Dept. of Entomology, Insectary Building, Ithaca, NY 14850; Jeffrey GARDNER, Cornell University, Dept. of Entomology, 190 Insectary Building, Ithaca, NY 14850; Sylvie CHENUS, Cornell University, 190 Insectary, Ithaca, NY 14853

D0283 Aflatoxin and fumonisin production in susceptible and insect resistant transgenic corn. **Craig ABEL,** USDA ARS SIMRU, P.O. Box 346, Stoneville, MS 38776-0346; Hamed ABBAS, USDA-ARS CGPRU, P.O. Box 345, Stoneville, MS 38776

D0284 A mutualistic relationship between Mexican bean beetle and bean pod mottle virus. **Richard MUSSER,** University of Arkansas, Dept. of Entomology, Fayetteville, AR 72701; Sue HUM-MUSSER, University of Arkansas, Agri. 330, Fayetteville, AR 72701; Gary FELTON, Fayetteville, AR; Rose GERGERICH, University of Arkansas, Fayetteville, AR 72701

D0285 Towards characterization of unknown proteins encoded by

the *maize chlorotic dwarf virus* genome. **Rym CHAOUCH,** Ohio State University, 1680 Madison Avenue, Wooster, OH 44691; Kristen WILLIE, USDA-ARS, 1680 Madison Ave., Wooster, OH 44691; Margaret REDINBAUGH, USDA-ARS, 1680 Madison Ave., Wooster, OH 44691; Saskia HOGENHOUT, Ohio State University, Entomology, 1680 Madison Ave., Wooster, OH 44691

D0286 Experimental vectors of the bacterium that causes yellow vine disease of cucurbits. **Astri WAYADANDE,** Oklahoma State University, Entomology and Plant Pathology, 127 Noble Research Center, Stillwater, OK 74078; Sam PAIR, USDA ARS SCARL, P.O. Box 159, Lane, OK 74555; Talal AL-ZADJALI, Oklahoma State University, 127 Noble Research Center, Stillwater, OK 74078; Jacqueline FLETCHER, Oklahoma State University, 127 Noble Research Center, Stillwater, OK 74078

D0287 The role of spring thrips populations in transmission of tomato spotted wilt virus. **Lenny WELLS,** University of Georgia, Plant Pathology, UGA Coastal Plain Experiment Station, Tifton, GA 31793

D0288 Patterns of tomato spotted wilt tospovirus movement between susceptible weed hosts and capture of *Frankliniella* spp. (Thysanoptera: Thripidae). **Russell GROVES,** North Carolina State University, Dept. of Entomology, Raleigh, NC 27695; George KENNEDY, North Carolina State University, Dept. of Entomology, Raleigh, NC 27695-7630; James WALGENBACH, North Carolina State University, Entomology, Agriculture & Life Sciences, MHCREC, 2016 Fanning Bridge Rd, Fletcher, NC 28732-9244

D0289 Green peach aphid action thresholds for potato leafroll virus control in Idaho. **Thomas MOWRY,** University of Idaho, Plant, Soil and Entomological Sciences, Parma Research and Extension Center, 29603 U of I Lane, Parma, ID 83660-6699

D0290 Volatiles from PLRV-infected potatoes are arrestants for *Myzus persicae*. **Hongjian DING,** University of Idaho, Dept. of Plant, Soil and Entomological Sciences, Room 242, Ag. Sci. Bldg., Moscow, ID 83844-2339; Sanford EIGENBRODE, University of Idaho, Plant, Soil, and Entomological Sciences, 242 Agricultural Science Building, Moscow, ID 83844-2339

D0291 Acidic proteinases in *Bemisia tabaci* (B type). **Tramanh PHAM,** Univ. of St. Thomas, Biology Dept., 3800 Montrose Blvd., Houston, TX 77006; Donald FROHLICH, Univ. of St. Thomas, Biology Dept., Houston, TX 77006; Rosemarie ROSELL, Univ. of St. Thomas, Biology Dept., Houston, TX 77006

D0292 Why do *Monochamus* beetles play a role as principal vectors of pinewood nematodes? **Noritoshi MAEHARA,** Forestry and Forest Products Research Institute, Matsunosato 1, Kukizaki, Ibaraki 305-8687, Japan; Kazuyoshi FUTAI, Graduate School of Agriculture, Kyoto University, Kyoto 606-8502, Japan

D0293 Fungus-mite associations and the ecology of southern pine beetle. **Richard HOFSTETTER,** Dartmouth College, Biological Sciences, 6044 Gilman, Hanover, NH 03755-3576; Kier KLEPZIG, USDA Forest Service, 2500 Shreveport Hwy, Pineville, LA 71360-4046; Matthew AYRES, Dartmouth College, Biological Sciences, Gilman Hall, Hanover, NH 03755; John MOSER, USFS Southern Forest Expt Sta, 2500 Shreveport Hwy, Pineville, LA 71360-4046

Display Presentations, Section Cd. Behavior and Ecology

D0294 Integrating science and art trough insect appreciation projects. **Carmen TRISLER,** Wittenberg University, Education/Biology, P.O. Box 720, Springfield, OH 45501

D0295 Ohio Beetle Survey-A project of The Ohio Coleopterists. **David HORN,** Ohio State University, Dept. of Entomology, Columbus, OH 43210; David OSBORNE, The Ohio State University, 1735 Neil Ave., Columbus, OH 43210; Daniel DIGMAN, The Ohio State University, 1735 Neil Ave., Columbus, OH 43210

D0296 Do red imported fire ants suppress soybean pests? **Zandra DELAMAR,** Auburn University, Entomology, 301 Funchess Hall, Auburn University, AL 36849; Micky EUBANKS, Auburn University, Dept. of Entomology, Auburn Univ., AL 36849; Stuart BLACKWELL, Auburn University, 301 Funchess Hall, Dept. of Entomology and Plant Pathology, Auburn University, AL 36849; Christa PARRISH, Auburn University, 301 Funchess Hall, Dept. of Entomology and Plant Pathology, Auburn University, AL 36849

D0297 A pest risk assessment for *Copitarsia* spp.: I. An analysis of interceptions in the United States. **Robert VENETTE,** USDA-APHIS, University of Minnesota, Dept. of Entomoloy, St. Paul, MN 55108; Juli GOULD, USDA, 3645 E. Wier Ave., Phoenix, AZ 85040-2931; Joseph DAVIDSON, USDA-APHIS; Philip KINGSLEY, USDA APHIS PPQ, Bldg 1398, Otis Angb, MA 02542

D0298 A pest risk assessment for *Copitarsi* spp.: II. Quantifying the probability of establishment throughout the United States. **Juli GOULD,** USDA, 3645 E Wier Ave, Phoenix, AZ 85040-2931; Robert VENETTE, University of Minnesota, Dept. of Entomoloy, St. Paul, MN 55108; Philip KINGSLEY, USDA APHIS PPQ, Bldg 1398, Otis Angb, MA 02542; Joseph DAVIDSON, USDA-APHIS, 3505 Boca Chica Blvd., Suite 360, Brownsville, TX 78521

D0299 Hazard and risk rating post oak savanna landscapes for the red imported fire ant. **Robert COULSON,** Texas A&M University, Dept. of Entomology, College Station, TX 77843-0001

D0300 Risk associated with black-legged tick and Lyme disease on Cape Cod, MA. **Dave SIMSER,** P.O. Box 767, East Falmouth, MA 02536-0767

D0301 Perception of predation risk by *Semiothisa aemulataria* (Lepidoptera: Geometridae). **Ignacio CASTELLANOS,** University of Maryland College Park, Dept. of Entomology, College Park, MD 20742; Pedro BARBOSA, University of Maryland College Park, Entomology, Plant Sciences Building, College Park, MD 20742

D0302 Nonlinear transmission of insect viruses. **Vincent D'AMICO,** USDA-NEFES, 51 Mill Pond Road, Hamden, CT 06514; Joseph ELKINTON, University of Massachusetts Amherst, Entomology, Fernald Hall, Amherst, MA 01003; John PODGWAITE, USDA Forest Insect & Disease, 51 Mill Pond Rd, Hamden, CT 06514-1703

D0303 Food selections of Tettigoniidae in rice fields. **Johnny BERNHARDT,** University of Arkansas, P.O. Box 351, Stuttgart, AR 72160-0351

D0304 Lentic Odonata of the Missouri Prairie Region: Associations with mesohabitats and regionalizations. **Brett LANDWER,** University of Missouri-Columbia, 1-87 Ag. Blgd., Dept. of Entomology, Columbia, MO 65211; Robert SITES, University of Missouri-Columbia, Dept. of Entomology, Columbia, MO 65211

D0305 Aquatic and semiaquatic Heteroptera from northeastern Thailand: Biogeography and new records. **Akekawat VITHEEPRADIT,** University of Missouri, Dept. of Entomology, 1-87 Agriculture Building, Columbia, MO 65211; Robert SITES, University of Missouri-Columbia, Dept. of Entomology, Columbia, MO 65211

D0306 Arthropod communities in *Nepenthes* pitchers: Where do histiostomatid mites fit in? **Norman FASHING,** College of William and Mary, P.O. Box 8795, Williamsburg, VA 23187-8795

D0307 Comparisons among the arthropod community found at the leaf litter, aerial space under the canopy and box elder trees (*Acer negundo* Sapindales: Aceraceae) in a hardwood forest in Maryland. **Raul MEDINA,** University of Maryland College Park, 4112 Plant Sciences Bldg, College Park, MD 20742-0001; Pedro BARBOSA, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742-0001

D0308 Plant diversity and arthropod communities: An example from agroforestry. **William STAMPS,** University of Missouri-Columbia, 1-87 Agriculture Bldg, Columbia, MO 65211; Terryl WOODS, University of Missouri-Columbia, Dept. of Entomology, Columbia, MO 65211-0001; Marc LINIT, University of Missouri-Columbia, Dept. of Entomology, Columbia, MO 65211-0001

D0309 Examination of the peninsula effect upon insect species richness of the Bruce Peninsula (Ontario, Canada). **Catherine ONODERA,** University of Guelph, Dept. of Environmental Biology, Guelph, ON N1G 2W1, Canada

D0310 Abundance and diversity of cerambycid beetles between urban and forested landscapes. **Emerson LACEY,** University of Illinois at Urbana-Champaign, 503 N State St, Apt 3, Champaign, IL 61820-3572; Matthew GINZEL, University of Illinois at Urbana-Champaign, Dept. of Entomology, 320 Morrill Hall, Urbana, IL; Lawrence HANKS, University of Illinois at Urbana-Champaign, Dept. of Entomology, Urbana, IL 61801

D0311 Positive and negative effects of the ligular removal by insects on the reproductive success of an Asteraceae species in a xeric community in Mexico. **Dulce María FIGUEROA-CASTRO,** Universidad Nacional Autónoma de México, Lab. de Ecología, Fac. de Ciencias, U.N.A.M., D.F. 04510, México; Zenón CANO-SANTANA, Universidad Nacional Autónoma de México, Lab. de Ecología, Fac. de Ciencias, U.N.A.M., D.F. 04510, México

D0312 Arthropod fauna of gray catbird nests. **Kristen BELL,** Oberlin College, Dept. of Biology, Oberlin, OH 44074; Mary GARVIN, Oberlin College, Dept. of Biology, Oberlin, OH 44074

D0313 Patterns of parasitism of macrolepidoptera and the role of parasitoids in insect assemblage structure. **Pedro BARBOSA,** University of Maryland College Park, Entomology, Plant Sciences Building, College Park, MD 20742; Astrid CALDAS, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742-0001

D0314 Carabidae abundance and diversity in Annapolis Valley, Nova Scotia apple orchards. **Colleen O'FLAHERTY,** Atlantic Food and Horticulture Research Centre, Entomology, 32 Main Street, Kentville, NS B4N 1J5, Canada; Robert SMITH, Agric Canada Res Stn, Kentville, NS B4N 1J5, Canada; Sue RIGBY, Atlantic Food and Horticulture Research Centre, Entomology, Kentville, NS B4N 1J5, Canada; Cory SHEFFIELD, Agriculture and Agri-Food Canada, 32 Main Street, Kentville, NS B4N 1J5, Canada

D0315 Epigaeic beetle assemblages (Coleoptera: Carabidae and Staphylinidae) of uncut forest patches retained within harvested stands. **Kamal GANDHI,** University of Minnesota, Forest Resources, 115 Green Hall, 1530 Cleveland Ave., St. Paul, MN 55108-6112; John SPENCE, University of Alberta, CW 405A Biological Sciences Bldg, Edmonton, AB T6G2E9, Canada; Luigi MORGANTINI, Weyerhaeuser Canada, 11553, 154 Street, Edmonton, AB T5M 3N7, Canada; Karen CRYER, University of Alberta, Dept. of Biological Sciences, Edmonton, AB T6G 2E9, Canada

D0316 Soil invertebrates of American Samoa. **Donald VARGO,** American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799; Mark SCHMAEDICK, American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799

D0317 Reared and malaise sampled parasitoid richness in xeric and mesic forests in the Central Appalachian Range. **John STRAZANAC,** West Virginia University, Plant & Soil Sciences / Entomology, P.O. Box 6108, Morgantown, WV 26506-6108; Monty WOOD, Agriculture and Agri-Food Canada, Plant and Soil Sciences, Eastern Cereal and Oilseed Research Centre, Research Branch, Central Experimental Farm, Ottawa, ON K1A 0C6, Canada; Linda BUTLER, West Virginia University, Plant & Soil Sciences / Entomology, P.O. Box 6108, Morgantown, WV 26505-6108

D0318 Insect diversity following stand conversion: A comparison among restoration techniques. **Ryan MORGAN,** University of Toronto, Forestry, 33 Willcocks St., Toronto, ON M5S 3B3, Canada; Sandy SMITH, University of Toronto, Zoology, 33 Willocks St., Toronto, ON M5S3B3, Canada; M. I. BELLOCQ

D0319 Effect of crop distribution on populations of the silverleaf whitefly, *Bemisia argentifolii*, and its parasitoids. **Earl ANDRESS,** USDA APHIS PPQ Ppmc, 4151 HWY 86, Brawley, CA 92227; Juli GOULD, USDA, 3645 E. Wier Ave., Phoenix, AZ 85040-2931; Mark QUINN, Washington State University, Dept. of Crop & Soil Sci, Pullman, WA 99164-0001

D0320 Arthropod biodiversity of coastal sage scrub. **Richard REDAK,** University of California, Dept. of Entomology, Riverside, CA 92521-0314; Jutta BURGER, Dept. of Entomology, University of California, Riverside, CA 92521; Thomas PRENTICE, Dept. of Entomology, University of California, Riverside, CA 92521

D0321 The role of guild membership and motility in patterns of arthropod recolonization. **Jutta BURGER,** University of California, Dept. of Entomology, Riverside, CA 92521; Michael PATTEN, University of California, Dept. of Biology, Riverside, CA 92521; John ROTENBERRY, University of California, Riverside, Biology, 1310 Spieth Hall, Riverside, CA 92521; Richard REDAK, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521

D0322 Nectar thieves, pollen robbers and pollinators of flame azalea, *Rhododendron calendulaceum*. **Adriean J. MAYOR,** University of Tennessee, Dept. of Entomology and Plant Pathology, 205 Ellington Plant Sciences Bldg., Knoxville, TN 37901; Jerome F. GRANT, University of Tennessee, Dept. of Entomology and Plant Pathology, 205 Ellington Plant Sciences Bldg., Knoxville, TN 37901

D0323 Pollinator biodiversity in *Ecballium elaterium* (Cucurbitaceae): A Mediterranean endemic. **Bernard E. VAISSIÈRE,** INRA Zoologie, Avignon Cedex, F-84914, France; Richard W. RUST, University of Nevada, Reno, NV 89557; Paul WESTRICH, Lichtensteinstraße 17, Kusterdingen, D-72127, Germany

D0324 Comparative pollination effectiveness among Apoidean visitors of wild blueberry (*Vaccinium angustifolium* Ait.). **Steven JAVOREK,** Agriculture and Agri-Food Canada, 32 Main St., Kentville, NS B4N 1J5, Canada; Kenna MACKENZIE, Agriculture and Agri-Food Canada, 32 Main Street, Kentville, NS B4N 1J5, Canada; Sam VANDER KLOET, Acadia University, Dept. of Biology, Wolfville, NS B0P 1X0, Canada

D0325 Nectar production and pollen loads in an experimentally fragmented landscape. **Catherine HOFFMAN,** Saint Louis University, Dept. Biology, 3507 Laclede Ave, St. Louis, MO 63103-2010; Gerardo CAMILO, Saint Louis University, Dept. of Biology, St. Louis, MO 63103-2010

D0326 First North American record of the palearctic species *Tetropium fuscum* (Fabr.) (Coleoptera: Cerambycidae). **Georgette SMITH,** Natural Resources Canada, Canadian Forest Service, P.O. Box 4000, Fredericton, NB E3B 5P7, Canada; Edward HURLEY, Natural Resources Canada, Canadian Forest Service, P.O. Box 4000, Fredericton, NB E3B 4R5, Canada; Jon SWEENEY, Natural Resources Canada, Canadian Forest Serv, Fredericton, NB E3B 5P7, Canada; Ken HARRISON, Natural Resources Canada, Canadian Forest Service, P.O. Box 4000, Fredericton, NB E3B 5P7, Canada; Wayne MACKAY, Natural Resources Canada, Canadian Forest Service, P.O. Box 4000, Fredericton, NB E3B 5P7, Canada

D0327 A 10-year analysis of mountain pine beetle and weather in central Idaho. **Barbara BENTZ,** USDA Forest Service, Rocky Mountain Research Station, 860 North 1200 East, Logan, UT 84321; Jim VANDYGRIFF, USDA Forest Service, Rocky Mountain Research Station, 860 North 1200 East, Logan, UT 84321

D0328 Livestock grazing and grasshopper population dynamics: An experimental approach. **David BRANSON,** USDA-ARS, 1500 N. Central Ave, Sidney, MT 59270

D0329 Arctic insects, global warming and the ITEX program. **Richard RING,** University of Victoria, Biology Dept., Victoria, BC V8W 3N5, Canada

D0330 Computer based training of animals. **Christian GUTZEN,** University of Bonn, Dept. of Neurobiology, Poppelsdorfer Schloss, Bonn, 53115, Germany; Stephan SCHWARZ, University of Bonn, Dept. of Neurophysiology, Poppelsdorfer Schloss, Bonn, 53115, Germany

D0331 A predictive model to enhance safeguarding capabilities against weevil based on ecology, behavior and phylogeny. **Stephanie BLOEM,** USDA-APHIS-NBCI, Univ. of Florida, Rt. 4, Box 4092, Monticello, FL 32344; Russell F. MIZWLL III, Univ. of Florida, Rt. 4, Box 4092, Monticello, FL 32344

D0332 A simulation model for *Lyctocoris campestris*, a predator of stored-product insect pests. **James THRONE,** USDA-ARS Grain Marketing and Production Research Center, 1515 College Ave., Manhattan, KS 66502; Megha PARAJULEE, Texas Agricultural Experiment Station, Chilli-Vernon Base, 11708 Highway 70 South, P.O. Box 1658, Vernon, TX 76385; Thomas PHILLIPS, Oklahoma State University, Dept. of Entomology, 127 Noble Research Center, Stillwater, OK 74078

D0333 An exploratory computer model for examining the larval distribution dynamics of the pestiferous midge, *Glyptotendipes paripes* (Diptera: Chironomidae) in lakes of central Florida. **Richard LOBINSKE,** University of Florida, Mid-Florida Research and Education Center, 2725 S. Binion Rd, Apopka, FL 32703-8504; Arshad ALI, University of Florida, Mid-Florida Research and Education Center, 2725 S Binion Rd, Apopka, FL 32703-8504; Jon ALLEN, University of Florida, Dept. of Entomology & Nematol, Gainesville, FL 32611

D0334 Modeling development in grape berry moth, *Endopiza viteana* (Clemens) (Lepidoptera: Tortricidae). **Patrick C. TOBIN,** Pennsylvania State University, Dept. of Entomology, 501 ASI Building, University Park, PA 16802-3508; Sudha NAGARKATTI, Pennsylvania State University, Lake Erie Regional Grape Research and Extension Center, 662 N. Cemetery Road, North East, PA 16428; Michael C. SAUNDERS, Pennsylvania State University, Dept. of Entomology, 501 ASI Building, University Park, PA 16802-3508

D0335 Patch utilization by the red flour beetle (*Tribolium castaneum*). **James CAMPBELL,** USDA ARS, GMPRC, 1515 College Ave, Manhattan, KS 66502; Carrie RUNNION, USDA ARS GMPRC, 1515 College Ave, Manhattan, KS 66502

D0336 Spatial learning in *Oxyopes salticus* (Araneae: Oxyopidae). **Fred PUNZO,** Univ. of Tampa, Box 5F 401 W Kennedy Blvd, Tampa, FL 33606

D0337 The effects of physical stimuli on the direction that the vermiform larvae of *Romalea microptera* take upon hatching. **Jeffery BERGMAN,** Illinois State University, Biological Sciences, 4120 Biological Sciences, Normal, IL 61790-4120; Douglas WHITMAN, Illinois State Univ., 4120 Dept. of Biol, Normal, IL 61790

D0338 Costs of crowding: Breeding aggregations in pine engravers (Scolytidae) result in lower mating success. **Mary REID,** University of Calgary, Dept. of Biological Sciences, Calgary, AB T2N 1N4, Canada; Kyle HODNETT, University of Calgary, Dept. of Biological Sciences, Calgary, AB T2N 1N4, Canada

D0339 Density dependent host acceptance behaviour by mountain pine beetles? **Ché ELKIN,** University of Calgary, Dept. of Biological Sciences, Calgary, AB T2N 1N4, Canada; Mary REID, University of Calgary, Dept. of Biological Sciences, Calgary, AB T2N 1N4, Canada

D0340 Constant temperature-controlled arena for studying insect behavior. **Michael MULLEN,** USDA ARS GMPRC, 1515 College Ave, Manhattan, KS 66502; Jade VARDEMAN, USDA ARS GMPRC, 1515 College Ave, Manhattan, KS 66502; James CAMPBELL, USDA ARS GMPRC, 1515 College Ave, Manhattan, KS 66502-2736

D0341 Sub-surface swimming behavior of *Lissorhoptrus oryzophilus* (Coleoptera: Curculionidae). **Raymond HIX,** University of Arkansas, P.O. Box 2669, Fayetteville, AR 72701-2669; Donn JOHNSON, University of Arkansas, 321 AGRI Building, Fayetteville, AR; John BERNHARDT, University of Arkansas, P.O. Box 351, Stuttgart, AR 72160

D0342 The effect of host species on reproductive success of *Dendroctonus frontalis* (Coleoptera: Scolytidae). **Jessica VEYSEY,** Dartmouth College, Biology, Hanover, NH 03755; Matthew AYRES, Dartmouth College, Biological Sciences, Hanover, NH 03755; Maria LOMBARDERO, Universidad de Santiago, Departamento de Producción Vegetal, Campus de Lugo, 27002, Spain; Richard HOFSTETTER, Dartmouth College, Biology, Hanover, NH 03755

D0343 Reproductive strategies of North American Acanthosomatidae. **E. Richard HOEBEKE**, Cornell University, Entomology, Comstock Hall, Ithaca, NY 14853-0901; Maureen CARTER, Entomology, Cornell University, Comstock Hall, Ithaca, NY 14853

D0344 The effects of light entering the gall exit tunnel on pupariation of *Eurosta solidaginis*. **Carol MAPES,** Kutztown University of Pennsylvania, Biology Dept., Kutztown, PA 19530; Tara WILLIAMS, Kutztown University of Pennsylvania, Biology Dept., Kutztown, PA 19530

D0345 Do aphid parasitoids promote aphid bacterial symbiosis? **Conrad CLOUTIER,** Université Laval, Département de biologie, Cité Universitaire, Québec, QC G1K 7P4, Canada; Angela DOUGLAS, University of York, Dept. of Biology, York, North Yorkshire YO10 5EX, United Kingdom

D0346 Influence of a chloronicotinyl insecticide on host choice and movement patterns of *Bemisia argentifolii* on cantaloupe plants (*Cucumis melo* L.). **Steven KOLMES,** Dept. of Biology, University of Portland, 5000 N Willamette Blvd, Portland, OR 97203; Timothy DENNEHY, Dept. of Entomology, University of Arizona, Tucson, AZ 85721-0001; Samielle MARKLUND, Dept. of Biology, Univ. of Portland, 5000 N Willamette Blvd, Portland, OR 97203; Lori PETERSON, Dept. of Biology, Univ. of Portland, 5000 N Willamette Blvd, Portland, OR 97203; Anne CHAPMAN, Dept. of Biology, Univ. of Portland, 5000 N Willamette Blvd, Portland, OR 97203; Teresa HAUSER, Dept. of Biology, Univ. of Portland, 5000 N Willamette Blvd, Portland, OR 97203; David ALEXANDER, Dept. of Biology, Univ. of Portland, 5000 N Willamette Blvd, Portland, OR 97203; Raymond BARD, Dept. of Chemistry, Univ. of Portland, 5000 N Willamette Blvd, Portland, OR 97203

D0347 Response of boreal beetles to a severe windstorm event and subsequent fuel reduction activity in northern Minnesota. **Kamal GANDHI,** University of Minnesota, Forest Resources, 115 Green Hall, 1530 Cleveland Ave., University of Minnesota, St. Paul, MN 55108-6112; Daniel GILMORE, University of Minnesota, Dept. of Forest Resources, 1861 Highway 169 East, Grand Rapids, MN 55744-3396; Robert HAACK, Michigan State University, USDA Forest Ser, No Ctrl Forest Exp Stn, East Lansing, MI 48823; William MATTSON, USDA Forest Service, Forestry Sciences Laboratory, 5985 Highway K, Rhinelander, WI 54501; Steven SEYBOLD, University of Minnesota, Entomology, 219 Hodson Hall, 1980 Folwell, St. Paul, MN 55108; John ZASADA, USDA Forest Service, Forestry Sciences Laboratory, 1831 Highway 169 East, Grand Rapids, MN 55744-3396

D0348 Host searching behavior and mating behavior of the ambrosia beetle, *Platypus quercivorous* (Murayama). **Masahiko TOKORO,** Forestry and Forest Products Research Institute, Kukizakicyo Matunosato 1, Tukuba, Ibaraki 305-8687, Japan; Hiroshi KITAJIMA; Haruo KINUURA, FFPRI, Japan; Eiji OHYA; Tadakazu NAKASHIMA; Kiyoshi NAKAMUTA, For & For Prod Res Inst, Pb 16 Tsukuba Norin Kenkyu, Ibaraki, 305-8687, Japan

D0349 Host plant preference and suitability for the pink hibiscus mealybug. **Timothy PAINE,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521; Sarah BOYD, University of California, Dept. of Entomology, Riverside, CA 92521; Christopher HANLON, University of California, Dept. of Entomology, Riverside, CA 92521

D0350 Intraspecific competition and alfalfa response subsequent to injury by potato leafhopper. **Yingfang XIAO,** Jiangsu Academy of Agricultural Sciences, 50 Zhongling ST, Nanjing, Jiangsu 210014, P.R. China; William LAMP, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742-0001

D0351 Behavioral responses of susceptible and resistant lines of the light brown apple moth on diets containing *Bacillus thuringiensis* endotoxins. **M. O. HARRIS,** Dept. of Entomology, North Dakota State University, Fargo, ND 58105; N. MARKWICK, HortResearch, Private Bag 92169, Auckland, New Zealand; M. SANDANAYAKA, HortResearch, Private Bag 92169, Auckland, New Zealand

D0352 Oviposition choice by the black walnut curculio, *Conotrachelus retentus*: A ten year study. **William STAMPS,** University of Missouri-Columbia, 1-87 Agriculture Bldg, Columbia, MO 65211; Marc LINIT, University of Missouri-Columbia, Dept. of Entomology, Columbia, MO 65211-0001

D0353 Characterization of courtship behavior of *Choristoneura rosaceana* (Harris) and *Pandemis pyrusana* Kearfott, Lepidoptera: Tortricidae. **Tomislav CURKOVIC,** Washington State University, Dept. of Entomology, Pullman, WA 99164-6382; Jay BRUNNER, Washington State University, Tree Fruit Research Center, 1100 N Western Ave., Wenatchee, WA 98801-1230; Peter LANDOLT, USDA ARS, 5230 Konnowac Pass Rd, Wapato, WA 98951-9651

D0354 Why did the beetle not cross the road? Proximate cues to road avoidance. **James DANOFF-BURG,** Columbia University, Center for Environmental Science and Conservation, New York, NY 10027; Robert DUNN, University of Connecticut, Dept. of Ecol & Evol Bio, Storrs, CT 06269-0001

D0355 Response of *Lygus hesperus* Knight (Heteroptera: Miridae) to conspecific and host-plant cues in a y-tube olfactometer. **Jacquelyn BLACKMER,** USDA-ARS, 4135 E. Broadway Rd., Western Cotton Research Laboratory, Phoenix, AZ 85040; Julia P. SMITH, USDA-ARS, 4135 E. Broadway Rd., Western Cotton Research Laboratory, Phoenix, AZ 85040; Cesar RODRIGUEZ-SAONA, USDA-ARS, 4135 E. Broadway Rd., Phoenix, AZ 85040-8803

D0356 Response of *Galendromus occidentalis* to *Tetranychus urticae* damaged and undamaged hop leaves in a Y-tube olfactometer. **Mary GARDINER,** University of Idaho, Parma Research and Extension Center, 29603 U of I Lane, Parma, ID 83660; James BARBOUR, University of Idaho, Plant, Soil, and Entomological Sciences, Parma Res & Ext Ctr, Parma, ID 83660

D0357 Responses to host cues by *Tetanops myopaeformis*: Modalities are not additive? **Sanford EIGENBRODE,** University of Idaho, Plant, Soil, and Entomological Sciences, Agric. Sci. Bldg. Room 242, Moscow, ID 83844-2339; Hongjian DING, University of Idaho, Dept. of Plant, Soil and Entomological Sciences, Ag. Sci. 242, Moscow, ID 83844-2339; Edward BECHINSKI, University of Idaho, Plant, Soil, and Entomological Sciences, Moscow, ID 83843

D0358 Response of nontarget insects to *Conophthorus* behavioral chemicals in California and Mexico. **Nancy G. RAPPAPORT,** USDA Forest Service, Pacific Southwest Research Station, Berkeley, CA 94701; John D. STEIN, USDA Forest Service, Forest Health Enterprise Team, Morgantown, WV 26505; Adolfo DEL RIO MORA, Universidad Michoacana de San Nicolas de Hidalgo, CP 58240, Morelia, Michoacan Mexico

D0359 Soft scale honeydew secretions elicit competition between several members of the Vespidae. **Amanda HODGES,** University of Georgia, Dept. of Entomology, 413 Biological Sciences Building, Athens, GA 30602; Greg HODGES, University of Georgia, 124 E Paces Dr., Athens, GA 30605-5280

D0360 Courtship pheromones: Behavior and olfaction in Heliothine moths. **Neil VICKERS,** University of Utah, 257 S 1400 E Rm 201, Salt Lake City, UT 84112-0840

D0361 Movement behavior of the Asian longhorned beetle. **Jay BANCROFT,** 48 Bradley Ave, Hamden, CT 06514-3907; Michael SMITH, USDA ARS BIIR, 501 S. Chapel St., Newark, DE 19713

D0362 Movement of thrips and other insects through greenhouse vents. **Colleen TEERLING,** Agriculture and Agri-Food Canada, P.O. Box 6000, 4902 Victoria Ave. North, Vineland Station, ON L0R 2E0, Canada

D0363 The adult feeding and migration behaviour of the Warren rootcollar weevil. **Shelley HOOVER,** Simon Fraser University, Biological Sciences, 8888 University Drive, Burnaby, BC V5A 1S6, Canada; Staffan LINDGREN, University of Northern British Columbia, Forestry, 3333 University Way, Prince George, Canada

D0364 Monarch butterfly (*Danaus plexippus*) migratory orientation differs by continental region but does not compensate immediately for displacement. **Sandra PEREZ,** University of Texas at El Paso, Biological Sciences, 500 W. University Ave., El Paso, TX 79902; Orley TAYLOR Jr., University of Kansas, Biological Sciences, Dept. of Entomology, Lawrence, KS 66045-0001

D0365 More diets, energy and flight in the walnut husk fly. **Joe ZERMEÑO,** California State University, Hayward, Dept. of Biological Sciences, 25800 Carlos Bee Blvd., Hayward, CA 94542; Susan OPP, California State University, Hayward, Dept. of Biological Sciences, 25800 Carlos Bee Blvd., Hayward, CA 94542; Carol LAUZON, California State University, Hayward,

Dept. of Biological Sciences, Hayward, CA 94542; Sarah POTTER, California State University, Hayward, Entomology, Dept. of Biological Sciences, Hayward, CA 94542

D0366 "Up, up and away": Characteristics of high-flying western corn rootworm beetles. **Joseph SPENCER,** University of Illinois at Urbana-Champaign, Entomology, 64 Natural Resources, Urbana, IL 61801; Adam TERANDO, Dept. of Geography, University of Illinois, Urbana, IL 61802; Scott ISARD, University of Illinois at Urbana-Champaign, Geography, Urbana, IL 61801; Timothy MABRY, University of Illinois at Urbana-Champaign, Illinois Natural History Survey, 607 E Peabody Dr., Champaign, IL 61820

D0367 Sluggish movement as a defense mechanism: Exaptation or adaptation? **John HATLE,** Illinois State Univ., Dept. of Biological Sci, Normal, IL 61761; Brent SALAZAR, Illinois State University, Dept. of Biology, P.O. Box 4120, Normal, IL 61790-4120; Douglas WHITMAN, Illinois State Univ., Dept. of Biology, P.O. Box 4120, Normal, IL 61790-4120

D0368 Progress on Asian longhorn beetle chemical attractants. **Stephen TEALE**, SUNY, Environmental and Forest Biology, 1 Forestry Drive, Syracuse, NY 13210; Michael BOHNE, Syracuse University, 2218 East Colvin St., Syracuse, NY 13210; Jennifer LUND, SUNY, Environmental Science and Forestry, 1 Forestry Dr., Syracuse, NY 13210; Joseph FRANCESE, USDA-APHIS, Otis ANGB, MA

D0369 Response of tropical ambrosia beetles (Coleoptera, Scolytidae) to semiochemicals. **Carlos FLECHTMANN,** FEIS/UNESP, Dept. of Biology, Av. Brasil, 56, Ilha Solteira, SP 15385-000, Brazil; Vanessa SAGI, Dept. of Biology, FEIS/UNESP, Av. Brasil, 56, Ilha Solteira, SP 15385-000, Brazil; Luiz CORDEIRO, Klabin Fabricadora de Papel e Celulose Ltda., Fazenda Monte Alegre, Telêmaco Borba, PR 84279-000, Brazil

D0370 Sex pheromones of the stink bugs *Chlorochroa ligata*, *C. sayi*, and *C. uhleri* (Hemiptera: Pentatomidae). **Hsiao-Yung HO,** Institute of Zoology, Academia Sinica and Dept. of Entomology, Univ.. of California, Riverside, Taipei, Taiwan 11529, Taiwan; Heather MCBRIEN, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0314; Jocelyn MILLAR, University of California, Riverside, Entomology, 100A Chapman Hall, Riverside, CA 92521

D0371 Modified pheromone communication associated with inseciticide resistance in the obliquebanded leafroller, *Choristoneura rosaceana*. **Johanne DELISLE,** Natural Resources Canada, 1055 P.E.P.S. Street, P.O. Box 3800, Sainte-Foy, QC G1V 4C7, Canada; Charles VINCENT, McGill University, Natural Resource Sciences, Horticultural Research and Development Centre, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, QC J3B 3E6, Canada

D0372 Medflies and microorganisms: You can lead a fly to bait, but can you make it eat? **Susan OPP,** California State University, Hayward, Biological Sciences, 25800 Carlos Bee Blvd., Hayward, CA 94542; Carol LAUZON, California State University, Hayward, Biology, 25800 Carlos Bee Blvd., Hayward, CA 94542; Joe ZERMEÑO, California State University, Hayward, Dept. of Biological Sciences, 25800 Carlos Bee Blvd., Hayward, CA 94542; Sarah POTTER, California State University, Hayward, Entomology, 25800 Carlos Bee Blvd., Hayward, CA 94542

D0373 Differential attractiveness of strains of *Enterobacter agglomerans* to Mexican fruit fly. **David ROBACKER,** Texas A&M University, USDA ARS, 2301 S International Blvd, Weslaco, TX 78596-8421; Carol LAUZON, California State University, Hayward, Dept. of Biological Sciences, 25800 Carlos Bee Blvd., Hayward, CA 94542; Robert BARTELT, USDA ARS, Nat Center For Agric Util Res, Peoria, IL 61604

D0374 Plant volatiles induced by a piercing-sucking insect: The response of cotton to *Lygus hesperus* damage. **Cesar RODRIGUEZ-SAONA,** USDA-ARS, Western Cotton Research Lab, 4135 E. Broadway, Phoenix, AZ 85040-8803; Livy WILLIAMS, USDA ARS SIMRU, P.O. Box 346, Stoneville, MS 38776-0346; Steven CRAFTS-BRANDNER, USDA-ARS, Western Cotton Research Lab, 4135 E. Broadway, Phoenix, AZ 85040-8803; Paul PARE, Texas Tach University, Dept. of Chemistry and Biochemistry, Lubbock, TX 79409; Thomas HENNEBERRY, USDA-ARS, Western Cotton Research Lab, 4135 E Broadway, Phoenix, AZ 85040-8803

D0375 Odorants attracting corn rootworm beetles. **Leslie HAMMACK,** USDA ARS, 2923 Medary Ave, Brookings, SD 57006-4267

D0376 Relationships between endogenous juvabione in Fraser fir and balsam woolly adelgids. **Glenn FOWLER,** North Carolina State University, Entomology, 3151 Walnut Creek Pkwy, Raleigh, NC 27606; Jie ZHANG, Florida State University, System Group, ACNS, Tallahassee, FL 32310; Fred HAIN, North Carolina State University, Dept. of Entomology, Raleigh, NC 27695-7626

D0377 Preliminary data on the temporal and spatial distribution of codling moth, oriental fruit moth, and redbanded leafroller in conventional and mating disruption small apple orchard blocks. **Jennifer HOELSCHER,** University of Missouri-Columbia, 1-87 Agriculture Building, Dept. of Entomology, Columbia, MO 65211-7160; Bruce BARRETT, University of Missouri-Columbia, Dept. of Entomology, Columbia, MO 65211

D0378 New lure traps for the monitoring and the control of mediterranean fruit fly (*Ceratitis capitata* Wiedemann): Field and laboratory observations in Italy. **Massimo CRISTOFARO,** Enea Cr Casaccia Sp 025, Via Anguillarese 301, Roma, 00060, Italy; Carlo Tronci, ENEA C.R. Casaccia, via Anguillarese, 301 S.Maria di Galeria, Rome, Italy; Vincenzo DI ILIO, University of Siena, Via P.A. Mattioli, 5, Siena, 53100, Italy; Lori CARVALHO, USDA-ARS, Hilo, HI; Eric JANG, Dept. of Agriculture, P.O. Box 4459, Hilo, HI 96720; Francesca DI CRISTINA, ENEA C.R. Casaccia, Via Anguillarese, 301 S. Maria di Galeria, Rome, 00060, Italy

D0379 Attractant for the larger pine shoot beetle, *Tomicus piniperda*. **Stephen TEALE,** SUNY, College of Environmental Science and Forestry, Environmental and Forest Biology, 1 Forestry Drive, Syracuse, NY 13210; Dariusz CZOKAJLO, IPM Technologies, Inc., 4134 N. Vancouver Ave. Suite 105, Portland, OR 97217; Therese POLAND, Michigan State University, USDA Forest Serv NCRS, 1407 S Harrison Rd, East Lansing, MI 48823; Peter DE GROOT, Canadian Forest Service, P.O. Box 490, Sault Ste Marie, ON P6A 5M7, Canada; Joseph K. STAPLES, Illinois State University, 4120 Biological Sciences, Normal, IL 61790; Robert HAACK, Michigan State University, USDA Forest Ser, No Ctrl Forest Exp Stn, East Lansing, MI 48823; Philipp KIRSCH, IPM Technologies, Inc., 4134 N. Vancouver Ave, Suite 105, Portland, OR 97217

D0380 Intercept™ Panel Trap, a novel trap for monitoring forest Coleoptera. **Dariusz CZOKAJLO,** IPM Technologies, Inc., 4134 N. Vancouver Ave. Suite 105, Portland, OR 97217; Darrell ROSS, Oregon State University, 20 Forestry Sciences Lab, Corvallis, OR 97331-7501; Philipp KIRSCH, IPM Technologies, Inc., 4134 N. Vancouver Ave. Suite 105, Portland, OR 97217

D0381 Pheromone-trap determined phenology of three *Carpophilus* spp. in a fig orchard. **L. P. S. (Bas) KUENEN,** USDA ARS HCRL, 2021 S Peach Ave, Fresno, CA 93727; Charles BURKS, USDA ARS HCRL, 2021 S. Peach Ave, Fresno, CA 93727; Heather ROWE, USDA ARS HCRL, 2021 S. Peach Ave, Fresno, CA 93727

D0382 Effect of trap size, placement and age on captures of blueberry maggot flies (Diptera: Tephritidae). **Oscar LIBURD,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Sridhar POLAVARAPU, Rutgers, The State University of New Jersey, Rutgers Blueberry and Cranberry Res Cent, Chatsworth, NJ 08019; Steven ALM, University of Rhode Island, Plant Sciences, 9 E Alumni Ave Ste 7, Kingston, RI 02881-2019

D0383 Relationships between noctuid adult trap capture and larval sampling in peanuts. **Robert MEAGHER,** USDA-ARS CMAVE, 1700 SW 23rd Dr., Gainesville, FL 32608-1069

D0384 Probe body modifications and insect capture in EGPIC grain probe traps. **Nancy EPSKY,** USDA ARS, CMAVE, P.O. Box 14565, Gainesville, FL 32604-2565; Dennis SHUMAN, USDA ARS, CMAVE, 1700 SW 23rd Dr., Gainesville, FL 32608-1069

D0385 Ambrosia beetle species attacking chestnut and captured in ethanol baited traps in Middle Tennessee. **Jason OLIVER,** Tennessee State University, Nursery Crop Research Station, 472 Cadillac Lane, McMinnville, TN 37110-2304; Catharine MANNION, University of Florida, TREC, 18905 SW 280th Street, Homestead, FL 33031

D0386 Blueberry maggot fruit fly attraction and capture with colored spheres. **R. ALFORD,** University of Maine, Dept. of Biological Sciences, Dept. of Biol Sciences, Orono, ME 04469-5722

D0387 A test of sequential semiochemical baiting to contain and concentrate mountain pine beetle infestations. **Alexander GUSTAFSSON,** Simon Fraser University, Biological Sciences, Centre for Environmental Biology, 8888 University Drive, Burnaby, B. C. V5A 1S6, Canada

D0388 Symphyta sampled by malaise traps in temperate mesic and xeric forests in eastern United States. **Rachal BRAUD,** West Virginia University, Plant and Soil Sciences, Entomology, P.O. Box 6108, Morgantown, WV 26506-6108; John STRAZANAC, West Virginia University, Plant and Soil Sciences, Entomology, P.O. Box 6108, Morgantown, WV 26506-6108; David R. SMITH, U.S. Dept. of Agriculture, Systematic Entomology Laboratory, ARS, Washington, D.C. 20560; Linda BUTLER, West Virginia University, Plant and Soil Sciences, Entomology, P.O. Box 6108, Morgantown, WV 26506-6108

D0389 Diel emergence pattern of adult citrus rust mite in Florida. **Chris BERGH,** Virginia Polytechnic Institute and State University, Alson H. Smith, Jr. AREC, 595 Laurel Grove Road, Winchester, VA 22602; Clayton MCCOY Jr., University of Florida, CREC-Lake A, Gainesville, FL 32610

D0390 Tree nutrition effects on preformed and induced resistance to bark beetles and fungi. **Glenn FOWLER,** North Carolina State University, Forestry, 908 Merrie Road, Raleigh, NC 27606; Lee ALLEN, North Carolina State University, Forestry-Coop-Fertilization, 3108 Jordan Hall, Raleigh, NC 27695; Daniel ROBISON, North Carolina State University, Dept. of Forestry, Raleigh, NC 27695-0001; Kier KLEPZIG, USDA Forest Service, 2500 Shreveport Hwy, Pineville, LA 71360-4046; Fred HAIN, North Carolina State University, Dept. of Entomology, Raleigh, NC 27695

D0391 How predator efficiency and behavior affects a predator-prey interaction in a patchy environment. **David MARGOLIES,** Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506-4004; Fengyou JIA, Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506-4004

D0392 Intracolony relatedness in *Nasutitermes*. **Paul BARDUNIAS,** University of Kansas, Entomology, Arts & Science, 11474 Floyd Dr. #107, Overland Park, KS 66210

D0393 Environmental heterogeneity in coupled populations of *Tribolium castaneum*. **Wesley GODOY,** Universidade Estadual Paulista, Depto. Parasitologia - IB - Rubiao Junior, Botucatu, SP 18618-000, Brazil; Alan HASTINGS, University of California, Davis, Dept. of Environmental Science and Policy, Davis, CA 95616

D0394 Sexual and reproductive biology of *Lydella jalisco* (Diptera: Tachinidae), a parasitoid of the Mexican rice borer. **Isabelle LAUZIERE,** Texas A&M University, Texas Agricultural Exp Stn, 2415 E U.S. Highway 83, Weslaco, TX 78596-8344; Jesusa C. LEGASPI, Texas Agricultural Exp. Stn, 2415 E. Hgw 83, Weslaco, Tx 78596; Benjamin C. LEGASPI Jr., USDA-ARS, U.S. Dept. of Agriculture, Kika de la Garza Subtrop Agric. Research Cent, Weslaco, TX 78596

D0395 Interaction between fall armyworm and Bt or non-Bt corn. **Juan CABRERA,** North Carolina State University, Dept. of Entomology, Gardner Hall, Campus Box 7613, Raleigh, NC 27695-7613; Fred GOULD, North Carolina State University, Entomology, 840 Method Road, Raleigh, NC 27607; George KENNEDY, North Carolina State University, Dept. of Entomology, Raleigh, NC 27695-7630

D0396 Genetic algorithms in an individual based model for the study of grasshopper life history evolution. **Dennis FIELDING,** USDA Agricultural Research Service, P.O. Box 757200, University of Alaska, Fairbanks, AK 99775-7200

D0397 Genetic differentiation across a behavioural boundary in a primitively social bee. **Amro ZAYED,** York University, Biology Dept. - Lumbers 209, 4700 Keele Street, Toronto, ON Canada; Laurence PACKER, York University, Biology, York University, Toronto, ON M3J 1P3, Canada

D0398 Interaction of insect strain and diet on diamondback moth development and reproduction. **James E. CARPENTER,** USDA-ARS, P.O. Box 748, Tifton, GA 31793-0748; Stephanie BLOEM, USDA-APHIS-NBCI, 429 Meadow Ridge Dr, Tallahassee, FL 32312-1577

D0399 Use of synthetic hydrocarbons to identify individuals in mark-recapture studies. **M. D. GINZEL,** University of Illinois at Urbana-Champaign, Dept. of Entomology, 320 Morrill Hall, Urbana, IL 61801; L. M. HANKS, University of Illinois at Urbana-Champaign, Dept. of Entomology, Urbana, IL 61801; V. N. PHAM, University of Illinois at Urbana-Champaign, 320 Morrill Hall, 505 S. Goodwin Avenue, Urbana, IL 61801

D0400 Visualization of strains of *Enterobacter agglomerans* and *Klebsiella pneumoniae* in alimentary canal organs from *Ceratitis capitata* and *Rhagoletis completa* using molecular techniques and microscopy. **Carol LAUZON,** California State University, Hayward, Dept. of Biological Sciences, 25800 Carlos Bee Blvd., Hayward, CA 94542; Sarah POTTER, California State University, Hayward, Entomology, Dept. of Biological Sciences, Hayward, CA 94542; John PELOQUIN, University of California, Riverside, Dept. of Entomology, Riverside, CA 92506; Thomas MILLER, University of California, Riverside, Entomology, 17 Entomology Bldg., Riverside, CA 92521

D0401 Microsatellite markers in congeneric herbivores and an associated parasitoid. **Astrid CALDAS,** University of Maryland College Park, Dept. of Entomology, College Park, MD 20742-4454; David HAWTHORNE, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742; Pedro BARBOSA, University of Maryland College Park, Entomology, College Park, MD 20742

D0402 Use of molecular techniques to elucidate ecological and behavioral aspects of pine sawfly life history. **Lynne K. RIESKE-KINNEY,** University of Kentucky, Dept. of Entomology, S 225 Agric. Science North, Lexington, KY 40546-0091; Stephen DOBSON, University of Kentucky, S225 Ag Science

Center North, Lexington, KY 40546; Lee TOWNSEND, University of Kentucky, Entomology, S-225 Ag Sci N, Lexington, KY 40546-0091

D0403 A better mouse trap? Evaluating the ramp pitfall trap. **Sue RIGBY,** Atlantic Food and Horticulture Research Centre, Entomology, 32 Main St., Kentville, NS B4N 1J5, Canada; Robert SMITH, Atlantic Food and Horticulture Research Centre, 32 Main St., Kentville, NS B4N 1J5, Canada

D0404 Intra- and interspecific competition of *Liposcelis entomophila* (Enderlain) and *L. paeta* Pearman (Psocoptera: Liposcelididae) in different environmental conditions. **Rennie ROESLI,** Grain Science and Industry, 205 Shellenberger Hall, Kansas State University, Manhattan, KS 66506; Rhondda JONES, James Cook University, Douglas, Townsville, Queensland QLD 4811, Australia

D0405 EGPIC: Accuracy of insect counts in different substrates. **Bhadriraju SUBRAMANYAM.**, Kansas State University, Dept. of Grain Science & Industry, 201 Shellenberger Hall, Manhattan, KS 66506; Mauricio VALENCIA, Kansas State University, Dept. of Grain Science & Industry, 201 Shellenberger Hall, Manhattan, KS 66506

D0406 Comparison of diapause responses between geographic populations of the predator *Geocoris punctipes*. **Kenneth YEARGAN,** University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0001; John RUBERSON, University of Georgia, Dept. of Entomology, P.O. Box 748, Tifton, GA 31793; Blake NEWTON, University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0091

D0407 Survival of overwintering gypsy moth eggs in Michigan. **Deborah G. MCCULLOUGH,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Jeffrey ANDRESEN, Michigan State University, East Lansing, MI ; Noah KOLLER, Michigan State University, East Lansing, MI ; Leah BAUER, USDA Forest Service, East Lansing, MI ; Carl RAMM, Michigan State University, Dept. of Forestry, East Lansing, MI

D0408 Overwinter populations of the corn leafhopper *Dalbulus maidis* (Homoptera: Cicadellidae) in central Mexico. **Gustavo MOYA-RAYGOZA,** Univ. De Guadalajara, CUCBA, Dept. Botanica Y Zool, Zapopan, Jalisco 45100, Mexico; L. R. NAULT, The Ohio State University, OARDC, 1680 Madison Ave., Wooster, OH 44691; S. A. HOGENHOUT, The Ohio State University, OARDC, 1680 Madison Ave., Wooster, OH 44691

D0409 Spider mite, *Tetranychus urticae* (Koch.) growth rate at different heights within the hop, *Humulus lupulus* L., canopy. **James BARBOUR,** University of Idaho, Plant, Soil, and Entomological Sciences, Univ. of Idaho, Parma Res & Ext Ctr, Parma, ID 83660; Bahman SHAFII, University of Idaho, Dept. of Plant, Soil, and Entomological Sciences, Moscow, ID 83844-2339

D0410 Responses of red flour beetle life stages to heat. **Anil Kumar MENON,** Kansas State University, Dept. of Grain Science & Industry, 201 Shellenberger Hall, Manhattan, KS 66506; Bhadriraju SUBRAMANYAM, Kansas State University, Dept. of Grain Science and Industry, 201, Shellenberger Hall, Manhattan, KS 66506

D0411 Temperature-dependent development of *Lacanobia subjuncta* (Lepidoptera: Noctuidae). **Michael DOERR,** Washington State University, Tree Fruit Research and Extension Center, 1100 N. Western Ave, Wenatchee, WA 98801; **Jay BRUNNER,** Washington State University, Tree Fruit Research Center, 1100 N. Western Ave., Wenatchee, WA 98801-1230

D0412 Coldhardiness and comparative supercooling in eggs of western and northern corn rootworms. **Michael ELLSBURY,** USDA ARS NGIRL, 2923 Medary Ave, Brookings, SD 57006; Richard LEE, Miami University, Dept. of Zool., Miami Univ., Oxford 45056

D0413 Variation in western corn rootworm egg hatch patterns among Nebraska populations. **Jenny STEBBING,** University of Nebraska-Lincoln, Dept. of Entomology, 202 Plant Industry, Lincoln, NE 68583-0816; Lance MEINKE, University of Nebraska, Dept. of Entomology, Lincoln, NE 68583-0816; Blair SIEGFRIED, University of Nebraska, 202 Plant Industry Bldg. Lincoln, NE 68583-0812; Robert WRIGHT, University of Nebraska, P.O. Box 66, Clay Center, NE 68933-0066

D0414 Does relative humidity during heat sterilization influence survival of *Tribolium castaneum* Herbst? **Rennie ROESLI,** Dept. of Grain Science and Industry, 205 Shellenberger Hall, Kansas State University, Manhattan, KS 66506; Bhadriraju SUBRAMANYAM, Dept. of Grain Science and Industry, 205 Shellenberger Hall, Kansas State University, Manhattan, KS 66506

D0415 Microscopic and microbiological investigation of all life stages of the walnut husk fly, *Rhagoletis completa* Cresson. **Sarah POTTER,** California State University, Hayward, Entomology, Dept. of Biological Sciences, 25800 Carlos Bee Blvd., Hayward, CA 94542; Carol LAUZON, California State University, Hayward, Dept. of Biological Sciences, 25800 Carlos Bee Blvd., Hayward, CA 94542

D0416 Trench or die: Why do many soybean loopers fail to trench? **Erin SIZEMORE,** University of Central Arkansas, Dept. of Biology, 180 Lewis Science Center, Conway, AR 72035; David DUSSOURD, University of Central Arkansas, Dept. of Biology, Conway, AR 72035-0001

D0417 *Frankliniella* thrips species complex and their within plant distribution in north Florida tomatoes. **Stuart REITZ,** USDA-ARS, Center for Biological Control, Tallahassee, FL 32307; Xin Hua YAN, Florida A&M University, Tallahassee, fl 32307; Erika YEARBY, Florida A&M University, Center for Biological Control, Perry-Page Bldg. 307 S, Tallahassee, FL 32307

D0418 Susceptibility of selected North American conifers to oviposition by the exotic brown spruce longhorn beetle, *Tetropium fuscum*, (Coleoptera: Cerambycidae). **Jon SWEENEY,** Natural Resources Canada, Canadian Forest Serv, Fredericton, NB E3B 5P7, Canada; Georgette SMITH, Natural Resources Canada - Canadian Forest Service, P.O. Box 4000, Fredericton, NB E3B 5P7, Canada; Edward HURLEY, Natural Resources Canada - Canadian Forest Service, P.O. Box 4000, Fredericton, NB E3B 5P7, Canada; Ken HARRISON, Natural Resources Canada - Canadian Forest Service, P.O. Box 4000, Fredericton, NB E3B 5P7, Canada; Garvice GESNER, Natural Resources Canada - Canadian Forest Service, P.O. Box 4000, Fredericton, NB E3B 5P7, Canada; Jessica PRICE, Natural Resources Canada - Canadian Forest Service, P.O. Box 4000, Fredericton, NB E3B 5P7, Canada

D0419 Impact of loblolly pine sawfly defoliation on growth of loblolly pine stands in southern Arkansas. **Lynne THOMPSON,** University of Arkansas at Monticello, School of Forest Resources, Monticello, AR 71656-3468; Boris ZEIDE, University of Arkansas at Monticello, School of Forest Resources, Monticello, AR 71656-3468

D0420 Habitat, host and host age preference by the cherry bark tortrix. **Barry BAI,** Oregon Dept. of Agriculture, Plant Div,, 635 Capitol St NE, Salem, OR 97301-2524; Lynell TANIGOSHI, Washington State University, Entomology, Res & Ext Unit, Vancouver, WA 98665-9752; Todd MURRAY, Washington State University, Vancouver Research & Extension Unit, 1919 NE 78th St., Vancouver, WA 98665

D0421 Effect of foliar herbivory at different phenophases on grapevine growth and development. **Rodrigo MERCADER,** Michigan State University, Dept. of Entomology, 243 Natural Sciences Building, East Lansing, MI 48824; Rufus ISAACS, Michigan State University, 206C Center for Integrated Plant Systems, East Lansing, MI 48824

D0422 The biology and behavior of *Pseudodorus clavatus* (Diptera: Syrphidae), an important predator of citrus aphids. **Belén BELLIURE,** Instituto Valenciano de Investigaciones Agrarias, Apartado Oficial de Correos, Montcada, Valencia 46113, Spain; J.P. MICHAUD, University of Florida, 700 Exp. St. Rd., Lake Alfred, FL 33850

D0423 *Anoplophora glabripennis* (Coleoptera: Cerambycidae) development on cut logs of four species of *Acer*. **Melody KEENA,** USDA Forest Service, Northeastern Center for Forest Health Research, Hamden, CT 06514; Steve ULANECKI, USDA Forest Service, Northeastern Center for Forest Health Research, Hamden, CT 06514

D0424 Analysis of host growth in an *Anoplophora glabripennis* (Coleoptera: Cerambycidae) infested poplar (*Populus* spp.) stand in China. **Joseph FRANCESE,** USDA APHIS PPQ, Otis Plant Protection Center, Bldg 1398 W. Truck Road, Otis ANGB, MA 02542; Stephen TEALE, State University College of Environmental Science and Forestry, 133 Illick Hall, 1 Forestry Drive, Syracuse, NY 13210

D0425 Comparisons of populations of *Metcalfa pruinosa* and associated planthoppers in the USA and Italy (Homoptera: Fulgoroidea). **Stephen WILSON,** Central Missouri State University, Dept. of Biology, Warrensburg, MO 64093; Andrea LUCCHI, Universita di Pisa, Sez. Entomolgia Agraria, CDSL, Pisa, Italy

D0426 Relative abundances and species diversity of predatory insects in edges of row crop agroecosystems: Effects of noncrop habitats. **Daniel PAVUK,** Bowling Green State Univ., Dept. of Biol Sci, Bowling Green, OH 43403-0212; Kelly HITE, Bowling Green State University, Dept. of Biological Sciences, Bowling Green, OH 43403-0212; Rhonda OATES, Bowling Green State University, Dept. of Biological Sciences, Bowling Green, OH 43403-0212; Melanie BERGOLC, Bowling Green State University, Dept. of Biological Sciences, Bowling Green, OH 43403-0212

D0427 Seasonal variation in the presence of *Aphis gossypii* (Glover) and other aphids (Homoptera: Aphididae) in irrigated cotton in Santiago Del Estero, Argentina. **Silvia HELMAN,** Universidad Nacional de Santiago del Estero, Buenos Aires 347, Capital, Santiago del Estero 4200, Argentina

D0428 An invasion of the ragweed beetle, *Ophraella communa* LeSage, into Japan and its biology on common ragweed in Ibaraki Prefecture, Japan. **Seiichi MORIYA,** National Institute of Agro-Environmental Sciences, 3-1-1 Kannondai, Tsukuba, Ibaraki, 305-8604, Japan; Takuhiro YAMAGUCHI, Oshima Branch, Kagoshima Agricultural Experiment Station, 7-1 Uragami-cho, Naze, Kagoshima 894-0068, Japan; Koichi TANAKA, National Institute of Agro-Environmental Sciences, 3-1-1, kannondai, Tsukuba, Ibaraki 305-8604, Japan; Kohji YAMAMURA, National Institute of Agro-Environmental Sciences, 3-1-1, Kannondai, Tsukuba, Ibaraki 305-8604, Japan

D0429 Response of butterflies to elk and vegetation management in Bandelier National Monument, New Mexico. **Paula KLEINTJES,** Biology, University of Wisconsin-Eau Claire, Eau Claire, WI 54702; Stephen FETTIG, Bandelier National Monument, HCR 1, Route 1, Suite 15, Los Alamos, NM 87544; Lindsay PAWLUK, Dept. of Biology, University of Wisconsin-Eau Claire, Eau Claire, WI 54702

D0430 Integrating pest management and conservation using herbaceous cropland field borders. **Ned GRUENHAGEN,** University of Missouri-Columbia, Dept. of Entomology, Columbia, MO 65211; Marc LINIT, University of Missouri-Columbia, Dept. of Entomology, Columbia, MO 65211-0001; Thomas DAILEY, Missouri Dept. of Conservation, Fish and Wildlife Research Center, 1110 S. College Ave., Columbia, MO 65201

D0431 Impact of cattle grazing and leafy spurge (*Euphorbia esula*) on butterfly communities in native grasslands of southwestern Alberta. **Sherri FOWNES,** 11127 85 Ave., Edmonton, AB T6G 0W7, Canada; Robert BOURCHIER, Agric And Agri-food Canada, Lethbridge Res Cent Box 3000, Lethbridge, AB T1J 4B1, Canada

D0432 Impacts of differing harvest intensities on carabid beetle diversity in the boreal forest. **Timothy Work,** University of Alberta, Dept. of Biological Sciences, CW 405 Biological Sciences Building, Edmonton AB, T6G 2E9, Canada; John SPENCE, University of Alberta, Biological Sciences, CW 405A Biological Sciences Bldg, Edmonton, AB T6G2E9, Canada; Jan VOLNEY, Natural Resources Canada, Canadian Forest Service, No. Forestry Center, 5320-122 St Edmonton, AB, T6H 3S5, Canada; Karen CRYER, University of Alberta, Dept. of Biological Sciences, CW 405 Biological Sciences Building, Edmonton AB, T6G 2E9, Canada; David SHORTHOUSE, University of Alberta, Dept. of Biological Sciences, CW 405 Biological Sciences Building, Edmonton, AB, T6G 2E9, Canada

D0433 The impact of red imported fire ants on cotton pests. **Stuart BLACKWELL,** Auburn University, Dept. of Entomology and Plant Pathology, 301 Funchess Hall, Auburn University, AL 36849; Micky EUBANKS, Auburn University, Dept. of Entomology and Plant Pathology, 301 Funchess Hall, Auburn Univ., AL 36849

D0434 Macroinvertebrate communities in headwater streams: Influence of adjacent land use. **Brandy BERGTHOLD,** University of Missouri-Columbia, Dept. of Entomology, 1-87 Agriculture Building, Columbia, MO 65211; Robert SITES, University of Missouri-Columbia, Dept. of Entomology, Columbia, MO 65211

D0435 Influence of prescribed fire on spider and carabid beetle communities in southwestern Oregon. **Niwa CHRISTINE,** USDA, Forest Service, PNW Research Station, Forestry Sciences Lab, 3200 SW Jefferson Way, Corvallis, OR 97331; Robert PECK, USDA Forest Service, PNW Research Station, Forestry Sciences Lab, 3200 SW Jefferson Way, Corvallis, OR 97331

D0436 Effects of spring and summer burns on ground beetle assemblages in a reconstructed tallgrass prairie. **Kirk LARSEN,** Luther College, Dept. of Biology, 700 College Drive, Decorah, IA 52101-1039; Jessica GIVENS

D0437 Comparison of diversity of ant genera among burned sites in specific habitats of eastern Washington. **Melissa GAVER,** Eastern Washington University, E 14220 Sunnyside, Spokane, WA 99037

D0438 Litter dwelling macroarthropods following fall and spring underburning in ponderosa pine type. **Christine NIWA,** USDA-Forest Service, Pacific Northwest Research Station, Forestry Sciences Lab, 3200 SW Jefferson Way, Corvallis, OR 97331; Robert PECK, USDA-Forest Service, Pacific Northwest Research Station, Forestry Sciences Lab, 3200 SW Jefferson Way, Corvallis, OR 97331; Walter THIES, USDA-Forest Service, Pacific Northwest Research Station, Forestry Sciences Lab, 3200 SW Jefferson Way, Corvallis, OR 97331

D0439 Response of pine-infesting beetles to prescribed burns of differing severities in stands of longleaf pine. **Brian SULLIVAN,** USDA Forest Service, Entomology, USDA Forest Service, Pineville, LA 71360-4046; Mark DALUSKY, University of Georgia, Dept. of Entomology, Athens, GA 30602; Wayne BERISFORD, University of Georgia, Dept. of Entomology, Athens, GA 30602

D0440 Dynamique des commnunautés de collemboles dans des coupes sylvicoles, en forêt boréale. **Madeleine CHAGNON,** Universite du Quebec en Abitibi-Temiscamingue, 60 Basse Bouble, Saint-Jude, QC J0H 1P0, Canada; Suzanne BRAIS, Universite du Quebec en Abitibi Teminscamingue

D0441 Habitat enhancement on abandoned sand mines for two threatened skippers, *Hesperia attalus slossonae* and *H. leonardis*. **Joseph PATT**, Nature Conservancy of New Jersey, 2350 Route 47, Delmont, NJ 08314-8950; Dale SCHWEITZER, The Nature Conservancy, 2350 Route 47, Delmont, NJ 08314

D0442 Oleander aphid, *Aphis nerii*, herbivory causes density-dependent induction of milkweed cardenolides. **John MARTEL,** University of Maine, 7 Brookside Dr., Topsham, ME 04086-5145; Stephen MALCOLM, Western Michigan University, Dept. of Biological Sciences, Kalamazoo, MI 49008

D0443 Comparative life history of two species of *Acrosternum* Fieber (Heteroptera, Pentatomidae) fed on native and cultivated host plants. **Gilberto ALBUQUERQUE,** UENF CCTA Lab Protecao de Plantas, Av Alberto Lamego 2000, Campos, RJ 28015-620, Brazil; Cristiano SCHWERTNER, Universidade Estadual do Norte Fluminense, Av. Alberto Lamego, 2000, Campos dos Goytacazes, Rio de Janeiro 28015-620, Brazil

D0444 The effects of emergence date on the performance in the grasshopper *Sphenarium purpurascens* (Orthoptera: Pyrgomorphidae) in Central Mexico. **Edgar CAMACHO-CASTILLO,** Universidad Nacional Autonóma de México, Departamento de Biología, Facultad de Ciencias, Ciudad Universitaria 04510, Coyoacan, Mexico, D.F., Mexico; Zenon CANO-SANTANA, Cd Universitaria, Lab De Ecologia, 04510 Mexico Df, Mexico; Lesly I. MELENDEZ-RODRIGUEZ, Universidad Nacional Autonóma de México, Ciudad Universitaria 04510, Coyoacan, Mexico, D.F., Mexico 04510

D0445 Size dependent settlement behaviour of the pine engraver: Costs and benefits of joining breeding aggregations. **Kyle HODNETT,** University of Calgary, Dept. of Biological Sciences, Calgary, AB T2N 1N4, Canada; Mary REID, University of Calgary, Biological Sciences, Dept. of Biological Sciences, Calgary, AB T2N 1N4, Canada

D0446 For how many days after being laid are the eggs of the of the glassy-winged sharp shooter *Homalodisca coagulata* successfully parasitized by *Gonatocerus ashmeadi* and *Gonotocerus morrilli* (Hymenoptera: Mymaridae)? **Rolando LOPEZ,** University of Florida, NFREC, Monticello, FL 32344-9302; Russell MIZELL III, University of Florida, AREC, Monticello, FL 32344

D0446A Antioxidant contents of parsnip webworms (*Depressaria pastinacella*) exposed to different ultraviolet light regimes in the montane west. **Mark CARROLL**, University of Illinois at Urbana-Champaign, Department of Entomology, 320 Morrill Hall, 505 S. Goodwin Ave., Urbana, 61801; May BERENBAUM, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801

Display Presentations, Section Ce. Insect Pathology and Microbial Control

D0447 Comparison of the antimicrobial activity of honey produced by *Tetragonisca angustula* (Meliponinae) from different phytogeographic regions of Costa Rica. **Jason DEMERA,** Cornell University, Comstock Hall, Dept. of Entomology, Ithaca, NY 14850

D0448 Biological control of the coffee berry borer, *Hypothenemus hampei*. **FERNANDO VEGA,** USDA, ARS, Insect Biocontrol Laboratory, Bldg. 011A, Room 214, Beltsville, MD 20705; Neelam NARANG, same address; Steven REHNER, same as above; Raymond ST. LEGER, Dept. of Entomology, University of Maryland, College Park, MD 20742

D0449 Apolipophorin III mediates hemocyte activity of *Galleria mellonella* (Lepidoptera). **Robert ZAKARIAN,** McGill University, Entomology, 21111 Lakeshore, St Anne de Bellevue, QC H4K 2G2, Canada

D0450 Symbiotic bacteria shared by whitefly and aphids. **Alistair DARBY,** University of York, Dept. of Biolgy, P.O. Box 373, York, YO10 5YW, Unitied Kingdom; Angela DOUGLAS, University of York, Biology, P.O. Box 373, York, YO10 5YW, United Kingdom

D0451 Persistence of the B.t. CryIA(c) protein from cotton in the soil and in root samples. **Douglas STREETT,** Southern Insect Mgmt Lab, P.O. Box 346, Stoneville, MS 38776

D0452 Operational performance of TM-Biocontrol to suppress populations of Douglas-fir tussock moth, *Orgyia pseudotsugata*. **Michael JOHNSON,** USDA Forest Service, Pacific Northwest Region, Box 3623, Portland, OR 97208; Donald SCOTT, USDA Forest Service, Blue Mountains Pest Management Service Center, Forest Sciences Laboratory, La Grande, OR 97850; Roger SANDQUIST, USDA Forest Service, Pacific Northwest Region, Box 3623, Portland, OR 97208

D0453 Cross-resistance of pink bollworm to *Bacillus thuringiensis* toxins. **Susan MEYER,** University of Arizona, Dept. of Entomology, Tucson, AZ 85721-0036; Bruce TABASHNIK, University of Arizona, Dept. of Entomology, Tucson, AZ 85721-0001; Yong-Biao LIU, University of Arizona, Dept. of Entomology, Tucson, AZ 85721; Ruud DE MAAGD, Business Unit Cell Cybernetics, Plant Research International, P.O. Box 16 6700 AA Wageningen, Netherlands; Timothy DENNEHY, University of Arizona, Entomology, Forbes, Room 401, Tucson, Arizona 85721

D0454 Susceptibility of *Lygus hesperus* Knight to the entomopathogenic bacteria *Bacillus thuringiensis*. **Élisabeth WELLMAN-DESBIENS,** HRDC Agriculture and Agri-Food Canada, Biology, Universite du Quebec à Montreal, 430 Gouin Boulevard, St-Jean-sur-Richelieu, QC J3B 3E6, Canada; Jean-Charles CÔTÉ, HRDC Agriculture and Agri-Food Canada, 430 Gouin Boulevard, St-Jean-sur-Richelieu, QC J3B 3E6, Canada; Daniel CODERRE, Université du Québec à Montréal, Case postale 8888 Succursale Centre-Ville, Montréal, QC H3C 3P8, Canada

D0455 Developmental resistance of gypsy moth larvae to mortal baculovirus infection. **Kelli HOOVER,** Pennsylvania State University, Dept. of Entomology, University Park, PA 16802; Mike GROVE, Penn State, Dept. of Entomology, 501 ASI, University Park, PA 16802; Shengzhong SU, Penn State, Dept. of Entomology, 501 ASI, University Park, PA 16802

D0456 Host cadavers protect entomopathogenic nematodes during freezing. **Edwin LEWIS,** Virginia Polytechnic Institute and State University, Dept. of Entomology, Price Hall, Blacksburg, VA 24061; David SHAPIRO, USDA ARS SAA, 21 Dunbar Rd, Byron, GA 31008-7066

D0457 Soil moisture effects on entomopathogenic nematodes. **Jennifer GRANT,** Cornell University, NYSAE, NYS IPM Program, Geneva, NY 14456; Michael VILLANI, Cornell University, NYSAES, Dept. of Entomology, Geneva, NY 14456

D0458 Ultrastructure and development of a *Mattesia* infection in the rust grain beetle, *Cryptolestes ferrugineus*. **Jeffrey LORD,** Kansas State University, Biol Res Unit-GMPRC, 1515 College Ave, Manhattan, KS 66502-2736; Sheri ANDERSON, Biological Research Unit, GMPRC, 1515 College Ave, Manhattan, KS 66502

D0459 Prevalence of the microsporidium *Thelohania solenopsae* in populations of red imported fire ant. **Arthur RICHTER,** Louisiana State University Agricultural Center, 402 Life Sciences Building, Baton Rouge, LA 70803; James FUXA, Louisiana State University, Dept. of Entomology, Louisiana State University, Baton Rouge, LA 70803-0001

D0460 Insect pathogens for control of the parasitic mite, *Varroa jacobsoni* in colonies of honey bee, *Apis mellifera*. **Lambert Houssou Ble KANGA,** USDA, Agriculture Research Service, Beneficial Insects Res. Unit, 2413 East Highway 83, Weslaco, TX 78596-8344; Rosalind JAMES, USDA Agric Res Service, 2413 E US Highway 83, Weslaco, TX 78596-8344; Carlos GRACIA, USDA, Agricultural Research Service, Beneficial Insects Res. Unit, 2413 East Highway 83, Weslaco, TX 78596-8344

D0461 High temperature effect on sporulation of *Beauveria bassiana* infected Colorado potato beetle larvae. **Roger SHER,** University of Maine, Dept. of Biological Sciences, 307 Deering Hall, Orono, ME 04469-0001; Ellie GRODEN, University of Maine, Dept. of Biological Sciences, 306 Deering Hall, Orono, ME 04469

D0462 Host plant effects on activity of *Beauveria bassiana* and *Paecilomyces fumosoroseus* against two populations of *Bemisia* whiteflies. **Tadeusz POPRAWSKI,** USDA, ARS, Beneficial Insects Research Unit, Weslaco, TX 78596; Walker JONES, USDA ARS SARL BCPRU, 2413 E US Highway 83, Weslaco, TX 78596-8344

D0463 Environmental safety, avian ecotoxicology and the potential for registered use of entomopathogenic fungi from Madagascar for control of grasshoppers and locusts. **Dan JOHNSON,** Agriculture and Agri-Food Canada, Research Centre, P.O. Box 3000, Lethbridge, AB T1J 4B1, Canada; Judit SMITS, Dept. of Veterinary Pathology, Toxicology Centre,, 44 Campus Drive, Saskatoon, SK S7N 3B4, Canada

D0464 Effects of the entomopathogenic fungus *Beauveria bassiana* (Balsamo) Vuillemin on *Choristoneura rosaceana* Harris (Lepidoptara: Tortricidae). **Silvia TODOROVA,** Université du Québec à Montréal, Sciences biologiques, C.P.8888, Succ. Centre-Ville, Montréal, QC H3C 3P8, Canada; Daniel CODERRE, Université du Québec à Montréal, Dept. Sciences biologiques, C.P.8888, Succ. Centre-Ville, Montréal, QC H3B 3P8, Canada; Charles VINCENT, McGill University, Natural Resource Sciences, Horticultural Research and Development Centre, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, QC J3B 3E6, Canada; Jean-Charles CÔTÉ, Horticultural Research and Development Center, Agriculture Agri-Food Canada, 430 Gouin Blvd., Saint-Jean-sur-Richelieu, Québec J3B 3E6, Canada

Display Presentations, Section Cf. Quantitative Ecology

D0465 Using a geographical information system to evaluate the role of defoliating insects on forest declines in the Allegheny National Forest. **Andrew LIEBHOLD,** USDA Forest Service, Northeastern Research Station, 180 Canfield St, Morgantown, WV 26505; Randall MORIN, USDA Forest Service, Northeastern Research Station, 180 Canfield St., Morgantown, WV 26505; Kurt GOTTSCHALK, USDA Forest Service, Northeastern Research Station, 180 Canfield St., Morgantown, WV 26505; Eugene LUZADER, USDA Forest Service, Northeastern Research Station, 180 Canfield St., Morgantown, WV USA; Robert ACCIAVATTI, USDA Forest Service, Northeastern Area, 180 Canfield St., Morgantown, WV 26505; Daniel TWARDUS, USDA Forest Service, Northeastern Area, 180 Canfield St., Morgantown, WV 26505; Robert WHITE, Allegheny National Forest, P.O. Box 847, Warren, PA 16365; William SMITH, USDA Forest Service, Southern Research Station, P.O. Box 12254, Research Triangle Park, NC 27709

D0466 Linking simulation with GIS to model aster leafhopper population dynamics and aster yellows epidemics. **Liyang ZHOU,** Ohio State University, Entomology, 1680 Madison Ave., 1803 Apple Orchard, Wooster, OH 44691; Casey HOY, Ohio Agricultural Research and Development Center, Entomology, Ohio State University, Dept. of Entomology, Wooster, OH 44691; Sally MILLER, Ohio State University, Dept. of Plant Pathology, OARDC, Wooster, OH 44691; Lowell NAULT, Ohio State University, Dept. of Entomology, OARDC, Wooster, OH 44691

D0467 Evaluation of two years of automatic aeration in Montana. **David WEAVER,** Montana State University, Dept. of Entomology, Bozeman, MT 59717-3020; David CROMPTON, OPIsystems Inc., 1216 - 36 Ave. N.E., Calgary, AB T2E 6M8, Canada; Matthew GRIESHOP, Montana State University, Dept. of Entomology, Bozeman, MT 59717-3020; James THRONE, Kansas State University, USDA ARS GMPRC, 1515 College Ave, Manhattan, KS 66502

D0468 Modeling insect population dynamics in grain elevators. **Paul FLINN,** USDA-ARS, Grain Marketing & Prod Res Cent, 1515 College Ave, Manhattan, KS 66502; David HAGSTRUM, USDA-ARS, Grain Marketing & Prod Res Cent, 1515 College Ave, Manhattan, KS 66502; Carl REED, Kansas State University, Dept. of Grain Sci, Shellenberger Hall, Manhattan, KS 66506; Thomas PHILLIPS, Oklahoma State Univ., Dept. of Entomology, Stillwater, OK 74078

D0469 Spatial patterns of forest insect outbreaks. **Mikko PELTONEN,** Academy of Finland, USDA Forest Service, Northeastern Research Station, Morgantown, WV 26505; Andrew LIEBHOLD, USDA Forest Service, Northeastern Research Station, Morgantown, WV 26505-3101; David WILLIAMS, USDA Forest Service, Global Change, 5 Radnor Corp. Center, Radnor, PA 19087-4585; Ottar BJØRNSTAD, National Center for Ecological Analysis and Synthesis, 735 State St., Suite 300, Santa Barbara, CA 93101-3351

D0470 Staphylinid beetles as indicators of disturbance in northern forests. **Gregory POHL,** Natural Resources Canada, Canadian Forest Service, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB T6H 3S5, Canada

D0471 Modeling behavioral resistance to crop rotation. **David ONSTAD,** University of Illinois at Urbana-Champaign, Ctr For Economic Entomology, Illinois Nat Hist Survey, Champaign, IL 61820; Charles GUSE, University of Illinois at Urbana-Champaign, 69 Nat Res Bldg, 607 E Peabody Dr., Champaign, IL 61820; Joseph SPENCER, University of Illinois at Urbana-Champaign, Center For Economic Entomology, 607 E Peabody Dr, Champaign, IL 61820-6917; Eli LEVINE, University of Illinois at Urbana-Champaign, Natural History Survey, 607 E Peabody Dr, Champaign, IL 61820-6917

D0472 Nitidulid diversity of northeastern North America. **Roger WILLIAMS,** Ohio State University, Dept. of Entomology, OARDC, Wooster, OH 44691; Michael ELLIS, Dept. of Entomology, OARDC, 1680 Madison Ave., Wooster, OH 44691; Claire & Gilles-Yvon LEVESQUE, 291 Des Diamants, Fleurimont, J1G 4A1, Canada; Charmine CONDY, University of Toronto, Dept. of Zoology, Toronto, ON M5S 1A1, Canada

D0473 Coexistence of a guild of identical parasitoid species in a spatially explicit competition model. **Daniel SLONE,** University of Florida, Dept. Entomology/Nematology, 970 Natural Area Drive, Gainesville, FL 32611; Jon ALLEN, University of Florida, Entomology and Nematology Dept., College of Agriculture, IFAS 740, University of Florida, Gainesville, FL 32610

D0474 Boreal spiders as indicators of multi-scale forest structure, disturbance, and biodiversity. **David SHORTHOUSE,** University of Alberta, Biological Sciences, Dept. of Biological Sciences, CW-405 Biological Sciences Centre, Edmonton, AB T6G 2E9, Canada

D0475 The effects of varying patch connectivity and number on the predatory functional response of an acarine predator. **Phil LESTER,** Bioagricultural Sciences and Pest Management, Fort Collins, CO 80523-1177; John YEE, Agriculture and Agri-Food Canada, P.O. Box 6000, Vineland Station, ON L0R 1S0, Canada; Sandra YEE, Dept. of Mathematics and Statisitics, Brock University, St. Catharines, ON L2S 3A1, Canada; Rudolf HARMSEN, Biology Dept., Biology, Queen's University at Kingston, Kingston, ON K7L 3N6, Canada

D0476 Resource selection function for the neotropical walking-stick, *Lamponius portoricensis*. **Gerardo CAMILO,** Saint Louis University, Dept. of Biology, St Louis, MO 63103-2010

D0477 Phenology models for first emergence of adult *Apthona nigriscutis* Foudr. **David LEGG,** University of Wyoming, Plant, Soil, & Insect Sciences, P.O. Box 3354, Laramie, WY 82071-3354; Steve VAN VLEET, American Cyanamid, P.O. Box 57, Potlatch, Idaho 83855; David RAGSDALE, University of Minnesota, 1980 Folwell Avenue, Dept. of Entomology, St. Paul, MN 55108; Richard HANSEN, USDA, Montana State Univ., USDA APHIS, Bozeman, MT 59717-0278; John LLOYD, University of Wyoming, Plant, Soil, & Insect Sciences, Laramie, WY 82071-3354

D0478 Genetic analyses of cross-resistance to three organophosphate insecticides in *Drosophila melanogaster*. **Takahiro MIYO,** Doctoral Program in Biological Sciences, University of Tsukuba, Tsukuba, Ibaraki 305-8572, Japan; Yuzuru OGUMA, Institute of Biological Sciences, University of Tsukuba, Tsukuba, Ibaraki 305-8572, Japan

Display Presentations, Section D. Medical and Veterinary Entomology

D0479 Current status of the cattle fever tick eradication program of USDA, APHIS, VS. **J. Mathews POUND,** USDA/ARS KBUSLIRL, 2700 Fredericksburg Rd, Kerrville, TX 78028-9184; John E. GEORGE, USDA/ARS KBUSLIRL, 2700 Fredericksburg Road, Kerrville, TX 78028-9184; Diane M. KAMMLAH, USDA/ARS KBUSLIRL, 2700 Fredericksburg Road, Kerrville, TX 78028-9184; Ed BOWERS, USDA/APHIS/VS CFTEP, 700 Zaragosa St., Federal Bldg 5, Room 527, Laredo, TX 78042; Ronald B. DAVEY, USDA/ARS CFTRL, Rt. 3, Box 1010, Edinburg, Texas 78539

D0480 Attract and kill technology to control ticks. **John MCLAUGHLIN,** IPM Technologies, Inc., 2024 Hunterfield Land, Raleigh, NC 27609; Dariusz CZOKAJLO, IPM Technologies, Inc., 4134 N. Vancouver Ave, #105, Portland, OR 97217; John CARROLL, USDA, ARS, PBEL, BARC East, BLDG 1040, Beltsvill, MD 20705; Philipp KIRSCH, IPM Technologies, Inc., 4134 N. Vancouver Ave, #105, Portland, OR 97217

D0481 *Ixodes scapularis* in central Maryland: Should deer-targeted tick control measures continue through the winter? **John CARROLL,** USDA, ARS, PBEL, BARC, East Bldg. 1040, Beltsville, Maryland 20705

D0482 Does ixodid cement have multiple functions? **Lewis COONS,** The University of Memphis, Integrated Microscopy Center, Life Sciences Bldg., Memphis, TN 38152; Margorie ROTHSCHILD, The University of Memphis, Integrated Microscopy Center, Memphis, TN 38152

D0483 A previously undescribed *Borrelia* similar to *B. miyamotoi* in *Ixodes scapularis* ticks in the northeastern. **Glen SCOLES,** USDA-ARS, Animal Disease Research Unit, Washington State University, 4015 ADBF, Pullman, WA 99164-6630; Michele PAPERO, Yale University School of Medicine, Dept. of Epidemiology and Public Health, LEPH 600, 60 College St., New Haven, CT 06320-8034; Durland FISH, Yale University School of Medicine, Dept. of Epidemiology and Public Health, LEPH 600, 60 College St., New Haven, CT 06520-8034

D0484 Detection and characterization of a human granulocytic ehrlichiosis (HGE)-like agent from *Ixodes scapularis* in Ontario, Canada. **Robbin LINDSAY,** Zoonotic Diseases Section, Health Canada, 1015 Arlington St, Winnipeg, MB R3E 3R2, Canada; Michael DREBOT, Zoonotic Diseases Section, Health Canada, 1015 Arlington Street, Winnipeg, MB R3E 3R2, Canada; Harvey ARTSOB, Zoonotic Diseases section, Health Canada, 1015 Arlington Street, Winnipeg, MB R3E 3R2, Canada; Ian BARKER, Dept. Pathobiology, Ontario Veterinary College, University of Guelph, Guelph, ON N1G 2W1, Canada

D0485 Entomopathogenic fungi for control of *Ixodes* and *Amblyomma* ticks. **Sandra ALLAN,** University of Florida, Pathobiology, P.O. Box 110880, Gainesville, FL 32611-0880; Clinton KAISER, University of Florida, Dept. of Pathobiology, P.O. Box 110880, Gainesville, FL 32611

D0486 Prevalence of tick-borne pathogens in *Amblyomma americanum* (Acari: Ixodidae) at Ft. A. P. Hill, Virginia. **Ellen STROMDAHL,** U.S Army Center for Health Promotion and Preventive Medicine, Entomological Sciences Program, BLDG E-5800, APG, MD 21010-5403; Richard WELLS, U. S. Army Center for Health Promotion and Preventive Medicine, Entomological Sciences Program, APG, MD 21010-5403; Laurie STOVER, U. S. Army Center for Health Promotion and Preventive Medicine, Entomological Sciences Program, APG, MD 21010-5403; Alexandra SPRING, U.S. Army Center for Health Promotion and Preventive Medicine-North, Entomological Sciences Division, Ft. Meade, MD 20755-5225; Melissa MILLER CHPPM NORTH, Bldg 4411, Fort George G Meade, MD 20755-5225; Sandra EVANS, U. S. Army Center for Health Promotion and Preventive Medicine, Entomological Sc, APG, MD 21010-5403; Karl NEIDHARDT, U.S.Army Center for Health Promotion and Preventive Medicine-North, Fort George G Meade, MD 20755-5061; Brian ZEICHNER, U.S. Army Center for Health Promotion and Preventive Medicine, Entomological Sci, APG, MD 21010-5403

D0487 Flow cytometry analysis of immune changes in *Amblyomma americanum*-infested mice. **Kathryn LEDIN,** University of Georgia, Dept. of Entomology, 413 Biological Sciences Bldg., Athens, GA 30602-2603; Swarnjit SINGH, University of Arkansas, Dept. of Animal Science, E140 Animal Science Bldg., Fayetteville, AR 72701; Donald CHAMPAGNE, University of Georgia, Dept. of Entomology, 413 Biological Sciences Bldg., Athens, GA 30602-2603

D0488 Investigations into the immune response of the tick, *Dermacentor variabilis*, to challenge with the bacterium *Escherichia coli*. **Shane CERAUL,** Old Dominion University, Dept. of Biological Sciences, 45th St. & Elkhorn Ave., Norfolk, VA 23529; Daniel SONENSHINE, Old Dominion University, Biological Sciences, Norfolk, VA 23529; Wayne HYNES, Old Dominion University, Biological Sciences, MGB, 202F, Old Dominion University, Norfolk, VA 23529-0266

D0489 Localization of host immunoglobulin within the itch mite, *Sarcoptes scabiei*. **Larry ARLIAN,** Wright State University, Biological Sciences, Dayton, OH 45435; Christine RAPP, Wright State University, 3640 Colonel Glenn Highway, Dayton, OH 45435; Marjorie MORGAN, Wright State University, 3640 Colonel Glenn, Dayton, OH 45435; Jacqueline NEAL, Wright State University, Biological Sciences, 3640 Colonel Glenn Highway, Dayton, OH 45435

D0490 Development and test of the phylogenetic utilities of protein-encoding genes in ticks. **Qingquan FANG,** Georgia Southern University, Biology, P.O. Box 8042, Statesboro, GA 30460; James KEIRANS, Georgia Southern University, Biology, Inst of Arthropodol & Parasitol, P.O. Box 8056, Statesboro, GA 30460-1000; Lance DURDEN, Georgia Southern University, P.O. Box 8056, Statesboro, GA 30460-1000

D0491 Population genetic structure of *Aedes albopictus* in the United States and Brazil. Leonard MUNSTERMANN, Yale University, Peabody Museum of Natural History, 60 College St, New Haven, CT 06510-3210; **Josephine BIRUNGI,** Yale School of Medicine, Dept. of Epidemiology and Public Health, 60 College st. LEPH 706, New Haven, CT 06520

D0492 Geography of diapause in New World *Aedes albopictus*. **L. P. LOUNIBOS,** University of Florida, AREC-Vero B, Florida Medical Entomology Lab, 200 9th St SE, Vero Beach, FL 32962-4699; R. L. ESCHER, University of Florida, Florida Medical Entomology Lab, 200 9th St. SE, Vero Beach, FL 32962; R. Lourenco DE OLIVEIRA, Instituto Oswaldo Cruz, 4365-Manguinhos, Rio de Janeiro, RJ Brazil; M.A.H. BRAKS, University of Florida, Florida Medical Entomology Lab, 200 9th St. SE, Vero Beach, FL 32962

D0493 Persistence of *Aedes aegypti* in urban south Florida following the *Aedes albopictus* invasion. **George O'MEARA,** University of Florida, 200 9th St SE, Vero Beach, FL 32962-4699; Leon LOUNIBOS, University of Florida, AREC-Vero B, Florida Medical Entomology Lab, 200 9th St SE, Vero Beach, FL 32962-4699

D0494 Dispersal of *Aedes albopictus* and *Aedes aegypti* in an endemic area in the State of Rio de Janeiro, Brazil. **Nildimar Alves HONORIO,** Instituto Oswaldo Cruz, 4365-Manguinhos, Rio de Janeiro, RJ Brazil; Wellington DA COSTA SILVA, Fundacao Nacional da Saude, Rua Goitacazes, 134, Nova Iguacu, RJ Brazil; Paulo Jose LEITE, Fundacao Nacional da Saude, Rua Goitacazes, 134, Nova Iguacu, RJ Brazil; Jaylei Monteiro GONCALVES, Instituto Nacional de Controle de Qualidade e Saude, 4365- Manguinhos, Rio de Janeiro, RJ Brazil; Silvana do Couto JACOB, Instituto Nacional de Controle de Qualidade e Saude, 4365-Manguinhos, Rio de Janeiro, RJ Brazil; L. P. LOUNIBOS, University of Florida, AREC-Vero B, Florida Medical Entomology Lab, 200 9th St. SE, Vero Beach, FL 32962-4699; Ricardo Lourenco DE OLIVEIRA, Instituto Oswaldo Cruz, 4365-Manguinhos, Rio de Janeiro, RJ Brazil

D0495 Molecular polymorphism of the Defensin gene in the *Anopheles gambiae* complex. **Frederic SIMARD,** 4770, Buford Hwy, Chamblee, GA 30341; Monica LICHT, Centers for Disease Control and Prevention, 4770 Buford Hwy, MS: F22; Tovi LEHMANN, Div. Paracitic 4770 Buford Hwy, Chamblee, GA 30341

D0496 Effects of gregarine parasites on competitive interactions in *Aedes* mosquitoes. **Brianna W. ALIABADI,** Illinois State University, Dept. of Biological Sciences, J 210, Normal, IL 61790-4120; Steven JULIANO, Illinois State University, Dept. of Biological Sciences, Normal, IL 61790-4120

D0497 Observations on salt marsh mosquitoes in Topsail, North Carolina. **Leopoldo RUEDA,** Public Health Pest Management, DEH, NC DENR, 1309 Glencastle Way, Raleigh, NC 27606-4704; Robert GARDNER, Onslow County Public Works, Mosquito Control Section, 1222 Onslow Pines Road, Jacksonville, NC 28540

D0498 Evaluation of novel mosquito traps for the collection of anopheline malaria vectors in Thailand. **Ratana SITHIPRASASNA,** Dept. of Entomology, US Army Medical Component, AFRIMS, Bangkok, 10400, Thailand; Michael J. PERICH, Dept. of Entomology, WRAIR, Walter Reed Army Medical Center, Silver Spring, MD 20910; Robert A. WIRTZ, Entomology Branch, Division of Parasitic Diseases, CDC, Atlanta, GA 30341-3724; Russell E. COLEMAN, Dept. of Entomology, US Army Medical Component,, AFRIMS, Bangkok, 10400, Thailand

D0499 Drift deposition profile following aerial ULV mosquito adulticide application using two nozzle systems. **He ZHONG,** Florida A & M University, PHEREC, 4000 Frankford Ave, Panama City, FL 32405; James DUKES, Florida A&M University, Public Health Entomology Research Center, 4000 Frankford Ave, Panama City, FL 32405; Michael GREER, Florida A&M University, Public Health Entomoloby Research Center, 4000 Frankford Ave, Panama City, FL 32405; Philip HESTER, Florida A&M University, Public Health Entomology Research Center, 4000 Frankford Ave, Panama City, FL 32405

D0500 Outdoor evaluation of several commercial mosquito repellents. **John SMITH,** Florida A&M University, JAMS Public Health Entomology Research & Education Center, 4000 Frankford Avenue, Panama City, FL 32405-1933; Thomas FLOORE, Florida A&M University, JAMS Public Health Entomology Reseach & Education Center, 4000 Frankford Avenue, Panama City, Florida 32405-1933; John PETERSEN, Florida A&M University, JAMS Public Health Entomology Research & Education Center, 4000 Frankford Avenue, Panama City, Florida 32405-1933; Kenneth SHAFFER, Florida A&M University, JAMS Public Health Entomology Research & Education Center, 4000 Frankford Avenue, Panama City, Florida 32405-1933

D0501 Oral susceptibility of selected large mammal-feeding mosquitoes and biting midges to West Nile virus. **Edward T. SCHMIDTMANN,** USDA-ARS, Arthropod-Borne Animal Disease Research Laboratory, Box 3965, University Station, Laramie, WY 82071Richard A. NUNAMAKER, Arthropod-Borne Animal Diseases Research Laboratory, USDA-ARS, Laramie, WY; William C. WILSON, Arthropod-Borne Animal Diseases Research Laboratory, USDA-ARS, Laramie, WY; Gregg J. HUNT, Arthropod-Borne Animal Diseases Research Laboratory, USDA-ARS, Laramie, WY; Dan L. KLINE, Center for Medical and Veterinary Entomology, USDA-ARS, Gainesville, FL; William L. GROGAN, Salisbury State University, Salisbury, MD

D0502 Spatial analysis of West Nile virus risk in Queens, New York using remote sensing. **John BROWNSTEIN,** Yale Univeristy, 60 College St. Rm 600, New Haven, CT 06510; Durland FISH, Yale University, Yale School of Med, P.O. Box 208034, New Haven, CT 06520-8034

D0503 Biosafety level 3 containment facility: Handling West Nile virus-infected insects safely and securely. **Gregg J. HUNT,** USDA-ARS, P.O. Box 3965, University Station, Laramie, WY 82071-3965

D0504 A geostatistical algorithm for estimating human risk of Lyme disease on a national scale. **Durland FISH,** Yale University, Yale School of Med, P.O. Box 208034, New Haven, CT 06520-8034

D0505 The role of trypanosome infection on tsetse fecundity and survival. **Irene KASUMBA,** Yale University, Epidemiology and Public Health, 60 College St., LEPH 606, New Haven, CT 06520; Serap AKSOY, Yale University, Epidemiology & Public Health, School of Medicine, 333 Cedar Street, 604 LEPH, Yale University, New Haven, CT 06520

D0506 Repellent(s) - ecofriendly tools for integrated tsetse and trypanosomosis management. **RAJINDER SAINI,** ICIPE, Animal Health, P.O. Box 30772, Nairobi, Kenya; Ahmed HASSANALI, ICIPE, P.O. Box 30772, Nairobi, Kenya

D0507 Characterization of human and insect mitochondrial DNA from maggot gut contents. **Jeffrey WELLS,** University of Alabama at Birmingham, 901 15th St S, Birmingham, AL 35205-3406; Francesco INTRONA Jr., Università di Bari, Sezione di Medicina Legale, Policlinico, Bari, 70100, ITALY; Giancarlo DI VELLA, Università di Bari, Sezione di Medicina Legale, Policlinico, Bari, 70125, ITALY; Carlo CAMPOBASSO, Università di Bari, Sezione di Medicina Legale, Policlinico, Bari, 70125, ITALY; Jack HAYES, Retired, University of Texas at San Antonio, School of Public Health, P.O. Box 1472, Boerne, TX 78006; Felix SPERLING, University of California, Berkeley, Environmental Science, Policy & Management, Natural Resources, College of, University of Alberta, Dept. of Biological Science, Edmonton, AB T6G 2E9, Canada

D0508 Modelling and transition from asymptotic equilibrium to bounded oscillations and aperiodic behavior in experimental populations of *Chrysomya megacephala* (Diptera: Calliphoridae). **Izabel SILVA,** UNESP, Bioestatistica, Universidade Estadual Paulista, Depto. Bioestatistica IB UNESP Rubiao Junior, Botucatu, SP 18618-000, Brazil; Paulo MANCERA, Universidade Estadual Paulista, Depto. Bioestatistica IB UNESP Rubiao Junior, Botucatu, SP 18618-000, Brazil; Wesley GODOY, Universidade Estadual Paulista, Dept. De Parasitol Ib, Botucatu, SP 18618-000, Brazil

D0509 Paper as a substitute for gel in screwworm larval diet. **Muhammad CHAUDHURY,** USDA-ARS, P.O. Box 3149, Laredo, TX 78044

D0510 Mating behavior and reproduction of the cat flea (Siphonaptera: Pulicidae) in an artificial feeding system. **Bisong YUE,** Kansas State University, Entomology, Manhattan, KS 66506; Ralph CHARLTON, Kansas State University, Entomology, Manhattan, KS 66506; Michael DRYDEN, Kansas State University, Dept. of Diagnostic Medicine/Pathobiology, Manhattan, KS 66502; Alberto BROCE, Kansas State University, Dept. of Entomology, Manhattan, KS 66506

D0511 Maintaining low relative humidity reduces dust mite and allergen levels in homes. **Diann VYSZENSKI-MOHER,** Wright State University, Biol Sci, Dayton, OH 45435; Jacqueline NEAL, Wright State University, Biological Sciences, 3640 Colonel Glenn Highway, Dayton, OH 45435; Andrea ALEXANDER, Wright State University, 3640 Colonel Glenn Highway, Dayton, OH 45435; Christine RAPP, Wright State University, 3640 Colonel Glenn Highway, Dayton, OH 45435; Marjorie MORGAN, Wright State University, 3640 Colonel Glenn Highway, Dayton, OH 45435; Larry ARLIAN, Wright State University, Biological Sciences, Dayton, OH 45435

D0512 Chronological age-grading of flies by near-infrared spectroscopy (NIRS). **Joel PEREZ-MENDOZA,** Kansas State University, Grain Marketing and Production Res Ctr, 1515 College Ave, Manhattan, KS 66502-2736; James E. BAKER, Grain Marketing Production and Research Center, 1515 College Av., Manhattan, KS 66502; Jeff FABRICK, Kansas State University, 1515 College Av., Manhattan, KS 66502; Feng XIE, Kansas State University, Manhattan, KS 66502; Floyd DOWELL, Grain Marketing Production and Research Center, 1515 College Av., Manhattan, KS 66502; Alberto BROCE, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Robert WIRTZ; James THRONE, Kansas State University, USDA ARS GMPRC, 1515 College Ave, Manhattan, KS 66502

D0513 Larvicidal activity of topically-formulated endectocides against pest flies (Diptera: Muscidae) in dung of treated cattle. **Kevin FLOATE,** Agriculture and Agri-Food Canada, Lethbridge Research Centre, P.O. Box 3000, Lethbridge, AB T1J 4B1, Canada; Roy SPOONER, Agriculture and Agri-Food Canada, Lethbridge Research Centre, P.O. Box 3000, Lethbridge, AB T1J 4B1, Canada; Doug COLWELL, Agriculture and Agri-Food Canada, Lethbridge Research Centre, P.O. Box 3000, Lethbridge, AB T1J 4B1, Canada

D0514 The interaction between climatic factors and bluetongue outbreaks in Israel and the eastern Mediterranean, and the feasibility of establishing bluetongue-free zones. **Yehuda BRAVERMAN,** Kimron Vet Institute, P.O. Box 12, Bet Dagan, 50250, Israel; Fanny CHECHIK, The Meteorological Services, Bet Dagan, 50250, Israel; Bradley MULLENS, University of California, Riverside

D0515 The infection of *Melanoplus sanguinipes* (Fabricius) (Orthoptera: Acrididae) with vesicular stomatitis virus. **Richard NUNAMAKER,** P.O. Box 3965, Laramie, WY 82071-3965; Corey CAMPBELL, USDA, ARS, ABADRL, P.O. Box 3965, Laramie, WY 82071; Geoffrey LETCHWORTH III, USDA, ARS, ABADRL, P.O. Box 3965, Laramie, WY 82071; Scott SCHELL, University of Wyoming, Renewable Resources, Laramie, WY 82071; Jeffrey LOCKWOOD, University of Wyoming, Renewable Resources, Laramie, WY 82071; Suzanne VERNON, Lusk, WY

D0516 Evaluation of the impact of mechanical incorporation of poultry litter into field soil on darkling beetle survival. **Dawn CALIBEO,** North Carolina State University, Dept. of Entomology, 1108 Grinnell's Laboratory, Raleigh, NC 27695-7626; Wes WATSON, North Carolina State University, Dept. of Ent, Raleigh, NC 27695-7626; Mike STRINGHAM, North Carolina State University, Dept. of Entomology, Grinnell's Laboratory, Raleigh, NC 27695

D0517 Insect management by North Carolina poultry producers. Stephen TOTH, North Carolina State University, Dept. of Entomology, Box 7613, Raleigh, NC 27695-7613; **Michael STRINGHAM,** North Carolina State University, Dept. of Entomology, Box 7626, Raleigh, NC 27695-7626; Wes WATSON, North Carolina State University, Dept. of Entomology, Box 7626, Raleigh, NC 27695-7626

D0518 Diptera and Coleoptera associated with bovine dung pats in southeastern Brazil. **Aricio LINHARES,** Campinas State University, Depto De Parasitologia, IB, Caixa Postal 6109, Campinas, SP 13083-970, Brazil; Julio MENDES, Uberlandia Federal University, Dept. of Pathology, Uberlandia, MG Brazil

D0519 Characterization of pyrethroid resistance in Louisiana horn flies, *Haematobia irritans* (L.) (Diptera: Muscidae), using a PCR assay to detect a resistance-associated sodium channel gene mutation. **Diane M. KAMMLAH,** USDA ARS K-B USLIRL, 2700 Fredericksburg Rd, Kerrville, TX 78028-9184; Felix D. GUERRERO, USDA ARS K-B USLIRL, 2700 Fredericksburg Road, Kerrville, TX 78028-9184; Lane D. FOIL, Dept. of Entomology, Louisiana State University Agricultural Center, Baton Rouge, LA 70803

Display Presentations, Section Fb. Urban Entomology

D0520 IPM guidelines for structural pests: A tool for training and implementation. **Craig Hollingsworth,** Dept. of Entomology, University of Massachusetts, Amherst, MA 01003

D0521 'Urban IPM' in a rural setting: Maine's school IPM program. **Kathleen MURRAY,** Maine Dept. of Agriculture, Office of Agricultural, Natural and Rural Resources, 28 State House Station, Augusta, ME 04987

D0522 IPM certification for schools: A new, voluntary program to reduce pest and pesticide risks in schools, and increase consumer awareness and support for IPM. **Thomas GREEN,** 1914 Rowley Ave, Madison, WI 53705; Curtis PETZOLDT, Cornell University, Integrated Pest Management, IPM Building, NYSAES, Geneva, NY 14456

D0523 Development and implementation of integrated pest management for the elm leaf beetle in a large urban area (Sacramento, CA). **Andrew LAWSON,** University of California, Berkeley, 246 30th St, Apt 204, Oakland, CA 94611; Donald DAHLSTEN, University of California, Berkeley, Ctr For Biol Control, Berkeley, CA 94720-3112; David ROWNEY, U.C. Berkeley; Martin FITCH, City of Sacramento, Neighborhood Services; Ray TRETHEWAY, Sacramento Tree Foundation

D0524 The efficacy of urban integrated pest management programs against street tree pests. **Sophie DESSUREAULT,** Vancouver Board of Parks and Recreation, Planning and Operations, 955 Evans Ave., Vancouver, BC V6A 4C8, Canada

D0525 Effect of mulch source on nesting site choice by Argentine ants and odorous house ants. **Heike MEISSNER,** North Carolina State University, Dept. of Entomology, Raleigh, NC 27695-7630; Jules SILVERMAN, North Carolina State University, Dept. of Entomology, 3314 Gardner Hall, Raleigh, NC 27695

D0526 Evaluation of liquid ant baits with different modes of action on Argentine ants. **David OI,** USDA-ARS CMAVE, 1600 SW 23rd Drive, Gainesville, FL 32608

D0527 Response of *Camponotus pennsylvanicus* (DeGeer) to Premise dust bait. **Abdullahi AMEEN,** Purdue University, Center For Urban & Industrial Pest Management, W. Lafayette, IN 47907-1158; Catina RATLIFF, Purdue University, Center for Urban & Industrial Pest Management, W. Lafayette, IN 47907; Gary BENNETT, Purdue University, Entomology, W. Lafayette, IN

D0528 Responses of German cockroach and to ultrasound-emitting devices. **Fangneng HUANG,** Kansas State University, Entomology, Dept. of Grain Science and Industry, Kansas State University, Manhattan, KS 66506; Subramanyam BHADRIRAJU, Kansas State University, Grain Science and Industry, 201 Shellenberger Hall, Manhattan, KS 66506

D0529 Are all German cockroaches equal when it comes to allergen? **Judith MOLLET,** Arthropod Control Sciences, 210 Professional Park Dr. SE, Blacksburg, VA 24060-6680; Lisa VAILES, University of Virginia, Dept. of Medicine, Division of Allergy and Clinical Immunology, Charlottesville, VA 22908; Martin CHAPMAN, University of Virgnia, Dept. of Medicine, Division of Allergy and Clinical Immunology, Charlottesville, VA 22908; Thomas PLATTS-MILLS, University of Virginia, Dept. of Medicine, Division of Allergy and Clinical Immunology, Charlottesville, VA 22908

D0530 Seasonal fluctuations of population density of the Asian cockroach, *Blattella asahinai* Mizukubo (Blattodea: Blattellidae) in Charleston County, South Carolina. **Duangkhae SITTHICHAROENCHAI,** Clemson University, 4 Dove Circle, Clemson, SC 29631; Patricia A. ZUNGOLI, Clemson University, Entomology Dept., Clemson, SC 29634; Eric P. BENSON, Clemson University, 105 Long Hall, Entomology Dept., Clemson, SC 29634; William C. BRIDGES Jr., Clemson University, F148 Poole Ag Center, Experimental Statistics Dept., Clemson, SC 29634

D0531 Field and laboratory efficacy of an imidacloprid bait against smokybrown cockroaches. **Marla TANLEY,** Auburn University, 301 Funchess Hall, Auburn, AL 36849-5413; Arthur APPEL, Auburn University, Entomology, 301 Funchess Hall, Auburn, AL 36849

D0532 Sperm production capacity of secondary reproductive subterranean termite males, *Reticulitermes flavipes*. **Dini MILLER,** Virginia Polytechnic Institute and State University, Dept. of Entomology, 216 Price Hall, Blacksburg, VA 24061

D0533 Sibling species and sociogenetics in European and American termites of the genus *Reticulitermes*. **Jean-Luc CLEMENT,** Centre National de la Recherche Scientifique, Laboratoire de Neurobiologie UPR 9024 LNB, 31 Chemin J. Aiguier, Marseille, Bouches du Rhône 13402 cedex, France; Anne Geneviéve BAGNERES, C.N.R.S., 31 Chemein J. Aiguier, Marseille, 13008, France; Paolo UVA, C.N.R.S., 31 Chemin J.Aiguier, Marseille, 13008, France

D0534 Polygyny in termite colonies: Reproductive co-operation or conflict? **Manfred KAIB,** 95440 Bayreuth, Germany, Bayreuth, 95440, Germany

D0535 Termite responses to polymer barriers. **Philip WEGE,** Zeneca Professional Products, 1800 Concord Pike, Wilmington, DE 19850-5458

D0536 Species identification and foraging activity of subterranean termites in the United Arab Emirates. **Walid KAAKEH,** United Arab Emirates University, Dept. of Plant Production, Al-Ain, 1, United Arab Emirates

D0537 Where to find subterranean termites: Spatial activity patterns of *Reticulitermes flavipes* (Kollar) and *Reticulitermes hageni* Banks. **Richard HOUSEMAN,** University of Missouri, Dept. of Entomology, 1-87 Agriculture Building, Columbia, MO 65211-7140; Roger GOLD, Texas A&M University, Entomology, College Station, TX

D0538 Colony and population genetic structure of the termite species, *Reticulitermes virginicus*. **Joanna CARLSON,** North Carolina State University, Entomology, Campus Box 7613, Raleigh, NC 27695; Edward VARGO, North Carolina State University, Dept. of Entomology, Raleigh, NC 27695-7613

D0539 Spatial distribution of trees infested with subterranean termites in an urban park. **David WOODSON,** 1100 Robert E Lee Blvd, New Orleans, LA 70124-4305; Beverly WILTZ, SRRC ARS USDA, 1100 Robert E. Lee Blvd, P.O. Box 19687, New Orleans, LA 70179-0687

D0540 Evaluation of sealants and adhesives for use with Recruit AG termite bait against eastern subterranean termites. **Ed KING,** Dow AgroSciences, 9330 Zionsville Road, IN 46268; Amy GRIFFIN, Dow AgroSciences, 9330 Zionsville Road, IN 46268

D0541 Impact of Premise 75 on field populations of *Reticulitermes* spp. **Faith OI,** USDA-ARS CMAVE, 1600 SW 23rd Dr., Gainesville, FL 32608-1067; John PAIGE, Bayer Corp, 5690 58th Ave, Vero Beach, FL 32967-6017; Kenneth GLOVER, University of Florida, Environmental Health & Safety, P.O. Box 112200, Gainesville, FL 32611-2200

D0542 Block based termite integrated pest management (BBT-IPM). **Timothy MYLES,** University of Toronto, Faculty of For, Earth Sci Cent, Toronto, ON M5S 3B3, Canada

D0543 New acoustic methods for termite detection. **Richard MANKIN,** University of Florida, USDA ARS, P.O. Box 14565, Gainesville, FL 32604-2565; Weste OSBRINK, USDA-ARS, USDA ARS SRRC, Southern Regional Res Ctr, New Orleans, LA 70124; Faith OI, USDA-ARS CMAVE, USDA ARS CMAVE, 1600 SW 23rd Dr, Gainesville, FL 32608-1067

D0544 The Louisiana area-wide management program for Formosan subterranean termites in trees. **Dennis RING,** Louisiana State University Ag Center, P.O. Box 25100, Baton Rouge, LA 70894-5100; Gregg HENDERSON, Louisiana State University AgCenter, Dept. of Entomology, Baton Rouge, LA 70803

D0545 Monitor and evaluation of field populations of the Formosan subterranean termite in New Orleans public schools. **Huixin FEI,** Dept. of Entomology, Louisiana State University, 402 Life Sciences Building, Baton Rouge, LA 70803; Gregg HENDERSON, Louisiana State University, Dept. of Entomology, Baton Rouge, LA 70803; Jay PAXSON, Dept. of Entomol-

ogy, Louisiana State University, Baton Rouge, LA 70803; Karen NIX, Dept. of Entomology, Louisiana State University, Baton Rouge, LA 70803

D0546 A large area management program for the Formosan subterranean termite in the French Quarter of New Orleans, LA. **Alan MORGAN,** Louisiana State University, P.O. Box 19687, New Orleans, LA 70179; Dennis RING, Louisiana State University, Knapp Hall, P.O. Box 25100, Baton Rouge, LA 70894; Xing Ping HU, Louisiana State University, P.O. Box 25100, Baton Rouge, LA 70894; Lixin MAO, Louisiana State University, 1100 Robert E Lee Blvd, New Orleans, LA 70124-4305; David WOODSON, USDA-ARS, 1100 Robert E. Lee Blvd, New Orleans, LA 70179

D0547 Assessment of Formosan termite invasion in south Mississippi. **Cathy HOLLOMON,** Mississippi State University, Coastal Research and Extension Unit, Agriculture/MAFES/MSU-ES, 2710 Beach Blvd. Ste 1E, Biloxi, MS 39531; Carl HOVERMALE, Mississippi State University, South MS Branch Experiment Station, P.O. Box 193, Poplarville, MS 39470; Janine POWELL, Mississippi State University, USDA ARS BCMRRU, P.O. Box 225, Stoneville, MS 38776-0225; Patricia KNIGHT, Mississippi State University, South MS Branch Experiment Station, Agriculture/MAFES/MSU-ES, P.O. Box 193, Poplarville, MS 39470

D0548 Effects of delayed mating on reproductive performance and longevity of the Indianmeal moth. **Bh SUBRAMANYAM,** Kansas State University, Entomology, Dept. of Grain Science and Industry, Manhattan, KS 66506; Fangneng HUANG, Kansas State University, 201 Shellenberger Hall, Dept. of Grain Science and Industry, Manhattan, KS 66506

D0549 The efficacy of pea fractions to control stored-product insects. **Xingwei HOU,** Agriculture and Agri-Food Canada, 195 Dafoe Rd., Winnipeg, MB R3T 2M9, Canada; Paul FIELDS, Agriculture and Agri-Food Canada, Cereal Research Centre, 195 Dafoe Rd., Winnipeg, MB R3T 2M9, Canada

D0550 The repellant, antifeedant and toxic action of five legume seeds to three stored-product insects. **Seetharaman SURESH,** Tamil Nadu Agricultural University, Departmaent of Entomology, Coimbatore, Tamil Nadu 641 003, India; Paul FIELDS, Agriculture and Agri-Food Canada, Cereal Research Centre, 195 Dafoe Rd., Winnipeg, MB R3T 2M9, Canada; Xingwei HOU, Agriculture and Agri-Food Canada, 195 Dafoe Rd., Winnipeg, MB R3T 2M9, Canada

D0551 Carbonyl sulfide and ethyl formate: A new and a revisited fumigant for stored product protection. **E Jane WRIGHT,** Stored Grain Research Laboratory, CSIRO Entomology, GPO Box 1700, Canberra, ACT 2601, Australia

Wednesday, December 6, 2000

Program Symposia	Location
Natural Products as Insecticides	411AB
The Science of Entomology	408B
Section Symposia	**Location**
A Phylogenetic Perspective	408B
Polydnaviruses	411C
Biological Control	407C
Implementing IPM in Schools	408A
Urban Ant Management	411AB
Formal Conferences	**Location**
Aquatic Insect Studies	408A
Informal Conferences	**Location**
Mtg of Chrysomelid Workers	404AB
BCE/Res & Trends in Ent	406A
Genetics of Aphids	408C
Transgenic Corn/Mon Butterflies	407A
Arthropods of Grasslands	401BC
Protecting & Prom Pollinators	611A
Habitats to Mng Ins. Populations	407C
Contributing to a Career in Ent	409AB
Eradication of *Anoplophora glab*	409AB
Transgenic Insecticidal Crops	407A
ISHSF Annual Bus Mtg	406A
Ten-Minute Papers	**Location**
A2	401BC
Ca 2	408C
Cd 5	611B
F	411C
Business Meetings	**Location**
Governing Bd Mtg ESA	M: Etude Champlain
Governing Bd Orientation ESA	M: Etude Champlain
Section A - Final	406A
Section B - Final	411C
Section C - Final	407C
Section D - Final	404AB
Section E - Final	408A
Section F - Final	411AB
SEQ/ESC/ESA Final Bus Mtg	407B
Women in Ent Bkft	TBA
Social Events	**Location**
Ent Fndn Benefit Din/Dance	M: Caf' Conc'
Past Presidents' Breakfast	M: Viger A
Student Reception	611A
Program Highlights	**Location**
Cody Exhibits	100A (US Pavilion)
Adventures Through a Looking Glass	100A (US Pavilion)

Wednesday, December 6, 2000

Other	Location
Editorial Bd/Pubs Council Mtg	410C
Employment Opp Ctr (EOC)	318
EOC Interview Room	317
Ent Fndn Info & Promo Exhibit	100A (US Pavilion)
Exhibits	100B
Guests' Suite	QE: Matapedia
Insect Photo Salon	404AB
Local Arrangements Cmte	402C
Membership Cmte Mtg	409C
Moderators'/Projectionists' Mtg	401A
Posters	100B
Program Cmte Mtg Final	403C
Registration	Lobby Lvl 1
Sales Booth (ESA)	100A
Slide Preview	401A

Functions listed on this summary page were correct as of August 15, 2000. Section chairs and symposia organizers may have made modifications. Consult Announcements Board near LAC Office (402C, Palais, Level 4).

QE: Queen Elizabeth Hotel
M: Marriott Chateau Champlain
S: Montreal Sheraton
All other rooms (designated by numbers only) are at the Palais des Congres de Montreal

Insect Photo Salon

404A/B

10:00 a.m. - 11:00 a.m.

Program Symposium: Advances in the Use of Natural Products as Insecticides

411 A/B

Organizers and Moderators

Hélène Chiasson, Urgel Delisle et Associés Inc., 426 Chemin des Patriotes, Saint-Charles-sur-Richelieu, Quebec, Canada J0H 2G0; Florence Dunkel, Dept. of Entomology, 324 Leon Johnson Hall, Montana State University, Bozeman, MT 59717; M. Isman, Faculty of Agricultural Sciences, University of British Columbia, 2357 Main Mall, Suite 248, Vancouver, BC Canada V6T 1Z4

8:00 Introduction.

8:05 0820 Caveat emptor: Questionable uses of natural products. **John TRUMBLE,** Dept. of Entomology, University of California, Riverside, CA

8:30 0821 Potential of naphthoquinones as botanical insecticides. **Bhupinder KHAMBAY,** Biological and Ecological Chemistry Dept., I.A.C.R. Rothamsted, Harpenden, Hertfordshire AL5 2JQ, England

8:55 0822 Natural products as synergists. **Bernard J. R. PHILOGENE,** Biology Dept., University of Ottawa, Box 450, Station 'A', Ottawa, ON K1N 6N5, Canada

9:20 0823 Enhancing insecticidal efficacy of plant essential oils. **Helene CHIASSON,** Urgel Delisle et Associes, 426 Chemin des Patriotes, Saint-Charles-sur-Richelieu, QC J0H 2G0, Canada; André BÉLANGER, Horticultural Research and Development Center, Agriculture and Agri-Food Canada, 430 Gouin Blvd., Saint-Jean-sur-Richelieu, QC J3B 3E6, Canada; Charles VINCENT, Horticultural Research and Development Center, Agriculture and Agri-Food Canada, 430 Gouin Blvd., Saint-Jean-sur-Richelieu, QC J3B 3E6, Canada; Noubar BOSTANIAN, Horticultural Research and Development Center, Agriculture and Agri-Food Canada, 430 Gouin Blvd., Saint-Jean-sur-Richelieu, QC J3B 3E6, Canada

9:45 Break

9:55 0824 Botanical insecticides from humid tropical forests. **John T. ARNASON,** Biology Dept., University of Ottawa, Box 450, Station 'A', Ottawa, ON K1N 6N5, Canada

10:20 0825 Annonaceous acetogenins: Chemistry and bioactivities. **Jerry McLAUGHLIN,** Nature's Sunshine Products Inc., 1655 N. Main Street, Spanish Fork, UT 84660

10:45 0826 Strategies for discovery of plant-derived natural products for pest management. **Stephen DUKE,** Natural Products Utilization Research Unit, ARS-USDA, University, MS 38677

11:10 0827 Scaling-up profitable production of native wild plants. **Florence DUNKEL,** Dept. of Entomology, Montana State University, 324 Leon Johnson Hall, Bozeman, MT 59717-0302

11:35 0828 Commercialization of natural insecticides of plant origin. **Murray ISMAN,** Faculty of Agricultural Sciences, University of British Columbia, 2357 Main Mall, Suite 248, Vancouver, BC V6T 1Z4, Canada

Section Symposium A 3: Why is the Insecta so Diverse and Species-Rich? A Phylogenetic Perspective

408 B

Organizer and Moderator

Michael J. Sharkey, Dept. of Entomology, University of Kentucky, Lexington, KY 40546-0091

8:00 Introduction.

8:05 0829 Evolution of life-style changes in the Heteroptera. **Carl SCHAEFER II,** University of Connecticut, Ecology & Evolutionary Biology, Box U-43, University of Connecticut, Storrs, CT 06269-3043

8:30 0830 The characteristics of highly diverse lineages of Hymenoptera: Is there a pattern? **Michael SHARKEY,** University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0091

9:00 0831 Trait mapping and life history radiation in the aculeate Hymenoptera. **James HUNT,** Univ. of Missouri, Dept. Biol., 8001 Nat Bridge, St. Louis, MO 63121

9:25 0832 Phylogeny of Trichoptera and the evolution of case- and net-making behavior. **Roger BLAHNIK,** University of Minnesota, 219 Hodson Hall, 1980 Folwell Ave., St. Paul, MN 55108; Karl KJER, Rutgers Univ., Dept. of Entomology, New Brunswick, NJ 08901; Ralph HOLZENTHAL, University of Minnesota, 1100 Washington Avenue South, Minneapolis, MN 55415-1226

9:50 Break

10:10 0833 The evolution of social behavior in cockroaches: Phylogenetic reconstructions and pitfalls. **Philippe GRANDCOLAS,** Museum national d'Histoire naturelle, 45 Rue Buffon, Paris, 75005, France

10:35 0834 The origin and diversification of life history strategies in brachyceran Diptera. **Brian WIEGMANN,** Box 7613, North Carolina State University, Raleigh, NC 27695-7613; Kenneth COLLINS, North Carolina State Univ., Dept. of Entomology, Raleigh, NC 27695

11:00 0835 Key innovations of the Lepidoptera—night moves, biochemical wizardry, and other stratagems for success. **David WAGNER,** University of Connecticut, Ecology & Evolutionary Biology, College of Liberal Arts and Sciences, U-43\Room 312\75 North Eagleville Road, Storrs, CT 06269-3043

11:25 0836 Do beetles take more ecological opportunities than usual? **Brian FARRELL,** Harvard University, Earth and Planetary Sciences, Arts and Sciences, Museum of Comparative Zoology, Cambridge, MA 02138

Formal Conference: Aquatic Insect Studies: Old Questions, New Tools

408 A

Organizer and Moderator

Donna Giberson, Dept. of Biology, Unviersity of Prince Edward Island, 550 University Ave., Charlottetown, PEI CIA 4P3 Canada

8:00 0837 Introduction and welcome. **Donna GIBERSON,** University of Prince Edward Island, Dept. of Biology, 550 University Ave., Charlottetown, Prince Edward Island C1A 4P3, Canada

8:10 0838 To bite or not to bite: Protein expression in autogenous black flies. **Charles BROCKHOUSE,** University of Prince Edward Island, Dept. of Biology,, 550 University Avenue, Charlottetown, Prince Edward Island C1A 4P3, Canada

8:35 0839 Mayfly biodiversity and conservation in northeastern North America: Surprises, constraints, and strategies. **Steven BURIAN,** Southern Connecticut State University, Dept. of Biology, 501 Crescent St., New Haven, CT 06515

9:00 0840 Huffing and puffing: Polytene chromosomes from Chironomidae and other Nematocera (Diptera) as indicators of environmental stress and instantaneous growth. **Jan CIBOROWSKI,** University of Windsor, Dept. of Biological Sciences, 401 Sunset Avenue, Windsor, ON N9B 3P4, Canada

9:25 0841 Patterns in mayfly emergence in Lake Erie. **Lynda CORKUM,** University of Windsor, Dept. of Biological Sciences, 401 Sunset Avenue, Windsor, ON N9B 3P4, Canada

9:50 0842 Food web patterns along a stream continuum: Insights from stable isotope analysis. **Richard DOUCETT,** University of New Brunswick, Dept. of Biology, Bag Service 45111, Fredericton, NB E3B 6E1, Canada

10:15 0843 Midgehikers on stoneflies: Using stable isotopes to sort out a parasitic relationship. **Donna GIBERSON,** University of Prince Edward Island, Dept. of Biology, 550 University Avenue, Charlottetown, Prince Edward Island C1A 4P3, Canada

10:40 0844 What parasites can contribute to the study of food webs. **David MARCOGLIESE,** Environment Canada, St. Lawrence Centre, 105 McGill St., 7th Floor,, Montreal, QC H2Y 2E7, Canada

11:05 0845 Classification of aquatic Adephaga (Coleoptera): Old tools used in new ways lead to new answers. **Robert ROUGHLEY,** University of Manitoba, Dept. of Entomology, Winnipeg, MB R3T 2N2, Canada

11:30 0846 Mentum deformities and community composition of chironomid larvae (Diptera: Chironomidae) downstream of a New Brunswick metal mine. **Erin SWANSBURG,** University of Windsor, Dept. of Biological Sciences, 401 Sunset Avenue, Windsor, ON N9B 3P4, Canada

Informal Conference: Peace Corps Experiences Contributing to a Career in Entomology

409 A/B

Organizers and Moderators

Adriana Costero, LPD/NIAID/NIH, 4 Center Dr. MSC 0425, Bethesda, MD 20892-0425; John Petersen, Florida A&M University, 4000 Frankford Ave., Panama City, FL 32405

8:00 0847 Peace Corps experiences contributing to a career in entomology. **Adriana COSTERO,** LPD/NIAID/NIH, 4 Center Drive, Bethesda, MD 20892-0425; John PETERSEN, 4000 Frankford Avenue, Panama City, FL 32405

8:05 0848 Peace Corps entomology in Africa - west, east and south. **Gary BERNON,** Building 1398, Otis Air Base, Cape Cod, MA 02542

8:20 0849 Pest management and biological control in Thailand. **Phil LEWIS,** 808 E. Blackland Road, Temple, TX 76502

8:35 0850 From Peace Corps experiences to international IPM programs. **Gary JAHN,** International Rice Research Institute, P.O. Box 3127, Makati City, Philippines

8:50 0851 Beekeeping and teaching in Ghana. **Matthew O'NEAL,** 715A Grand River Ave., Williamston, MI 48893

9:05 Break

9:20 0852 Onchocerciasis in Birkina Faso. **John PETERSEN,** 4000 Frankford Avenue, Panama City, FL 32405

9:35 0853 Apiculture to IPM - entomological lessons from Peace Corps/Guatemala. **John WALLACE,** Millersville University, Dept. of Biological Sciences, Millersville, PA 17551

9:50 0854 The right place at the right time. **Allan SHOWLER,** USDA/ARS, 2413 East Highway 83, Weslaco, TX 78596

Informal Conference: Arthropods of Grasslands: Current Status and Future Directions

401 B/C

Organizer and Moderator

Terry A. Wheeler, Dept. of Natural Resource Sciences, McGill University, Macdonald Campus, Ste-Anne-de-Bellevue, QC, H9X 3V9 Canada

8:00 0855 From pasture to pens: The role of cattle in structuring agroecosystems on the modern prairie. **Kevin FLOATE,** Agriculture and Agri-Food Canada, Lethbridge Research Centre, Lethbridge, AB T1J 4B1, Canada

8:20 0856 The use of fire as a biodiversity and conservation management tool in tallgrass prairies. **Rob ROUGHLEY,** University of Manitoba, Dept. of Entomology, Winnipeg, MB R3T 2N2, Canada; Darren POLLOCK, University of Manitoba, Dept. of Entomology, Winnipeg, MB R3T 2N2, Canada

8:40 0857 Diversity of *Meromyza* (Diptera: Chloropidae) in Canadian native grasslands. **Terry WHEELER,** McGill University, Dept. of Natural Resource Sciences, Macdonald Campus, Ste-Anne-de-Bellevue, QC H9X 3V9, Canada

9:00 0858 Endemism and dispersal of short-horned bugs (Homoptera: Auchenorrhyncha) in Pacific Northwest intermontane grasslands. **Andy HAMILTON,** Agriculture and Agri-Food Canada, ECORC, K. W. Neatby Building, Ottawa, ON K1A 0C6, Canada

Informal Conference: International Society of Hymenopterists: Scientific Forum and Annual Business Meeting

406 A

Organizer and Moderator

James B. Woolley, International Society of Hymenopterists, Dept. of Entomology, Texas A&M University, College Station, TX 77843

8:00 0859 Introductory remarks. **John LASALLE,** Unit of Parasitoid Systematics, CABI Bioscience UK Centre (Ascot), Ascot, Berks. SL5 7PY, UK

8:05 0860 Parasitoids of bark beetles in eastern Canada: Recent insights. **Krista RYALL,** University of Toronto, Earth Science Centre, 33 Willcocks Street, Toronto, ON M5S 3B3, Canada; Sandy SMITH, University of Toronto, 33 Willcocks St., Toronto, ON M5S 3B3, Canada

8:20 0861 Diversity and abundance of Ichneumonidae and Braconidae in various habitats of peninsular Malaysia. **A. B. IDRIS,** School of Environmental and Natural Resource Sciences,

Selnagor, Malaysia; T. HASNAH, School of Enviromental and Natural Resources Sciences, Selnagor, Malaysia; N. Nor ZANEEDARWATI, School of Enviromental and Natural Resources Sciences, Selnagor, Malaysia

8:35 0862 Advances in the knowledge of Ichneumonidae (Hymenoptera) from México. **Enrique RUÍZ-CANCINO,** Research Center, UAMAC-UAT, Cd. Victoria, Tam. 87149, México; Dmitri Rafaelovich KASPARYAN, Research Center, UAMAC-UAT, Cd. Victoria, Tam. México; Juana María CORONADO-BLANCO, Research Center, UAMAC-UAT, Cd. Victoria, Tam. México

8:50 0863 Rooting the Ichneumonoids: Problems and pleasures. **Donald QUICKE,** Dept. of Biology, Imperial College at Silwood Park, Ascot, Berks. SL5 7PY, U.K.; Robert BELSHAW, Dept. of Biology, Imperial College at Silwood Park, Ascot, Berks. SL5 7PY, U.K.

9:05 0864 A Gondwanan origin for aphid parasitoids? **Robert BELSHAW,** Dept. of Biology, Imperial College at Silwood Park, Ascot, Berks. SL5 7PY, U.K.; Mark DOWTON, Australian Flora & Fauna Research Centre, Dept. of Biology, Wollongong, 2522, Australia; Donald QUICKE, Dept. of Biology, Imperial College at Silwood Park, Ascot, Berks. SL5 7PY, U.K.; Andrew AUSTIN, University of Adelaide, Dept. of Applied & Molecular Ecology, Waite Campus, Glen Osmonde, 5064, Australia

9:20 0865 Diversity of *Diplolepis* (Cynipidae) and their galls on the wild roses of Canada. **Joseph SHORTHOUSE,** Laurentian University, Biology, Sciences and Professions, Sudbury, ON P3E 2C6, Canada

9:35 Break

9:45 0866 Systematics of the Monomachidae (Proctotrupoidea). **Luciana MUSETTI,** Ohio State University, Entomology, Museum of Biological Diversity, 1315 Kinnear Rd., Columbus, OH 43212-1192; Norman JOHNSON, Ohio State University, Entomology, Museum of Biological Diversity, 1315 Kinnear Rd., Columbus, OH 43212-1192

10:00 0867 The morphology of molecular data: Case studies from Eulophidae. **John LASALLE,** Unit of Parasitoid Systematics, CABI Bioscience UK Centre (Ascot), Ascot, Berks. SL5 7PY, UK

10:15 0868 Molecular variation across Chalcidoidea - a problem of whole group reconstruction? **John HERATY,** University of California, Riverside, Entomology, 212 Entomology Bldg., Riverside, CA 92521; Christina BABCOCK, University of California, Riverside, Dept. of Entomology, Riverside, CA 92507; Bruce CAMPBELL, Western Regional Research Center, USDA-ARS, Berkeley, CA 94710-1100

10:30 0869 Population genetics of the social wasp *Mischocyttarus collarellus*. **Elizabeth SMITH,** Dept. of Entomology, University of Kansas, Lawrence, KS 66045

10:45 0870 Phylogeny of halictid bees (Halictidae: Apoidea) based on single-copy nuclear gene sequences. **Bryan DANFORTH**, Dept. of Entomology, Comstock Hall, Ithaca, NY 14853

11:00 0871 Annual business meeting, International Society of Hymenopterists. **John LASALLE,** Unit of Parasitoid Systematics, CABI Bioscience UK Centre (Ascot), Ascot, Berks. SL5 7PY, UK; James B. WOOLLEY, Dept. of Entomology, Heep Center, College Station, TX 77843-2475

Informal Conference: Role of Transgenic Insecticidal Crops in Insect Pest Management

407 A

Organizers and Moderators

John Obrycki, Iowa State University, Dept. of Entomology, Ames, IA 50011-3140; John Losey, Cornell University, Dept. of Entomology, Comstock Hall, Ithaca, NY 14853

8:00 0872 Introduction to informal conference. **John OBRYCKI,** Dept. of Entomology, Insectary Bldg., Ames, IA 50011-3140

8:05 0873 Overview of transgenic insecticidal crops: Role in pest management. **Fred GOULD,** North Carolina State University, 840 Method Road Unit 1, Raleigh, NC 27607

8:30 0874 Role of transgenic cotton in the southestern United States. **John RUBERSON,** University of Georgia, Dept. of Entomology, P.O. Box 748, Tifton, GA 31793; Roger LEONARD, Louisana State University, LA

8:55 0875 Transgenic insecticidal cotton cultivars and biological control in Texas. **Julio BERNAL,** Texas A&M University, Biological Control Laboratory, College Station, TX 77843 2475; Jarrad PRASIFKA, Texas A&M University, Biological Control Laboratory, College Station, TX 77843

9:20 Break

9:35 0876 Prescriptive use of transgenic hybrids for corn rootworms: Does the IPM paradigm have a chance ? **Michael GRAY,** University of Illinois at Urbana-Champaign, Dept. of Crop Sciences, Turner Hall, Urbana, IL 61801

10:00 0877 Transgenic field corn for suppression of the European corn borer. **John OBRYCKI,** Iowa State University, Entomology, Ames, IA 50011; John LOSEY, Cornell University, Comstock Hall, Ithaca, NY 14853

10:25 0878 Transgenic sweet corn: Role in insect pest management. **Galen DIVELY,** University of Maryland College Park, Entomology, LFSC, Plant Sciences Building, College Park, MD 20742

10:50 0879 Discussion of informal conference. **John LOSEY,** Cornell University, Comstock Hall, Ithaca, NY 14853

Informal Conference: Manipulating Habitat Complexity to Manage Insect Populations

407 C

Organizers and Moderators

Paula Shrewsbury, Dept. of Entomology, 4112 Plant Science Building, University of Maryland, College Park, MD 20742-4454; Lawrence M. Hanks, Dept. of Entomology, 320 Morrill Hall, University of Illinois at Urbana-Champaign, 505 South Goodwin Ave., Urbana, IL 61801

Introduction.

8:00 0880 Habitat management to enhance biological control in ornamental systems. **Paula SHREWSBURY,** Dept. of Entomology, 4112 Plant Science Building, College Park, Maryland 20742

8:20 0881 Comparison of urban ecosystem parameters on tree resistance and insect outbreaks. **Vera KRISCHIK,** University of Minnesota, Dept. of Entomology, St. Paul, MN 55108

8:40 0882 Landscape factors contributing to insect outbreaks on honeylocust. **Clifford SADOF,** Purdue University, Dept. of Entomology, West Lafayette, IN; Ryan SNYDER, Purdue University, Dept. of Entomology, West Lafayette, IN; Chad SPERRY, Klinger and Associates Consulting Engineers, Quincy, IL

9:00 0883 Habitat management to enhance biological control in annual crop landscapes. **Douglas LANDIS,** Michigan State University, Dept. of Entomology and Center for Integrated Plant Systems, E. Lansing, MI 48824-1311; F. D. MENALLED, Michigan State University, Dept. of Entomology and Center for Integrated Plant Systems, E. Lansing, MI 48824; J. C. LEE, University of Minnesota, Physics, Dept. of Entomology, St. Paul, MN; K. RENNER, Michigan State University, Dept. of Crop and Soil Science, E. Lansing, MI

9:20 Break

9:35 0884 Companion plants, vehicles of biological control for arthropod pests in orchards. **Noubar BOSTANIAN,** Hort Res & Dev Center, Agric & Agri-Food Canada, St. Jean-sur-Richelieu, QC Canada; G. RACETTE, Hortic. Res. Dev. Center, Agriculture & Agri-Food Canada, St. Jean-sur-Richelieu, QC Canada

9:55 0885 Adding floral resources to agro-ecosystems: Managing the consequences for third and fourth trophic levels. **Stephen WRATTEN,** Lincoln University, Division of Plant, Soil, and Ecological Sciences, P.O. Box 84, Canterbury New Zealand; G. M. GURR, The University of Sydney, Pest Management Group, Orange Agricultural College, NSW 2800 Australia; N. A. IRVIN, Lincoln University, Division of Plant, Soil, and Ecological Sciences, P.O. Box 84, Canterbury New Zealand; L. A. BERNDT, Lincoln University, Division of Plant, Soil, and Ecological Sciences, P.O. Box 84, Canterbury New Zealand

10:15 0886 The influence of crown closure on defoliators of young trees. **Daniel QUIRING,** University of New Brunswick, Dept. of Forestry and Environmental Management, Fredericton, NB Canada; D. OSTAFF, Canadian Forest Service, Natural Resources Canada, Fredericton, NB Canada

10:35 0887 Multiple-scale linkages of boreal forest spiders and carabids to habitat structure modifications. **David SHORTHOUSE,** University of Alberta, Dept. of Biological Sciences, Edmonton, AB Canada; J. R. SPENCE, University of Alberta, Dept. of Biological Sciences, Edmonton, Canada; W. J. A. VOLNEY, Canadian Forestry Service, Natural Resources Canada, Dept. of Biological Sciences, University of Alberta, Edmonton, Canada

10:55 0888 Lepidoptera odysseys: How do 'Leps' deal with forest habitat structure? **Louis MORNEAU,** University of Alberta, Dept. of Biological Sciences, Edmonton, Canada; W. J. A. VOLNEY, Dept. of Biological Sciences, University of Alberta, Canadian Forestry Service, Natural Resources Canada, Edmonton, Canada; J. R. SPENCE, University of Alberta, Dept. of Biological Sciences, Edmonton, Canada

11:15 0889 Conservation biological control of herbivores in urban forests. **Lawrence HANKS,** University of Illinois at Urbana-Champaign, Entomology, Dept. of Entomology, Urbana, IL 61801

11:35 Conclusion.

Section: Ca. Biological Control

408 C

Organizers and Moderators

Cliff Sadof, Dept. of Entomology, Purdue University, West Lafayette, IN 47907; Tim Paine, Dept. of Entomology, University of California, Riverside, CA 92521

8:00 0890 Effects of snowdrop lectin (GNA) expressed in transgenic sugar cane on the fitness of *Cotesia flavipes*, a parasitoid of the sugarcane borer (*Diatraea saccharalis* F.). **Mamoudou SETAMOU,** TAMU Agricultural Research and Extension Center, 2415 E. Highway 83, Weslaco, Texas 78596-8399; Julio BERNAL, Dept. of Entomology, Texas A&M University, College Station, TX 77843; Jesusa LEGASPI, Texas A&M University, Entomology, Texas Agricultural Exp. Station, 2415 E US Highway 83, Weslaco, TX 78596-8344; Benjamin LEGASPI Jr., Texas A&M University, Entomology, 2413 East Hwy 83, Weslaco, TX 78596; Eric MIRKOV, Texas A&M Agricultural Research and Extension Center, 2415 E. Highway 83, Weslaco, TX 78596-8399

8:12 0891 Factors affecting secondary exposure risk of genetically modified Bt plants to entomophagous natural enemies. **Jian DUAN,** Monsanto Company, Ecological Tech Ctr/V2C, Saint Louis, MO 63167-0001; Graham HEAD, Monsanto Co., 700 Chesterfield Pkwy., St. Louis, MO 63198; Michael MCKEE, Monsanto Company, Chemistry, College of Sciences and Mathematics, Monsanto Company - Ecological Tech Cntr, St. Louis, MO 63141

8:24 0892 Selective pesticides and parasitoids: Are the new insecticides compatible with biocontrols. **John STARK,** Washington State University, Entomology, Puyallup Research and Extension Center, 7612 Pioneer Way E, Puyallup, WA 98371-4989; Roger VARGAS, USDA ARS USPBARC, P.O. Box 4459, Hilo, HI 96720-0459; John BANKS, University of Washington, Interdisciplinary Arts & Sciences, Interdisciplinary Arts & Sciences, Tacoma, WA 98402

8:36 0893 Assimilation of floral nutrients by a predaceous insect larva. **Joseph M. PATT,** The Nature Conservancy of New Jersey, Delaware Bayshores Office, 2350 Rt. 47, Delmont, NJ 08314; George C. HAMILTON, Rutgers University, Dept. of Entomology, New Brunswick, NJ 08903; Sam C. WAINWRIGHT, U.S. Coast Guard Academy, Dept. of Science, 15 Mohegan Ave., New London, CT 06320; James LASHOMB, Rutgers, The State University of New Jersey, Dept. of Entomology, Blake Hall 92 Lipman Dr., New Brunswick, NJ 08901

8:48 0894 Plant morphology effects on the effectiveness of chrysopid and coccinellid larvae attacking the pea aphid *Acyrthosiphon pisum* L. **Ana LEGRAND,** University of Connecticut, Plant Science, Dept. of Plant Science, 1367 Storrs Rd U-67, Storrs, CT 06269-4067

9:00 0895 The relationship between host plant selection and biological parameters in an omnivorous natural enemy, *Dicyphus hesperus*. **J. A. SANCHEZ,** Agriculture and Agri-Food Canada, Pacific AgriFood Research Centre, P.O. Box 1000, Agassiz, BC V0M 1A0, Canada; D. R. GILLESPIE, Agric & Agric Food Canada, Pacific Agric Res Cent, Agassiz, BC V0M 1A0, Canada; R. R. MCGREGOR, Dept. of Biology, Douglas College, P.O. Box 2503, New Westminster, BC V3L 2B4, Canada

9:12 0896 Spiders from papaya (*Carica papaya* L.) in Puerto Rico. **Alberto PANTOJA,** University of Puerto Rico, Mayaguez Campus, Dept. of Crop Protection, Mayaguez, PR 00681-9030; Harold BASTIDAS, FEDEARROZ, Villavicencio, Meta Colombia

9:24 0897 Demographic comparisons of braconid parasitoids and their fruit fly hosts. **Roger VARGAS,** USDA ARS USPBARC, P.O. Box 4459, Hilo, HI 96720-0459; Mohsen RAMADAN, University of Hawaii, Hawaii Dept. of Agric, Div of Plant Ind Biocontrol, Honolulu, HI 96823-2159; John STARK, Washington State University, Entomology, Puyallup Research and Extension Center, 7612 Pioneer Way E, Puyallup, WA 98371-4989

9:36 0898 Host specificity in the aphid parasitoid *Aphidius colemani*. **Paul ODE,** University of Delaware, USDA ARS BIIR, Newark, DE 19713; Keith R. HOPPER, USDA-Agricultural Research Service, Beneficial Insects Introduction Research Unit, 501 South Chapel Street, Newark, DE 19713

9:48 0899 Population structure and levels of genetic variation in

native and introduced *Aphidius ervi* revealed with microsatellite loci. **Ruth A. HUFBAUER,** Colorado State University, Dept. of Bioagricultural Sciences and Pest Management, Fort Collins, CO 80526-1177; Steven M. BOGDANOWICZ, Cornell University, Dept. of Ecology and Evolutionary Biology, Ithaca, NY 14853

10:00 0900 Using the literature to evaluate host range of parasitoids proposed for biological control introductions. **Elizabeth DE NARDO,** EMBRAPA CNPMA, Ohio State University, Entomology, Quarantine Lab for Biol Control, 1680 Madison Ave, Wooster, OH 44691-4114; Keith HOPPER, University of Delaware, USDA ARS BIIRL, 501 S Chapel St, Newark, DE 19713-3814; Roger WILLIAMS, Ohio State University, Entomology, College of Biological Sciences, Wooster, OH 44691

Section F. Crop Protection Entomology

411 C

Organizers and Moderators

Lee K. French, French Agric Res Inc., RR 2 Box 294, Lamberton, MN 56152-9536; John Reese, Dept. of Entomology, Waters Hall, Kansas State University, Manhattan, KS 66506

8:00 0901 Monitoring population dynamics of red palm weevil, *Rhynchophorus ferrugineus* (Olivier), by means of pheromone traps in Kingdom of Saudi Arabia. **Aziz AJLAN,** Dept. of Plant Protection, College of Agriculture & Food Sciences, Al Hasa, 31982, Saudi Arabia

8:12 0902 Conservation tillage cotton production affects boll weevil. **James SMART,** Agricultural Research Service, 2413 E. Hwy 83, Weslaco, TX 78596; Sasha GREENBERG, USDA, ARS, 2413 E. Hwy 83, Weslaco, TX 78596; J. M. BRADFORD, USDA, ARS, 2413 E. Hwy. 83, Weslaco, TX 78596

8:24 0903 Influence of warm-season living mulches on natural enemies of lepidopterous pests populating a broccoli agroecosystem. **Cerruti HOOKS,** University of Hawaii, 3050 Maile Way Rm 310, Honolulu, HI 96822-2231; Marshall JOHNSON, University of Hawaii, Entomology, College of Tropical Agriculture and Human Resources, Manoa, HI 96822

8:36 0904 Use of physical exclusion cages, kaolin clay, horticultural mineral oil and multi-species pheromone disruption as pest management techniques in organic apple production. **Arthur AGNELLO,** Cornell University, NYS Agricultural Experiment Station, Dept. of Entomology, Geneva, NY 14456; W. REISSIG, Cornell University, NYAES, Dept. of Entomology, Geneva, NY 14456

8:48 0905 Biology and control of cabbage seedpod weevil, *Ceutorhynchus assimilis* Paykull, a new pest of canola in western Canada. **Lloyd DOSDALL,** Alberta Agriculture, Food and Rural Development, Pest Prevention and Management Unit, 7000 - 113 Street, Edmonton, AB T6H 5T6, Canada

9:00 0906 Behavior of eastern subterranean termites (*Reticulitermes flavipes*) and Formosan subterranean termites (*Coptotermes formosanus*) in soil treated with fipronil. **Harry HOWELL Jr.,** Texas A&M University, Dept. of Entomology, TAMU, College Station, TX 77843-2475

9:12 0907 Cottonwood leaf beetle defoliation impact on *Populus* growth. **David COYLE,** USDA Forest Service, Savannah River Institute, New Ellenton, SC 29809; Joel MCMILLIN, USDA Forest Service, Forest Health Protection, Pactola Ranger District, Rapid City, SD 57702; Richard HALL, Iowa State University, Forestry; Elwood HART, Iowa State University, Dept. of Entomology, Iowa State University, Ames, IA 50011

9:24 0908 Baseline insecticide tolerances and cross-resistance in *Choristoneura rosaceana* and *Pandemis pyrusana* (Lepidoptera: Tortricidae). **John DUNLEY,** Washington State University, Dept. of Entomology, Tree Fruit Research and Extension Center, Wenatchee, WA 98801; Jay BRUNNER, Washington State University, Tree Fruit Research Center, Dept. of Entomology, Wenatchee, WA 98801-1230; Michael DOERR, Washington State University, Tree Fruit Research and Extension Center, 1100 N. Western Ave., Wenatchee, WA 98801; Elizabeth BEERS, Washington State University, Dept. of Entomology, Tree Fruit Research & Extension Center, Wenatchee, WA 98801

Program Symposium: The Science of Entomology: A View of the Past and Lessons for the Future

408 B

Organizers and Moderators

George Ball , Dept. of Biological Sciences, University of Alberta, Edmonton, AB T6G 2E9 Canada; Carol Sheppard, Washington State University, Dept. of Entomology, P.O. Box 646382, Pullman, WA 99164-6382

1:00 0909 Opening remarks. **Carol SHEPPARD,** Washington State University, Entomology, P.O. Box 646382, Pullman, WA 99164-6382; George BALL, University of Alberta, Dept. of Biological Sciences, Edmonton, AB T6G 2E9, Canada

1:05 0910 Entomological records: What are they? Why are they important? How can they be saved? **W. Conner SORENSEN,** Amselweg 3, Eschbach, 56357, Germany

1:35 0911 A history of economic entomology in the Canadian prairies in the 20th century. **Paul W. RIEGERT,** University of Regina, Dept. of Biology, 3737 Wascana Parkway, Regina, SK S4S 0A2, Canada

2:05 0912 History of insect ecology; Forbes' legacy. **May BERENBAUM,** University of Illinois at Urbana-Champaign, Ecology, Ethology, and Evolution, Dept. of Entomology, 320 Morrill Hall, Urbana, IL 61801-3795

2:35 Break

2:55 0913 A century of developments in systematic entomology. **Charles D. MICHENER,** University of Kansas, Entomological Museum, Snow Hall, Lawrence, KS 66045

3:25 0914 Insect development in the 20th century: A metamorphosis not a molt! **Bruce HEMING,** University of Alberta, Bioscience, Agriculture, Forestry and Home Economics, 2-24A Earth Sciences, University of Alberta, Edmonton, AB T6G 2J9, Canada

3:55 0915 Insect physiology and medical entomology: A historical perspective. **Marc KLOWDEN,** University of Idaho, Plant, Soil, and Entomological Sciences, AS 233, Moscow, ID 83844-2339

4:25 0916 Aristotle, Linnaeus, Darwin and beyond: Directional markers for the history of entomology. **Mary P. WINSOR,** University of Toronto, Institute for History and Philosophy of Science and Technology, 73 Queen's Park Crescent, Toronto, ON M5S 1K7, Canada

4:50 0917 Open discussion with speakers and audience. **Mary P. WINSOR,** University of Toronto, Institute for History and Philosophy of Science & Technology, 73 Queen's Park Crescent, Toronto, ON M5S 1A1, Canada

Section Symposium B 1: Polydnaviruses: At the Center of Host Parasite Relationships

411 C

Organizers and Moderators

Bruce Webb, Dept. of Entomology, University of Kentucky, S-225 Ag. Sci. Center N., Lexington, KY 40546; Mike Strand, University of Wisconsin, Dept. of Entomology, Madison, WI 53706; Nancy Beckage, Departments of Entomology and Cell Biology/ Neuroscience, University of California, Riverside, CA 92521

1:00 0918 The past, present and future of polydnavirus research. **Don STOLTZ,** Dalhousie University, Dept. of Microbiology and Immunology, Sir Charles Tupper Medical Building, Halifx, NS B3H 4H7, Canada

1:30 0919 Polydnaviruses and the inhibition of insect cellular immune responses. **Michael STRAND,** University of Wisconsin-Madison, Dept. of Entomology, Madison, WI 53706

2:00 0920 Polydnavirus-induced inhibition of host metamorphosis. **Michael CUSSON,** Laurentian Forestry Centre, P.O. Box 3800, Ste Foy, PQ 40546-0091, Canada

2:30 0921 Effects of *Cotesia congregata* polydnavirus on host gene expression. **Nancy BECKAGE,** University of California-Riverside, Departments of Entomology and Cell Biology, Riverside, CA 92521

3:00 0922 The polydnavirus of *Chelonus inanitus*: Formation, genome organization and transcription. **Beatrice LANZREIN,** University of Bern, Entomology, Division of Developmental Biology, Balterstrasse 4, Bern, CH-3012, Switzerland

3:30 0923 Use of cell lines allowed characterization *of Hyposoter didymator* PDV genes expressed in lepidopteran hosts. **Anne-Nathalie VOLKOFF,** INRA - CNRS, Entomology, Agriculture, Laboratoire de Recherches de Pathologie Comparee, Saint-Christol-les Ales, 30 380, France

4:00 0924 Excision of bracovirus sequences from the chromosomes of parasitoid wasp *Cotesia congregata*. **Jean-Michel DREZEN,** University of Tours, Entomology, Institut de Recherche sur la Biologie de l'insecte, Tours, 32 700, France

4:30 0925 Polydnavirus genome projects. **Bruce WEBB,** University of Kentucky, Entomology, S-225 Ag. Sci. Center N., Lexington, KY 40546-0091

Section Symposium C 3: Putting Biological Control into Perspective: Art or Science?

407 C

Organizer and Moderator

Judith Myers, Dept. of Zoology and Agricultural Sciences, University of British Columbia, Vancouver, B.C. Canada V6T 1Z4

1:30 Introduction.

1:35 0926 Biocontrol-risky but necessary. **Matthew B. THOMAS,** Liverhulme Unit for Population Biol. & Biol. Control, CABI & NERC Centre for Population Ecology, Silwood Park, Ascot, Berks S15 7TA, UK

1:55 0927 Natural control and biological control: What does ecology tell us. **Jens ROLAND,** University of Alberta, Biological Sciences, 1145 Saskatchewan St., Edmonton, AB T6G 2R3, Canada

2:15 0928 How many agents is enough? **Judith MYERS,** University of British Columbia, Zoology, Dept. Zoology and Agricultural Sciences, Vancouver, British Columbia V6T 1Z4, Canada

2:35 0929 Risk assessment with microbial control. **Jennifer CORY,** Ecology and Biocontrol Division, NERC CEH-Oxford, Mansfield Rd, Oxford, OX1 3SR, UK

2:55 Break

3:05 0930 Monitoring the impact of biological control: Tracking an outbreak. **Robert BOUCHIER,** AAFC- Lethbridge Research Centre, 5403 1st Ave. South, Lethbridge, AB T1J 4B1, Canada

3:25 0931 Monitoring the impact of biological control: Quantifying the damage. **Rose DECLERKE-FLOATE,** AAFC-Lethbridge Research Centre, 5403 1st Ave. South, Lethbridge, AB T1J 4B1, Canada

3:45 0932 *Trichogramma* as a model system: How safe is it? **Sandra SMITH,** University of Toronto, 33 Willocks St., Faculty of Forestry, Toronto, ON M5S 3B3, Canada

4:05 0933 The role of weed biocontrol in ecological restoration. **Peter MCEVOY,** Oregon State University, Dept. Entomology, Cordley Hall, Corvalis, OK 97331-2907

Section Symposium E 3. Implementing IPM in Schools: Current Status and Future Prospects

408 A

Organizers and Moderators

Paul Guillebeau, Dept. of Entomology, University of Georgia, Athens GA 30602; Karen Vail, Extension Entomology./Plant Pathology, Rm. 218 Plant Sci. Bldg., Univ. of Tennessee, Knoxville, TN 37901; Gretchen Van De Mark, Dept. of Entomology, University of Georgia, Athens, GA 30602

1:00 0934 Introduction. **Lee Paul GUILLEBEAU,** Dept. of Entomology, Athens, GA 30602

1:10 0935 The U.S. EPA role and perspective on IPM in schools. **Sherry GLICK,** U.S. EPA, Biopesticides and Pollution Prevention Division, 7511C, Washington, DC 20460

1:36 0936 The role and perspective of the pest management industry concerning IPM in schools. **Gene HARRINGTON,** 8100 Oak Street, Dunn Loring, VA 22027

2:02 0937 Florida IPM in schools, in the state and on the web. **Clay SCHERER,** Unv. of Florida, P.O. Box 110620, Gainesville, FL 32611-0620

2:28 0938 How a private company is working to implement IPM in schools for Virginia. **Richard KRAMER,** 500 Greenbridge Rd., Brookeville, 20833

2:54 Break

3:09 0939 Pesticide reform legislation in Massachusetts. **Paul BURNS,** The Massachusetts Public Interest Research Group, 29 Temple Place, Boston, MA 02111

3:35 0940 Trials and tribulations from one of the first states to implement IPM in schools. **Michael RAUPP,** University of Maryland College Park, Dept. of Entomology, 4112 Plant Sciences Building, College Park, MD 20742

4:01 0941 The pros and cons of mandating IPM in schools. **Michael MERCHANT,** Texas Agric Ext Serv, 17360 Coit Rd., Dallas, TX 75252-6599

4:27 0942 Implementing IPM in schools through voluntary cooperation and teamwork. **Lee Paul GUILLEBEAU,** Univer-

sity of Georgia, Dept. of Entomology, Athens, GA 30602; Gretchen VAN DE MARK, Dept. of Entomology, UGA, Athens, GA 30602

Section Symposium F 3: Urban Ant Management in the New Millennium

411 A/B

Organizers and Moderators

David H. Oi, USDA-ARS CMAVE, 1600 SW 23rd Drive, Gainesville, FL 32608; John H. Klotz, Dept. Entomology, Univ. of Calif., Riverside, CA 92521; J. Kenneth Grace, Dept. Entomology, Univ. of Hawaii, Honolulu, HI 96822

1:30 0943 Symposium introduction. **David OI,** USDA-ARS CMAVE, 1600 SW 23rd Drive, Gainesville, FL 32608

1:35 0944 Characteristics of ant species that colonize urban habitats. **Jules SILVERMAN,** North Carolina State University, Dept. of Entomology, 3314 Gardner Hall, Raleigh, NC 27695-7613

2:00 0945 Carpenter ant management in the 21st century. **Laurel HANSEN,** Spokane Falls Community College, Biology Dept., 3410 W Fort Wright Drive, Spokane, WA 99224

2:25 0946 Argentine ants: New approaches to managing a persistent pest. **John KLOTZ,** Univ. of California, Riverside, Dept. of Entomology, Riverside, CA 92521

2:50 Break

3:05 0947 White-footed ants: A new pest demands,new management tactics. **Betty FERSTER,** Univ. Florida, Fort Lauderdale REC, 3205 SW College Ave, Fort Lauderdale, FL 33314

3:30 0948 The challenge of pharaoh ant management. **Karen VAIL,** Univ. of Tennessee, Extension Entomology & Plant Pathology, 218 Plant Sci. Bldg., Knoxville, TN 37901-1071

3:55 0949 Pest ants in Canada. **Stephen KELLS,** Abell Pest Control Inc., 246 Attwell Drive, Etobicoke, ON M9W 5B4, Canada

4:20 0950 Symposium conclusion. **John KLOTZ,** Univ. of California, Riverside, Dept. of Entomology, Riverside, CA 92521

Informal Conference: 18th Annual Meeting of Chrysomelid Workers

404 A/B

Organizer and Moderator

David G. Furth, Dept. of Entomology, Smithsonian Institution, Washington, D.C. 20560-0165

12:00-1:30

Informal Conference: Board Certified Entomologists: A Mosaic of Current Research and Trends in Entomology

Fees for this seminar are $30.00 Member and $10.00 Student. You must be registered for the 2000 JAM to participate in this seminar. Please pay at the Registration desk

406 A

Organizer and Moderator

Paul Borth, Dow AgroSciences, 9330 Zionsville Road, Indianapolis, IN 46268

1:00 0951 Introduction. **Paul BORTH,** Dow AgroSciences, 9330 Zionsville Rd., Indianapolis, IN 46268

1:05 0952 Current research and trends in Section A Entomology: Systematics, morphology and evolution. **Jacqueline MILLER,** University of Florida, Natural Sciences, Gainesville, FL 32610

1:25 0953 Current research and trends in Section B Entomology: Physiology, biochemistry, toxicology and molecular biology. **Jeffrey SHAPIRO,** USDA ARS CMAVE 1700 SW 23rd Dr., Gainesville, FL 32608

1:45 0954 Current research and trends in Subsection Ca Entomology: Biological control. **Ernest DELFOSSE,** George Washington Carver Center, 5601 Sunnyside Ave, Beltsville, MD 20705-5139

2:05 0955 Current research and trends in Subsection Cc Entomology: Insect vectors in relation to plant disease. **David RAGSDALE,** Dept. of Entomology, 219 Hodson Hall, Univ. of Minnesota, St. Paul, MN 55108

2:25 0956 Current research and trends in Subsection Cf Entomology: Quantitative ecology. **David ONSTAD,** Illinois Nat Hist Survey, Ctr for Economic Entomology, 607 E. Peabody Dr., Champaign, IL 61820

2:45 0957 Current research and trends in Subsection Cd Entomology: Behavior and ecology. **Paul WESTON,** Cornell University, Entomology, Agriculture and Life Sciences, 150 Insectary, Ithaca, NY 14853

3:05 Break

3:15 0958 Current research and trends in Section D Entomology: Medical and veterinary entomology. **Leonard MUNSTERMANN,** Yale University, Peabody Museum of Natural History, Dept. of Epidemiology & Public Health, New Haven, CT 06520-8034

3:35 0959 Current research and trends in Subsection Eb Entomology: Regulatory. **Walter GOULD,** Subtrop Hort Res Stn, 13601 Old Cutler Rd., Miami, FL 33158

3:55 0960 Current research and trends in Section F Entomology: Crop and urban pest management. **Michael WEISS,** Dept. of Plant, Soil, and Entomological Science, Moscow, ID 83844-2339

4:15 0961 Current research and trends in Subsection Fa Entomology: Host plant resistance. **Gary BREWER,** Dept. of Entomology, Hultz Hall, North Dakota State University, Fargo, ND 58105

4:35 0962 Current research and trends in Subsection Fb Entomology: Urban entomology. **Eric BENSON,** Clemson University, Dept. of Entomology, 105 Long Hall, Clemson, SC 29634-0364

4:55 0963 Closing. **Paul BORTH,** Dow AgroSciences, 9330 Zionsville Rd., Indianapolis, IN 46268

Informal Conference: Effects of Transgenic Corn on Monarch Butterflies: Progress Reports

407 A

Organizers and Moderators

R. L. Hellmich, USDA-ARS, Corn Insects & Crop Genetics Research Unit, Dept. of Entomology, Genetics laboratory c/o Insectary, Iowa State University, Ames, IA 50011; M. K. Sears, Dept. of Environmental Biology, University of Guelph, Guelph, ON N1G 2W1 Canada; G. P. Dively, Dept. of Entomology, University of Maryland, College Park, MD 20742

1:00-5:00

Informal Conference: Genetics of Aphids and Other Parthenogens: Applications to Agriculture, Evolution, and Ecology

408 C

Organizers and Moderators

Kevin A. Shufran, USDA-ARS, 1301 N. Western Rd., Stillwater, OK 74075; David Hawthorne, Dept. of Entomology, University of Maryland, College Park, MD 20742-4454

1:00 0964 Incipient speciation in host races of pea aphids. **Sara VIA,** Dept. of Biology and Dept. of Entomology, University of Maryland, College Park, MD 20742

1:20 0965 Genetic mapping of traits involved in host plant use in pea aphid. **David J. HAWTHORNE,** Dept. of Entomology, 4112 Plant Sciences BLDG, College Park, MD 20742; Sara VIA, Dept. of Biology and Dept. of Entomology, University of Maryland, College Park, MD 20742

1:40 0966 Genetic dissection of feeding specialization in two host races of the pea aphid. **Marina CAILLAUD,** Dept. of Entomology, Cornell University, Ithaca, NY 14853; Sara VIA, Dept. of Biology and Dept. of Entomology, University of Maryland, College Park, MD 20742; David HAWTHORNE, Dept. of Entomology, University of Maryland, College Park, MD 20742

2:00 0967 Molecular analysis of wing polymorphism in aphids. **Srini KAMBHAMPATI,** Dept. of Entomology, Kansas State University, Manhattan, KS 66506

2:20 0968 Ecological genetics of the *Daphnia pulex* group. **Teresa J. CREASE,** Dept. of Zoology, University of Guelph, Guelph, ON N1G 2W1, Canada

2:40 Break

2:55 0969 Molecular phylogenetics of aphids. **Carol D. VON DOHLEN,** Dept. of Biology, UMC 5305, Logan, UT 84322

3:15 0970 Evolution of aphid biotypes. **Kevin SHUFRAN,** USDA ARS, 1301 N Western St., Stillwater, OK 74075

3:35 0971 Tracking aerial movement in aphids: Methods and new initiatives. **Gugs LUSHAI,** School of Biological Sciences, Biodiversity and Ecology Division, Southampton, SO16 7PX, UK; Hugh D. LOXDALE, Entomology and Nematology Dept., IACR-Rothamsted, Harpenden, Herts. AL5 2JQ, UK; Bob FOOTTIT, Agriculture and Agri-Food Canada, Eastern Cereal and Oilseed Research Centre, Ottawa, ON K1A OC6, Canada

3:55 0972 Population structure and phylogeography in U.S. grape phylloxera. **D. A. DOWNIE,** Dept. of Entomology, University of California, Davis, CA 95616; J. GRANETT, Dept. of Entomology, University of California, Davis, CA 95616; J. R. FISHER, Pacific West Area, Horticultural Crops Research Laboratory, Corvallis, OR 97330

4:15 0973 Population genetics of aphid endosymbioses. **Daniel J. FUNK,** Biology Dept., Vanderbilt University, Nashville, TN 37235; Nancy A. MORAN, Dept. of Ecology and Evolutionary Biology, University of Arizona, Tucson, AZ 85721

Informal Conference: Status of Research on and Eradication of *Anoplophora glabripennis*, a.k.a. the Asian Longhorned Beetle

409 A/B

Organizer and Moderator

Scott W. Ludwig, Penn State University, Dept. of Entomology, 501 ASI Building, University Park, PA 16802

Introduction.

1:00 0974 Systematics of Asian longhorned beetles of the genus *Anoplophora* (Coleoptera: Cerambycidae). **Steven LINGAFELTER,** Systematic Entomology Lab., USDA, National Museum of Natural History, Washington, DC 20560-168; E. Richard HOEBEKE, Cornell University, Entomology, Comstock Hall, Room 2144F, Ithaca, NY 14853-0901

1:15 0975 Invasive longhorned beetles: A global perspective. **Lawrence HANKS,** University of Illinois at Urbana-Champaign, Entomology, 505 South Goodwin Ave., 320 Morrill Hall, Urbana, IL 61801

1:30 0976 Development of tools for keeping *Anoplophora* out of North America. **David LANCE,** USDA-APHIS-PPQ, Otis Plant Protection Center, Bldg. 1398, Otis ANGB, MA 02542; Victor MASTRO, USDA-APHIS-PPQ, Otis Plant Protection Center, Bldg. 1398, OTIS ANGB, MA 02542; Baode WANG, USDA APHIS PPQ, Otis Plant Protection Center, Bldg. 1398, OTIS ANGB, MA 02542 5002; A. SAWYER, USDA-APHIS-PPQ, Otis Plant Protection Center, Bldg. 1398, Otis ANGB, MA 02542; W. MCLANE, USDA-APHIS-PPQ, Otis Plant Protection Center, Bldg. 1398, Otis ANGB, MA 02542

1:45 0977 *Anoplophora glabripennis*: Current research interest from a Canadian perspective. **David RODEN,** Canadian Forest Service, P.O. Box 490, Sault Ste. Marie, ON P6B 5C6, Canada

2:00 0978 Greenhouse studies on host range of *Anoplophora glabripennis*. **Scott LUDWIG,** Pennsylvania State University, Entomology, 501 ASI Building, University Park, PA 16802; Silvia MONTERO, Dept. of Horticulture, Tyson Bldg., University Park, PA 16802; Jim SELLMER, Pennsylvania State University, Ornamental Horticulture, 314 Tyson Building, University Park, PA 16802 ; Kelli HOOVER, Dept. of Entomology, Penn State University, University Park, PA 16802

2:15 0979 Entomopathogens from *Anoplophora glabripennis* in North America. **Leah BAUER,** USDA Forest Service, North Central Forest Experiment Station, Dept. of Entomology, E. Lansing, MI 48824

2:30 Break

2:45 0980 Control of *Anoplophora glabripennis* with entomopathogenic fungi. **Thomas DUBOIS,** Cornell University, Dept. of Entomology, Ithaca, NY 14853-090; Ann HAJEK, Cornell University, Entomology, Comstock Hall, Ithaca, NY 14853-0901; Zengzhi LI, Anhui Agricultural University, Dept. of Forestry, Hefei, Anhui 230036, China; Meizhen FAN, Anhui Agricultural University, Dept. of Forestry, Hefei, Anhui 230036, China

3:00 0981 Status of research on the chemical ecology of *Anoplophora glabripennis*. **Jeffrey ALDRICH,** USDA-ARS Insect Chemical Ecol Lab, Beltsville, MD 20705; Aijun ZHANG, USDA-ARS, Insect Chemical Ecol Lab, Beltsville, MD 20705; James OLIVER, USDA-ARS, Insect Chemical Ecol Lab, Beltsville, MD 20705

3:15 0982 Chemical attractants in *Anoplophora glabripennis*. **Stephen TEALE,** SUNY-ESF, 133 Illick Hall, 1 Forestry Drive, Syracuse, NY 13210

3:30 0983 Behavioral analysis of *Anoplophora glabripennis* movement and orientation on various spatial scales. **Michael SMITH,** USDA ARS BIIR, 501 S Chapel St., Newark, DE 19713; Jay BANCROFT, USDA ARS BIIR Lab, Newark, DE 19713-3814; Gouhong LI, Chinese Academy of Forestry, Beijing, China; Ruitong GAO, Chinese Academy of Forestry, Beijing, China

3:45 0984 Individual based simulation of *Anoplophora glabripennis* dispersal. **Jay BANCROFT,** USDA ARS BIIR

Lab, Newark, DE 19713-3814; Michael SMITH, USDA ARS BIIR, 501 S Chapel St., Newark, DE 19713

4:00 0985 Evaluation of trunk- and soil-injection of systemic insecticides for control of *Anoplophora glabripennis*. **Therese POLAND,** USDA Forest Serv NCRS, 1407 S Harrison Rd., RM 220, E. Lansing, MI 48823; Robert HAACK, USDA Forest Serv, 1407 S Harrison Rd., #220 NISBE, E. Lansing, , MI 48823

4:15 0986 Acoustic detection of *Anoplophora glabripennis* larvae and other wood-borers. **Robert HAACK,** USDA Forest Serv, 1407 S Harrison Rd., #220 NISBE, E. Lansing, , MI 48823; Therese POLAND, USDA Forest Serv NCRS, 1407 S Harrison Rd., RM 220, E. Lansing, MI 48823; Cyrus SMITH, Instrumentation Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831

Informal Conference: Protecting and Promoting Our Pollinators

611 A

Organizers and Moderators

Peter G. Kevan, Dept. Environmental Biology, University of Guelph, Guelph, ON N1G 2W1, Canada ; Carlos Vergara, Departamento de Química y Biología, Universidad de las Américas-Puebla, 72820 Santa Catarina Mártir, Pue., Mexico; Gordon Frankie, Dept. of Entomology, University of California, Berkeley, CA 94720

1:00 0987 Pollinators as poster children for the conservation movement. **V. J. TEPEDINO,** USDA-ARS Bee Biology & Systematics Lab., Utah State University, Logan, UT 84322

1:15 0988 Population genetic aspects of pollinator decline. Owen ROBIN, Mount Royal College, Dept. of Chemical, Biological & Environmental Sciences, Calgary, AB T3E 6K6, Canada; **Laurence PACKER,** York University, Dept. of Biology, 4700 Keele Street, North York, ON M3J 1P3, Canada

1:30 0989 Honey bee protection from parasitic mites: Challenges and opportunities. **Medhat NASR,** University of Guelph, Ontario Beekeepers Association, c/o Dept. Environmental Biology, Guelph, ON N1G 2W1, Canada

1:45 0990 Pollinators of wild plants and crops in arid and tropical lands in Mexico. **Carlos H. VERGARA,** Universidad de las Américas, Departamento de Química y Biología, Puebla, Santa Catarina Mártir, Pue 72820, Mexico

2:00 0991 Conservation of indigenous bee foraging habitat within wild blueberry (*Vaccinium angustifolium* Ait.) agro-ecosystems. **Steven K. JOVOREK,** Agriculture and Agri-Food Canada, Kentville, NS B4N 1J5, Canada

2:15 0992 Using communities of pollinators to assess environmental stress: Departures from log normality in diversity and abundance. **Peter G. KEVAN,** University of Guelph, Dept. Environmental Biology, Guelph, ON N1G 2W1, Canada

2:30 Break

2:45 0993 Beyond pollinator decline. **Gordon FRANKIE,** University of California, Dept. of Entomology, Div of Insect Biology-cnr, Berkeley, CA 94720; Gloria DEGRANDI-HOFFMAN, USDA ARS, 2000 E Allen Rd, Tucson, AZ 85719-1520; Joseph WATKINS, University of Arizona, Mathematics, Room 520, Tucson, AZ 85721; Wade LEITNER, University of Arizona, Dept. of Mathematics, Tucson, AZ 85721; Robbin THORP, University of California, Bee Biology, Davis, CA 95616

3:00 0994 Adverse effects on bee nutrition of dietary restriction to pollen from monocultures. **Justin SCHMIDT,** Carl Hayden Bee Res. Ctr. (USDA-ARS), 2000 E. Allen Road, Tucson, AZ 85719

3:15 0995 The toxicity and hazard of insecticides to non-Apis bees. **Daniel MAYER,** Washington State University, 24106 N Bunn Rd, Prosser, WA 99350-8694; C. JOHANSEN, Washington State University, 24106 N Bunn Rd, Prosser, WA 99350; J. D. LUNDEN, Washington State University, 24106 N Bunn Rd, Prosser, WA 99350

3:30 0996 Native bees and agriculture: Does habitat loss and fragmentation diminish pollination services? **C. KREMEN,** Stanford University, Center for Conservation Biology, Stanford, CA 94305; R. BUGG, University of California, Broom's Barn Experimental Station, Sustainable Agriculture Res. & Ed. Program, Davis, CA 96515; R. THORP, University of California, Dept. of Entomology (Bee Biology), Davis, CA 96515

3:45 0997 Evolution of *Hylaeus* in the Hawaiian Islands. **Karl MAGNACCA,** Cornell University, Dept. of Entomology, Ithaca, NY 14853

4:00 0998 Increasing managed bee pollinator options in agricultural ecosystems. **William KEMP,** Utah State University, USDA-ARS, Bee Biol & Sys Lab, Logan, UT 84322-5310; Jordi BOSCH, Utah State University, USDA-ARS, Bee Biology & Systematics Lab., 5310 Old Main Hill, Logan, UT 84322-5310

4:15 0999 Is imidacloprid hazardous to bees that forage on treated weedy turf? **Jerome GELS,** University of Kentucky, Dept. of Entomology, Lexington, KY 40506; Daniel POTTER, University of Kentucky, Dept. of Entomology, Lexington, KY 40546-0001

Section: A. Systematics, Morphology, and Evolution

401 B/C

Organizers and Moderators

Robert Longair, University of Calgary, Faculty of Science, Dept. of Biological Science, Calgary, Alberta, T2N 1N4 Canada; John Pinto, Dept. of Entomology, University of California, Riverside, CA 92521

1:00 1000 Systematics of the strobi-complex of the weevil genus *Pissodes*: The larval perspective. **Daryl WILLIAMS,** Canadian Forest Service, 5320 - 122 St., Edmonton, AB T6H 3S5, Canada; David LANGOR, IUFRO, Seckendorff-Gudent-Weg8, A-1131, Vienna, Austria

1:12 1001 The evolution of phoresy in the Meloidae (Coleoptera). **John PINTO,** Univ. of California, Dept. of Entomology, Riverside, CA 92521-0001; Marco BOLOGNA, University of Rome III, Viale Marconi 446, 00146 Rome, Italy

1:24 1002 Patterns of abundance and diversity of mammal ectoparasites from Indiana. **Marilyn HOUCK,** Texas Tech University, P.O. Box 3131, Texas Tech University, Lubbock, TX 79409-3131; John WHITAKER Jr., Indiana State University, Dept. of Life Sciences, Terre Haute, IN 47809; Richard STRAUSS, Texas Tech University, Lubbock, TX 79409

1:36 1003 Evolutionary genetics of the wood roach, *Cryptocercus*. **Jeffrey CLARK,** Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Shaon HOSSAIN, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Srini KAMBHAMPATI, Kansas State University, Dept. of Entomology, Manhattan, KS 66506

1:48 1004 Morphometric modifications from free to parasitic lifestyle in *Aleochara bilineata* (Gyll.) (Coleoptera: Staphylinidae) larvae. **Lucie ROYER,** Natural Resources Canada-Canadian Forest Service, Atlantic Forestry Centre, P.O. Box 960 University Drive, Corner Brook, Newfoundland A2H 6J3, Canada; Joseph LE LANNIC, Centre de microscopie electronique a balayage, Universite de Rennes 1, Campus de Beaulieu, Rennes Cedex, 35042, France; Jean-Pierre NENON, Laboratoire d'ecobiologie des insectes parasitoides, Universite de Rennes 1, Campus de Beaulieu, Rennes Cedex, 35042, France; Guy BOIVIN, McGill University, Natural Resource Sciences, MacDonald College, Res Stn Agriculture Canada, 430 Boul Gouin, St Jean Sur Richelieu, PQ J3B 3E6, Canada

2:00 1005 Pollination of *Macrozamia* cycads by newly discovered thrips species. **L. TERRY,** University of Utah, Dept. Biology, Salt Lake City, UT 84112; Laurence Mound, Australian National Insect Collection, CSIRO, CSIRO Entomology, GPO Box 1700, Canberra, ACT 2601, Australia

2:12 1006 The systematics of *Lasiopogon* Loew (Diptera: Asilidae). **Robert CANNINGS,** Royal British Columbia Museum, Natural History Section, 675 Belleville Street, Victoria, BC V8W 9W2, Canada

2:24 1007 Cladistic analysis of larval case morphology and implications of host-plant associations for North American *Coleophora* (Lepidoptera: Coleophoridae). **Sibyl BUCHELI,** Ohio State University, Dept. of Entomology, Columbus, OH 43210; Jean-François LANDRY, Agriculture & Agri-Food Canada, Neatby Bldg., C.E.F., Ottawa, ON K1A 0C6, Canada; John WENZEL, The Ohio State University, Museum of Biological Diversity, 1315 Kinnear Rd, Columbus, OH 43212

2:36 1008 Subgenera of *Glossosoma* (Trichoptera: Glossosomatidae). **John MORSE,** Clemson University, Entomology, Forestry & Life Sciences, Clemson, SC 29634-0365; Lianfang YANG, Nanjing Agricultural University, Entomology, Dept. of Plant Protection, Nanjing, Jiangsu 210095, People's Republic of China

2:48 1009 Overview of the systematics of the New World scarab genus *Anomala* and its relatives. **Mary Liz JAMESON,** University of Nebraska, Univ. of Nebraska State Museum, W436 Nebraska Hall, Lincoln, NE 68588

3:00 Break

3:12 1010 Phylogenetic relationships of New World *Cyanopterus* and *Digonogastra* (Hymenoptera: Braconidae). **Jason LEATHERS,** Oregon State University, 2046 Cordley Hall, Corvallis, OR 97331-8530

3:24 1011 Fleas: Famine, folklore, and phylogeny for fun. **Michael WHITING,** Brigham Young University, 574 Widstoe Building, Provo, UT 84602

3:36 1012 *Paruroctonus boreus* (Scorpionida: Vejovidae) in central Washington. Richard ZACK, Washington State University, Dept. of Entomology, Pullman, WA 99164-6382; **Christophor LOONEY,** Washington State University, Dept. of Entomology, Pullman, WA 99164-6382

3:48 1013 Diversity of Agromyzidae (Diptera) in southern Yukon grasslands. **Stephanie BOUCHER,** McGill University, Natural Resource Sciences, Macdonald Campus, Ste-Anne-De-Bellevue, QC H9X 3V9, Canada

4:00 1014 Mining collections: Cerambycidae (Coleoptera) and the importance of regional insect collections. **David MCCORQUODALE,** University College of Cape Breton, Behavioural and Life Sciences, Box 5300, Sydney, NS B1P 6L2, Canada

4:12 1015 Preliminary surveys of terrestrial arthropods in mountain national parks in western Canada. **Robert LONGAIR,** University of Calgary, Faculty of Science, Calgary, AB T2N1N4, Canada; Warren FITCH, University of Calgary, Dept. of Biological Sciences, 2500 University Dr. NW, Calgary, AB T2N 1N4, Canada; Ann DUGUAY, University of Calgary, Dept. of Biological Sciences, 2500 University Dr. NW, Calgary, AB T2N 1N4, Canada

4:24 1016 Hawaiian insect radiations: Opportunists or accidental tourists? **Jason CRYAN,** Brigham Young University, Dept. of Zoology, 574 Widtsoe Bldg, Provo, UT 84602; James LIEBHERR, Cornell University, Entomology, Agriculture and Life Sciences, 2144G Comstock Hall, Ithaca, NY 14853; Michael WHITING, Brigham Young University, Dept. of Zoology, Provo, UT 84602,

4:36 1017 The value of entomological biodiversity - Creation of a new national monument. **Richard ZACK,** Washington State University, Dept. of Entomology, Pullman, WA 99164-6382; Christophor LOONEY, Washington State University, Dept. of Entomology, Pullman, WA 99164-6382; Dennis STRENGE, Pacific Northwest National Laboratory, Dept. of Environmental Technology, P.O. Box 999, Richland, WA 99352

4:48 1018 The evolution of photic organs in the family Lampyridae. **Marc BRANHAM,** Ohio State University, Dept. of Entomology, Columbus, OH 43212

5:00 1019 An information package on Indian fruit flies (Diptera: Tephritidae). **S. K. GUPTA,** Guru Nanak Dev University, Zoology, Amritsar, Punjab 143 005, India; Namanpreet Kaur BHATIA, Guru Nanak Dev University, Amritsar, Punjab 143 005, India; B. K. GUPTA, Guru Nanak Dev University, Computer Centre, Amritsar, Punjab 143005, India

Section: Cd. Behavior and Ecology

611 B

Organizers and Moderators

Claudio Gratton, University of Maryland, Dept. of Entomology, 4144 Plant Sciences Bldg., College Park, MD 20742; Stephen Matter, University of Alberta, Dept. of Biological Sciences, Edmonton, AB, T6G 2E9 Canada

1:00 1020 Interseasonal carryover effects of a fertilization pulse on the food web structure of a salt marsh arthropod community. **Claudio GRATTON,** Univ. of Maryland, Dept. of Entomology, College Park, MD 20742-4454; Robert DENNO, University of Maryland, Dept. of Entomology, College Park, Maryland 20742

1:12 1021 The effect of salt-stressed host plants on phytophagous insect densities along a natural salinity gradient. **Andrea HUBERTY,** University of Maryland College Park, 4112 Plant Sci Bldg, College Park, MD 20742-0001; Robert DENNO, University of Maryland College Park, Entomology, Room 4146, Plant Sciences Building, College Park, MD 20742

1:24 1022 Effects of tidal inundation on the distribution of wolf spiders in an intertidal salt marsh. **Danny LEWIS,** University of Maryland, , Entomology Dept., 4112 Plant Sciences Building, College Park, MD 20742; Robert DENNO, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742

1:36 1023 Interactive effects of habitat complexity and intraguild predation on top-down suppression of a salt marsh herbivore: A field study. **Deborah FINKE,** University of Maryland College Park, Dept. of Entomology, College Park, MD 20742; Robert DENNO, University of Maryland College Park, Entomology, Room 4146, Plant Sciences Building, College Park, MD 20742

1:48 1024 Disturbance underlies spatial variation in the strength of top-down and bottom-up control of herbivorous insect populations. **Robert DENNO,** University of Maryland College Park, Dept. of Entomology, College Park, MD 20742; Claudio

GRATTON, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742-4454; Gail LANGELLOTTO, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742-0001; Andrea HUBERTY, University of Maryland College Park, 4112 Plant Sci Bldg, College Park, MD 20742-0001; Deborah FINKE, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742

2:00 1025 Consequences of competitive ability for species abundance in a guild of phloem-feeding insects. **Scott FERRENBERG,** 4112 Plant Sciences Bldg, University of Maryland, College Park, MD 20742

2:12 1026 Development of a leafroller, *Archips goyerana*, on baldcypress genotypes with varying salt tolerance. **Richard GOYER,** Louisiana State University, Dept. of Entomology, Baton Rouge, LA 70803-0001

2:24 1027 Distribution of red imported fire ants and native ants across a post oak-grassland ecotone in eastern Texas. **Sean O'KEEFE,** Texas A&M University, Dept. of Entomology, College Station, TX 77843; Rebecca MEEGAN, Texas A&M University, Dept. of Forest Science, College Station, TX 77843; Robert COULSON, Texas A&M University, Dept. of Entomology, College Station, TX 77843; S. Bradleigh VINSON, Texas A&M University, Dept. of Entomology, College Station, TX 77843

2:36 Break

2:48 1028 Influence of gall wasps (Hymenoptera: Cynipidae: *Antistrophus*) on fitness of native prairie forbs (Asteraceae: *Silphium*): Implications for population control. **John TOOKER,** University of Illinois at Urbana-Champaign, 320 Morrill Hall, Urbana, IL 61801; Lawrence HANKS, University of Illinois at Urbana-Champaign, Dept. of Entomology, Urbana, IL 61801

3:00 1029 Potato leafhopper disruption of alfalfa physiology: Effect of host developmental stage. **William LAMP,** University of Maryland College Park, Dept. of Entomology, College Park, MD 20742-0001; Amy MILLER, University of Maryland, Dept. of Entomology, College Park, MD 20742; Jeffrey VOLENEC, Purdue University, Dept. of Agronomy, West Lafayette, IN 47907-1150

3:12 1030 Oviposition deterrence as a resistance mechanism against wheat midge in spring wheat. **Robert J. LAMB,** Agriculture & Agri Food Canada, Cereal Research Centre, Winnipeg, MB R3T 2M9, Canada; Ian L. WISE, Agriculture & Agri-Food Canada, Cereal Research Centre, 195 Dafoe Road, Winnipeg, MB R3T 2M9, Canada; Marjorie A. H. SMITH, Agriculture & Agri-Food Canada, Cereal Research Centre, 195 Dafoe Road, Winnipeg, MB R3T 2M9, Canada

3:24 1031 The impact of plant mating system on plant-herbivore interactions. **David CARR,** University of Virginia, Blandy Experimental Farm, 400 Blandy Farm Lane, Boyce, VA 22620; Micky EUBANKS, Auburn University, Dept. of Entomology and Plant Pathology, 301 Funchess Hall, Auburn University, AL 36849

3:36 1032 The effects of nectaring flowers and mating opportunities on the between patch dispersal of *Parnassius smintheus*. **Stephen MATTER,** Dept. of Biological Sciences, Edmonton, AB T6G 2E9, Canada; Jens ROLAND, University of Alberta, Dept. of Biological Sciences, Edmonton, AB T6G 2E9, Canada

3:48 1033 Adaptation to a novel host alters both host preference and host discrimination in a seed beetle. **Frank MESSINA,** Utah State University, Dept. of Biol, Logan, UT 84322-5305

4:00 1034 Effects of different host-plants on beet armyworm, *Spodoptera exigua* (Hubner) development and reproductive potential. **Sasha GREENBERG,** SARC-ARS-USDA, Integrated Farming & Natural Resources Research Unit, 2413 East Highway 83, Weslaco, TX 78596; Thomas SAPPINGTON, IFNRRU, SARC, ARS-USDA, SARC, 2413 E. Hwy 83, Bld.201, Weslaco, TX 78596

4:12 1035 Inventory of house dust mites in rural and urban residential areas of Panama. Roberto MIRANDA, Laboratorio de Artropodos Venenosos, Museo de Invertebrados G.B.Fairchild,, Estafeta Universitaria, Universidad de Panama, Panama; Alejandro ALMANZA, Laboratorio de Artropodos Venenosos,, Museo de Invertebrados G. B. Fairchild,, Estafeta Universitaria,, Panama, Panama Panama; **Diomedes QUINTERO,** Laboratorio de Artropodos Venenosos,, Museo de Invertebrados G.B.Fairchild, Panama

4:24 1036 Some biological aspects on the potato tuberworm *Phthorimaea operculella* (Zell.) under uncontrolled laboratory conditions. **Gamal KARAMAN,** Minia University, Plant Protection, Plant Protection Res. Institute, 7 Nady El-Sayied St., Minia, Minia Giza 12311, Egypt

Display Presentations, Section B. Physiology, Biochemistry, Toxicology, and Molecular Biology

100 B

D0552 Insect physiology online. **Thomas MILLER,** University of California, Riverside, Entomology, 17 Entomology Bldg., Riverside, CA 92521; P. Elaine ROBERTS, Colorado State University, C 120 Plant Sciences Building, Fort Collins, CO 80523

D0553 Carbohydrate self-selection in the cockroach: Taste versus metabolic feedback. **Robert NOHAVANDI**, California State University, Northridge, Dept. of Biology, 18111 Nordhoff St., Northridge, CA 91330; Paige FUJIMOTO, California State University, Northridge, Dept. of Biology, 18111 Nordhoff St., Northridge, CA 91330; Elbert BASA, California State University, Northridge, Dept. of Biology, 18111 Nordhoff St., Northridge, CA 91330; Randy COHEN, California State University, Northridge, Dept. of Biology, 18111 Nordhoff St., Northridge, California 91330-8303

D0554 Mating, feeding, and interacting: further analysis of their effects on German cockroach reproduction. **Ken BERGER,** Pennsylvania State University, Dept. of Entomology, 520 ASI Building, University Park, PA 16802; Heather BUTELA, Pennsylvania State University, Dept. of Entomology, 520 ASI Building, University Park, PA 16802; Joe WHETSTONE, Pennsylvania State University, Dept. of Entomology, 520 ASI Building, University Park, PA 16802; Glenn HOLBROOK, Pennsylvania State University, Dept. of Entomology, 512 ASI Building, University Park, PA 16802

D0555 Analysis of drag on silkworm moth (*Bombyx mori*) antennae using dimensionless numbers. **Jun ZHANG,** University of Kansas, Dept. of Entomology, Lawrence, KS 66045; Catherine LOUDON, University of Kansas, Dept. of Entomology, Lawrence, KS 66045-0001

D0556 Attraction of male Mediterranean fruit fly to stereoslectively synthesized enatiomers of ceralure B1. **Eric JANG,** Dept. of Agriculture, P.O. Box 4459, Hilo, HI 96720; Andre RAW, ICEL, BARC-West, Bld. 007 Rm 324, Beltsville, MD 20705

D0557 Qualitative studies of pterins in the head capsule of *Chaetorellia succinea* and *C. australis*. **Nada TOMIC-CARRUTHERS,** USDA-APHIS-PPQ, 800 Buchanen, Albany, CA 94710

D0558 Identification of two new brain-gut peptides from the mosquito *Aedes aegypti*. **Dawn STANEK,** University of Georgia, Dept. of Entomology, Athens, GA 30602; Mark BROWN, University of Georgia, Dept. of Entomology, Athens, GA 30602; Jan POHL, Emory University, Winship Cancer Center, School of Medicine, Room B4336\Clinic Building B, 1365 Clifton Road, Emory University, Atlanta, GA 30322

D0559 The critical feeding period for last instar and pharate adult greenhouse (*Trialeurodes vaporariorum*) and silverleaf (*Bemisia argentifolii*) whiteflies. **Dale GELMAN,** Insect Biocontrol Lab USDA ARS, 10300 Baltimore Ave, Beltsville, MD 20705-2325; Jing HU, Insect Biocontrol Lab., USDA, ARS, Bldg. 306, Room 322, BARC East, Beltsville, MD 20705

D0560 Nutritional studies of Mediterranean fruit fly. **Chiou Ling CHANG,** USDA-ARS, 2727 Woodlawn Dr, Honolulu, HI 96822-1842

D0561 Regulation of diuresis in adult *Helicoverpa zea* by glycogen synthase/trehalose synthase activity. **David BUSHMAN,** Mt. St. Mary's College, Dept. of Science, Emmitsburg, MD 21727-7799; Juliet EINSMANN, Mt. St. Mary's College; Sarah MCGINLEY, Mt. St. Mary's College

D0562 Importance of respiratory water loss in alate red imported fire ants. **Arthur APPEL,** Auburn University, Entomology, 301 Funchess Hall, Auburn, AL 36849

D0563 Evolution of water balance in the genus *Drosophila*. **Allen GIBBS,** University of Arizona, Center for Insect Science, 1041 E. Lowell St., Tucson, AZ 85721; Luciano MATZKIN, SUNY-Stony Brook, Dept. of Ecology and Evolution, Stony Brook, NY 11794

D0564 Acid and alkaline phosphatase activities in the digestive and excretory systems of the Colorado potato beelte. **Shuxia YI,** USDA-ARS, Biosciences Research Lab, 1605 Albrecht Blvd, Fargo, ND 58105-5674; Terrance ADAMS, P.O. Box 5674 State University Station, 1605 Albrecht Blvd., Fargo, ND 58105-5674

D0565 Role of midgut chymotrypsins in the adaptation of *A. ipsilon* and *H. zea* to dietary soybean trypsin inhibitors. **Sudeshna MAZUMDAR-LEIGHTON,** Cornell University, NYSAES, Geneva, NY 14456; Roxanne BROADWAY, Cornell University, Entomology, NYSAES, Geneva, NY 14456

D0566 Qualitative and quantitative protease activities in midgut and salivary glands of *Lygus hesperus*. **Renee WAGNER,** Dept. of Agriculture, Agricultural Research Service, Biological Control of Insects Research Laboratory, Columbia, MO 65203-3535; Maureen WRIGHT-OSMENT, USDA, ARS, BCIRL, 1503 S Providence Rd, Columbia, MO 65203; Joseph HUESING, Monsanto Co., 700 Chesterfield Parkway N, Chesterfield, MO 63198; Richard THOMA, Monsanto Co., 700 Chesterfield Parkway, N, Chesterfield, MO 63198; Oliver ILAGAN, Monsanto Co., 700 Chesterfield Parkway, N, Chesterfield, MO 63198; Thomas COUDRON, USDA, ARS, BCIRL, 1503 S Providence Rd, Columbia, MO 65203; Elaine BACKUS, Dept. of Entomology, I-87 Ag Bldg, University of Missouri, Columbia, MO 65211

D0567 Disruption of glycogen synthase gene in *Steinernema carpocapsae* by RNA interference (RNAi): Role in nematode desiccation. **Christopher BREY,** Rutgers, The State University of New Jersey, Dept. of Entomology, 93 Lipman Dr., New Brunswick, NJ 08901; Randy GAUGLER, Rutgers, The State University of New Jersey, Entomology, P.O. Box 231, New Brunswick, NJ 08903-0231

D0568 MATING and JH enhance sexual signaling and mating in male Caribbean fruit flies. **Peter TEAL,** University of Florida, Ctr For Med Agric Vet Entomology, 1700 Sw 23 Dr, Gainesville, FL 32604

D0569 Role of juvenile hormone III in reproductive biology of the Formosan subterranean termite, *Coptotermes formosanus*. Ashok RAINA, USDA, ARS, SRRC, FSTRU, 1100 Robert E Lee Blvd, New Orleans, LA 70124-4305; **Yong PARK,** USDA-ARS-SRRC, Entomology, 1100 Robert E Lee Blvd, New Orleans, LA 70124

D0570 Mushroom bodies transmitting mating signals to regulate juvenile hormone synthesis in the cockroach *Diploptera punctata*. **Yee-Chien LIU,** Dept. of Life Science, National Tsing Hua University, Hsinchu, 300, Taiwan; Shu-Hsia HU, Dept. of Life Science, National Tsing Hua University, Hsinchu, Taiwan; Shu-Ling CHIU, Dept. of Life Science, National Tsing Hua University, Hsinchu, Taiwan; Chih-Ying HUANG, Dept. of Life Science, National Tsing Hua University, Hsinchu, Taiwan; Ann-Shyn CHIANG, Dept. of Life Science, National Tsing Hua University, Hsinchu, Taiwan

D0571 Effects of ecdysone agonists on the expression of ecdysone receptor and ultraspiracle protein in lepidopteran and non-lepidopteran insects. **Chris LUPPENS,** 1-87 Agriculture Building, Columbia, MO 65211; Qisheng SONG, University of Missouri-Columbia, Dept. of Entomology, University of Missouri, Columbia, MO 65211

D0572 Developmental changes of allatostatinergic and leukokininergic neurons in the brain of the cockroach, *Diploptera punctata*. **Shu-Ling CHIU,** National Tsing Hua University, Dept. of Life Science, Hsinchu, Taiwan; Yee-Chien LIU, Dept. of Life Science, National Tsing Hua University, Hsinchu, 300, Taiwan; Shu-Hsia HU, National Tsing Hua University, Dept. of Life Science, Hsinchu, Taiwan; Chih-Ying HUANG, National Tsing Hua University, Dept. of Life Science, Hsinchu, Taiwan; Ann-Shyn CHIANG, National Tsing Hua University, Dept. of Life Science, Hsinchu, Taiwan

D0573 Functional NMDA-subtype glutamate receptors mediate juvenile hormone biosynthesis of corpus allatum cells in the cockroach, *Diploptera punctata*. **Hsin-Ping LIU,** Dept. of Life Science, National Tsing Hua University, Hsinchu, 300, Taiwan; Maciej A PSZCZOLKOWSKI; Shu-Jane LIN; Ann-Shyn CHIANG, Dept. of Life Science, National Tsing Hua University, Dept. of Life Science, Hsinchu, Taiwan

D0574 NMDA receptors in *Drosophila melanogaster*. **Wei-Yong LIN,** Dept. of Life Science, National Tsing Hua University, Hsinchu, 300, Taiwan; Hsin-Ping LIU, Dept. of Life Science, National Tsing Hua University, Hsinchu, Taiwan; Tsai-Feng FU, Dept. of Life Science, National Tsing Hua University, Hsinchu, Taiwan; Ann-Shyn CHIANG, Dept. of Life Science, National Tsing Hua University, Hsinchu, Taiwan

D0575 Identification of a serotonin receptor cDNA from *Aedes aegypti* female excretory and respiratory systems. **Patricia PIETRANTONIO,** Texas A&M University, Heep Center MS 2475, Dept. of Entomology, College Station, TX 77843-2475; Christopher JAGGE, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475

D0576 Cyclic GMP controls cell size in corpora allata of the cockroach, *Diploptera punctata*. **Ling-Wen CHANG,** Building II, Dept. of Life Science, National Tsing Hua University, Hsinchu, 300, Taiwan, Republic of China; Ann-Shyn CHIANG, Building II, Dept. of Life Science, National Tsing Hua University, Hsinchu, 300, Taiwan, Republic of China

D0577 A fat body-specific chitinase gene characterized from tsetse flies (Diptera: Glossindiae). **Jian YAN,** Yale University, Epidemiology and Public Health, Medical School, 60 College St, LEPH 606, New Haven, CT 06520; Serap AKSOY, Yale University, Epidemiology & Public Health, School of Medicine, 333 Cedar Street, 604 LEPH, Yale University, New Haven, CT 06520

D0578 Cloning and characterization of a ß-1,3-glucan recognition protein from the pyralid moth, *Plodia interpunctella*.

Jeffrey FABRICK, Dept. of Biochemistry, Kansas State University, Manhattan, KS 66506; James BAKER, USDA-ARS-GMPRC, 1515 College Ave, Manhattan, KS 66502; Michael KANOST, Dept. of Biochemistry, Kansas State University, Manhattan, KS 66506

D0579 Molecular characterization of immune related genes of tsetse fly, *Glossina morsitans morsitans*. **Zhengrong HAO,** Dept. of Epidemiology and Public Health, Yale University School of Medicine, 60 College Street, LEPH 606, New Haven, CT 06520; Serap AKSOY, Yale University, Epidemiology & Public Health, School of Medicine, 333 Cedar Street, 604 LEPH, New Haven, CT 06520

D0580 The immune response of insects upon administered insult by *Escherichia coli*. **Lesley CROWLEY,** Texas Tech University, Biology, 2717 3rd St. Apt #312, Lubbock, TX 79415

D0581 Genetic changes within an aphid clone: Homogenization of rDNA intergenic spacers after insecticide selection. **Kevin SHUFRAN,** USDA ARS, 1301 N Western Rd, Stillwater, OK 74075-2714; Z B MAYO, University of Nebraska, P.O. Box 830816, Lincoln, NE 68583-0816; Teresa CREASE, University of Guelph, Zoology, Guelph, ON, Canada

D0582 Production of monoclonal antibodies to differentiate two species of the *Cotesia flavipes* complex. **Tracey WEBB,** Kansas State University, Dept. Entomology, Manhattan, KS 66506; Sanjay KAPIL, Kansas State University, Dept. Diagnostic Medicine, Manhattan, KS 66506; Charles OMWEGA, ICIPE, P.O. Box 30772, Nairobi, Kenya; William OVERHOLT, ICIPE, P.O. Box 30772, Nairobi, Kenya; Sonny RAMASWAMY, Kansas State University, Entomology, Manhattan, KS 66506

D0583 Mendelian inheritance of random amplified polymorphic DNA-polymerase chain reaction (RAPD-PCR) markers in the European corn borer (*Ostrinia nubilalis*) populations. **Lilian SALDANHA,** University of Nebraska, 202 PI Bldg., Dept. of Entomology, Lincoln, NE 68583-0816; Steve SKODA, USDA/ARS, Midwest Livestock Ins Res Unit, 305 Plant Industry Bldg, Lincoln, NE 68583; Sharron QUISENBERRY, Montana State University, College of Agriculture, Bozeman, MT 58717-2860; John FOSTER, University of Nebraska-Lincoln, 202 PI Bldg., Dept. of Entomology, Lincoln, NE 68583

D0584 Measuring changes in genetic diversity under four captive breeding schemes. **Laura MONTI,** University of Maryland College Park, Entomology, 1236 N Dinwiddie St, Arlington, VA 22205-2533; David HAWTHORNE, University of Maryland College Park, Entomology, College Park, MD 20742; Andrea BADGLEY, University of Maryland College Park, Dept. of Entomology, 4112 Plant Sciences, College Park, MD 20742; Heather MCGUIRE, Louisiana State University; Mohamed NOOR, Louisiana State University

D0585 DNA-based genotyping techniques for the detection of point mutations associated with insecticide resistance in Colorado potato beetle. **Si Hyeock LEE,** Dept. of Entomology, University of Massachusetts, Fernald Hall, Amherst, MA 01003; Hyo Jeong KIM; Kyong Sup YOON; Aiguo ZHANG; John M. CLARK, Dept. of Entomology, University of Massachusetts, Amherst, MA 01003

D0586 Molecular cloning and nucleotide sequence of a new P450 gene, *CYP319A1*, from the cattle tick, *Boophilus microplus*. Haiqi HE, USDA-ARS-SPARC, 2881 F Rd., College Station, TX 77845; **Andrew CHEN,** USDA-ARS-SPARC, 2881 F Rd., College Station, TX 77845-4988

D0587 Cytochrome P450 CYP6L1 is specifically expressed in the reproductive tissues of adult male German cockroaches, *Blattella germanica* (L.). **Jeffrey SCOTT,** Cornell University, Entomology, Comstock Hall, Ithaca, NY 14853; Zhimou WEN, Cornell University, Comstock Hall, Entomology, Ithaca, NY 14853

D0588 Differential expression of two *HSP70* transcripts in response to cold shock and adult diapause in the Colorado potato beetle, *Leptinotarsa decemlineata* (Say). **George YOCUM,** Biosciences Research Laboratory, USDA, ARS, Fargo, ND 58105-5674

D0589 Stress-induced proteins in non-diapause western spruce budworm vs. "diapause proteins" in eastern spruce budworm: Implications for their function. **Erning HAN,** Université Laval, CRBF, Faculté de Foresterie et de Géomatique, Pavillon Marchand, Ste-Foy, QC G1K 7P4, Canada; Éric BAUCE, Université Laval, CRBF, Faculté de Foresterie et de Géomatique, Pavillon Marchand, Ste-Foy, QC G1K 7P4, Canada

D0590 Partial purification of elongation factor-1a from Sf21 cells. **Melissa STUART,** Kirksville College, Dept. of Microbiology/Immunology, 800 W. Jefferson Street, Kirksville, MO 63501

D0591 Purification and partial characterization of an entomopoxvirus from a parasitic wasp of tephritid fruit flies. **Pauline LAWRENCE,** University of Florida, Entomology and Nematology Dept., P.O. Box 110620, Gainesville, FL 32611-0620

D0592 *Glyptapanteles indiensis* polydnavirus DNA as an insect cell transformation vehicle. **Dawn GUNDERSEN-RINDAL,** Dept. of Agriculture, Bldg 011A, Rm 214, BARC West, Beltsville, MD 20705; Dwight LYNN, USDA, Bldg 011A, Rm 214 BARC West, Beltsville, MD 20705; Edward DOUGHERTY, USDA ARS, Rm 214 Bldg 011A, Beltsville, MD 20705

D0593 Expression of a novel teratocyte protein of the braconid, *Microplitis croceipes* (Cresson). **Rico RANA,** University of Kentucky, Entomology, S-225 Agricultural Science Bldg. North, Lexington, KY 40546; Douglas DAHLMAN, University of Kentucky, Dept. of Entomology S-225, Lexington, KY 40546-0091; Bruce WEBB, University of Kentucky, Entomology, S-225 Ag. Sci. Center N., Lexington, KY 40546-0091

D0594 A sneak preview: Exploring the genome of *Wigglesworthia glossinidia,* the primary endosymbiont of tsetse flies. **Leyla AKMAN,** Yale University, Epidemiology and Public Health, School of Medicine, 606 LEPH, 60 College St, New Haven, CT 06510; Serap AKSOY, Yale University, Epidemiology & Public Health, School of Medicine, 60 College St, 606 LEPH, New Haven, CT 06510

D0595 Stable, germ-line transformation of pink bollworm (Lepidoptera: Gelechiidae) with EGFP, mediated by *piggyBac*. **John PELOQUIN,** University of California, Riverside,. of Entomology, Riverside, CA 92506; Stephen THIBAULT, Exelixis Pharmaceuticals, Inc., 260 Littlefield Ave., South San Francisco, CA 94080; Robert STATEN, USDA APHIS PPQP, 4125 E Broadway, Phoenix, AZ 85040; Thomas MILLER, University of California, Riverside, Entomology, 17 Entomology Bldg., Riverside, CA 92521

D0596 Transformed lepidopteran cell lines expressing baculovirus P35 or SV40 T antigen produce high levels of AcMNPV and recombinant proteins. **Ping WANG,** Boyce Thompson Institute, Cornell University, Ithaca, NY 14853; Guoxun LI,. Boyce Thompson Institute, Cornell University, Ithaca, NY 14853; Juan GARCIA, Boyce Thompson Institute, Cornell University, Ithaca, NY 14853; Helge ZIELER, Laboratory of Parasitic Diseases, NIH, Bethesda, MD 20892; Robert GRANADOS, Boyce Thompson Institute, Entomology, Cornell University, Ithaca, NY 14853

D0597 Cultured midgut cells from *Pseudaletia unipuncta* and *Trichoplusia ni* larvae for baculovirus studies. **Juan GARCIA,** Boyce Thompson Institute, Cornell University, Ithaca, NY 14853; Jiang ZHONG, Boyce Thompson Institute, Cornell University, Ithaca, NY 14853; Guoxun LI, Boyce Thompson Institute, Cornell University, Ithaca, NY 14853; Ping WANG, Boyce Thompson Institute, Cornell University, Ithaca, NY 14853; Robert GRANADOS, Entomology, Boyce Thompson Institute, Cornell University, Ithaca, NY 14853

D0598 Cryopreservation of Caribbean fruit fly (*Anastrepha suspensa*) embryos. **Wen Bo WANG,** North Dakota State University, Dept. of Plant Pathology, Fargo, ND 58105; Roger LEOPOLD, USDA-ARS, State Univ. Stn, P.O. Box 5674, Fargo, ND 58105-5674; Alfred HANDLER, USDA/ARS/CMAVE, 1700 SW 23rd Dr., Gainesville, FL 32608; Thomas FREEMAN, North Dakota State University, Dept. of Plant Pathology, Fargo, ND 58105

D0599 Sex-specific genes of four tephritid species-*Bactrocera cucurbitae*, *Bactrocera dorsalis*, *Bactrocera tryoni* and *Ceratitis capitata*. **Deborah SHEARMAN,** University of Hawaii, Plant and Environmental Protection Sciences, 3050 Maile Way, Gilmore 310, Honolulu, HI 96822; Susan MCCOMBS, University of Hawaii, 3050 Maile Way Rm 310, Honolulu, HI 96822-2231

D0600 Positional cloning of the maternally-acting selfish gene, *Medea1*, in *Tribolium castaneum*. **Richard BEEMAN,** USDA, ARS, GMPRC, 1515 College Ave., Manhattan, KS 66502-2736; Sara BROWN, Div. Biol., Kansas State Univ., Manhattan, KS 66502; Beth STONE-SMITH, Div. Biol., Kansas State Univ., Manhattan, KS 66502; Andreas GNIRKE, Exelixis Pharmaceutical Co., South San Francisco, CA 94083; Jeffrey GARNES, Exelixis Pharmaceutical Co., South San Francisco, CA 94083; Marguerite TRANKIEM, Exelixis Pharmaceutical Co., South San Francisco, CA 94083; Kevin KEEGAN, Exelixis Pharmaceutical Co., South San Francisco, CA 94083

D0601 Novel wax esters and hydrocarbons on the red harvester ant, *Pogonomyrmex barbatus*. **Dennis NELSON,** USDA-ARS, Biosciences Research Laboratory, 1605 Albrecht Boulevard, Fargo, ND 58105; Madeleine TISSOT, Stanford University, Dept. of Biological Sciences, Gilbert Hall, Stanford, CA 94305; Lori NELSON, U.S. Forest Service, Pacific Southwest Research Station, P.O. Box 245, Berkeley, CA 94701; Charlotte FATLAND, USDA-ARS, Biosciences Research Laboratory,, 1605 Albrecht Boulevard, Fargo, ND 58105; Deborah GORDON, Stanford University, Dept. of Biological Sciences, Gilbert Hall, Stanford, CA 94305-5020

D0602 Effect of modified atmospheres on microflora and respiration of California prunes. **J. ZETTLER,** USDA ARS, 2021 S Peach Ave, Fresno, CA 93727-5951; Shlomo NAVARRO, Agricultural Research Organization, P.O. Box 6, Bet Dagan, 50250, Israel

D0603 Histology and ultrastructure of antennae of *Anoplophora glabripennis* (Coleoptera: Cerambycidae). **Kathleen SHIELDS,** USDA Forest Service,, Northeastern Research Station, Hamden, CT 06514-1703; Richard HIRTH, USDA Forest Service, Northeastern Research Station, Hamden, CT 06514; David MIKUS, USDA Forest Service, Northeastern Research Station, Hamden, CT 06514

D0604 Effect of antennal grafts between two moth species on olfactory processing of sex pheromones. **Charles LINN,** Cornell University, New York State Agri Expt Stn, Dept. of Entomology, Geneva, NY 14456; Neil VICKERS, University of Utah, 257 S 1400 E Rm 201, Salt Lake City, UT 84112-0840; Wendell ROELOFS, Cornell University, Dept. of Entomology, Cornell Exp Stn, Geneva, NY 14456

D0605 Host hemolymph proteins and protein digestion in larval *Habrobracon hebetor* (Hymenoptera: Braconidae). **James BAKER,** USDA-ARS-GMPRC, 1515 College Ave, Manhattan, KS 66502; Jeffrey FABRICK, Dept. of Biochemistry, Kansas State University, Manhattan, KS 66506

D0606 Gypsy moth midgut microflora: Effects of diet, insect source, *Bacillus thuringiensis* subsp. *kurstaki* and *zwittermicin*. **Nichole BRODERICK,** University of Wisconsin-Madison, Entomology, 1630 Linden Dr. RM 345, Madison, WI 53706; Kenneth RAFFA, University of Wisconsin-Madison, Dept. of Entomology, Madison, WI 53706; Robert GOODMAN, University of Wisconsin-Madison, Plant Pathology, 687a Russell Laboratories, Madison, WI 53706; Jo HANDELSMAN, University of Wisconsin-Madison, Plant Pathology, 683A Russell Labs, Madison, WI 53706

D0607 Use of the domesticated silkworm, *Bombyx mori*, as a new model for studying the inheritance of Bt toxin resistance in Lepidoptera. **Marian R. GOLDSMITH,** University of Rhode Island, Biological Sciences Dept., 100 Flagg Rd., Kingston, RI 02881-0816; Kazuhisa MIYAMOTO, National Institute of Sericultural and Entomological Science, Owashi 1-2, Tsukuba, Ibaraki 305-8634, Japan; Carrie A. LAWLOR, University of Rhode Island, Biological Sciences Dept., 100 Flagg Rd., Kingston, RI 02881-0816; Yong Soon KIM, National Institute of Sericultural and Entomological Science, Owashi 1-2, Tsukuba, Ibaraki 305-8634, Japan; Kanda KOHZO, Saga University, Dept. of Applied Biological Sciences, Faculty of Agriculture, Saga, 840-8502, Japan

D0608 Selection of fall armyworm, *Spodoptera frugiperda* (Lepidoptera: Noctuidae) for survival on Bt toxin. **Francys VILELLA,** University of Nebraska-Lincoln, Entomology, 202 Plant Industry Building, Lincoln, NE 68583-0816; Jose Magid WAQUIL, University of Nebraska; Evaldo VILELA, Univesidade Federal de Vicosa, DBA - Campus Universitario s/n, Vicosa, Minas Gerais 36571-000, Brazil; Blair SIEGFRIED, University of Nebraska, 202 PI Bldg., Lincoln, NE 68583 0812; John FOSTER, 7100 Holmes Park Rd Apt 322, Lincoln, NE 68506-4692

D0609 The effect of *Photorhabdus luminescens* toxin complex a on the Colorado potato beetle, *Leptinotarsa decemlineata* (Coleoptera: Chrysomelidae). **Michael BLACKBURN,** Dept. of Agriculture, USDA-ARS-PSI-IBL, Bldg. 011A, Rm 214, Beltsville, MD 20705; John DOMEK, Dept. of Agriculture, USDA-ARS-PSI-IBL, Bldg. 011A, Rm. 214, Beltsville, MD 20705

D0610 Variations in esterase based resistance and inheritance of esterase patterns in corn rootworm populations of Nebraska. **Srinivas PARIMI,** University of Nebraska, Dept. of Entomology, Lincoln, NE 68583; Michael SCHARF, University of Nebraska, Dept. of Entomology, Lincoln, NE 68583-0816; Lance MEINKE, University of Nebraska, Dept. of Entomology, Lincoln, NE 68583-0816; Blair SIEGFRIED, University of Nebraska, 202 PI Bldg., Lincoln, NE 68583-0812; Laurence CHANDLER, USDA ARS NCSL, P.O. Box 5677, Fargo, ND 58105-5677

D0611 Mechanisms of resistance to organophosphorus insecticides in populations of the obliquebanded leafroller, *Choristoneura rosaceana* (Harris), (Lepidoptera:Tortricidae) from southern Ontario. **David PREE,** Res Stn Agric Canada, Vineland Station, ON L0R 2E0, Canada; Karen WHITTY; Lori BITTNER

D0612 Evidence of evolving carbaryl resistance in western corn rootworm, *Diabrotica virgifera virgifera* (Coleoptera: Chrysomelidae) in Kansas. **Kun Yan ZHU,** Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Gerald WILDE, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Phillip SLODERBECK, Kansas State University, The Forrest Park Bldg, 2510 John Street, Garden City, KS 67846; Lawrent BUSCHMAN, Kansas State University, Entomology, Southwest Research Ext Center, 4500 E Mary St, Garden City, KS 67846-9132; Randall HIGGINS, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Roxanne SHUFRAN, Kansas State University, Dept. of

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D0613 Sodium channel mutations and pyrethroid resistance. **Jianguo TAN,** Dept. of Entomology, Room 106, CIPS, Michigan State University, East Lansing, MI 48824; Zhiqi LIU, Dept. of Entomology, Room 106, CIPS, Michigan State University, East Lansing, MI 48824; Steven VALLES, USDA ARS, P.O. Box 14565, Gainesville, FL 32604-2565; Alan GOLDIN, Dept. of Microbiology and Molecular Genetics, 240 Medical Science Building B, University of California, Irvine, CA 92697; Ke DONG, Michigan State University, Entomology, 106 Pesticide Res Ctr, E Lansing, MI 48824

D0614 Venom from the parasitic wasp *Nasonia vitripennis* elicits cell death via a Ca2+-dependent phospholipase C pathway. **David RIVERS,** Loyola College in Maryland, Dept. of Biology, 4501 North Charles Street, Baltimore, MD 21210; Mary ROCCO, Loyola College in Maryland, 4501 North Charles Street, Baltimore, MD 21210; Anis FRAYHA, Loyola College, 4501 North Charles Street, Baltimore, MD 21210

D0615 *Ixodes scapularis* saliva contains glutathione peroxidase. **Subrata DAS,** Yale University, School of Medicine, 333 Cedar St, Inter Med - Rheumatology, New Haven, CT 06510-3206; Fred KANTOR, Yale University, Internal Medicine, 907 LCI, New Haven, CT; Erol FIKRIG, Yale University, Internal Medicine, Section of Rheumatology\610 LCI, New Haven, CT

D0616 Effect of a plant-based insecticide on the greenhouse whitefly (*Trialeurodes vaporariorum* (West.) Homoptera: Aleyrodidae) and the parasitic wasp, *Encarsia formosa* Gahan (Hymenoptera: Aphelinidae). **Helene CHIASSON,** Urgel Delisle et Associés, Entomology, 426 Chemin des Patriotes, Saint-Charles-sur-Richelieu, QC J0H 2G0, Canada; Andre POLIQUIN, Urgel Delisle et Associés, 426 Chemin des Patriotes, Saint-Charles-sur-Richelieu, QC J0H 2G0, Canada; Steeve BOURASSA, Urgel Delislet et Associés, 426 Chemin des Patriotes, Saint-Charles-sur-Richelieu, QC J0H 2G0, Canada; Nadine BELOIN, Urgel Delisle et Associés, 426 Chemin des Patriotes, Saint-Charles-sur-Richelieu, QC J0H 2G0, Canada

D0617 Chemosterilization of *Ceratitis capitata* (Wiedemann) and *Bactrocera oleae* (Gmelin) (Diptera: Tephritidae) induced by azadirachtin: Structural and ultrastructural analyses. **Vincenzo DI ILIO,** University of Siena, Dept. of Evolutive Biology, Via P.A. Mattioli, 5, Siena, 53100, Italy; Daniela MARCHINI, University of Siena, Dept. of Evolutive Biology, Via P.A. Mattioli, 4, Siena, 53100, Italy; Massimo CRISTOFARO, Enea Cr Casaccia Sp 025, Via Anguillarese, 301 S.Maria Di Galeria, Rome, 00060, Italy; Paola NOBILI, ENEA C.R. Casaccia, Via Anguillarese, 301 S. Maria di Galeria, Roma, 00060, Italy; Romano DALLAI, University of Siena, Dept. of Evolutive Biology, Via P. A. Mattioli, 4, Siena, 53100, Italy

D0618 Allelochemicals as inhibitors of glutathione S-transferases in the fall armyworm. **Simon YU,** University of Florida, Entomology and Nematology Dept., Gainesville, FL 32611

D0619 Diferulic acids (DFAs) profiles of corn grain: Are the same factors operational for *Sitophilus zeamais* and *Fusarium graminearum*? **Antoine BILY,** University of Ottawa / UPPA, Faculty of science, Dpt of Biology, P.O. Box 450, Stn. A, UPRES 159, IBEAS-Sciences Biologiques, UPPA, Pau, France, Ottawa, ON K1N 6N5, Canada; Al RAMPUTH, University of Ottawa, Dpt of Biology, P.O. Box 450, Stn. A, Ottawa, ON K1N 6N5, Canada; Catherine REGNAULT-ROGER, UPPA, Laboratoire d'Ecologie Moleculaire, UPRES 159, IBEAS-Sciences Biologiques, PAU, 64000, France; Sergio GARCIA LARA, Cimmyt Int, Apartado Postal 6-641, Mexico, 06600; David BERGVINSON, Cimmyt Int, Apartado Postal 6-641, 06600, Mexico; John ARNASON, University of Ottawa, Biology, 550 Cumberland St, University of Ottawa, Ottawa, ON K1N 6N5, Canada; Bernard PHILOGENE, University of Ottawa, Biology, University of Ottawa, Ottawa, ON K1N 6N5, Canada

D0620 Laboratory toxicity of insecticide residues to silverleaf whitefly eggs, nymphs, and adults on sweet potato, cabbage, and cotton. **Gary ELZEN,** USDA-ARS, BIRU, 2413 E. Hwy 83, Weslaco, TX 78596; Sergio MALDONADO, USDA-ARS, 2413 E. Hwy 83, Weslaco, TX 78596

D0621 Combined ?-cymene and elevated carbon dioxide treatments for the postharvest disinfestation of *Frankliniella occidentalis*. **Alida JANMAAT,** University of British Columbia, Dept. Zoology, 6270 University Boulevard, Vancouver, BC V6T 1Z4, Canada; J. H. VISSER, Plant Research International, P.O. Box 9060, Wageningen, 6700 GW, The Netherlands; Willem Jan DE KOGEL, Plant Research International, P.O. Box 9060, Wageningen, 6700 GW, The Netherlands; Ernst WOLTERING, Agrotechnological Research Institute ATO, P.O. Box 17, Wageningen, 6700 AA, The Netherlands

D0622 Control of *Rhagoletis mendax* in lowbush blueberry using a vegetative field spray program. **Sonia GAUL,** 8 Melbourne Ave, Kentville, NS B4N 1V9 Canada; Evans ESTABROOKS, Ag, Evans and Associates, New Maryland, NB E3C 1J2, Canada; Ken MCRAE, Agriculture and Agri-Food Canada, 32 Main St, Kentville, NS B4N 1J5, Canada

D0623 Evaluations of selected pesticides against egg, nymph, and adult stages of the glassy-winged sharpshooter *Homalodisca coagulata* (Say). **James BETHKE,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001; Richard REDAK, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0314; Matthew BLUA, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521

D0624 Insect pests of *Brassica napus* and the myrosinase-glucosinolate system. **Bo PONTOPPIDAN,** Dept. of Plant Biology, Box 7080, Uppsala, 75007, Sweden; Richard HOPKINS, Swedish University of Agricultural Sciences, Dept. of Entomology, Box 7044, Uppsala, Sweden SE-750 07; Johan MEIJER, Dept. Plant Biology, Uppsala Genetic Center, P.O. Box 7080, Uppsala, SE-750 07, Sweden

Display Presentations, Section Ca. Biological Control

D0625 Comic relief: A humorous interlude. **Timothy LOCKLEY,** USDA APHIS PPQ MD IFA, 3505 25th Ave, Gulfport, MS 39501-6921

D0626 The role of seasonal changes on the interaction of *Nezara viridula* and *Trissolcus basalis* in Hawaii. **Vincent JONES,** University of Hawaii, Entomology, College of Tropical Agriculture and Human Resources, Manoa, HI 96822

D0627 Supercooling capacity of Eurasian and North American populations of *Aphelinus albipodus* and *A. asychis* (Hymenoptera: Aphelinidae), and *Diaeretiella rapae* (Hymenoptera: Aphidiidae). **Robert M. NOWIERSKI,** Montana State University, Dept. of Entomology, Bozeman, MT 59717; Bryan C. FITZGERALD, Montana State University, Dept. of Entomology, Bozeman, MT 59717

D0628 Explorations for *Centaurea solstitialis* and *Salsola kali* natural enemies in eastern Europe during the summer 2000. **Massimo CRISTOFARO,** ENEA, CR Casaccia Sp 025, Via Anguillarese 301, Roma, 00060, Italy; Gaetano CAMPOBASSO, USDA ARS EBCL Rome Substation, via Colle Trugli, Rome, Italy; Javid KASHEFI, USDA ARS EBCL Substation, American Farm School, Thessaloniki, Greece; Mark VOLKOVITCH, Russian Academy of Sciences, St. Petersburg, Russia; Sergey REZNIK, Russian Academy of Sciences, St. Petersburg, Russia; Sibel UYGUR, University of Cukurova, Adana, Turkey; Michael PITCAIRN, CDFA Biol Ctrl Program, 3288 Meadowview Rd, Sacramento, CA 95832

D0629 Using a serological method for *Dicyphus hesperus* mark-recapture experiments. **David GILLESPIE,** Agric & Agric Food Canada, Pacific Agric Res Cent, Agassiz, BC 10M 1A0, Canada; J. A. SANCHEZ, Agriculture and Agri-Food Canada, Pacific Agri-Food Research Centre, P.O. Box 1000, Agassiz, BC V0M 1A0, Canada; McGregor ROB, Dept. of Biology, Douglas College, P.O. Box 2503, Ne Westminster, BC V3L 5B2, Canada

D0630 The tephritid fruit fly parasitoid *Fopius arisanus* (Sonan): Some biological attributes of pre-released females and suitability of various sugars as potential food supplement in release site. **Renato C. BAUTISTA,** U.S. Pacific Basin Agricultural Research Center, 2727 Woodlawn Dr., Honolulu, HI 96822; Ernest J. HARRIS, U.S. Pacific Basin Agricultural Research Center, 2727 Woodlawn Dr., Honolulu, HI 96822; Roger I. VARGAS, U.S. Pacific Basin Agricultural Research Center, P.O. Box 4459, Hilo, HI 96720

D0631 Biology of *Glyptapanteles militaris* (Hymenoptera: Braconidae) and effect of temperature, water and sugar availability on adult longevity. **Alejandro C. COSTAMAGNA,** Dept. of Entomology, 204 Center for Integrated Plant Systems, Michigan State University, E. Lansing, MI 48824; Fabián D. MENALLED, Michigan State University, 204 Center for Integrated Plant Systems, East Lansing, MI 48824; Douglas A. LANDIS, Michigan State University, Dept. of Entomology, East Lansing, MI 48824

D0632 Size-fitness relationship of the parasitoid wasp *Aphytis melinus*. **Juliana GARCIA,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001; Julio BERNAL, Texas A&M University, Dept. of Entomology, Biol. Control Lab, College Station, Texas 77843-2475; Robert LUCK, University of California, Riverside, Entomology, Natural and Agricultural Sciences, 200 A Entomology Bldg., Riverside, CA 92521

D0633 A novel device for the collection, storage, transportation, and delivery of beneficial insects: with special reference to *Ophraella communa* (Coleoptera: Chrysomelidae). **Miron P. TESHLER,** McGill University, Plant Science, Macdonald Campus, 21111 Lakeshore, Ste. Anne-de-Bellevue, QC H9X 3V9, Canada; Serghei DERNOVICI, McGill University, Macdonald Campus, 21111 Lakeshore, Ste-Anne-de-Bellevue, QC H9X 3V9, Canada; Daniel CODERRE, UQAM University, Montreal, QC Canada; Antonio DITOMMASO, Cornell University; Alan WATSON, McGill University, Plant Science, 21111 Lakeshore Road, McGill University, Ste.-Anne-de-Bellevue, QC H9X 3V9, Canada

D0634 Long-term assessment of the influence of agricultural landscape complexity in parasitoid abundance and diversity. **Fabian MENALLED,** Michigan State University, 204 Center for Integrated Plant Systems, East Lansing, MI 48824; Paul C. MARINO, University of Charleston, Dept. of Biology, Charleston, SC 29424; Alejandro C. COSTAMAGNA, Michigan State University, 204 CIPS, Dept. of Entomology, East Lansing, MI 48824; Douglas LANDIS, Michigan State University, Dept. of Entomology, East Lansing, MI 48824

D0635 Male-biased sex ratios in *Glyptapanteles flavicoxis* (Marsh) (Hymenoptera: Braconidae) parasitizing gypsy moth (Lepidoptera: Lymantriidae). **Roger FUESTER,** USDA-ARS Beneficial Insects Res Lab, 501 South Chapel St, Newark, DE 19713; Kenneth SWAN, USDA-ARS Beneficial Insects Introduction Res., 501 S. Chapel Street, Newark, DE 19713; Kyle DUNNING, USDA ARS, Beneficial Insects Introduction Res., 501 S. Chapel Street, Newark, DE 19713; Philip TAYLOR, University of Delaware, USDA ARS NAA BIIR, 501 S Chapel St, Newark, DE 19713

D0636 Dot-blot immunoassay detection of *Microctonus aethiopoides* (Braconidae, Euphorinae), an adult endoparasitoid in alfalfa weevil, *Hyper postica*. **AbdulAziz M. A. MOHAMED,** University of Wisconsin-Madison, Dept. of Entomology, 237 Russell Lab, 1630 Linden Dr, Madison, WI 53706; David B. HOGG, and Walter G. GOODMAN, University of Wisconsin-Madison, Dept. of Entomology, 237 Russell Lab, 1630 Linden Drive, Madison, WI 53706

D0637 Effect of cold storage on the quality of a mass-reared endoparasitoid (Hymenoptera: Braconidae). **Eric RIDDICK,** USDA-ARS, Entomology & Plant Pathology, P.O. Box 5367, 810 Highway 12 East, Mississippi State, MS 39762-5367

D0638 Host preferences of introduced braconid parasitoids (*Cotesia glomerata* and *C. rubecula*) relative to native and invasive pierid butterflies in New England. **Bree GOLDSTEIN,** University of Massachusetts Amherst, Biology, Amherst, MA 01002; Roy VAN DRIESCHE, University of Massachusetts Amherst, Dept. of Entomology, Amherst, MA 01003; Jessica BENSON, Univ. of Massachusetts, Entomology Dept., Amherst, MA 01003; Andrew PASQUALE, Fernald Hall, University of Massachusetts, Amherst, MA 01003

D0639 Host discrimination and use by the heteronomous hyperparasitoid, *Encarsia pergandiella*. **Walker JONES,** USDA-ARS-Beneficial Insects Research, 2413 E Highway 83, Weslaco, TX 78596-8344; Sasha GREENBERG, USDA-ARS-SARC, 2413 E Highway 83, Weslaco, TX 78596

D0640 Biological control of Japanese beetle, *Popillia japonica*, in eastern Tennessee: Mission impossible? **Daniel J. OTTO,** University of Tennessee, Knoxville, Dept. of Entomology and Plant Pathology, 205 Ellington Plant Sciences Bldg., Knoxville, TN 37901; Jerome F. GRANT, University of Tennessee, Dept. of Entomology and Plant Pathology, 205 Ellington Plant Sciences Bldg., Knoxville, TN 37901; Roberto M. PEREIRA, University of Tennessee, Dept. of Entomology and Plant Pathology, 205 Ellington Plant Sciences Bldg., Knoxville, TN 37901

D0641 Egg parasitoids of sunn pest (*Eurygaster integriceps*) in Syria. **M. EL BOUHSSINI,** ICARDI, P.O. Box 5466, Aleppo, Syria; A. BABI, University of Aleppo, College of Agriculture, Aleppo, Syria; M Abed EL HAI, Center for Agricultural Research, Aleppo, Syria

D0642 Reliance on natural enemies in cotton aphid management. **Timothy KRING,** University of Arkansas, Dept. of Entomology, Agriculture Bldg Room 321, Fayetteville, AR 72701; Hugh CONWAY, University of Arkansas, Dept. of Entomology, AGRI 321, Fayetteville, AR 72701; Donald STEINKRAUS, University of Arkansas, Dept. of Entomology, AGRI 321, Fayetteville, AR 72701; John RUBERSON, University of Georgia, Dept. of Entomology, P.O. Box 748, Tifton, GA 31793

D0643 Influence of three aphid species (Homoptera: Aphididae) on predation, survivorship and development of *Chrysoperla rufilabris* and *C. carnea* (Neuroptera: Chrysopidae). **Tong-Xian LIU,** Texas A&M University, 2415 E Highway 83, Weslaco, TX 78596-8399; Tian-Ye CHEN, Texas A&M University-Kingsville, 312 N. Internatinal Blvd, Weslaco, TX 78596

D0644 Parasitoids and hyperparasitoids associated with *Diuraphis noxia* (Mordvilko) (Homoptera: Aphididae) in the region of Montpellier, France. **Angela FARIAS,** USDA, ARS, Beneficial Insect Introductions Research, University of Delaware, 501 S.

Chapel Street, Newark, DE 19713; Keith R. HOPPER, USDA, ARS, Beneficial Insect Introductions Research, 501 South Chapel Street, Newark, DE 19713

D0645 Parasitoids of *Diuraphis noxia* in Wyoming: Changes in abundance 3 to 10 years after release. **Michael BREWER,** University of Wyoming, Dept. of Renewable Resources, Entomology, Laramie, WY 82071-3354; David PROKRYM, USDA APHIS PPQ, 2534 S 11th St, Niles, MI 49120-4416

D0646 Effect of greenbug-resistant wheat germplasm on life history of the greenbug parasitoid *Lysiphlebus testaceipes* Cresson (Hymenoptera: Aphidiidae). **Kristopher GILES,** Oklahoma State University, Dept. Entomology & Plant Pathol, Stillwater, OK 74078-3033; Roger FUENTES-GRANADOS, Oklahoma State University, 127 NRC, Stillwater, OK 74078; Norm C. ELLIOTT, Plant Science and Water Conservation Laboratory, USDA-ARS, 1301 N. Western Rd., Stillwater, OK 74075-2714; Dave R. PORTER, Plant Science and Water Conservation Laboratory, USDA-ARS, 1301 N. Western Rd., Stillwater, OK 74075-2714

D0647 Slower searching and oviposition behavior limits the movement of *Aphelinus albipodus* feeding on Russian wheat aphid, relative to *Diaeretiella rapae*. **Phil LESTER,** Bioagricultural Sciences and Pest Management, Colorado State University, Fort Collins, CO 80523-1177; Thomas HOLTZER, Bioagricultural Sciences & Pest Management, Colorado State University, Fort Collins, CO 80526-1177

D0648 Feeding behavior of *Geocoris punctipes*. **Patricia TILLMAN,** USDA ARS IBPMRL, P.O. Box 748, Tifton, GA 31793-0748

D0649 Seasonal abundance of cotton insects and associated predators and parasitoids in the delta region of Egypt. **Ahmed Samir HENDAWY,** Plant Protection Institute, Entomology, Biological Control Programme, Sakha, Kafr El Sheikh 00, Egypt; Helene CHIASSON, Urgel Delisle et Associés, 426 Chemin Des Patriotes, Saint-Charles-sur-Richelieu, QC J0H 2G0, Canada

D0650 Using selective acaricides to manipulate the age structure of *Tetranychus urticae* (Koch) to enhance biological control provided by phytoseiid mites. **Kenneth COTE,** Virginia Polytechnic Institute and State University, 1011 University City Blv. #6, Blacksburg, VA 24060; Edwin LEWIS, Virginia Polytechnic Institute and State University, Dept. of Entomology, Price Hall, Blacksburg, VA 24061; Peter SCHULTZ, Virginia Polytechnic Institute and State University, Hampton Roads AREC, College of Agriculture and Life Sciences, Mail code 0512, Virginia Tech, Blacksburg, VA 24061

D0651 Evaluation of consumption rates by three coccinellids (Coleoptera: Coccinellidae). **Mohammed AL-DOGHAIRI,** King Saud University, College of Agriculture and Veterinary Medicine, Buraydah, Gassim 11111, Saudi Arabia; El Tayeb EL HAG, King Saud University, College of Agriculture and Veterinary Medicine, King Saud University, Buraydah, Gassim

D0652 Reviewing a multi-agency biological control program for *Bemisia argentifolii* in the southwest: Foreign exploration, mass culture & evaluations. **Kim HOELMER,** USDA, ARS, European Biological Control Laboratory, Campus International de Baillarguet, Montferrier, 34980, France; John GOOLSBY, USDA-ARS (CSIRO), 120 Meirs Rd, Indooroopilly QLD, 4068, Australia; Alan KIRK, USDA, ARS, European Biological Control Laboratory, Campus International de Baillarguet, Montferrier, 34980, France; William ROLTSCH, Calif Dept. of Food & Agr, C/O IVRC - 4151 Hwy 86, Brawley, CA 92227; Charles PICKETT, Calif Dept. Food & Agric, Bio Control Program, Sacramento, CA 95832

D0653 Reviewing a multi-agency biological control program for *Bemisia argentifolii* in the Southwest: Establishing, conserving & augmenting new parasitoids & evaluating their impact. **William ROLTSCH,** Calif Dept. of Food & Agr, C/O IVRC - 4151 Hwy 86, Brawley, CA 92227; Kim HOELMER, USDA, ARS, PSC 116, EBCL, APO, AE 09777-5000; Gregory SIMMONS, USDA-APHIS-PPQ-IS, P.O. Box 3149, Laredo, TX 78044-3147; Juli GOULD, USDA, 3645 E Wier Ave, Phoenix, AZ 85040-2931; Charles PICKETT, Calif Dept. Food & Agric, Bio Control Program, Sacramento, CA 95832; John GOOLSBY, USDA-ARS (CSIRO), 120 Meirs Rd, Indooroopilly QLD, 4068, Australia; Earl ANDRESS, USDA APHIS PPQ Ppmc, 4151 HWY 86, Brawley, CA 92227

D0654 *Fopius arisanus* an effective biological control tool in area-wide IPM of tephritid fruit flies. **Ernest HARRIS,** U.S. Pacific Basin Agricultural Research Center, USDA-ARS, 2727 Woodlawn Drive, Honolulu, HI 96822; Renato C. BAUTISTA, U.S. Pacific Basin Agricultural Research Center USDA-ARS, 2727 Woodlawn Drive, Honolulu, HI 96822

D0655 Population ecology of *Leptinotarsa undecimlineata* on *Solanum* spp. in Honduras. **Luis CANAS,** Purdue University, Dept. of Entomology, 1158 Smith Hall, West Lafayette, IN 47907-1158; Robert O'NEIL, Purdue University, Dept. of Entomology, 1158 Smith Hall, West Lafayette, IN 47907-1158

D0656 Dill flowers and the parasitoids of whiteflies. **Mark KRAEMER,** 3817 Seasigh Ct, Chester, VA 23831-7324; Joseph MCCONNEL, Virginia State Universtiy, P.O. Box 9061, Petersburg, VA 23806

D0657 Host-finding behavior of *Ceratogramma etiennei* (Hymenoptera: Trichogrammatidae), an egg parasitoid of *Diaprepes abbreviatus* (Coleoptera: Curculionidae). **Divina AMALIN,** University of Florida, TREC Homestead, 18905 SW 280 ST, Homestead, FL 33031; Jorge PENA, University of Florida, TREC, Homestead, FL 33031; Rita DUNCAN, TREC-IFAS, University of Florida, 18905 SW 280 St., Homestead, FL 33031

D0658 Potencial use of *Trichogramma* spp. in Brazilian crops: An overview. **José Roberto P. PARRA,** Escola Superior de Agricultura Luiz de Queiroz - Universidade de São Paulo, Departamento Entomologia, Fitopatologia e Zoologia Agrícola, Caixa Postal 09, Piracicaba, São Paulo 13418-900, Brazil; Roberto Antonio ZUCCHI, Escola Superior de Agricultura Luiz de Queiroz - Universidade de São Paulo, Departamento Entomologia, Fitopatologia e Zoologia Agrícola Ca, Piracicaba, SP 13418-900, Brazil

D0659 Optimization of an inundative biological control program of *Tuta absoluta* (Lep.: Gelechiidae) by *Trichogramma pretiosum* (Hym.: Trichogrammatidae) in greenhoused tomatoes. **Odair A. FERNANDES,** Depto. Fitossanidade - FCAV/UNESP, Jaboticabal, SP 14884-900, Brazil; Hayda O. S. DÓRIA, Depto. Fitossanidade - FCAV/UNESP, Jaboticabal, SP 14884-900, Brazil; Samuel MARTINELLI, Depto. Fitossanidade - FCAV/UNESP, Jaboticabal, SP 14884-900, Brazil; Silvia M. GOMES, Depto. Entomologia, Fitopatologia e Zoologia -ESALQ/USP, Piracicaba, SP 13418-900, Brazil; José R. P. PARRA, Escola Superior de Agricultura Luiz de Queiroz - Universidade de São Paulo, Departamento Entomologia, Fitopatologia e Zoologia Agrícola, Caixa Postal 09, Piracicaba, São Paulo 13418-900, Brazil

D0660 Comparsion of *Trichogramma pretiosum* and *T. brassicae* for biological control of *Trichoplusia ni*. **Deborah HENDERSON,** ES Cropconsult Ltd., 3041 West 33rd Ave., Vancouver, BC V6N 2G6, Canada; Renee PRASAD, ES Cropconsult Ltd., 3041 West 33rd Ave., Vancouver, BC V6N 2G6, Canada; Kristine SCHLAMP, ES Cropconsult Ltd., 3041 West 33rd Ave., Vancouver, BC Canada

D0661 Reproductive biology of *Trichogramma exiguum* (Pinto and Platner), a ubiquitous egg parasitoid in the U.S. **Melinda GIBBS,** North Carolina State University, Dept. of Entomology, Raleigh, NC 27695-7613; Charles SUH, Texas A&M University, 337 Bernburg Ln, College Station, TX 77845-3938; Abder JERRAYA, INAT, 43 Ave. Charles Nicolle 1082, Cite Mahrajehe, TUNIS; David ORR, North Carolina State University, Box 7613, Dept. of Entomology, Raleigh, NC 27695

D0662 Control efficacy of *Trichogramma pretiosum* (Hymenopertera: Trichogrammatidae) on *Keiferia lycopersicella* (Lepidoptera: Gelechiidae) in relation to parasitoid dispersal ability in greenhouse. **Kaihong WANG,** Greenhouse and Processing Crops Research Centre, Agriculture and Agri-Food Canada, East Highway 20, Harrow, ON N0R 1G0, Canada; Les SHIPP, Greenhouse and Processing Crops Research Centre, Agriculture and Agri-Food Canada, East Highway 20, Harrow, ON N0R 1G0, Canada; Tammy LOMOND, Greenhouse and Processing Crops Research Centre, Agriculture and Agri-Food Canada, Harrow, ON N0R 1G0, Canada

D0663 Competition between two noctuid parasitoids: Are they compatible within an augmentative biological control program? **Denise JOHANOWICZ,** University of Florida, Entomology and Nematology Dept., Gainesville, FL 32611; Everett R. MITCHELL, University of Florida, USDA ARS, 1700 SW 23rd Dr, Gainesville, FL 32608-1069

D0664 Using *Pediobius foveolatus* for control of Mexican bean beetle in snap beans on organic farms. **Kimberly STONER,** Conn Agric Exp Stn, P.O. Box 1106, New Haven, CT 06504-1106

D0665 Safeguarding U.S. agriculture: Biological control of the Mediterranean fruit fly in Mexico and Central America. **Kenneth BLOEM,** USDA-APHIS-PPQ-CPHST-NBCI, Florida A&M Univ. Center for Biological Control, Perry-Paige Bldg., Rm. 308S, Tallahassee, FL 32307; Tim HOLLER, USDA-APHIS-PPQ-CPHST, Gainesville, FL; Pedro RENDON, USDA-APHIS-PPQ-CPHST, Guatemala City, Guatemala; John SIVINSKI, USDA-ARS-CMAVE, Gainesville, FL

D0666 Renewed potential for classical biological control of Mediterranean fruit fly. **Russell MESSING,** 7370 Kuamoo Rd., Kapaa, HI 96746; William OVERHOLT, ICIPE, P.O. Box 30772, Nairobi, Kenya; John SIVINSKI, USDA-ARS, CMAVE, P.O. Box 14565, Gainesville, FL 32605; Robert WHARTON, Texas A&M University, Dept. of Entomology, College Station, TX 77843-0001

D0667 Comparison of *Diadegma insulare* and *Microplitis plutellae* as biological control agents of *Plutella xylostella*. **Jianxiang XU,** Dept. of Entomology, Cornell University/NYSAES, Geneva, NY 14456; Anthony SHELTON, Cornell University, Dept. of Entomology, Geneva, NY 14456; Xianian CHENG, Dept. of Plant Protection, Nanjing Agricultural University, Nanjing, Jiangsu 210095, P. R. China

D0668 Alternatives to synthetic pesticides for obliquebanded leafroller management in raspberries. **Tracy HUEPPELSHEUSER,** E. S. Cropconsult Ltd., 3041 West 33rd Avenue, Vancouver, BC V6N 2G6, Canada; Deborah HENDERSON, E. S. Cropconsult Ltd., 3041 West 33rd Avenue, Vancouver, BC V6N 2G6, Canada

D0669 Entomopathogenic nematodes for the organic grower. **John M. WEBSTER,** Simon Fraser University, Biological Sciences, 8888 University Drive, Burnaby, BC V5A 1S6, Canada

D0670 Potential for manipulating entomopathogenic nematode-host interactions in vegetable crop rotations. **Janet LAWRENCE,** Ohio State University, Dept. of Entomology, OARDC, Wooster, OH 44691; Casey HOY, Ohio Agricultural Research and Development Center, Entomology, Ohio State University, Wooster, OH 44691

D0671 Physiological aging and behavioral variability of infective-stage entomopathogenic nematodes, *Heterorhabditis bacteriophora*. **Nancy COHEN,** Rutgers University, Entomology, Blake Hall, New Brunswick, NJ 08901; Randy GAUGLER, Rutgers University, Entomology, Blake Hall, New Brunswick, NJ 08901; Sun Kyun YOO, Rutgers University, Entomology, Blake Hall, New Brunswick, NJ 08901

D0672 Jump-starting epizootics of *Neozygites fresenii* in cotton aphid populations. **Donald STEINKRAUS,** University of Arkansas, Entomology, Cralley/Warren Research Lab, 2601 N. Young Ave, Fayetteville, AR 72704; David WILDY, Wildy Farms, 3042 N County Rd 69, Manila, AR 72442; Dale WELLS, Cotton Services, Inc., 1903 S. Main, P.O. Box 72, Leachville, AR 72438

D0673 The effect of digging by adult Colorado potato beetles (*Leptinotarsa decemlineata*) on *Beauveria bassiana* spore pickup and retention. **Christine NORONHA,** Agriculture and Agrifood Canada, P.O. Box 1210, 440 University Ave., Charlottetown, PE T1H 4T6, Canada; Mark GOETTEL, Agriculture and Agri-Food Canada, Lethbridge, AB T1J 4B1, Canada

D0674 The impact of *Bacillus thuringiensis* on obliquebanded leafroller parasitoids. **Joan COSSENTINE,** Agriculture and Agri-Food Canada, Pacific Agri-Food Research Centre, Summerland, BC V0H 1Z0, Canada; Linda JENSEN, Agriculture and Agri-Food Canada, Pacific Agri-Food Research Centre, Summerland, BC V0H 1Z0, Canada

D0675 Population trends and recovery time of five species of Lepidoptera adversely effected by *Bacillus thuringiensis* var. *kustaki* in two eastern deciduous forests. **Sandy RAIMONDO,** West Virginia University, Plant Soil & Sciences, P.O. Box 6108, Morgantown, WV 26506-6108; Linda BUTLER, West Virginia University, Plant and Soil Sciences, P.O. Box 6108, Morgantown, WV 26506-6108

D0676 *Pseudoscymnus tsugae* Sasaji and McClure (Coleoptera: Coccinellidae) for control of hemlock woolly adelgid, *Adelges tsugae* Annand (Homoptera: Adelgidae), on ornamental hemlocks, *Tsuga canadensis* (L.) Carriere. **Michael DESANTO,** Dept. of, Plant Science, Univ. of Rhode Island, Kingston, RI 02881; Richard CASAGRANDE, University of Rhode Island, Dept. of Plant Sci, Kingston, RI 02881

D0677 Potential of biocontrol for management of *Pyrrhalta viburni*, a new landscape pest in the U.S. **Paul WESTON,** Cornell University, Dept. of Entomology, Ithaca, NY 14853; Marc KENIS, CABI Bioscience Centre, Switzerland 1, Rue des Grillons, Delemont, Switzerland; Joel BAIRD, Cornell University, Dept. of Entomology, 180 Insectary, Ithaca, NY 14853

D0678 Classical biological control of Seychelles scale in the Manua Islands of American Samoa using *Rodolia limbata*. **Makeati UTUFITI,** American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799; Lloyd ALI, American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799; Agnes VARGO, American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago 96799; Donald VARGO, American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799; Mark SCHMAEDICK, American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799

D0679 Developmental rates and summer aestivation effects in U.S. populations of the saltcedar leafbeetle, *Diorhabda elongata*. **Allen KNUTSON,** Texas A&M University, Texas Agric Ext Serv, 17360 Coit Rd, Dallas, TX 75252-6599; Phil LEWIS, USDA-ARS, 808 E Blackland Rd, Temple, TX 76502-6712; Tom DUDLEY, Dept. of Integrative Biology, University of California, Berkeley, CA 94720

D0680 Adult host-plant selection and oviposition and larval survival on non-host plants by the saltcedar leafbeetle,

Diorhabda elongata. **Phil LEWIS,** USDA-ARS, 808 E. Blackland Rd, Temple, TX 76502-6712; John HERR, USDA ARS WRRC, 800 Buchanan St, Albany, CA 94710-1105; C. J. DELOACH, USDA-ARS, 808 E. Blackland Rd, Temple, TX 76502; Tom DUDLEY, UC-Berkeley, Dept. of Integrative Biology, University of California, Berkeley, CA 94720

D0681 Attractiveness of host-produced aggregation pheromone to Dipteran and Hymenopteran parasitoids of the consperse stink bug, *Euschistus conspersus*. **Christian KRUPKE,** Washington State University, 1100 N. Western Ave., Wenatchee, WA 98801; Jay BRUNNER, Washington State University, Tree Fruit Research Center, 1100 N Western Ave, Wenatchee, WA 98801-1230

D0682 Establishment of two introduced egg parasitoids of *Diaprepes abbreviatus* (Coleoptera: Curculionidae). **Jorge PENA,** University of Florida, Tropical Research & Education Center, Homestead, FL 33031; Robert ADAIR Jr., Youngstown State University, 3644 Four Mile Run, McDonald, OH 44437; Divina AMALIN, University of Florida, TREC Homestead, 18905 SW 280 St, Homestead, FL 33031; Robert BELOSI, University of Florida; Robert BULLOCK, University of Florida, AREC,Gainesville, FL 32611; Rita DUNCAN, TREC-IFAS University of Florida, 18905 SW 280 St., Homestead, FL 33031; David HALL, U.S. Sugar Corp, Research Dept., Clewiston, FL 33440; Steve LAPOINTE, USDA; Clayton MCCOY Jr., University of Florida, CREC, Gainesville, FL 32610; Cindy MCKENZIE, USDA; Ru NGUYEN, Div of Plant Industry, P.O. Box 147100, Gainesville, FL 32614; Philip STANSLY, University of Florida, SWFREC Immokalee, 2686 State Road 29 N, Immokalee, FL 34142-9515

D0683 Field evaluation of a Chinese lady beetle for biological control of the hemlock woolly adelgid. **Michàel MONTGOMERY,** USDA, Forest Service, Northeastern Research Station, Hamden, CT 06514; Nathan HAVILL, Center for Forest Health Research, USDA, Forest Service, 51 Mill Pond Rd, Hamden, CT 06514

D0684 European parasitoids of cherry bark tortrix: A search for classical biological controls for potential introduction into North America. Wade JENNER, CABI Bioscience Centre, 1 Rue des Grillons, CH-2800, Delémont, Switzerland; **Ulrich KUHLMANN,** CABI Bioscience, Centre Switzerland, Delemont, CH-2800, Switzerland; Cossentine JOAN, Agriculture and Agri-Food Canada, Pacific Agri-Food Research Centre, Summerland, British Columbia V0H 1Z0, Canada; Lynell TANIGOSHI, Washington State University, Entomology, Res & Ext Unit, Vancouver, WA 98665-9752; Barry BAI, Oregon Dept. of Agriculture, 635 Capitol St NE, Salem, OR 97301-2524

D0685 Selecting release sites in Florida for the sawfly *Heteroperreyia hubrichi* (Hymenoptera: Pergidae), a natural enemy of Brazilian peppertree (*Schinus terebinthifolius*: Anacardiaceae), with CLIMEX and FAWN. **James CUDA,** University of Florida, Entomology and Nematology Dept., Building 970, Natural Area Dr, Gainesville, FL 32611-0620; Henrique PEDROSA, Federal University of Parana, Forest Protection Laboratory, Curitiba, Parana 80210-170, Brazil; Marcelo VITORINO, Federal University of Parana, Forest Protection Laboratory, Curitiba, Parana 80210-170, Brazil

D0686 Biological control of the glassy-winged sharpshooter in California. **David J. W. MORGAN,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521; Mark S. HODDLE, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521; Larry E. BEZARK, California Dept. of Food and Agriculture, Plant Health and Pest Prevention Services, Integrated Pest Control Program, Sacramento, CA 95814

D0687 Monitoring the establishment and performance of parasitoids released against tree pests in Minnesota. Jared S. OSTREM, Minnesota Dept. of Agriculture, Plant Pest Survey & Biological Control Program,, 90 West Plato Boulevard,, St. Paul, MN 55107-2094; **Henry Y. FADAMIRO,** Minnesota Dept. of Agriculture, Plant Pest Survey & Biological Control Program,, 90 West Plato Boulevard,, St. Paul, MN 55107-2094; Dharma D. SREENIVASAM, Minnesota Dept. of Agriculture, Plant Pest Survey & Biological Control Program,, 90 West Plato Boulevard,, St. Paul, MN 55107-2094

D0688 Response of predators to the sex pheromone of *Matsucoccus* spp. (Homoptera: Margarodidae) in pine dominated forests in east Tennessee. **John NELSON,** The University of Tennessee, Dept. Entomology & Pl. Pathol., Knoxville, TN 37901; Paris LAMBDIN, University of Tennessee, Knoxville, Entomology & Plant Pathol, Knoxville, TN 37901

D0689 Role of vertebrate predators in managing evergreen bagworm (Lepidoptera: Psychidae). **Ashley D. WALTER,** University of Illinois at Urbana-Champaign, Dept. of Entomology, 320 Morrill Hall, 505 S. Goodwin Avenue, Urbana, IL 61801; Jodie A. ELLIS, University of Illinois at Urbana-Champaign, Entomology Dept., Urbana, IL 61802; Lawrence M. HANKS, University of Illinois at Urbana-Champaign, Dept. of Entomology, Urbana, IL 61801

D0690 Field evaluation of Eliminade™: Effects on *D. frontalis* parasitism and brood emergence. **Dana KINNEY,** University of Arkansas, Dept. of Entomology, Fayetteville, AR 72701; Vaughn SALISBURY, University of Arkansas, Dept. of Entomology, Fayetteville, AR 72701; Lloyd BROWNE, Entopath Inc., 3555 Timberlane Dr, Easton, PA 18045; Fred STEPHEN, University of Arkansas, Dept. of Entomology, A-321, Fayetteville, AR 72701

D0691 Effects of *Melia azedarach* L. extracts on larval instars of the pine processionary moth *Thaumetopoea wilkinsoni* (Tams.). **Efat ABOU-FAKHR HAMMAD,** American University of Beirut, Crop Production & Plant Protection, Faculty of Agricultural & Food Sciences, 850 3rd Ave. 18th Floor, New York, NY 10022-6297; Jenny NASR, American University of Beirut, Bliss St, P.O. Box: 11-0236, Beirut, 11-0236, Lebanon; Nabil NEMER, American University of Beirut, Faculty of Agricultural & Food Sciences, Bliss St, P.O. Box 11-0236, Beirut, 11-0236, Lebanon

D0692 Assessment of natural enemies of gypsy moth, *Lymantria dispar*, in Tennessee. **Gary B. MOUGHLER,** University of Tennessee, Dept. of Entomology and Plant Pathology, 205 Ellington Plant Sciences Bldg., Knoxville, TN 37901; Jerome F. GRANT, University of Tennessee, Dept. of Entomology and Plant Pathology, 205 Ellington Plant Sciences Bldg., Knoxville, TN 37901

D0693 Biological control of giant whitefly. **Thomas BELLOWS,** University of California, Riverside, CA 92521

D0694 The red gum lerp psyllid - a new pest of eucalyptus in California. **Donald DAHLSTEN,** University of California, Berkeley, Ctr For Biol Control, Berkeley, CA 94720-3112; Andrew LAWSON, University of California, Berkeley, 246 30th St, Apt 204, Oakland, CA 94611; David ROWNEY, U.C. Berkeley; John KABASHIMA, U.C. Cooperative Extension; Karen ROBB, U.C. Cooperative Extension; William CHANEY, Monterey County Coop Ext, 1432 Abbott St, Salina, CA 93901; Laurence COSTELLO, U.C. Cooperative Extension; Dave SHAW, U.C. Cooperative Extension; Chuck INGELS, U.C. Cooperative Extension; Pamela GEISEL, U.C. Cooperative Extension,

D0695 Introduction of Eurasian parasitoids for control of the codling moth. **Thomas UNRUH,** Dept. of Agriculture, USDA-ARS, 5230 Konnowac Pass Rd., Wapato, WA 98951-9651; N. MILLS, University of California, Berkeley, Env Sci Policy & Mgmt, Berkeley, CA 94720-3112

D0696 Parasitism of obliquebanded leafroller (Lepidoptera: Tortricidae) in Michigan apple orchards. **Tammy WELLS-WILKINSON,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Douglas LANDIS, Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Larry GUT, Michigan State University, Dept. of Entomology, E Lansing, MI 48824; William KAUFFMAN, USDA APHIS PPQ, 2534 S 11th St, Niles, MI 49120

D0697 Riparian habitats critical to parasitoids attacking tree fruit leafrollers. **Robert PFANNENSTIEL,** USDA ARS SARC, 2413 E Hwy 83, Weslaco, TX 78596; Thomas UNRUH, USDA ARS Fruit and Veg Insect Res Unit, 5230 Konnowac Pass Rd, Wapato, WA 98951-9651

D0698 Using molecular techniques (AFLP) to identify variation among accessions of an invasive, exotic weed and facilitate selection of biological control agents. **Darryl JEWETT,** Dept. of Agriculture ARS, Northern Plains Agricultural Research Lab, 1500 North Central Avenue, Sidney, MT 59270; Barbara FREDERICK, Dept. of Agriculture ARS, 1500 N. Central Ave., Sidney, MT 59270; Neal SPENCER, ARS, USDA ARS, 1500 N Central Ave, Sidney, MT 59270-4202

D0699 Do weed seed predators eat crop seeds? **Jesse CHVOJKA,** 204 Center for Integrated Plant Systems, Michigan State University, East Lansing, MI 48824-1311; Fabian MENALLED, Michigan State University, 204 Center for Integrated Plant Systems, East Lansing, MI 48824

D0700 Effects of critical weed removal periods on pest and predatory arthropod diversity and abundance in corn **Judith HOUGH-GOLDSTEIN,** University of Delaware, Entolomogy & Applied Ecology, College of Agriculture & Natural Resources, Univ. of Delaware, Dept. of Entomology & Appl Ecol, Newark, DE 19717-1303; Mark VANGESSEL, University of Delaware, Plant & Soil Sciences, Research and Education Center, Georgetown, DE 19947

D0701 Host specificity of the Chondrilla root moth, *Bradyrrhoa gilveolella* (Treitschke) (Lepidoptera: Pyralidae), for the biological control of rush skeletonweed in North America. **J. L. LITTLEFIELD,** Montana State University, Dept. of Entomology, P.O. Box 173020, Bozeman, MT 59717-3020; J. BIRDSALL, U.S. Forest Service, Rocky Mountain Research Station, Montana State University, Bozeman, MT 59717-0276; G. MARKIN, U.S. Forest Service, Rocky Mountain Research Station, Montana State University, Bozeman, MT 59717-0278

D0702 Complementary studies on the host-specificity of *Longitarsus quadriguttatus* Pont., a below-ground herbivore for the biological control of the rangeland weed *Cynoglossum officinale* L. **Jennifer ANDREAS,** CABI Bioscience Centre Switzerland, Rue des Grillons 1, Delemont, CH-2800, Switzerland; Mark SCHWARZLAENDER, College of Agriculture, Dept. of Plant, Soil, and Entomological Sciences, Uinversity of Idaho, Moscow, ID 83844-2339

D0703 Loosestrife on the run: Integrating a biological control program into education and outreach. **Robert WIEDENMANN,** Illinois Natural History Survey, Cent For Econ Entomology, 607 E Peabody Dr, Champaign, IL 61820-6917; David VOEGTLIN, University of Illinois at Urbana-Champaign, Illinois Nt Hist Sur, Champaign, IL 61820-6970; Susan POST, Illinois Natural History Survey, 607 E. Peabody, Champaign, IL 61820

D0704 *Altica* sp. (Coleoptera: Chrysomelidae) on purple loosestrife, *Lythrum salicaria*, in Tennessee. **Debra HOYME,** University of Tennessee, Dept. of Entomology and Plant Pathology, 205 Ellington Plant Sciences Bldg., Knoxville, TN 37901; Jerome F. GRANT, University of Tennessee, Dept. of Entomology and Plant Pathology, 205 Ellington Plant Sciences Bldg., Knoxville, TN 37901

D0705 Non-target and plant community effects of *Galerucella* spp. beetles established for biological control of purple loosestrife. **Donald SEBOLT,** Michigan State University, 204 Ctr for Integrated Plant Systems, E Lansing, MI 48824; Douglas LANDIS, Michigan State University, Dept. of Entomology, 204 A Center for Integrated Plant Systems, East Lansing, MI 48824

D0706 Effects of biological control of leafy spurge (*Euphorbia esula*) by *Aphthona* spp. (Chrysomelidae: Alticinae) on localized plant communities. **N. G WIMAN,** Montana State University, Entomology, 303 E.Beall #2, Bozeman, MT 59715; Robert NOWIERSKI, Montana State University, Dept. of Entomology, P.O. Box 173020, Bozeman, MT 59717-3020

D0707 Population dynamics and spread of *Urophora affinis* and *U. quadrifasciata* in southwest Virginia. **L. T. KOK,** Virginia Polytechnic Institute and State University, Blacksburg, VA 24061; Warren MAYS, Virginia Tech, Dept. of Entomology, Blacksburg, VA 23061-0319

D0708 Growth of kudzu from Chinese and USA sources: Is imported better? **Kathleen KIDD,** North Carolina Dept. of Agriculture, Beneficial Insect Lab, P.O. Box 27647, Raleigh, NC 27611-7647; David ORR, North Carolina State University, Box 7613, Dept. of Entomology, Raleigh, NC 27695; Joseph NEAL, North Carolina State University, Horticultural Science, Box 7609, Raleigh, NC 27695; Melinda GIBBS, North Carolina State University, Dept. of Entomology, Box 7613, Raleigh, NC 27695

D0709 Utilization of two native plant genera by *Calophasia lunula* (Lepidoptera: Noctuidae), an introduced biological control agent of exotic toadflaxes (*Linaria* spp.). **Rich HANSEN,** USDA-APHIS-PPQ, Forestry Sciences Lab, Montana State Univ., Bozeman, MT 59717-0278

D0710 Evaluation of *Tupiocoris notatus* (Heteroptera: Miridae) as a biocontrol agent of *Solanum viarum* (Solanaceae). **Shaharra USNICK,** USDA ARS, Southern Weed Science Research Unit, 141 Experiment Station Rd, Stoneville, MS 38776

D0711 Release and evaluation of *Diorhabda elongata*, a Eurasian leaf beetle, for biological control of saltcedar, *Tamarix* spp. **Raymond CARRUTHERS,** USDA ARS, 800 Buchanan St, Albany, CA 94710-1105; C. Jack DELOACH, USDA-ARS, Temple, TX ; Tom DUDLEY, UC Berkeley, Berkeley, CA ; Gould JULIE, USDA-APHIS, Phoenix, AZ ; Lewis PHIL, USDA-ARS, Temple, TX

D0712 Bacteria and fungi associated with Formosan subterranean termite in Okinawa, Japan. **Janine E. POWELL,** USDA, ARS, P.O. Box 225, Stoneville, MS 38776-0225; Douglas A. BURKETTF, Det. 3, 311th HSW, Entomology Consulting Div., Kadena AB, APO AP 96368 Japan

Display Presentations, Section F. Crop Protection Entomology

D0713 Pest management strategic plans for U.S. agriculture. **Stephen TOTH,** North Carolina State University, Dept. of Entomology, Box 7613, Raleigh, NC 27695-7613; Ronald STINNER, North Carolina State University, Entomology, CALS, NSF Center for IPM, 1017 Main Campus Dr, Raleigh, NC 27606-5204; Wilfred BURR, U.S. Dept. of Agriculture, Office of Pest Management Policy, South Agriculture Building, Washington, DC 20250

D0714 Engineering pests for their own destruction: New approaches. Fred GOULD, North Carolina State University, Entomology, 840 Method Road, Raleigh, NC 27607; **Paul SCHLIEKELMAN,** University of California, Division of Biology, Berkeley, CA 94720

D0715 IPMnet- the global network of electronic IPM information. **Waheed BAJWA,** Oregon State University, Integrated Plant Protection Center, 2040 Cordley Hall, Corvallis, OR 97331-8530; Marcos KOGAN, Oregon State University, Entomology, Integ Plant Prot Cent, Corvallis, OR 97331-2915

D0716 Minnesota Dept. of Agriculture's Plant Pest Survey Program. **Mark ABRAHAMSON,** Minnesota Dept. of Agriculture, 90 Plato Blvd W, St. Paul, MN 55107-2004

D0717 Enumeration of arthropods reported to be pesticide resistant. **P. BILLS,** Michigan State University, Center for Integrated Plant Systems, B10 CIPS, East Lansing, MI 48824-1311; David MOTA-SANCHEZ, Michigan State University, B-11 Center for Integrated Plant Systems, East Lansing, MI 48824; Mark WHALON, Michigan State University, Pesticides Res Cent, E Lansing, MI 48824

D0718 Bifenazate - a new mite control compound. **Mark DEKEYSER,** Uniroyal Chemical Co, Synthesis, 120 Huron Street, Guelph, ON N1H 6N3, Canada

D0719 Bioactivity of crude extracts of *Annona* spp. (Annonaceae) against lepidopteran larvae. **J. Audrey LEATEMIA,** University of British Columbia, Faculty of Agricultural Sciences, 248-2357 Main Mall, Vancouver, BC V6T 1Z4, Canada; Murray B. ISMAN, University of British Columbia, Faculty of Agriculture Sciences, Vancouver, BC V6T 1Z4, Canada

D0720 Phytotoxicity of pheromone-like chemicals: Expected range of damage from acetates, alcohols, aldehydes, and alkanes. **Piera GIROUX,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824; James MILLER, Michigan State University, 203 Ctr for Integrated Plant Syst, E Lansing, MI 48824

D0721 Spatial distribution of three corn insect pests in sprinkler irrigated corn in eastern Colorado. **Shawn WALTER,** Colorado State University, Dept. of BSPM, Fort Collins, CO 80523; Frank PEAIRS, Colorado State University, Dept. of Bspm, Fort Collins, CO 80523-1177

D0722 Yield impact and control of corn earworm with 'YieldGard' corn hybrids. **Robert HAMMON,** Colorado State University, Western Colorado Research Center, 1910 L Rd, Fruita, CO 81521

D0723 Assessment of transgenic Bt resistance for lepidopteran control and reduction of aflatoxin contamination of corn. **G. BUNTIN,** University of Georgia, Entomology, 1109 Experiment St, Griffin, GA 30223-1731

D0724 Characterizing the impact of Bt corn pollen on non-target Lepidopteran species using a risk assessment framework. **Jeff WOLT,** Dow AgroSciences, 9330 Zionsville Road, Indianapolis, IN 46268; Thomas MEADE, Dow AgroSciences, 9330 Zionsville Rd, Indianapolis, IN 46268-1053; Paul BYSTRAK, Mycogen Seeds, 301 Campus Dr, Huxley, IA 50124-9759; Robert PETERSON, Dow AgroSciences, 9330 Zionsville Rd., Indianapolis, IN 46074

D0725 Transgenic corn for corn rootworm: Risk assessment on non-target insects. **Clinton PILCHER,** Monsanto Agronomy Center, 1677 80th St, Monmouth, IL 61462-8803; Muhammad BHATTI, Monsanto Company, 800 North Lindbergh Blvd., St. Louis, MO 63141; Carol PILCHER, Iowa State University, 325 N Union St, Good Hope, IL 61438-9283; Clinton MEINHARDT, Western Illinois University, Macomb, IL 61455

D0726 Western corn rootworm temporal phenology in corn. **Jeff WHITWORTH,** Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506-4004; Roxanne SHUFRAN, Kansas State University, Entomology, Dept. of Entomology, Waters Hall, Manhattan, Kansas 66506-4004; Gerald WILDE, Kansas State University, Kansas State Univ., Dept. of Entomology, Manhattan, KS 66506,

D0727 Resistance management for western corn rootworms (Coleoptera: Chrysomelidae) using seed mixtures of transgenic corn expressing the Cry3B protein. **Wade FRENCH,** USDA, ARS, NPA, Northern Grain Insects Research Lab., 2923 Medary Ave., Brookings, SD 57006; Laurence CHANDLER, USDA ARS NCSL, P.O. Box 5677, Fargo, ND 58105-5677; Dave BECK, USDA, ARS, NPA, Northern Grain Insects Research Lab., 2923 Medary Ave., Brookings, SD 57006; Jay PERSHING, Monsanto Company, 700 Chesterfield Village Pkwy, St. Louis, MO 63198-0001

D0728 Modeling the development of resistance by western corn rootworm to transgenic corn. **Charles GUSE,** University of Illinois at Urbana-Champaign, 69 Natural Resources Bldg, 607 E Peabody Dr., Champaign, IL 61820; David ONSTAD, University of Illinois at Urbana-Champaign, Ctr For Economic Entomology, Illinois Nat Hist Survey, Champaign, IL 61820; Eli LEVINE, University of Illinois at Urbana-Champaign, Natural History Survey, 607 E Peabody Dr., Champaign, IL 61820-6917; Joseph SPENCER, University of Illinois at Urbana-Champaign, Center For Economic Entomology, 607 E Peabody Dr., Champaign, IL 61820-6917

D0729 Comparison of monitoring techniques for western corn rootworm. **Roxanne SHUFRAN,** Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506-4004; Gerald WILDE, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Jeff WHITWORTH, Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506-4004; Phillip SLODERBECK, Kansas State University, The Forrest Park Bldg, 2510 John Street, Garden City, KS 67846; Randall HIGGINS, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Kun ZHU, Kansas State University, Dept. of Entomology, Manhattan, KS 66506-4004

D0730 Four years of rootworm areawide management in Kansas. **Jeff WHITWORTH,** Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506-4004; Gerald WILDE, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Roxanne SHUFRAN, Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506-4004; Phillip SLODERBECK, Kansas State University, The Forrest Park Bldg, 2510 John Street, Garden City, KS 67846; Randall HIGGINS, Kansas State University, Entomology, Dept. of Entomology, Manhattan, KS 66506; Kun ZHU, Kansas State University, Dept. of Entomology, Manhattan, KS 66506-4004

D0731 Long term assessment of transgenic and non-transgenic corn hybrids for management of European corn borer in Ohio. **Harold WILLSON,** Ohio State University, 1991 Kenny Rd, IPM Program, Columbus, OH 43210-1015; Bruce EISLEY, Ohio State University, 1991 Kenny Road, Columbus, OH 43210; Curtis YOUNG, Ohio State University, Northwest District Extension Office, 952 Lima Avenue, Findlay, OH 45840; Jim JASINSKI, Ohio State University, Southwest District Extension Office, 303 Corporate Cener Dr., Vandalia, OH 45377

D0732 Susceptibility of the K-State Dipel-resistant European corn borer strain to Bt Cry toxins. **Huarong LI,** Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506; Fangneng HUANG, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Randall HIGGINS, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Lawrent BUSCHMAN, Kansas State University, Entomology, Southwest Research Ext Center, 4500 E Mary St, Garden City, KS 67846-9132; Brenda OPPERT, USDA-ARS, Grain Marketing & Prod Res Ctr Ave, 1515 College Ave, Manhattan, KS 66502

D0733 Dispersal of dye-marked southwestern corn borer moths within a corn field and across a wheat stubble field. **Lawrent BUSCHMAN,** Kansas State University, Entomology, Southwest Research Ext Center, 4500 E Mary St, Garden City, KS 67846-9132; Jawwad QURESHI, Kansas State University, Dept. of Entomology, Manhattan, KS 66506; Jose GUZMAN, Kansas State University, Entomology Dept., 4500 E. Mary St., Garden City, KS 67846; Phillip SLODERBECK, Kansas State University, Southwest Research Extension Center, 4500 E. Mary St., Garden City, KS 67846; Sonny RAMASWAMY, Kansas State University, Entomology, Manhattan, KS 66506; Randall HIGGINS, Kansas State University, Dept. of Entomology, Manhattan, KS 66506

D0734 Efficacy of Tracer against lepidopteran pests in soybeans. **Xinpei HUANG,** Dow Agrosciences, 753 Highway 438, Greenville, MS 38701-8534; William HENDRIX, Dow Agrosciences, 1806 Peabody Ave., Memphis, TN 38104

D0735 Photosynthetic rate reduction from injury by adult clover leaf weevil *Hypera punctata* on soybeans. **Rod MADSEN,** 18557 Co Rd, Blair, NE 68008; Leon HIGLEY, University of Nebraska, 202 Plant Industry Bldg, Lincoln, NE 68583; Thomas HUNT, University of Nebraska, Haskell Agricultural Laboratory, 57905 866 Road, Concord, NE 68728

D0736 The effects of soil composition, parental background, and the Roundup Ready resistance trait on expression of Cry1Ac in transgenic Bt cotton varieties. **John ADAMCZYK,** USDA ARS SIMRU, P.O. Box 346, Stoneville, MS 38776-0346

D0737 Arizona's Multi-Agency Resistance Management Program for Bt cotton. **Timothy DENNEHY,** University of Arizona, Dept. of Entomology, Extension Arthropod Resistance Management Laboratory, P.O. Box 210036, Tucson, AA 85721; M. A. SIMS, University of Arizona, Dept. of Entomology, Extension Arthropod Resistance Manaagement Laboratory, Tucson, AZ 85721; Larry ANTILLA, Arizona Cotton Research & Protection Council, Phoenix, AZ ; Yves CARRIERE, University of Arizona, Dept. of Entomology, Tucson, AZ 85721-0036; Bruce TABASHNIK, University of Arizona, Dept. of Entomology, Tucson, AZ 85721-0001; Yong-Biao LIU, University of Arizona, Dept. of Entomology, Tucson, AZ 85721

D0738 Novel syntheses facilitate development of economical attract and kill tactics. **Francis WEBSTER,** State University of New York, Jahn Hall, 1 Forestry Drive, Syracuse, NY 13210; Philipp KIRSCH, IPM Technologies, Inc., 4134 N. Vancouver Ave, Suite 105, Portland, OR 97217

D0739 Reproductive biology and survival of boll weevil on *Cienfuegosia drummondii*. **Randy COLEMAN,** USDA ARS, 2413 E US Highway 83, Weslaco, TX 78596-8344; Roy PARKER, Texas A&M University, Texas Agric Ext Serv, Corpus Christi, TX 78406-9704; Gary ELZEN, 2413 E. Hwy 83, Weslaco, TX 78596

D0740 Novaluron: A new broad-spectrum benzoylurea insect growth regulator for management of insect pests in cotton, vegetables and pome fruit. **Robert EVERICH,** Makhteshim-Agan of North American, 551 5th Ave Rm 1100, New York, NY 10176-1199; R. Timothy WEILAND, CKWitco Corp - Uniroyal Chemical, Benson Road, Middlebury, CT 06749; James WHITEHEAD, Makhteshim-Agan of North America, 128 Chinquipin Cove, Ridgeland, MS 39157

D0741 Evaluation of structured refuge strategies for pink bollworm in genetically modified cotton. **Daniel KEAVENY III,** California Dept. of Food and Agriculture, Pink Bollworm Project, 5100 Douglas Avenue, Shafter, CA 93263; Michelle WALTERS, USDA APHIS PPQ, 3645 E Wier Ave, Phoenix, AZ 85040-2931; Robert STATEN, USDA APHIS PPQP, 4125 E Broadway, Phoenix, AZ 85040

D0742 Comparison of pink bollworm management/eradication regimes in southern California valleys, 1994-2000. **Michelle WALTERS,** USDA APHIS PPQ, 3645 E Wier Ave, Phoenix, AZ 85040-2931; Robert STATEN, USDA APHIS PPQP, 4125 E Broadway, Phoenix, AZ 85040; Daniel KEAVENY III, California Dept. of Food and Agriculture, Pink Bollworm Project, 5100 Douglas Avenue, Shafter, CA 93263

D0743 Wheat curl mite effect on yield of wheat. **Tom HARVEY,** Kansas State University, Agric Research Center, 1232 240th Ave., Hays, KS 67601-9228; T. Joe MARTIN, Kansas State University, Ag Research Center, Hays, KS 67601-9228; Dallas SEIFERS, Kansas State University, Ag Research Center, 1232 240th Avenue, Hays, KS 67601-9228

D0744 IPM decision aids for orange wheat blossom midge. **Edward BECHINSKI,** University of Idaho, Plant, Soil, and Entomological Sciences, Moscow, ID 83843; David WATTENBARGER, University of Idaho; Benjamin HUBBARD, University of Idaho

D0745 Hessian fly: Population densities in no-till cropping systems. **Stephen CLEMENT,** Washington State University, Entomology, USDA ARS Plant Intro Stn, Pullman, WA 99164-6402; Leslie ELBERSON, Washington State University, USDA ARS Plant Intro, Pullman, WA 99164-6402; Frank YOUNG, Washington State University, Crop and Soil Sciences, Mail Stop 6420, Pullman, WA 99164; Roger RATCLIFFE, Purdue University, USDA ARS, Dept. of Entomology, W Lafayette, IN 47907-1158

D0746 Rice plant response to rice water weevil induced injury at various plant growth stages. **Larry GODFREY,** University of California, Davis, Entomology, Davis, California 95616; Terry CUNEO, University of California, Davis, 1 Shields Ave, Davis, CA 95616-5270; Richard LEWIS, Dept. of Entomology, One Shields Ave., Univ. of California, Davis, CA 95616

D0747 Mitochondrial DNA sequence divergence among Asian populations of migratory rice pests, *Nilarparvata lugens, Sogatella furcifera* (Homoptera) and *Cnaphalocrosis medinalis* (Lepidoptera). **Jeom-Hee MUN,** UC Berkeley, 201 Wellman Hall, Division of Insect Biology, Berkeley, CA 94720-3112; Yoo-Han SONG, Gyeong-Sang National University, Dept. of Agricultural Biology, Chinju, 660-701, South Korea; Kong-Luen HEONG, International Rice Research Institute, MCPO Box 3127, Makati, 1271, Philippines; George K. RODERICK, University of California, Conservation Research & Training Program, Manoa, 201 Wellman Hall #3112, Insect Biology, Berkeley, CA 94720-3112

D0748 The Mexican rice borer threat to sugarcane in the Upper Texas Rice Belt and western Louisiana. **Thomas REAGAN,** Louisiana State University, Dept. of Entomology, Baton Rouge, LA 70803; Michael Way, Texas A&M University, TAMU Agric Res & Ext Ctr, 1509 Imes Rd., Beaumont, TX 77713; Fred POSEY, LSU AgCenter, 402 Life Sciences Building, Baton Rouge, LA 70775

D0749 QTL mapping of pyrethroid resistance in Colorado potato beetle. **David HAWTHORNE,** University of Maryland College Park, Dept. of Entomology, College Park, MD 20742

D0750 Plastic traps for control of Colorado potato beetle. **David HUNT,** Agric & Agri-Food Canada Res Center, Harrow, ON N0R 1G0, Canada; Robert VERNON, Pacific Agri-Food Research Centre, Agriculture and Agri-Food Canada, Agassiz, BC V0M 1A0, Canada

D0751 Regional monitoring system for aphid vectors of potato viruses in Minnesota and North Dakota. **David RAGSDALE,** University of Minnesota, Dept. of Entomology, St. Paul, MN 55108; Robert SURANYI, University of Minnesota, Dept. of Entomology, St. Paul, MN 55108-6125; Edward RADCLIFFE, University of Minnesota, Dept. of Entomology, St. Paul, MN 55108; Matthew CARROLL, University of Minnesota, Entomology, 219 Hodson Hall, 1980 Folwell Ave., St. Paul,

Minnesota 55108; Ian MACRAE, University of Minnesota, Dept. of Entomology, NWROC, Crookston, MN 56716

D0752 Local dispersal of aphid vectors of potato viruses in Minnesota and North Dakota. **Min ZHU,** University of Minnesota, Dept. of Entomology, 218 Hodson Hall, 1980 Folwell Ave, St. Paul, MN 55108; Ian MACRAE, University of Minnesota, Dept. of Entomology, NWROC, Crookston, MN 56716; David RAGSDALE, University of Minnesota, Dept. of Entomology, St Paul, MN 55108; Edward RADCLIFFE, University of Minnesota, Dept. of Entomology, St Paul, MN 55108; Matthew CARROLL, University of Minnesota, Entomology, 219 Hodson Hall, 1980 Folwell Ave., St. Paul, Minnesota 55108; Robert SURANYI, University of Minnesota, Dept. of Entomology, St. Paul, MN 55108-6125

D0753 Seasonal activity of thrips in eastern Virginia tomato fields. **Brian NAULT,** Virginia Polytechnic Institute and State University, Eastern Shore AREC, Virginia Tech, Painter, VA 23420-2826

D0754 Evaluation of IPM practices for controlling the spread of tomato spotted wilt virus in tomatoes. **William CARSON,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001; Gregory KUND, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521; John TRUMBLE, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521

D0755 Susceptibility and behavioral responses of western flower thrips to pesticides used in management of tomato spotted wilt virus. **Gregory KUND,** University of California, Riverside, Dept. of Entomology, Riverside, CA 92521; John TRUMBLE, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001; William CARSON, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521-0001

D0756 Sweetpotato IPM in the Caribbean. **D. Michael JACKSON,** USDA-ARS, U.S. Vegetable Laboratory, 2875 Savannah Highway, Charleston, SC 29414-5333

D0757 Residual foliar activity of lufenuron to immature stages of the diamondback moth (Lepidoptera: Plutellidae). **Emmanuel EDOMWANDE,** Pretoria, Gauteng 0002, South Africa; At schoeman AS, University of Pretoria, Dept. of Zoology and Entomology, Pretoria, Gauteng 0002, South Africa; Mac VAN DER MERWE, University of Pretoria, Pretoria, Gauteng 0002, South Africa

D0758 Host plant preference of crucifer pests: Potential trap crops. **Rebecca HALLETT,** University of Guelph, Ontario Agricultural College, Dept. of Environmental Biology, Guelph, ON N1G2W1, Canada

D0759 Population dynamics of the leafhopper *Empoasca decipiens* on cucumbers. **Christian BORGEMEISTER,** Inst Plant Diseases, Herrenhaeuserstr 2, Hannover, 30419, Germany; Katharina RAUPACH, Inst Plant Diseases, Herrenhaeuserstr. 2, Hannover, 30419, Germany; Hans-Michael POEHLING, Inst Plant Diseases, Herrenhaeuserstr. 2, Hannover, 30419, Germany; Mamoudou SETAMOU, Texas A&M University, Entomology, 2415 E. Highway 83, Weslaco, TX 78596-8399; Martin HOMMES, Federal Biological Research Centre for Agriculture and Forestry, Messeweg 11-12, Braunschweig, 38104, Germany

D0760 Development of management practices for onion thrips in processing cabbage grown in New York State. **John CURTIS,** Cornell University, Dept. of Entomology, Geneva, NY 14456; Anthony SHELTON, Cornell University, Dept. of Entomology, Geneva, NY 14456; Tracey GREENE-HANFORD, Cornell University, Geneva, NY 14456; Hana MASSECAR L; Jason PLATE

D0761 Population trends of adult cabbage maggot (Diptera: Anthomyiidae) in relation to degree-day accumulations in upstate New York. **Anthony SHELTON,** Cornell University, Dept. of Entomology, Geneva, NY 14456; Jawahar JYOTI, Cornell University, Dept. of Entomology, NYSAES, Geneva, NY 14456

D0762 Evaluation of onion thrips control and resistance in New York State. **Mary Lou HESSNEY,** Cornell University, NYSAES, Dept. of Entomology, Geneva, NY 14456; Wendy C. KAIN, Cornell University, NYSAES, Dept. of Entomology, Geneva, NY 14456; Jody L. GANGLOFF, Cornell University, Nassau County Cooperative Extension, Plainville, NY 11803; Charles J. ECKENRODE, Cornell University, NYSAES, Dept. of Entomology, Geneva, NY 14456; Alan G. TALYOR, Cornell University, NYSAES, Dept. of Horticultural Sciences, Geneva, NY 14456; Michael G. VILLANI, Cornell University, NYSAES, Dept. of Entomology, Geneva, NY 14456

D0763 Pyrethroid resistance in the onion thrips in the Lower Rio Grande Valley of Texas. **Alton N. SPARKS Jr.,** Texas A&M University, Entomology, 2401 East Highway 83, Weslaco, TX 78596; Tong-Xian LIU, Texas A&M University, 2415 East Highway 83, Weslaco, TX 78596

D0764 Estimating susceptibility of the silverleaf whitefly to imidacloprid in the laboratory. **David SCHUSTER,** University of Florida, Gulf Coast Research & Education Center, 5007 60th Street East, Bradenton, FL 34203; Sandra THOMPSON, University of Florida, Gulf Coast Research & Education Center, 5007 60th Street East, Bradenton, FL 34203

D0765 Transluminar activity of pyriproxyfen against silverleaf whitefly on different plant species. Monica TOWNSEND, University of Georgia, Dept. of Entomology, CAES-GA Exper Stn, Griffin, GA 30223; **Ronald OETTING,** University of Georgia, Entomology, Georgia Exp Stn, 1109 Experiment St, Griffin, GA 30223-1731

D0766 Controlling tree fruit pests with Last Call: Innovative attract and kill technology. **Philipp KIRSCH,** IPM Technologies, Inc., 4134 N. Vancouver Ave, Suite 105, Portland, OR 97217; Gerhard BOOYSEN, Semiochem South Africa, Private Bag X0419, Suite 378, Tzaneen, 0850, South Africa; Dariusz CZOKAJLO, IPM Technologies, 4134 N. Vancouver Ave., #105, Portland, OR 97217

D0767 Last Call attract and kill bait technology shows promise in vegetable pest management. **Everett MITCHELL,** University of Florida, USDA ARS, 1700 SW 23rd Dr, Gainesville, FL 32608-1069; Philipp KIRSCH, IPM Technologies, Inc., 4134 N. Vancouver Ave, Suite 105, Portland, OR 97217; John MCLAUGHLIN, IPM Technologies, Inc., 2024 Hunterfield Land, Raleigh, NC 27609; Dariusz CZOKAJLO, IPM Technologies, Inc., 4134 N. Vancouver Ave. Suite 105, Portland, OR 97217

D0768 Within field distribution of sugarbeet root maggot, *Tetanops myopaeformis* (Diptera: Otitidae). **Ian MACRAE,** University of Minnesota, Dept. of Entomology, NWROC, 2900 University Ave, Crookston, MN 56716

D0769 The establishment of economic injury levels for the beet armyworm, *Spodoptera exigua*, in California sugarbeets. **David HAVILAND,** Entomology, UC Davis, One Shields Avenue, Davis, CA 95616; Larry GODFREY, University of California, Davis, Dept. Entomology, Davis, CA 95616; Tom BABB, Spreckels Sugar Company, P.O. Box 2240, Woodland, CA 95776

D0770 Infestation of strawberries with eggs of *Otiorhynchus* spp. (Coleoptera: Curculionidae). **James FISHER,** USDA/ARS/HCRL, 3540 NW Orchard Ave., Corvallis, OR 907330; David EDWARDS, USDA, ARS, HCRL, 3420 NW Orchard Ave, Corvallis, OR 97330

Wednesday, December 6

D0771 Implementation of mating disruption of the blackheaded fireworm, *Rhopobota naevana* (Lepidoptera: Tortricidae) in cranberry. **Carolyn GARVEY,** University of Wisconsin-Madison, Entomology, 1630 Linden Dr., Madison, WI 53706; Daniel MAHR, University of Wisconsin, Agriculture and Agribusiness, Cooperative Extension, Dept. of Entomology, Madison, WI 53706; Thomas BAKER, Iowa State University, Dept. of Entomology, 411 Science II, Ames, IA 50011

D0772 Novel tactics for protection of cranberry from direct fruit pests. Donald C. WEBER, Ocean Spray Cranberries, Agricultural Reseach Group, Lakeville, MA 02349; **Karen ASMUSSEN,** Ocean Spray Cranberries, Agricultural Research Group, Lakeville, MA 02349; Scott R. ROSKELLEY, Ocean Spray Cranberries, Agricultural Research Group, Lakeville, MA 02349

D0773 Implementation of mating disruption of *Sparganothis* fruitworm, *Sparganothis sulphureana* (Lepidoptera: Tortricidae) in cranberry. **Daniel MAHR,** University of Wisconsin-Madison, Agriculture and Agribusiness, Cooperative Extension, Dept. of Entomology, Madison, WI 53706; Carolyn GARVEY, University of Wisconsin-Madison, Entomology, 1630 Linden Dr., Madison, Wisconsin 53706; Thomas BAKER, Iowa State University, Dept. of Entomology, 411 Science II, Ames, IA 50011

D0774 Mating disruption for management of *Sparganothis sulfureana* in cranberries. **Donald C. WEBER,** Ocean Spray Cranberries, Agricultural Research Group, Lakeville, MA 02349; Sridhar POLAVARAPU, Rutgers Blueberry and Cranberry Research Center, Chatsworth, NJ 08019; Scott R. ROSKELLEY, Ocean Spray Cranberries, Agricultural Research Group, Lakeville, MA 02349

D0775 Resistance and alternatives to organophosphate insecticides for management of cranberry weevil (*Anthonomus musculus*). **Scott R. ROSKELLEY,** Ocean Spray Cranberries, Agricultural Research Group, Lakeville, MA 02349; Donald C. WEBER, Ocean Spray Cranberries, Agricultural Research Group, Lakeville, MA 02349

D0776 Influence of conservation tillage practices and insecticide use on the incidence of insect pests on flue-cured tobacco. **Paul SEMTNER,** Virginia Polytechnic Institute and State University, Virginia Tech, 2375 Darvills Rd, Blackstone, VA 23824-3020; T. David REED, Virginia Polytechnic Institute and State University, Southern Piedmont Agri. Res. and Ext. Center, 2375 Darvills Road, Blackstone, VA 23824; Joan CLARKE, Southern Piedmont Agricultural Reseach and Experiment Center, 2375 Darvills Road, Blacksburg, VA 23824

D0777 Neonicotinoid resistance in *Bemisia tabaci*: Mechanisms and management. **Ralf NAUEN,** Bayer AG, Agrochemicals Division, Research Insecticides, D-51368 Leverkusen, FRG, Germany

D0778 Impact of insecticide drenches on the development of rooted cuttings. **Scott LUDWIG,** Pennsylvania State University, Dept. of Entomology, 501 ASI Building, University Park, PA 16802; Kelli HOOVER, Pennsylvania State University, Dept. of Entomology, 501 ASI Building, University Park, PA 16802; Richard LINDQUIST, Ohio State University, OARDC, Entomology Dept., Wooster, OH 44691-4114

D0779 Peripheral insecticide applications as a means of black cutworm control on golf course putting greens. **R. WILLIAMSON,** University of Wisconsin-Madison, 237 Russell Labs, 1630 Linden Dr, Madison, WI 53706

D0780 Radii of attraction of eugenol, geraniol, PEG (3:7:3), and PEG (3:7:3) + Japonilure (R,Z)-5-1-decenyl)-dihydro-2(3H)-furanone in Japanese beetle (Coleoptera: Scarabaeidae) lure traps. **Jeffrey VALLA,** 2 Hillcrest Lane, Saratoga Springs, NY 12866

D0781 Spatio-temporal variation of the *Lygus* assemblage in canola, alfalfa and spring weeds in Alberta. **Hector CARCAMO,** Agriculture and Agri-Food Canada, Crop Science, P.O. Box 3000, Lethbridge, AB T1J 4B1, Canada; Michael DOLINSKI, Alberta Agriculture Food and Rural Development, # 304, 7000 - 113 Street, Edmonton, AB T6H 5T6, Canada; Peter MASON, Agric and Agric Food, East Cereal & Oilseed Res, Ottawa, ON K1A 0C6, Canada; Jennifer OTANI, Agriculture and Agri-Food Canada, P.O. Box 29, Beaverlodge, AB T0H 0C0, Canada; Lloyd DOSDALL, 7000 - 113 Street, Edmonton, AB T6H 5T6, Canada; Carolyn HERLE, Agriculture and Agri-Food Canada, Lethbridge, AB T1J 4B1, Canada; Richard BUTTS, P.O. Box 3000, Lethbridge, AB T1J 4B1, Canada; Owen OLFERT, Agriculture and Agri-Food Canada, 107 Science Place, Saskatoon, Saskatchewan S7N 0X2, Canada

D0782 Intraplant spatial patterns for *Acyrthosiphon kondoi* on alfalfa. **Ali ZARRABI,** Oklahoma State University, Dept. of Entomology and Plant Pathology, Stillwater, OK 74078; Richard BERBERET, Oklahoma State University, Dept. of Entomology and Plant Pathology, Rm 127 NRC, Stillwater, OK 74078; Arthur BISGES, Oklahoma State University, Dept. of Entomology and Plant Pathology, Stillwater, OK 74078; Mark PAYTON, Oklahoma State University, Dept. of Statistics, Stillwater, OK 74078

D0783 Strip-harvesting in alfalfa: Implications for the cultural and biological control of the potato leafhopper. **Laura WEISER,** Iowa State University, 4 Insectary, Ames, IA 50011; John OBRYCKI, Iowa State University, Entomology, Insectary Bldg., Ames, IA 50011-3140; Kristopher GILES, Oklahoma State University, Dept. Entomology & Plant Pathol, Stillwater, OK 74078-3033

D0784 Applications for a multiple channel acoustic monitoring system in detection and developmental studies of stored product pests. **Charles BURKS,** Dept. of Agriculture, 2021 S. Peach Ave., Fresno, CA 93727; Doru VELEA, National Center for Physical Acoustics, University of Mississippi, University, MS 38677; Peng LEE, National Center for Physical Acoustics, University of Mississippi, University, MS 38677; Robert HICKLING, Sonometrics Inc., 8306 Huntington Rd, Huntington Woods, MI 48070-1643

D0785 Efficacy of a new grain protectant applied to stored wheat in steel bins. **Edmond BONJOUR,** Oklahoma State University, Dept. of Entomology and Plant Pathology, 127 Noble Research Center, Stillwater, OK 74078-3033; Thomas PHILLIPS, Oklahoma State Univ., Dept. of Entomology, Stillwater, OK 74078; Zlatko KORUNIC, Hedley Technologies Inc., 5160 Explorer Drive, Unit 20, Mississauga, ON L4W 4T7, Canada

D0786 Susceptibility of last-instar red flour beetles and confused flour beetles (Coleoptera: Tenebrionidae) to hydroprene. **Franklin ARTHUR,** USDA-ARS, 1515 College Avenue, Manhattan, KS 66502

D0787 Insect pests associated with ear corn stored in cribs on small farms in Kentucky. **John SEDLACEK,** Kentucky State Univ., Comm Res Svc, Frankfort, KY 40601; Bryan PRICE, Kentucky State University, Community Research Service, E. Main St., Frankfort, KY 40601; Anthony HANLEY, Kentucky State University, Community Research Service, 400 E. Main, Frankfort, KY 40601

D0788 Impact of cry1Ab corn kernels in storage on Indian meal moth and angoumois grain moth. **Anthony HANLEY,** Kentucky State University, Community Research Service, 400 E. Main, Frankfort, KY 40601; John SEDLACEK, Kentucky State Univ., Comm Res Svc, Frankfort, KY 40601; Bryan PRICE, Kentucky State University, Community Research Service, E. Main St., Frankfort, KY 40601

D0789 Red cedar pests in Tamaulipas, México. **Enrique Ruíz-CANCINO,** Universidad Autónoma de Tamaulipas, UAM

Wednesday, December 6

Agronomía y Ciencias., Centro Universitario, Cd. Victoria, Tamaulipas 87149, México; Juana CORONADO-BLANCO, Ave 7 De Nov No 202., Col Americo Villarreal Guerra, Cd. Victoria, Tamaulipas 87004, Mexico

D0790 Attract and Kill technology for management European pine shoot moth, *Rhyacionia buoliana*, and western pine shoot borer, *Eucosma sonomana*. Dariusz CZOKAJLO, IPM Technologies, Inc., 4134 N. Vancouver Ave. Suite 105, Portland, OR 97217; **Gary DATERMAN,** U.S. Forest Service, 3200 Jefferson Way, Corvallis, OR 97331; Andris EGLITIS, U.S. Forest Service, 1645 Highway 20 East, Bend, OR 97701; Philipp KIRSCH, IPM Technologies, Inc., 4134 N. Vancouver Ave, Suite 105, Portland, OR 97217

D0791 Observations on the management of cooley spruce gall adelgid on blue spruce. **Whitney CRANSHAW,** Colorado State University, Bspm/Entomology, Ft Collins, CO 80523; Karen KRAMER, Colorado State University, Dept. of Bioagricultural Sciences and Pest Management, Ft. Collins, CO 80523; Loretta MANNIX, Colorado State University, Bioagricultural Sciences and Pest Management, Plant Sciences Bldg. C120, Fort Collins, CO 80523; Nihat DEMIREL, Colorado State University, 905 W Laurel St, Apt.324, Fort Collins, CO 80521-3573

D0792 Trap-Lures for surveillance of fruit flies. **Donald THOMAS,** USDA ARS, 2301 So International Blvd., Weslaco, TX 78596

D0793 Evaluation of reduced-risk insecticides against codling moth, peach twig borer, and western cherry fruit fly. **Michael REDING,** Utah State University, Dept. of Biol, Logan, UT 84322; Diane ALSTON, Utah State University, 5305 Old Main Hill, Logan, UT 84322-5305

D0794 Monitoring Oriental fruit moth and tarnished plant bug populations and damage levels in commercial orchards with different pest management programs. **Atanas ATANASSOV,** Rutgers, The State University of New Jersey, RAREC, 121 Northville Rd, Bridgeton, NJ 08302; Peter SHEARER, Rutgers, The State University of New Jersey, Agricultural Research & Extension Center, 121 Northville Rd, Bridgeton, NJ 08302-5919; George HAMILTON, Rutgers, The State University of New Jersey, Pest Mgmt Office, New Brunswick, NJ 08901; Dean POLK, Rutgers, The State University of New Jersey, 283 RT 539, Cream Ridge, NJ 08514

D0795 Residual activity of Intrepid and Confirm on codling moth and Oriental fruit moth. **Daniel BORCHERT,** North Carolina State University, Entomology, 106 Boxford Rd, Morrisville, NC 27560-9619; James WALGENBACH, North Carolina State University, Entomology, Agriculture & Life Sciences, MHCREC, 2016 Fanning Bridge Rd, Fletcher, NC 28732-9244; George KENNEDY, North Carolina State University, Dept. of Entomology, Raleigh, NC 27695; John LONG, Rohm & Haas Co, 100 Independence Mall West, PA 19106; Richard JANSSON, Rohm and Haas Co., 727 Norristown Rd, Spring House, PA 19477-0904

D0796 Sprayable pheromone for mating disruption of lesser peach tree borer, *Synanthedon pictipes* (Lepidoptera: Sesiidae), in Georgia peaches. **Ted COTTRELL,** USDA ARS, 21 Dunbar Rd, Byron, GA 31008-7066

D0797 Can a plant growth regulator (Apogee) enhance the efficacy of Provado and Confirm in apples? **Gregory PAULSON,** Shippensburg Univ., Dept. of Biol, Shippensburg, PA 17257; Larry HULL, Pennsylvania State University, Entomology, Agricultural Sciences, Penn State Fruit Res & Ext Ctr, P.O. Box 330, Biglerville, PA 17307-0330

D0798 Michigan Apple IPM Implementation Project. **David EPSTEIN,** Michigan State University, Integrated Plant Systems, IPM Program, B18E Food Safety & Toxicology, East Lansing, MI 48824; Daniel WALDSTEIN, Michigan State University, B18 Food Safety and Toxicology, E. Lansing, MI 48824; Larry GUT, Michigan State University, Dept. of Entomology, E Lansing, MI 48824; Peter MCGHEE, Michigan State University, Dept. of Entomology, East Lansing, MI 48824-1311

D0799 Areawide codling moth suppression program: Western United States. **Carrol CALKINS,** USDA ARS, 5230 Konnowac Pass Rd, Wapato, WA 98951-9651; Alan KNIGHT, USDA, 5230 Konnowac Pass Road, Wapato, WA 98951; Tom UNRUH, UDSA, ARS, 5230 Konnowac Pass Road, Wapato, WA 98951; Brad HIGBEE, UDSA, ARS, 5230 Konnowac Pass Road, Wapato, WA 98951; Brunner JAY, WSU Center for Reaearch and Education, Wnatchee, WA; Elizabeth Beers-PEREAE, WSU - Research and Education Center, Wenatchee, WA; Dunley JOHN, WSU - Research and Education Center, Wenatchee, WA; Hilton RICHARD, OSU - Research and Education Center, Medford, OR; Philip VANBUSKIRK, OSU - Research & Education Center, Medford, OR; Marcos KOGAN, OSU, Corvallis, OR; Welter STEVEN, U. of California - Berkeley, Berkeley, CA; Robert VAN STEENWYK, U. of California - Berkeley, Berkeley, CA

D0800 Lethal and delayed-lethal effects of insect growth regulators on codling moth, *Cydia pomonella* (L.), and Oriental fruit moth, *Grapholitha molesta* Busck (Lepidoptera: tortricidae) in Michigan apples. **John WISE,** Michigan State University, 243 Nat. Sci. Bldg., E. Lansing, MI 48824-1115; Larry GUT, Michigan State University, Dept. of Entomology, E Lansing, MI 48824

D0801 Developing alternative strategies to replace conventional organophosphate-based pesticides in apples. **Deepa RAMSINGHANI,** Michigan State University, B-11 Center for Integrated Plant Systems, Lansing, MI 48824; Mark WHALON, Michigan State University, Pesticides Res Cent, E Lansing, MI 48824

D0802 Variability of larval development in *Choristoneura rosaceana* Harris (Lepidoptera: Tortricidae). **Isabelle PRONIER,** Laboratoire de biologie animale, 33 rue Saint-Leu, F80039 Amiens Cedex 1, France; Charles VINCENT, Agric & Agri-food Canada, Hort Res & Dev Ctr, St-Jean, PQ J3B 3E6, Canada; Benoit RANCOURT, Horticultural Research and Development Center, Agriculture and Agri-Food Canada, 430 Gouin Blvd., Saint-Jean-sur-Richelieu, QC J3B 3E6, Canada; Boisclair DANIEL, Horticultural Research and Development Center, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu, QC J3B 3E6, Canada

D0803 Impact of adjuvents in extending the residual efficacy of spinosad against avocado thrips. **Kris TOLLERUP,** University of California, Riverside, Dept. of Entomology, University of California, Riverside, Dept. of Entomology, University of California, Riverside, Riverside, CA 92521

D0804 Sampling procedures for *Ecdytolopha aurantiana* (Lepidoptera: Tortricidae) in citrus groves. **José Roberto P. Parra POSTA,** Escola Superior de Agricultura Luiz de Queiroz - Universidade de São Paulo, Departamento Entomologia, Fitopatologia e Zoologia Agrícola, Caixa Postal 09, Piracicaba, São Paulo 13418-900, Brazil; Jose Mauricio S. BENTO, Escola Superior de Agricultura Luiz de Queiroz - Universidade de São Paulo, Departamento de Entomologia, Fitopatologia e Zoologia Agricola Caixa Postal, Piracicaba, SP 13418-900, Brazil; Evaldo F. VILELA, Universidade Federal de Vicosa, Departamento de Biologia Animal, Vicosa, MG 36571-000, Brazil; Walter S. LEAL, University of California Davis, Dept. of Entomology, Davis, CA 95616-8585

D0805 Demography and ecology of the forktailed katydid, a pest of California citrus. **Nick BRANDT,** California Polytechnic State University, San Luis Obispo, Crop Science Dept., 1 Grand Ave., San Luis Obispo, CA 93407; David HEADRICK, California Polytechnic State University, San Luis Obispo, Crop Science Dept., 1 Grand Ave., San Luis Obispo, CA 93407

D0806 Effect of different acaricides for control of citrus rust mite *Phyllocoptruta oleivora* Ash. (Acari: Eriophyidae) in three citrus cultivars on Tamaulipas, Mexico. **Sóstenes VARELA-FUENTES,** Universidad Autónoma de Tamaulipas, U.A.M. Agronomía y Ciencias, Centro Universitario Victoria, Victoria, Tamaulipas 87149, México; Norberto RODRÍGUEZ-NIÑO, Universidad Autonoma de Tamaulipas, U.A.M. Agronomía y Ciencias, Centro Universitario Victoria, Victoria, Tamaulipas 87149, México; Gilma SILVA-AGUIRRE, Universidad Autonoma de Tamaulipas, U.A.M. Agronomía y Ciencias, Centro Universitario Victoria, Victoria, Tamaulipas 87149, México

D0807 Novel new attractant and formulations for control and monitoring tephritid fruit flies. **Christopher SACK,** SUNY-ESF, Dept. of Chemistry, Syracuse, NY 13210; John MCLAUGHLIN, IPM Technologies, Inc., 2024 Hunterfield Land, Raleigh, NC 27609; Philipp KIRSCH, IPM Technologies, Inc., 4134 N. Vancouver Ave., #105, Portland, OR 97217; Dariusz CZOKAJLO, IPM Technologies, Inc., 4134 N. Vancouver Ave., #105, Portland, OR 97217

D0808 Fruit fly quarantine surveillance program in American Samoa. **Lloyd ALI,** American Samoa Community College, Entomology, Agriculture and Life Sciences, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799; Makeati UTUFITI, American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799; Elisapeta TOLEAFOA, Dept. of Agriculture, American Samoa Government, Pago Pago, AS 96799; Mark SCHMAEDICK, American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799

D0809 Efficacy of SpinTor naturalyte insect control in pecans. **William HENDRIX,** Dow Agrosciences, 1806 Peabody Ave., Memphis, TN 38104

D0810 Biology and management of banana scab moth in American Samoa. **Mark SCHMAEDICK,** American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799; Makeati UTUFITI, American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799; Fred BROOKS, American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799; Lloyd ALI, American Samoa Community College, Land Grant Program, P.O. Box 5319, Pago Pago, AS 96799

D0811 Insecticide trials against glassy winged sharpshooter leaf hoppers in a southern California vineyard. **David AKEY,** USDA, ARS, 4135 E. Broadway, Phoenix, AZ 85040-8803; Thomas HENNEBERRY, Western Cotton Res Lab, 4135 E Broadway Rd, Phoenix, AZ 85040-8803; Matthew BLUA, University of California, Riverside, Dept. of Entomology, Riverside, CA 92521; Steve CASTLE, USDA, ARS, PWA, Western Cotton Research Laboratory, 4135 E. Broadway, Phoenix, AZ 85040-8803; Nilima PRABHAKER, University of California, Riverside, Entomology, 4135 E. Broadway Road, Phoenix, AZ 85045

D0812 A comparison of population sampling methods for Lepidopteran pests in highbush blueberries. **Nikhil MALLAMPALLI,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824; John WISE, Michigan State University, 6013 Drumheller, Bath, MI 48808; Rufus ISAACS, Michigan State University, Entomology, 203 Pesticide Research Center, East Lansing, MI 48824

D0813 Effects of mulching on insect pest and disease incidence in highbush blueberries, *Vaccinium corymbosum*. **Oscar LIBURD,** Michigan State University, Dept. of Entomology, East Lansing, MI 48824; Annemiek SCHILDER, Michigan State university, Dept. of Botany and Plant Pathology, Center for Integrated Plant Systems, 104, East Lansing, MI 48824; Lukasz STELINSKI, Michigan State University, Dept. of Entomology, 243 Natural Science Building, East Lansing, MI 48824; Erin FINN, Michigan State University, Dept. of Entomology, Center for integrated Plant Systems, B-9, East Lansing, MI 48824

D0814 Field edge based control tactics for the blueberry maggot fly in lowbush blueberry. **Judith COLLINS,** University of Maine, Dept. of Biological Sciences, Orono, ME 04469; Francis DRUMMOND, University of Maine, Dept. of Biological Sciences, 305 Deering Hall, Orono, ME 0446

Display Presentations, Section Ea. Extension

D0815 The University of Kentucky home landscape IPM program. **Richard Durham,** University of Kentucky, Dept. of Horticulture, Lexington, KY 40546; Monte JOHNSON, University of Kentucky, Dept. of Entomology, S-225 Agriculture Science Center North, Lexington, KY 40546-0091; John HARTMAN, University of Kentucky, Dept. of Plant Pathology, Lexington, KY 40546

D0816 Strawberry IPM: Pesticide assessment. **Kenneth SORENSEN,** North Carolina State University, Entomology, Box 7626, Raleigh, NC 27695

D0817 Beneficial arthropod survey in transgenic and non-transgenic field crops in Ohio. **Jim JASINSKI,** Ohio State University, OSU Extension, 303 Corp Ctr Dr #208, Vandalia, OH 45377; Curtis YOUNG, Ohio State University, 952 Lima Ave., Findlay, OH 45840; Bruce EISLEY, Ohio State University, 1991 Kenny Road, Columbus, OH 43210; Joe KOVACH, Ohio State University, 1991 Kenny Road, Columbus, OH 43210; Hal WILLSON, Ohio State University, 1991 Kenny Road, Columbus, OH 43210

D0818 Regional monitoring system for sweet corn pests using web interfaced geographic information systems. **Chris HARDING,** Pennsylvania State University, Entomology, 501 ASI Building, State College, PA 16802; Shelby FLEISCHER, Pennsylvania State University, Entomology, 501 ASI Building, University Park, PA 16802; Bruce MILLER; Marty SPELLMAN; Kris HOLMSTROM; Abby SEAMEN; Brian NAULT, Virginia Polytechnic Institute and State University, 33446 Research Dr, Painter, VA 23420-2826; Sally WALKER; Marilyn HUGHES; Mike SAUNDERS; Joseph INGERSON-MAHAR, Rutgers, The State University of New Jersey, Co-Op Extension Service, P.O. Box 5062, New Brunswick, NJ 08903-5062; Joanne WHALEN, University of Delaware, Dept. of Entomology, Newark, DE 19717; Dale MOYER; Galen DIVELY, University of Maryland College Park, Dept. of Entomology, College Park, MD 20742-0001; Dick BEAN, Maryland Dept. of Agric, Plant Protection Section, Annapolis, MD 21401

D0819 Reducing pesticide use in home gardens through training in biological control. **Clifford SADOF,** Dept. of Entomology, Purdue University, 1158 Smith Hall, West Lafayette, IN 47907-1158; Robert WIEDENMANN, Illinois Natural History Survey, Cent for Econ Entomol, 607 E Peabody Dr, Champaign, IL 61820-6917; Robert ONEIL, Purdue University, Dept. of Entomology, West Lafayette, IN 47907-1185

D0820 A summary of sampling methodologies for IPM of shade tree and forest insect. **Scott SALOM,** Virginia Polytechnic Institute and State University, Dept. of Entomology, Blacksburg, VA 24061-0319; Jeffrey FIDGEN, Virginia Tech, Dept. of Entomology, Blacksburg, VA 24061-0319; Christopher FETTIG, University of Georgia, 413 Biological Sci Bldg, Athens, GA 30605; Quintin MCCLELLAN, Virginia Tech, Dept. of Entomology, Blacksburg, VA 24061-0319

D0821 Soil insecticide use and cultural control practices on field corn in Virginia: 1989 and 1999 survey results. **R. R. YOUNGMAN,** Virginia Polytechnic Institute & State University, Dept. of Entomol, 216 Price Hall, Blacksburg, VA 24061; C. A. LAUB, Virginia Polytechnic Institute & State University,

Dept. of Entomol, 216 Price Hall, Blacksburg, VA 24061

D0822 Evaluation of potential imported fire ant treatments for hay bales. **Ronald WEEKS,** Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475; Michael HEIMER, Texas Agricultural Extension Service, 9020 FM 1484, Conroe, TX 77304-7822; Charles BARR, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475; Bastiaan DREES, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475

D0823 "The ant underground": An interative youth CD Rom used in fire ant education. **Kelly LOFTIN,** University of Arkansas, ENR, Cooperative Extension Service, 2301 S. University, P.O. Box 391, Little Rock, AR 72203; Donna SHANKLIN, CES-Natural Resources, P.O. Box 3468, Monticello, AR 71656-3468; Brian RICHARDSON, University of Arkansas, 2301 S. University, Little Rock, AR 72203; Bob REYNOLDS, University of Arkansas, 2301 S. University, Little Rock, AR 72203; Tom RILEY, University of Arkansas, 2301 S. University, Little Rock, AR 72203

D0824 Comparison of mating disruption techniques for control of grape berry moth. **Keith MASON,** Michigan State University, Entomology, 206 Center for Integrated Plant Systems, East Lansing, MI 48824; Rufus ISAACS, Michigan State University, Entomology, 203 Pesticide Research Center, East Lansing, MI 48824

D0825 Pesticide rinsate wastes: Treatment and disposal. **Donald MULLINS,** Dept. of Entomology, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0319; Sandra GABBERT; Patricia HIPKINS; Glen HETZEL; Roderick YOUNG; Duane BERRY

D0826 Economic comparison of Bt-corn refuge-planting strategies for South Central and Southwestern Kansas. **Phillip SLODERBECK,** Kansas State University, Entomology, 4500 East Mary St., Garden City, KS 67846; Lawrent BUSCHMAN, Kansas State University, Entomology, Southwest Research Ext Center, 4500 E Mary St, Garden City, KS 67846-9132; Randall HIGGINS, Kansas State University, Entomology, Kansas State Univ, Manhattan, KS 66506; Troy DUMLER, Kansas State University, 4500 E. Mary St., Garden City, KS 67846

D0827 The Kansas State Research and Extension Distance Diagnostic System. **Randall HIGGINS,** Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506; Phillip SLODERBECK, Kansas State University, 2510 John St, Garden City, KS 67846; Michelle KACZMAREK, Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506; Charles MARR, Kansas State University, Dept. of Horticulture, Manhattan, KS 66506; Will BALDWIN, Kansas State University, Dept. of Communications, Umberger Hall, Manhattan, KS 66506; Rachael SPRINGER, Kansas State University, Umberger Hall, Manhattan, KS 66506; Judy O'MARA, Kansas State University, Dept. of Plant Pathology, Manhattan, KS 66506; Daryl BUCHHOLZ, Kansas State University, Umberger Hall, Manhattan, KS 66506

D0828 Wheat midge in North Dakota: Seven year review. **Phillip GLOGOZA,** North Dakota State University, P.O. Box 5346, Fargo, ND 58105-5346; Janet KNODEL, North Central Research Ext Cen, 5400 Highway 83 South, Minot, ND 58701

D0829 Determining the impact of field crops IPM Extension efforts in New York. **J. Keith WALDRON,** Cornell University, NYS IPM Program, Dept. of Entomology, 5142 Comstock Hall, Ithaca, NY 14853-0901; James TETTE, Cornell University, NYSAES, IPM House, Geneva, NY 14456

D0830 IPM practices and pesticide usage by Texas corn producers. **Noel TROXCLAIR,** Texas A&M University, P.O. Box 1849, Uvalde, TX 78802-1849; William MORRISON, Texas A&M University, Entomology, 412 Heep Building, College Station, TX 77843-2475; Carl PATRICK, Texas Agricultural Extension Service, 6500 Amarillo Blvd., West, Amarillo, TX 79106; Brent BEAN, Texas Agricultural Extension Service, 6500 Amarillo Blvd., West, Amarillo, TX 79106

D0831 Establishing a theoretical foundation to develop a standardized measurement tool to measure the adoption of integrated pest management. **Carol PILCHER,** Iowa State University, 325 N. Union St, Good Hope, IL 61438-9283; Larry PEDIGO, Iowa State University, Entomology, Ames, IA 50011; Peggy PETRZELKA, Iowa State University; Steven PADGITT, Iowa State University, Sociology-Ag, Iowa State University; Wendy WINTERSTEEN, Iowa State University, Cooperative Extension, Iowa State University; Jerry DEWITT, Iowa State University, 2104 Agronomy, Ames, IA 50011; Mike DUFFY, Iowa State University; Tom FUCHS, Texas A&M University

Final Business Meeting
North American Meeting of the SEQ, ESC, and ESA

407B

6:30 p.m. - 8:00 p.m.

Call to Order

Resolutions
Election of Members to Standing Committees

Presentation of the Presidents' Prize for Student Competition Awards, Michael Gray and Kevin Steffey, Co-chairs

Presentation of ESA Student Awards, Joan Lasota, Chair

- John Henry Comstock Graduate Student Awards
- Jeffrey P. LaFage Graduate Student Research Award
- Plant Resistance to Insects Graduate Student Research Award
- Snodgrass Memorial Research Award

Presentation of SEQ Melville Duporte Award, François Lorenzetti

Presentation of ESC Crittle Award, Dan L. Johnson

Presentation of The Entomological Foundation Student Awards, James L. Frazier

- ESA Undergraduate Scholarships (Sponsored by BioQuip Products and The Entomological Foundation)
- Stan Beck Fellowship
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- Lillian and Alex Feir Graduate Student Travel Award

New Business

Remarks and Passing the Gavel

Announcements

Adjourn

Student Reception

611A

8:00 p.m. - 10:00 p.m.

Author Index

Dept. of Entomol, 216 Price Hall, Blacksburg, VA 24061

D0822 Evaluation of potential imported fire ant treatments for hay bales. **Ronald WEEKS,** Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475; Michael HEIMER, Texas Agricultural Extension Service, 9020 FM 1484, Conroe, TX 77304-7822; Charles BARR, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475; Bastiaan DREES, Texas A&M University, Dept. of Entomology, College Station, TX 77843-2475

D0823 "The ant underground": An interative youth CD Rom used in fire ant education. **Kelly LOFTIN,** University of Arkansas, ENR, Cooperative Extension Service, 2301 S. University, P.O. Box 391, Little Rock, AR 72203; Donna SHANKLIN, CES-Natural Resources, P.O. Box 3468, Monticello, AR 71656-3468; Brian RICHARDSON, University of Arkansas, 2301 S. University, Little Rock, AR 72203; Bob REYNOLDS, University of Arkansas, 2301 S. University, Little Rock, AR 72203; Tom RILEY, University of Arkansas, 2301 S. University, Little Rock, AR 72203

D0824 Comparison of mating disruption techniques for control of grape berry moth. **Keith MASON,** Michigan State University, Entomology, 206 Center for Integrated Plant Systems, East Lansing, MI 48824; Rufus ISAACS, Michigan State University, Entomology, 203 Pesticide Research Center, East Lansing, MI 48824

D0825 Pesticide rinsate wastes: Treatment and disposal. **Donald MULLINS,** Dept. of Entomology, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0319; Sandra GABBERT; Patricia HIPKINS; Glen HETZEL; Roderick YOUNG; Duane BERRY

D0826 Economic comparison of Bt-corn refuge-planting strategies for South Central and Southwestern Kansas. **Phillip SLODERBECK,** Kansas State University, Entomology, 4500 East Mary St., Garden City, KS 67846; Lawrent BUSCHMAN, Kansas State University, Entomology, Southwest Research Ext Center, 4500 E Mary St, Garden City, KS 67846-9132; Randall HIGGINS, Kansas State University, Entomology, Kansas State Univ, Manhattan, KS 66506; Troy DUMLER, Kansas State University, 4500 E. Mary St., Garden City, KS 67846

D0827 The Kansas State Research and Extension Distance Diagnostic System. **Randall HIGGINS,** Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506; Phillip SLODERBECK, Kansas State University, 2510 John St, Garden City, KS 67846; Michelle KACZMAREK, Kansas State University, Dept. of Entomology, Waters Hall, Manhattan, KS 66506; Charles MARR, Kansas State University, Dept. of Horticulture, Manhattan, KS 66506; Will BALDWIN, Kansas State University, Dept. of Communications, Umberger Hall, Manhattan, KS 66506; Rachael SPRINGER, Kansas State University, Umberger Hall, Manhattan, KS 66506; Judy O'MARA, Kansas State University, Dept. of Plant Pathology, Manhattan, KS 66506; Daryl BUCHHOLZ, Kansas State University, Umberger Hall, Manhattan, KS 66506

D0828 Wheat midge in North Dakota: Seven year review. **Phillip GLOGOZA,** North Dakota State University, P.O. Box 5346, Fargo, ND 58105-5346; Janet KNODEL, North Central Research Ext Cen, 5400 Highway 83 South, Minot, ND 58701

D0829 Determining the impact of field crops IPM Extension efforts in New York. **J. Keith WALDRON,** Cornell University, NYS IPM Program, Dept. of Entomology, 5142 Comstock Hall, Ithaca, NY 14853-0901; James TETTE, Cornell University, NYSAES, IPM House, Geneva, NY 14456

D0830 IPM practices and pesticide usage by Texas corn producers. **Noel TROXCLAIR,** Texas A&M University, P.O. Box 1849, Uvalde, TX 78802-1849; William MORRISON, Texas A&M University, Entomology, 412 Heep Building, College Station, TX 77843-2475; Carl PATRICK, Texas Agricultural Extension Service, 6500 Amarillo Blvd., West, Amarillo, TX 79106; Brent BEAN, Texas Agricultural Extension Service, 6500 Amarillo Blvd., West, Amarillo, TX 79106

D0831 Establishing a theoretical foundation to develop a standardized measurement tool to measure the adoption of integrated pest management. **Carol PILCHER,** Iowa State University, 325 N. Union St, Good Hope, IL 61438-9283; Larry PEDIGO, Iowa State University, Entomology, Ames, IA 50011; Peggy PETRZELKA, Iowa State University; Steven PADGITT, Iowa State University, Sociology-Ag, Iowa State University; Wendy WINTERSTEEN, Iowa State University, Cooperative Extension, Iowa State University; Jerry DEWITT, Iowa State University, 2104 Agronomy, Ames, IA 50011; Mike DUFFY, Iowa State University; Tom FUCHS, Texas A&M University

Final Business Meeting
North American Meeting of the SEQ, ESC, and ESA

407B

6:30 p.m. - 8:00 p.m.

Call to Order

Resolutions
Election of Members to Standing Committees

Presentation of the Presidents' Prize for Student Competition Awards, Michael Gray and Kevin Steffey, Co-chairs

Presentation of ESA Student Awards, Joan Lasota, Chair

- John Henry Comstock Graduate Student Awards
- Jeffrey P. LaFage Graduate Student Research Award
- Plant Resistance to Insects Graduate Student Research Award
- Snodgrass Memorial Research Award

Presentation of SEQ Melville Duporte Award, François Lorenzetti

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Author Index

Key Word Index

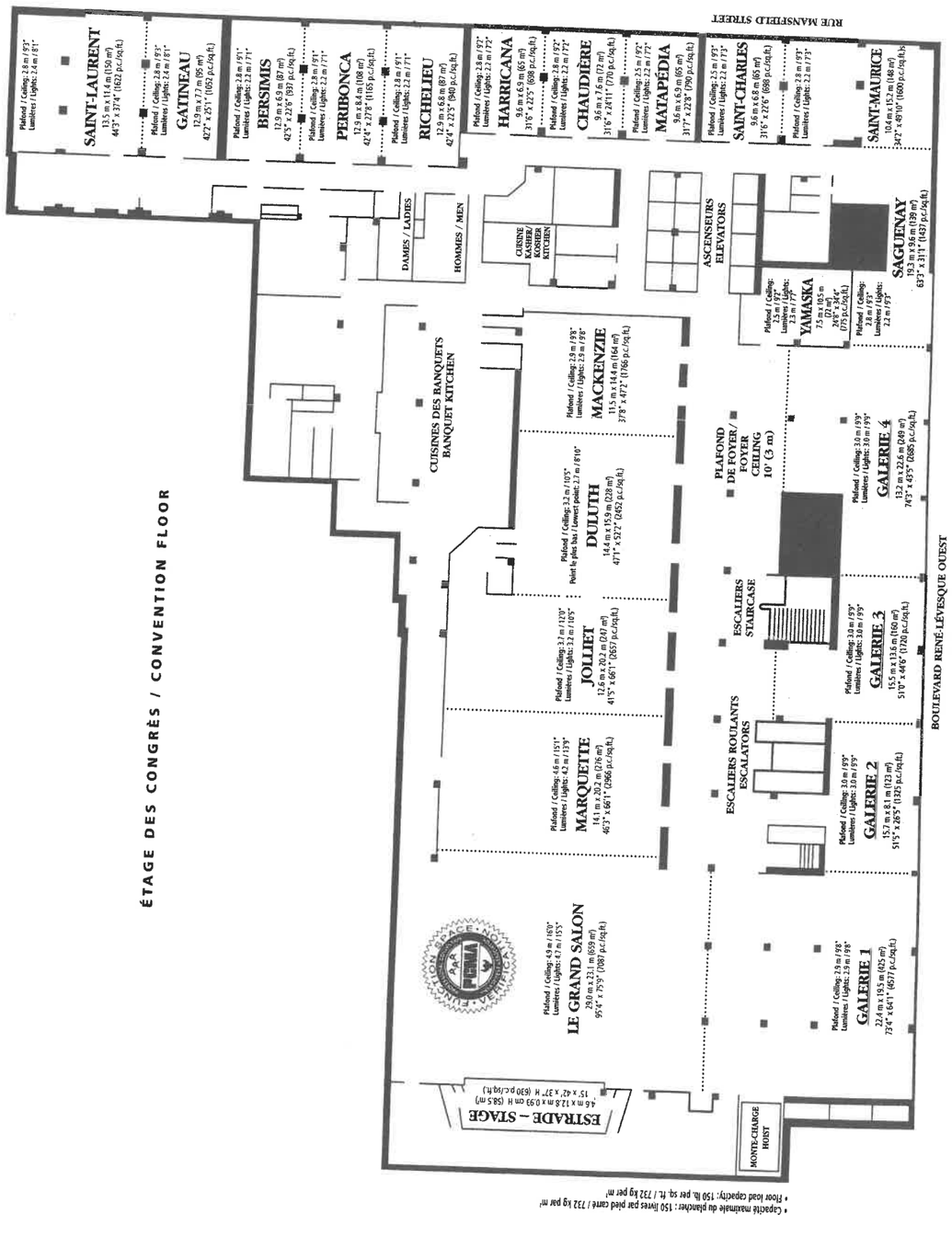
ESA Common Names Index

Scientific Names Index

Notes

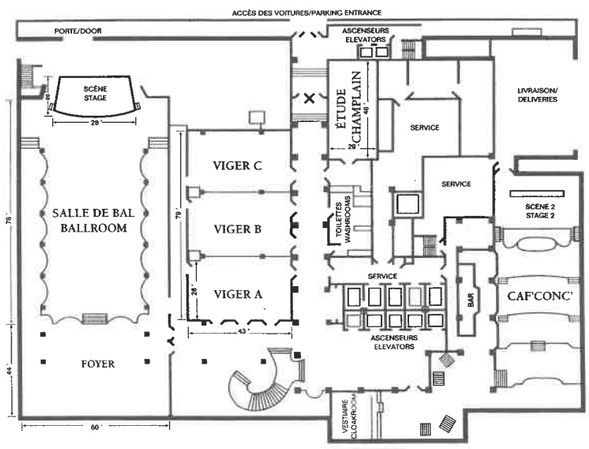
Le Reine Elizabeth

The Queen Elizabeth



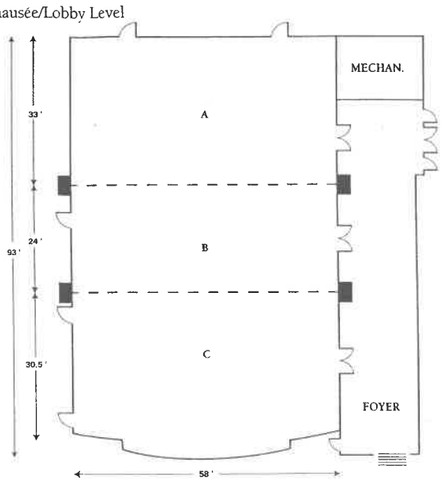
The Marriott Château Champlain

Hall inférieur
Lower Lobby

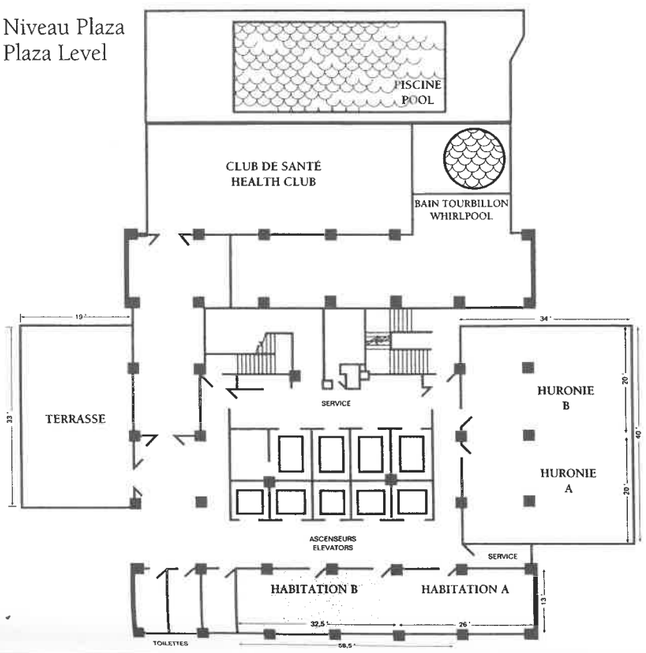


Salons
Cartier ABC

Rez-de -chausée/Lobby Level

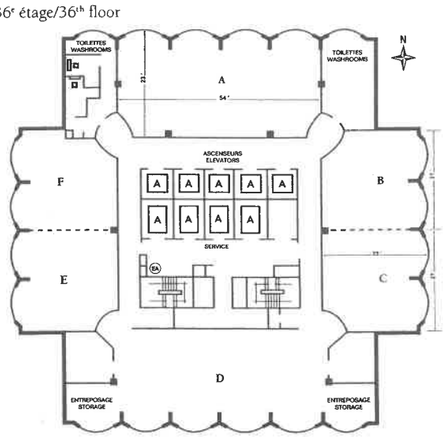


Niveau Plaza
Plaza Level



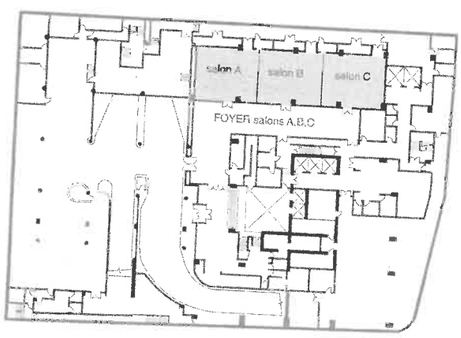
Salons
Maisonneuve

36e étage/36th floor

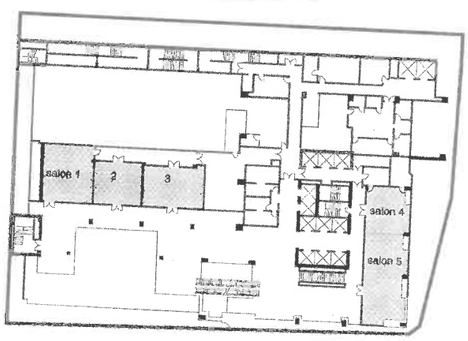


Le Centre Sheraton

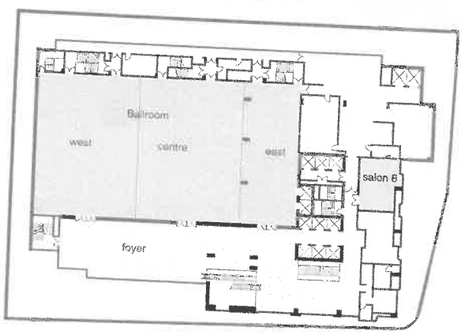
Level B • Meeting Rooms



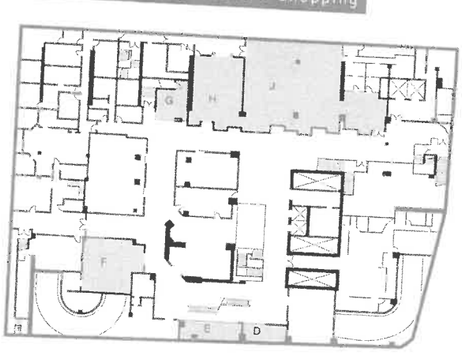
Second floor • Meeting Rooms



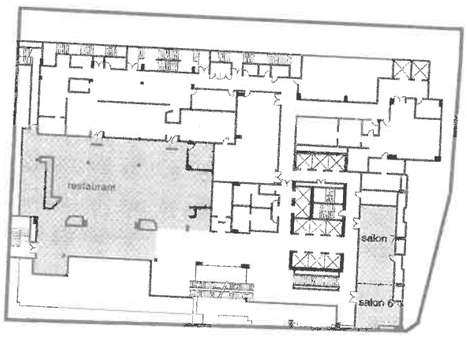
Fourth floor • Grand Ballroom



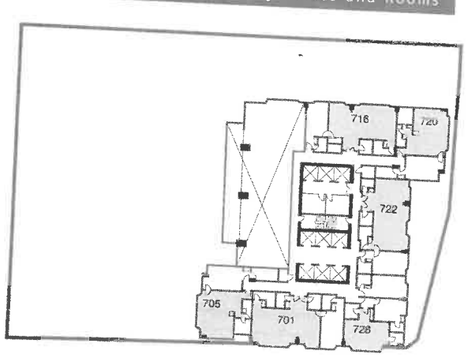
Level A • Meeting Rooms & Shopping



Third floor • Restaurant & Meeting Rooms



Seventh floor • Hospitality Suites and Rooms

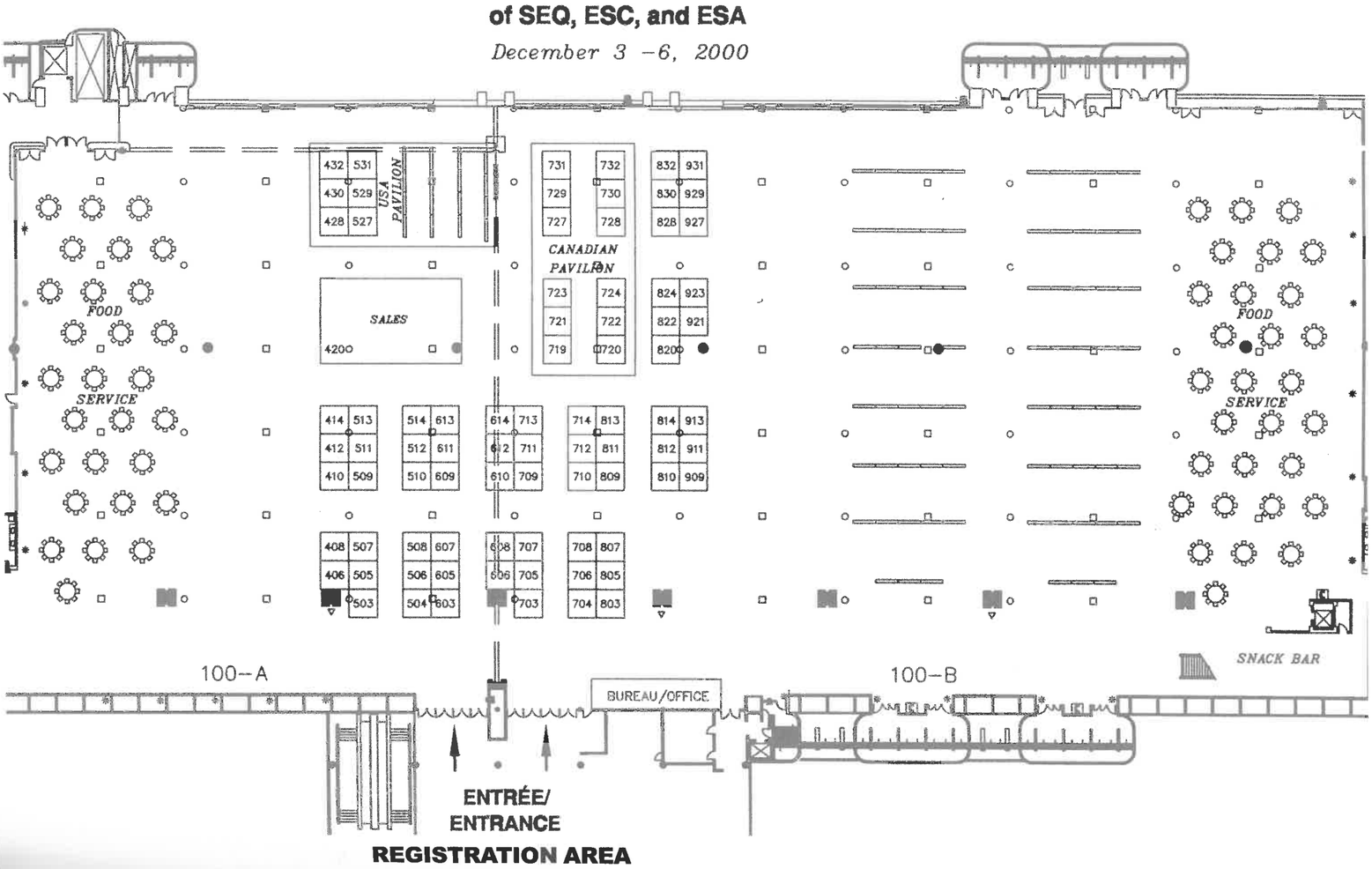


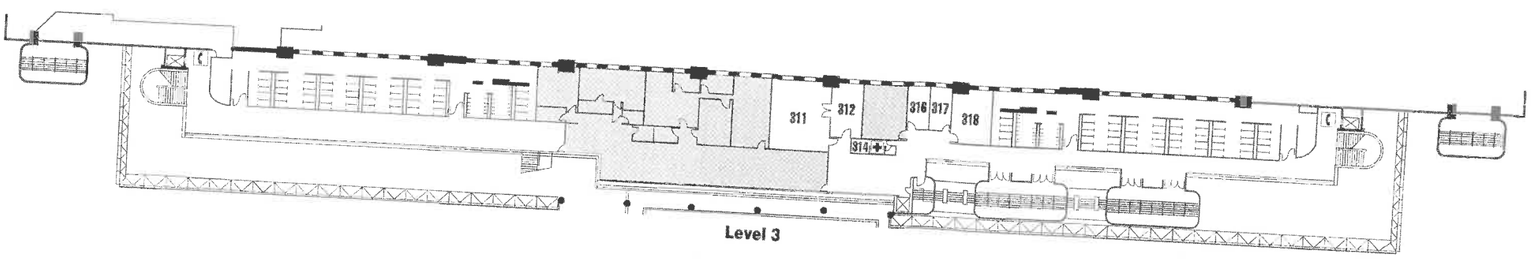
Exhibit/Poster Hall

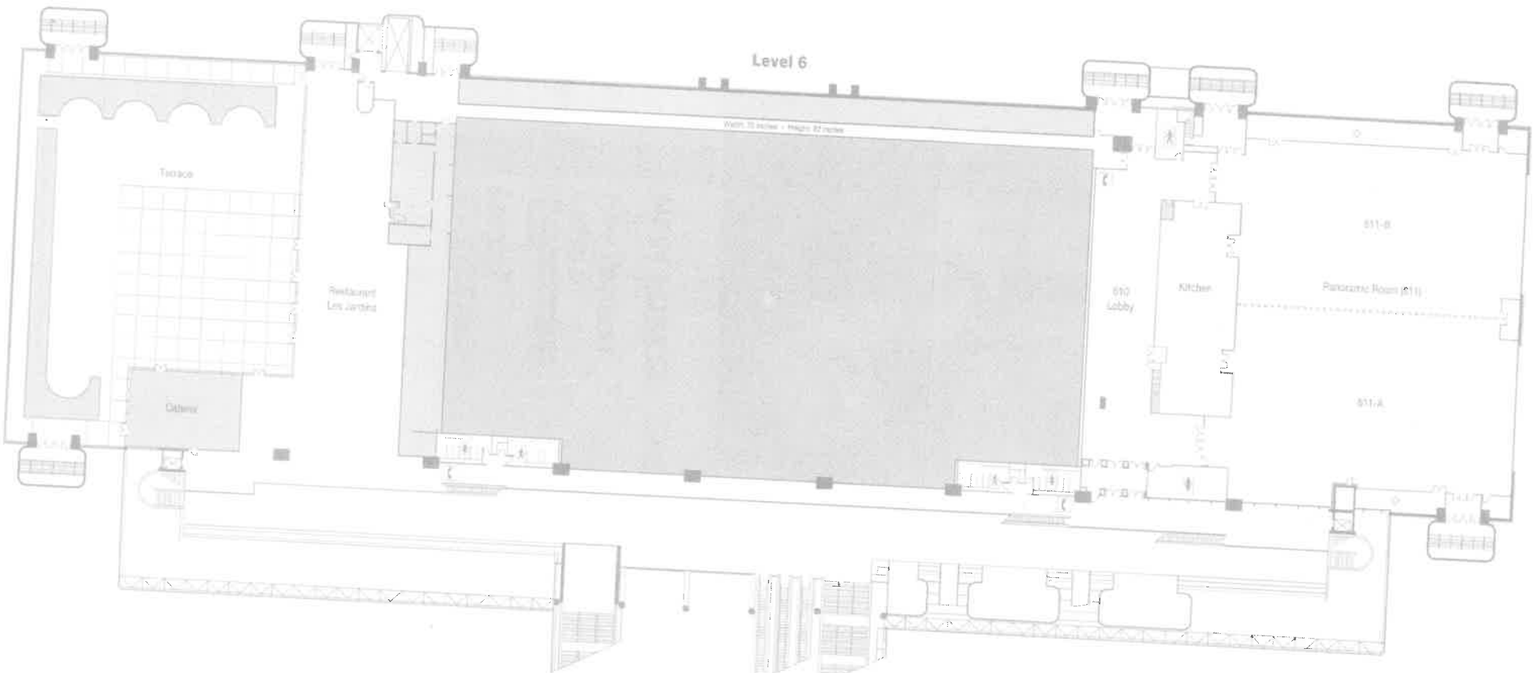
2000 JAM - The Joint Annual Meeting

of SEQ, ESC, and ESA

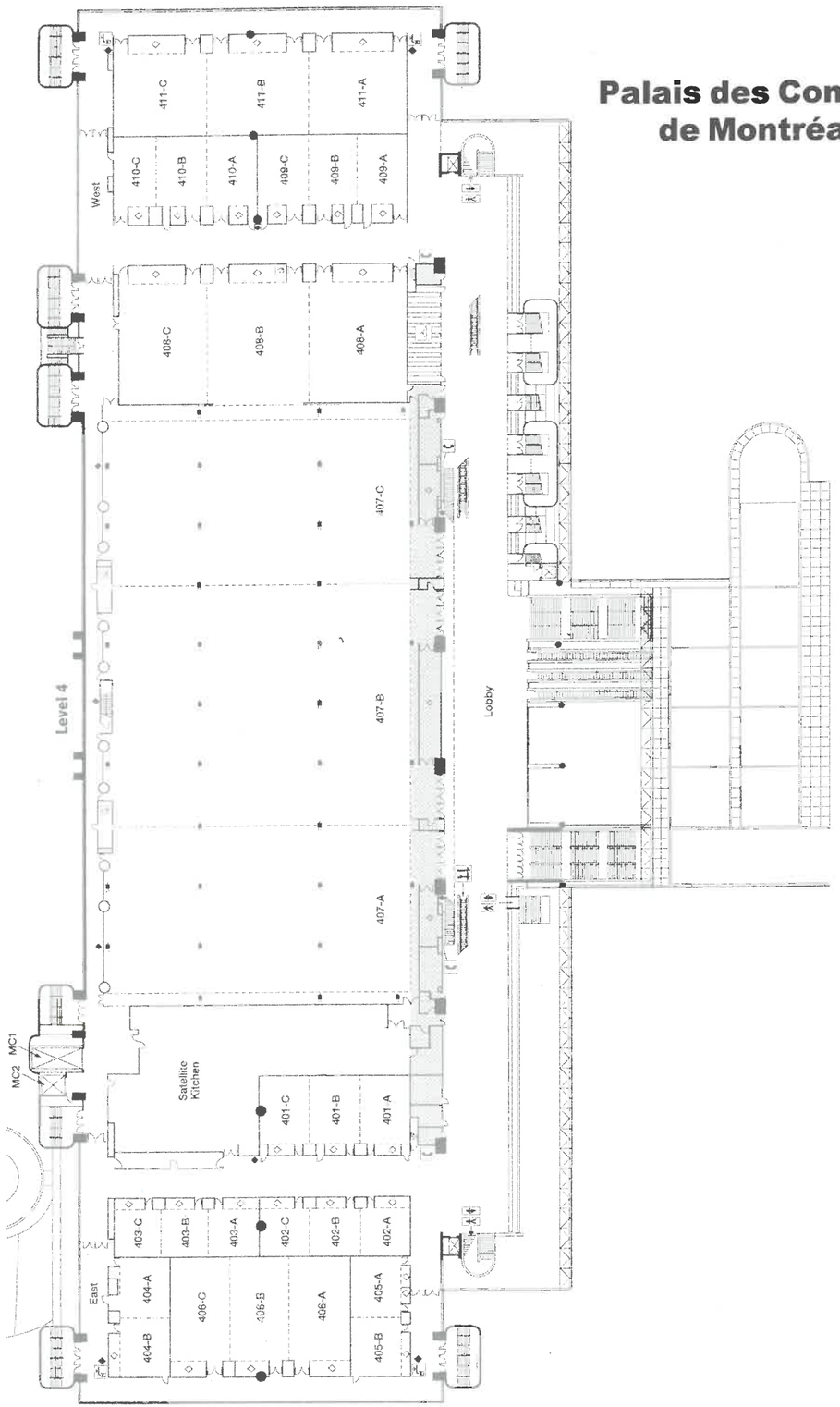
December 3 –6, 2000







Palais des Congrès de Montréal



The Montréal Insectarium is delighted to welcome you to the 2000 Annual Meeting of the Entomological Society of America.

- ***Visit our booth*** in the Canadian Pavilion on the exhibit floor and the *Magic of Insects* exhibition across from the registration area on the mezzanine.
- ***Free admission*** to the Montréal Insectarium, Biodôme and Botanical Garden with your congress badge.
- ***Don't miss*** *What's the Purpose of Entomological Research?* Exhibition at the Insectarium.

  "Behind the scenes" guided tours of the Insectarium, by reservation only. Dial (514) 872-0663.

Montréal Insectarium
4581 Sherbrooke Street East
Montréal QC H1X 2B2 Canada

Information: (514) 872-1400
www.ville.montreal.qc.ca/insectarium

VIAU Free shuttle bus from the Montréal Biodôme near Viau metro station to the Insectarium

MONTRÉAL 2000