



“Oceans of Imagination in the Entomological Sciences”

**Pacific Branch
ENTOMOLOGICAL SOCIETY
OF AMERICA
Eighty-Ninth
Annual Meeting**



**Victoria Y. Yokoyama
President**

**Asilomar Conference Grounds
Pacific Grove, California
February 27-March 2, 2005**

**PACIFIC BRANCH
ENTOMOLOGICAL SOCIETY OF AMERICA**

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Future Meetings

Wailea Resort, Maui, HI, March 5-8, 2006
Marriott Waterfront, Portland, Oregon, March 23-28, 2007

PROGRAM

Sunday Afternoon, February 27

Registration

Front Desk

Lucia Varela

3:00 – 6:00 P.M., 7:00 – 9:00 P.M.

Executive Committee Meeting

Hearth

4:00 - 6:00 P.M.

Dinner, Crocker Dining Hall, Sunday, 6:00 - 7:00 P.M.

Photo Salon

Chapel

Richard Coviello, University of California, Fresno, CA

7:00 - 7:30 P.M.

Re-Organization of the ESA

Chapel

Stephen Clement, Governing Board Representative

7:30 - 8:30 P.M.

Monday, February 28

Breakfast, Crocker Dining Hall, Monday, 7:30 – 9:00 A.M.

Registration

Front Desk

Lucia Varela

8:00 A.M. - 12 Noon, 1:00 - 4:00 P.M.

Exhibits

Hearth

Curtis Sandberg

8:30 A.M. – 6:00 P.M.

Student Poster Competition

Afterglow

Diane Alston

9:00 A.M. - 5:45 P.M.

Employment Opportunities

Hearth

Patrick Weddle

9:00 A.M. - 6:00 P.M.

Opening Session and Preliminary Business Meeting

Chapel

Monday, 8:30 A.M. - 11:30 A.M.

- 8:30** **Welcome and Opening Remarks,**
Victoria Yokoyama, President, ESA Pacific Branch.
USDA-ARS, SJVASC, Parlier, CA
- 8:40** **Report for the National Organization,**
Michael Ivie, President, Entomological Society of America
Montana State University, Bozeman, MT

- 9:00 Report for the Governing Board,**
Stephen Clement, Representative, ESA Pacific Branch
USDA-ARS, PIS, Pullman, WA
- 9:10 Introduction of the C. W. Woodworth Award:**
“C. W. Woodworth, the Entomologist We Honor,”
Victoria Yokoyama, President, ESA Pacific Branch
- 9:15 “Aspects of C. W. Woodworth’s Work,”**
Brian Holden, Great-Grandson of C. W. Woodworth
and Joann Wilfert, Award Donors
- 9:25 2005 C. W. Woodworth Award Winner Presentation,**
“The Myth of the L50: Why we must adopt more relevant
measures of pesticide effects on beneficial species”.
John Stark, Washington State University, Puyallup, WA
- 10:00 2005 John Henry Comstock Award Winner Presentation,**
“Biological Control of Spider Mites in Washington State Vineyards”.
Deirdre Prischmann, Washington State University, Pullman, WA
- 10:25 Break**
- 10:45 Preliminary Business Meeting,**
Victoria Yokoyama, President, ESA Pacific Branch
- 11:30 Adjourn**

Lunch, Crocker Dining Hall, Monday, 12:00 Noon - 1:00 P.M.

Student Competition Posters

Afterglow

Monday, 9:00 A.M. - 5:45 P.M.

Authors by Posters 11:00 A.M. - 12 Noon, 1:00 - 2:00 P.M.

Moderator: **Diane Alston**, Utah State University, Logan, UT

MS Student Poster Competition

- P-1** Moths of a Native Palouse Prairie. **Jessica L. Thompson** and Richard S. Zack, Department of Entomology, Washington State University, Pullman, WA

- P-2** Comparing Spring Wheat Varieties for Volatile Production and Oviposition Preference by the Wheat Stem Sawfly (*Cephus cinctus*) Norton. **Micaela Buteler**, David K. Weaver, and Robert K.D. Peterson. Department of Entomology, Montana State University, Bozeman, MT
- P-3** Visual And Olfactory Stimuli In Host-Plant Identification By The Oligolectic Bee *Chelostoma Fuliginosum* (Megachilidae). **Sarah E. Hardee** and Michael G. Peterson. Whitman College, Walla Walla, WA
- P-4** Mortality Of Wheat Stem Sawfly Larvae, *Cephus Cinctus* Norton (Hymenoptera: Cephidae) At High Temperatures. **Godshen R. Pallippambil**, Wendell L. Morrill and David K. Weaver. Department of Entomology, Montana State University, Bozeman, MT
- P-5** Current Distribution And Abundance Of *Chaetorellia Succinea* (Costa) On Yellow Starthistle In Southeastern Washington. **Kirk C. Tonkel** and G.L. Piper. Department of Entomology, Washington State University, Pullman, WA
- P-6** Do Bumble Bees Use Pollen Odor to Discriminate Between Flowers with Different Amounts of Pollen? **Elizabeth Wroe**. Department of Biology, Whitman College, Walla Walla, WA
- P-7** The Relationship Between Colorado Potato Beetle (Coleoptera: Chrysomelidae) And Fluroxypyr Rate For Volunteer Potato Suppression. **Chase Metzger**¹, Rick Boydston², Timothy Waters¹, Holly Ferguson¹, and Douglas Walsh¹. ¹Washington State University, Irrigated Agriculture Research and Extension Center, Prosser, WA. ²USDA-ARS, Irrigated Agriculture Research and Extension Center, Prosser, WA

PhD Student Poster Competition

- P-8** Making A Bee-Friendly Garden. **J.L. Hernandez**¹, V. Wojcik¹, and G.W. Frankie¹. ¹Department of Environmental Science, University of California, Berkeley, CA
- P-9** Effect Of Height And Distance On Volatile Collection From Wheat Infested With Wheat Stem Sawfly. **Oscar G. Perez**¹, David K. Weaver¹, Perry R. Miller², and Wendell L. Morrill¹. ¹Department of Entomology, Montana State University, Bozeman, MT. ²Department of Land Resources and Environmental Sciences, Montana State University, Bozeman, MT

- P-10** Effect of Grapevine Canopy Structure on Spider Mite (Acari: Tetranychidae) Biocontrol. **D. A. Prischmann**¹, D. G. James², and W. E. Snyder¹. ¹Washington State University, Entomology Dept., Pullman, WA ²Irrigated Agriculture Research & Extension Center, WSU, 24106 N. Bunn Rd., Prosser, WA
- P-11** Light Responsiveness in Honey Bees (*Apis mellifera* L.). **Jennifer Tsuruda**, Robert Page, Kim Fondrk. University of California, Department of Entomology, Davis, CA
- P-12** Phenotypic Segregation of Grapevine Galling Response to Grape Phylloxera (*Daktulosphaira vitifoliae* (Fitch)). **Tamara L. Roush**¹, Jeffrey Granett¹, and M. Andrew Walker². ¹University of California, Department of Entomology, Davis, CA. ²University of California, Department of Viticulture and Enology, Davis, CA
- P-13** Host Range of *Peristenus* spp. Attacking *Lygus hesperus* In Washington State, USA. **Waters, T. D.**, D. B. Walsh, R. P. Wight, and H. J. Ferguson. Dept. of Entomology, Washington State University, Prosser, WA
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Student Competition Submitted Papers

Chapel

Monday, 1:30 - 5:00 P.M.

Moderator: **Diane Alston**, Utah State University, Logan, UT

MS Oral Presentations

- 1:30** **1** Reproductive Morphology And Genetic-Based Recognition Of A Non-Native Invasive Bark Beetle, *Scolytus Schevyrewi*. **Patricia L. Johnson**. Washington State University Entomological Department, Pullman, Washington. USDA Forest Service, Pacific Northwest Forestry and Range Sciences Lab, La Grande, OR
- 1:42** **2** Insecticidal and Repellent Activities of Selected Monoterpenoids on *Agriotes obscurus* (Coleoptera: Elateridae). **Ranil Waliwitiya**,¹ Andrew Riseman,¹ Bob Vernon,² and Murray Isman^{1,1},¹Faculty of Agricultural Sciences, University of British Columbia, Vancouver, B.C., Canada,² Pacific Agri-Food Research Centre, B. C., Canada

- 1:54 3 **CANCELLED.** A Comparison Of Diets in Spring Alfalfa Fields of Female Coccinellids (Coleoptera: Coccinellidae). **L. N. Davidson**, and E. W. Evans. Department of Biology, Utah State University, Logan, UT
- 2:06 4 Sulfur Disruption of Host-Parasitoid Interactions in the Vineyard Agroecosystem. **S. J. Jepsen**, JA Rosenheim and CE Matthews. University of California, Davis, Department of Entomology, Davis, CA
- 2:18 5 Survey of Parasitism of the Alfalfa Weevil Complex in California Alfalfa. **Karey C. Windbiel**, Larry D. Godfrey and Richard R. Lewis, Department of Entomology, University of California, Davis, CA
- 2:30 6 The Biology and Biological Control of the Nettle Caterpillar, *Darna Pallivitta* (Moore), in Hawaii. **Christopher M. Kishimoto**¹, Arnold H. Hara², Stacey Chun², Walter T. Nagamine³. ¹University of Hawaii at Manoa Department of Plant and Environmental Protection Sciences, Honolulu, HI, ²University of Hawaii at Manoa, Department of Plant and Environmental Protection Sciences, Hilo, HI, ³Hawaii State Department of Agriculture, Honolulu, HI
- 2:42 7 Pathogen-Induced Hormesis in the Banana Aphid, *Pentalonia nigronervosa* (Hemiptera: Aphididae). **Cheryl L. Young** and Mark G. Wright. University of Hawaii at Manoa, Department of Plant and Environmental Protection Sciences, Honolulu, HI

PhD Oral Presentations

- 2:54 8 Characterization of Facultative Bacteria in the Hindgut of *Frankliniella Occidentalis* (Pergande), Western Flower Thrips. **Lisa Chanbusarakum** and Diane Ullman. University of California-Davis, Department of Entomology, Davis, CA
- 3:06 9 Assessing the Use of Native Bees as Biological Indicators in a Riparian Habitat. **Jennifer L. Hernandez**¹. ¹University of California, Department of Environmental Science, Policy, and Management, Berkeley, CA
- 3:18 10 Antagonism between Biological and Cultural Control Tactics. **Ricardo A. Ramirez II**¹, William E. Snyder¹, Ekaterina Riga². ¹Department of Entomology, and ²Department of Plant Pathology, Washington State University, Pullman, WA

- 3:30** Break
- 4:00 11** Urban Bee Fauna at the Berkeley Oxford Tract Garden. **V. Wojcik**¹, J.L. Hernandez¹, G.W. Frankie¹ and R.W.Thorp². ¹Department of Environmental Science, Policy and Management, University of California, Berkeley, CA 94720-3112, ²Department of Entomology University of California, Davis, CA
- 4:12 12** Isotopic Enrichment in Herbivorous Insects: A Comparative Field Based Study of Variation. **Kenneth O. Spence** and Jay. A. Rosenheim. University of California, Department of Entomology, Davis, CA
- 4:24 13** How Age Structure and Wind Influence Carpenterworm Moth Monitoring Traps in Hybrid Poplar Tree Plantations. **E. R. Hannon**, N.T. Kittelson, and J.J. Brown. Washington State University, Department of Entomology, Pullman, WA
- 4:36 14** The Right Timing and Enough Pheromone: Mating Disruption in Hybrid Poplars. **Neal T. Kittelson**, Eugene R. Hannon and John J. Brown. Washington State University, Department of Entomology, Pullman, WA
- 4:48 15** Development of A Strategy to Control the Field Ant, *Formica Perpilosa*, in Table Grape Vineyards. **Kris Tollerup**¹ and J. Klotz¹. ¹University of California, Department of Entomology, Riverside, CA
- 5:00** Adjourn

Symposium: Insecticides with Novel Modes of Action: Mechanism, Selectivity and Importance in Pest Management Programs

Fred Farr Forum

Monday, 1:30 P.M. – 5:48 P.M. (ESA Section B)

Organizer and Moderator: **Isaac Ishaaya**, Agricultural Research Organization, The Volcani Center, Bet Dagan, Israel

1:30 Introduction, **Isaac Ishaaya**

- 1:36 16** Insecticides with Novel Modes of Action – an Overview
Isaac Ishaaya¹ and A. R. Horowitz², Department of Entomology, Agricultural Research Organization, ¹The Volcani Center, Bet Dagan, ²Gilat Research Center, M.P. Negev, Israel
- 2:00 17** Novel Insecticides and Pest Management Programs in Various Agricultural Systems. **Nick Toscano**, Department of Entomology, University of California, Riverside, CA
- 2:24 18** Integrating Novel Compounds into Midwest Tree Fruit Production. **Mark E. Whalon**, Joshua Vanderjact, and Kevin McAlvey, Center for Integrated Plant Systems, Michigan State University, East Lansing MI
- 2:48 19** Novaluron, a Novel Benzoylphenyl Urea, Mechanism, Selectivity and Importance in Pest Management Programs. **Isaac Ishaaya**¹, Svetlana Kontsedalov¹, Michael Davidovich¹, Avner Barazani² and A. Rami Horowitz³, ¹Department of Entomology, Agricultural Research Organization, The Volcani Center, Bet Dagan, ²Inovative Development Department, Makhteshim Chemical Works, Beer Sheva, ³Department of Entomology, Agricultural Research Organization, Gilat Research Center, M.P. Negev, Israel
- 3:12 20** Neonicotinoids – Cross-Resistance potential and Importance in Controlling Cotton pests. **Nilima Prabhaker**¹, Steven J. Castle², T. J. Henneberry² and Nick C. Toscano¹. ¹Department of Entomology, University of California, Riverside, CA. ²Western Cotton Research Laboratory, USDA/ARS, Phoenix, AZ
- 3:24** Break
- 3:48 21** Novaluron, a Novel IGR for Controlling the Colorado Potato Beetle. **Chris Cutler**¹, Cynthia D. Scott-Dupree¹, Jeffrey H. Tolman² and C. Ronald Harris¹. ¹Department of Environmental Biology, University of Guelph, Guelph, Ontario, Canada, ²Southern Crop Protection and Food Research Centre, Agriculture and Agri-Food Canada, Ontario Agricultural College, London, Ontario, Canada
- 4:12 22** Role of Insect Growth Regulators for Management of *Bemisia tabaci*. **Steven E. Naranjo**¹ and Peter C. Ellsworth², ¹USDA-ARS Western Cotton Research Laboratory, Phoenix, AZ, ²Department of Entomology, University of Arizona, Maricopa Agricultural Center, Maricopa, AZ

- 4:36 23 Novel Approaches for Controlling Acridid Pests. **Alexandre V. Latchininsky**, University of Wyoming, Department of Renewable Resources/Entomology, Laramie, WY
- 5:00 24 The Role of Botanical Insecticides in Agricultural Pest Management. **Murray Isman**. Faculty of Agricultural Sciences, University of British Columbia, Vancouver, B.C., Canada
- 5:24 25 The Dr. Jekyll and Mr. Hyde in New Biorational Insecticides for Tree Fruit IPM: Acute Toxicities Versus Sublethal Effects. **T. R. Unruh**¹, H. Riedl², N. Mills³, D. Horton¹, R. Hilton², and E. Beers⁴.
¹USDA-ARS, ²Oregon State University, ³University of California, ⁴Washington State University
- 5:48 **Adjourn**

Symposium: Pest Management and Water Quality
Kiln

Monday, 1:30 P.M.- 5:12 P.M. (ESA Section E)

Organizer and Moderator: **Brian L. Bret**
 Dow AgroSciences, Roseville, CA

- 1:30 26 Applicators, Irrigators and Regulators: Balancing Pest Management Needs and Water Quality. **Parry Klassen**. CURES, Clovis, CA
- 1:54 27 Pesticide Regulation and Surface Water Quality In California. **Frank Spurlock**. California Department of Pesticide Regulation, Sacramento, CA
- 2:18 28 Development of a Macroinvertebrate Index and Use of Probabilistic Sampling for Stream Condition Assessments. P. R. Ode, **A. C. Rehn** and J. T. May. California Department of Fish and Game, Rancho Cordova, CA
- 2:42 29 Measuring, Monitoring and Mitigating Environmental Residues of Pyrethroid Insecticides. **Donald P. Weston**, University of California, Department of Integrative Biology, Berkeley, CA
- 3:06 Panel Discussion
- 3:12 Break

- 3:36 30** Water Quality Practices Planning – Potential for Reducing Agricultural Non-point Source Pollution on the Central Coast. **Mary Bianchi** and Daniel Mountjoy, University of California Cooperative Extension, San Luis Obispo, CA
- 3:48 31** Mitigating Organophosphate Dormant Spray Runoff from Orchards Using Alternative Management Practices. **F.G. Zalom**, Department of Entomology, University of California, Davis, CA
- 4:00 32** Reducing Pesticide Runoff in Prunes with Integrated Prune Farming Practices (IPFP) Program. **Gary L. Obenauf**, California Prune Board, Fresno, CA
- 4:12 33** Reducing Pesticide Spray Drift and Run-off into Surface Waters of Oregon's Hood River Valley. **Steve Castagnoli**, Helmut Riedl, and Jeffrey Jenkins, S. OSU- Mid-Columbia Agricultural Research & Extension Center, Hood River, OR
- 4:24 34** Reducing Pesticide in Irrigated Alfalfa through Water Management and IPM Best Management Practices. **D.H. Putnam**, R. Long, L. Godfrey, B. Hanson. Department of Plant Sciences, University of California, Davis, CA
- 4:36 35** Reducing Pesticide Runoff from Nurseries. **Vallerie Mellano**, Karen Robb, Dave Shaw, Diane DeJong, and Scott Parker. University of California Cooperative Extension , San Diego, CA
- 4:48 36** Diazinon Insecticide: Management Practices for Protecting Surface Water During Dormant Orchard Applications, a Registrant's Perspective. **Robert Ehn**. R3 AG Consulting, LLC, Clovis, CA
- 5:00** Panel Discussion. Brian L. Bret, Dow AgroSciences, Roseville, CA
- 5:12 Adjourn**

Dinner, Crocker Dining Hall, Monday, 6:00 - 7:00 P.M.

Pacific Branch Mixer and President's Reception

Fred Farr Forum

Monday Evening, 7:00 - 10:00 P.M.

Light Fare and Music by Pacific Coast Sounds

Please Present Ticket for Entry

Tuesday, March 1

Breakfast, Crocker Dining Hall, Tuesday, 7:30 – 9:00 A.M.

Registration

Front Desk

Lucia Varela

8:00 A.M. - 12 Noon

Exhibits

Hearth

8:30 A.M. – 6:00 P.M.

Employment Opportunities

Hearth

9:00 A.M. - 6:00 P.M.

General Poster Session

Afterglow

Tuesday, 9:00 A.M. - 5:45 P.M.

Authors by Posters 11:00 A.M. - 12 Noon, 1:00 - 2:00 P.M.

Moderator: **John C. Palumbo**, University of Arizona, Yuma Agricultural Center, Yuma, AZ

Section A

- P-14** Evidence that Foraging Experience Alters the Mushroom Bodies of the Solitary Bee *Osmia lignaria*. **Nancy Day**, Emily Talbot, Heidi E. M. Dobson, Christopher S. Wallace and Ginger S. Withers. Department of Biology, Whitman College, Walla Walla, WA

Section B

- P-15** Quantitative Analysis of Volatile Monoterpenes from Ponderosa Pine: Implications for Bark Beetle Colonization and Tree Mortality. **Shakeeb M. Hamud**¹, Christopher J. Fettig², Joel D. McMillin³, John A. Ahnhold³ Robert R Borys², and Steven J. Seybold¹. ¹USDA Forest Service, Pacific Southwest Research Station, Davis, CA ²USDA Forest Service, Pacific Southwest Research Station, Davis, CA, ³USDA Forest Service, Forest Health Protection, Flagstaff, AZ
- P-16** Interfacial Forces and Permeation of the Codling Moth, *Cydia pomonella* (L.) Cocoon Silk. **Teodoro Stadler**¹, Adriana Fornés², Armando Catenaccio³ and Micaela Buteler⁴. ¹National Research Council (CONICET) Buenos Aires, Argentina ²Facultad de Ingeniería, Universidad Nac. Cuyo, Mendoza, Argentina. ³Dto. Física, Universidad Nac. San Luis, San Luis, Argentina. ⁴Department of Entomology Montana State University, Bozeman, MT

Section C

- P-17** New Invasive Bark Beetles Threaten Urban Forest Landscapes. **Jana C. Lee**¹, José F. Negrón², Sally J. McElwey², Steven J. Seybold³. ¹University of California Davis, Department of Entomology, Davis, CA. ²US Forest Service, Rocky Mountain Research Station, Fort Collins, CO. ³US Forest Service, Pacific Southwest Research Station, Davis, CA
- P-18** Transmission Profiles of California *Citrus tristeza virus* Isolates by the Cotton Aphid, *Aphis gossypii*. **Raymond K. Yokomi**. USDA, ARS, Crop Diseases, Pests and Genetics Research Unit, Parlier, CA

- P-19** Tephritid Fruit Fly Survey in Hawaii: Yield New Clues of Ecological Effects. **Ernest J. Harris**¹, Renato C. Bautista². ¹U.S. Pacific Basin Agricultural Research Center, USDA- ARS, Honolulu, HI. ²Plant Pest Control Branch, Plant Industry Division, Hawaii Department of Agriculture, Honolulu, HI
- P-20** Scolytid Beetles Trapped on *Phytophthora Ramorum*-Infected Coast Live Oaks in California. **Brice A. McPherson**¹, Nadir Erbilgin², Gabriela Owens², and David L. Wood². ¹University of California, Center for Forestry, Berkeley, CA. ²University of California, Division of Insect Biology, Berkeley, CA
- P-21** Mass Rearing of Citrus Peelminer, *Marmara Gulosa* and It's Eulophid Parasite, *Cirrospilus Coachellae*. **Yuling Ouyang** and Elizabeth E. Grafton-Cardwell. Department of Entomology, University of California, Riverside, CA
- P-22** Evaluation of Baits for Control of Subterranean Termites (*Reticulitermes* spp.) under Wildland Conditions. **Robin L. Taylor**¹, Vernard R. Lewis², Ariel B. Power², Melissa L. Erickson¹, Lori J. Nelson¹, and Michael I. Haverty¹. ¹Pacific SW Research Station, USDA Forest Service, Berkeley, CA. ²Insect Biology/ESPM, University of California, Berkeley, CA

Section E

- P-23** Diagnostic PCR Procedures to Identify Internal Fruit-Feeding Insects of Pome Fruits. **Nina Barcenas**, T.R. Unruh, L.G. Neven. USDA-ARS, Yakima Agricultural Research Laboratory, Wapato, WA
- P-24** Neonicotinoid Insecticides for Whitefly Control in Cole Crops and Lettuce. **Eric T. Natwick**. University of California Cooperative Extension, Holtville, CA
- P-25** Update on CATTS Quarantine Treatments for Pome and Stone Fruits. **Lisa G. Neven**. USDA-ARS, Yakima Agricultural Research Laboratory, Wapato, WA
- P-26** Mortality of Cereal Leaf Beetle in Compressed Hay Exports. **Victoria Y. Yokoyama**, Gina T. Miller, and Gail E. Sergent. USDA, Agricultural Research Service, San Joaquin Valley Agricultural Sciences Center Parlier, CA

Section F

- P-27** Areawide II: Implementation of Non-OP Pest Management Programs on Pears in Oregon's Hood River Valley. **Allison Walston**, Steven Castagnoli, and Helmut Riedl. Oregon State University, Mid-Columbia Agricultural Research & Extension Center, Hood River, OR
- P-28** The Glassy-Winged Sharpshooter Gets Neither A 'Lei' Nor a Welcome 'Aloha' from the Island Paradise. **R. C. Bautista**, J. A. Yalamar, T. H. Suh, R. A. Heu, and K. K. Teramoto. Plant Pest Control Branch, Division of Plant Industry, Hawaii Department of Agriculture, Honolulu, HI
- P-29** Oak Gall Wasp (*Dryocosmus Dubiosus*) Insecticidal Management and Impact on Coast Live Oak Growth. **Steve H. Dreistadt**¹ and Mary Louise Flint^{1,2}. ¹IPM Education and Publications, Statewide IPM Program ²Department of Entomology, University of California, Davis, CA
- P-30** Monitoring for Organophosphate Insecticides in the Hood River Basin, Oregon. **Jeffrey Jenkins**, Steven Castagnoli, and Helmut Riedl. Oregon State University, Mid-Columbia Agricultural Research & Extension Center, Hood River, OR
- P-31** How Natural Enemies and Aphid Population Dynamics Affect Organic Broccoli Harvest. **Diego J. Nieto**^{1,2}, Carol Shennan², William H. Settle³, Shannon Bros¹, Rachel O'Malley⁴, and Jeffrey Honda¹. ¹ Department of Biological Sciences, San Jose State University, San Jose, CA ² Center for Agroecology and Sustainable Food Systems, University of California, Santa Cruz, CA. ³ Food and Agriculture Organization, United Nations, Viale delle Terme di Caracalla, 00100-Rome, Italy. ⁴ Department of Environmental Studies, San Jose State University, San Jose, CA
- P-32** Colonization of Parasitoids in California for Control of *Lygus* spp. **C. H. Pickett**¹, D. Coutinot², K. Hoelmer³, H. Goulet⁴ and U. Kuhlmann⁵. ¹California Department of Food & Agriculture, Biological Control Program, Sacramento, ²European Biological Control Laboratory, USDA ARS, Montferrier, France, ³USDA ARS Beneficial Insects Introduction Research Unit, Newark, Delaware, ⁴Agriculture and Agri-Food Canada, Ottawa, Ontario, Canada, ⁵CABI-Bioscience, Delemont Switzerland
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Symposium: Post Harvest Insect Control

Fred Farr Forum

Tuesday, 8:30 A.M. - 12:00 Noon (ESA Section F)

Organizer and Moderator: **Robert Williams,**

Dow AgroSciences, Atascadero, CA.

- 8:30** Welcome, **Bob Williams**
- 8:34 37** Postharvest Insect Control on Lettuce Using Controlled Atmosphere. **Yong-Biao Liu.** USDA, ARS, Salinas, CA
- 8:58 38** Vacuum Treatments of Post-harvest Dried Fruit and Nuts. **Judy Johnson,** USDA-ARS, Parlier, CA
- 9:22 39** Pest Management Practices in Food Processing. **Ed Hosoda,** Cardinal Professional Prod., Woodland, CA
- 9:46 40** Management of Stored-product Insects in Food-processing Plants Using Elevated Temperatures: Recent Advances and Challenges. **Bhadriraju Subramanyam.** Kansas State University, Manhattan, KS
- 10:10** Break
- 10:24 41** Alternatives to the Use of Methyl Bromide in Post-harvest Insect Control. **Jim Leesch.** USDA-ARS, Parlier, CA
- 10:48 42** Fumigation of Flour Mills to Manage Red Flour Beetle: Assessment of Treatment Efficacy. **Jim Campbell.** USDA-ARS, Manhattan, KS
- 11:12 43** Challenges in Developing a Post-harvest Fumigant. **Mike Hurley.** Dried Fruit & Nut Assoc. of California, Fresno, CA
- 11:36 44** Efficacy of a Mixture of Phosphene/Carbon Dioxide on Stored product insects. **Jeannette Muhareb.** Dried Fruit & Nut Assoc. of California, Fresno, CA
- 12:00** Adjourn
-

Symposium: Biology of Sharpshooter/*Xylella* Interactions

Kiln

Tuesday, 8:30 A.M. - 12:00 Noon (ESA Section C)

Organizer and Moderator: **Blake Bextine**,

University of California, Riverside, CA.

- 8:30** Introduction, **Blake Bextine**
- 8:34 45** Understanding *Homalodisca coagulata* Dispersion and Detecting *Xylella fastidiosa* in Vectors: Keys to Disease Management **Matthew Blua**. Department of Entomology, University of California, Riverside, CA
- 8:58 46** Spatial patterns of PD and GWSS at Multiple Scales: Application to Epidemiology and Management. **Thomas M. Perring**¹, Yong-Lak Park¹, Rayda K. Krell¹, Charles A. Farrar¹, Carmen Gispert². ¹Department of Entomology, University of California, Riverside, CA, ²Cooperative Extension Service, University of California, Davis, CA
- 9:22 47** A Histological Description of the Reproductive System and Seasonal Reproductive Activity of Female *Homalodisca coagulata* (Say) in Southern California. **N.A. Hummel**¹, C.Y.S. Peng¹, N.C. Toscano², and F.G. Zalom¹. ¹Department of Entomology, University of California, Davis, CA. ²Department of Entomology, University of California, Riverside, CA
- 9:46 48** Seasonal Population Biology of *Xylella fastidiosa* and Associated Insect Vectors; Implications for Secondary Spread of the Almond Leaf Scorch Pathogen. **Russell L. Groves**. USDA-ARS, SJVASC, Parlier, CA
- 10:10** Break
- 10:24 49** Glassy-winged Sharpshooter, *Homalodisca coagulata* and Pierce's Disease, *Xylella fastidiosa*, Plant Interactions. **Nick C. Toscano** and Jian Bi, Department of Entomology, University of California, Riverside, CA

- 10:48 50** Correlations of Probing Behaviors by Glassy-winged Sharpshooter, *Homalodisca coagulata* (Say), with Ac Electrical Penetration Graph (EPG) Waveforms Using Video and Artificial Diet. **P. Houston Joost**, Elaine Backus. USDA-ARS, SJVASC, Parlier, CA
- 11:12 51** Breaking the Disease Cycle: The Biology of Glassy-winged Sharpshooter/*Xylella* Interactions. **Blake Bextine**¹, Carol Lauzon² David Lampe³, and Thomas A. Miller¹. ¹Department of Entomology, University of California, Riverside, CA. ²Department of Biological Sciences, California State University, Hayward, CA. ³Department of Biological Sciences, Duquesne University, Pittsburg, PA
- 11:36 52** Symbiotic Control of Pierce's Disease: Biology of a Sharpshooter Symbiont. **Carol Lauzon**¹, Blake Bextine², David Lampe³, and Thomas A. Miller². ¹Department of Biological Sciences, California State University, Hayward, CA. ²Department of Entomology, University of California, Riverside, CA. ³Department of Biological Sciences, Duquesne University, Pittsburg, PA
- 12:00** Adjourn

Symposium: Biodiversity on the Farm: Issues, Impacts and Ideas

Chapel

Tuesday, 8:30 A.M. - 11:48 A.M. (ESA Section C)

Organizers and Moderators: **Renee Priya Prasad, Cory Straub, and Ricardo Ramirez**, Washington State University, Pullman, WA.

- 8:30** Introduction, **Renée Prasad**
- 8:36 53** Designing Biodiverse Pest Resilient Agroecosystems. **Miguel Altieri**. Dept. of Environmental Science, Policy and Management, University of California, Berkeley, CA
- 9:00 54** Utilizing Vegetational Diversity to Manipulate Insect Populations. **Brad Gaolach**. King County Extension, Washington State University, Renton, WA

- 9:24 55 The Impact of Manipulating Biodiversity through Ground Covers on Plant, Pest and Beneficial Arthropods in California Vineyards. **Kent Daane**. Division of Insect Biology, University of California, Berkeley, CA
- 9:48 56 Exploring the Relationship Between Predator Biodiversity and Aphid Biological Control. **Bill Snyder**. Dept. of Entomology, Washington State University, Pullman, WA
- 10:12 Break
- 10:36 57 Predator Diversity, Habitat Complexity and the Strength of Terrestrial Trophic Cascades. **Deborah Finke**. Dept. of Entomology, University of Maryland, College Park, MD
- 11:00 58 Floral Diversification, Parasitoids and Cabbage Pests. **Jana Lee**¹ and G. Heimpel². ¹ Dept. of Entomology, University of California, Davis, CA ² Dept. of Entomology, University of Minnesota, Minneapolis, MN
- 11:24 59 Wild Crop Pollinators: The Role of Native Vegetation in the Maintenance of Native Crop Pollinator Diversity. **Margy Mayfield**. Center for Conservation Biology, Stanford University, Stanford, CA
- 11:48 Adjourn
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AWARDS LUNCHEON

Crocker Dining Hall

Tuesday, 12:00 noon - 1:00 P.M.

Please Present Ticket for Entry

Symposium: IPM in Organic Production Systems

Fred Farr Forum

Tuesday, 1:30 – 6:00 P.M. (ESA Section F)

Organizer and Moderator: **Sean Swezey**,
University of California, Davis, CA

- 1:30** Introduction, **Sean Swezey**
- 1:36 60** Using Habitat Management to Improve Biological Control on Commercial Organic Farms in California. **Ramy Colfer**, Mission Organics, Salinas, CA
- 2:00 61** Organic Control Measures For Olive Fruit Fly In Small-Scale Orchards and Landscapes in Coastal California. **Paul Vossen**, University of California Cooperative Extension, Sonoma, CA
- 2:24 62** IPM and Biological Control in California Stone Fruit Orchards. **Kent Daane**, Glenn Y. Yokota¹, and Walt J. Bentley². ¹University of California, Division of Insect Biology, Berkeley, CA. ²University of California, IPM Program, Kearney Agricultural Center, Parlier, CA
- 2:48 63** Management of San Jose scale with Organically Compliant Horticultural Mineral Oil. **Walt Bentley**, University of California, Kearny Agricultural Center, Parlier, CA
- 3:12 64** Impact of Legally Compliant Organic Pesticides on Natural Enemies. **Marshall Johnson** and Rodrigo Krugner, University of California, Kearny Agricultural Center, Parlier, CA
- 3:36** Break
- 4:00 65** Control of Western Tarnished Plant Bug (*Lygus hesperus* Knight) With Alfalfa Trap Crops in California Organic Strawberries. **Sean L. Swezey**, Diego J. Nieto, and Janet A. Bryer. University of California, Santa Cruz, CA

- 4:24 66 Natural Enemy Abundance and Distribution in Association with Alfalfa Trap Crops in Organic Strawberries. **Diego Nieto**, Sean L. Swezey, and Janet A. Bryer. Center for Agroecology and Sustainable Food Systems, University of California, Santa Cruz, CA
- 4:48 67 Influence of Non-crop Plants on Stink Bugs (Hemiptera : Pentatomidae) and Their Natural Enemies in Tomatoes. **Corin Pease** and Frank Zalom, University of California, Davis, CA
- 5:12 68 Gardens of Multifloral Rose Enhance Biological Control of Pest Leafrollers in Pome Fruits in the Northwest. **Tom Unruh**, USDA-ARS, Wapato, WA
- 5:36 69 Area-wide Organic IPM in Pear Production. **John E. Dunley**, Washington State University, Wenatchee, WA
- 6:00 Adjourn
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Submitted Papers

Kiln

Tuesday, 1:00– 6:00 P.M.

Moderators: **Walter Bentley** and **Peter Goodell**

University of California Cooperative Extension, Parlier, CA

Section B

- 1:00 70 Electroantennogram Responses of *Culex quinquefasciatus* to Bermuda Grass and Rabbit Chow Infusions. **Tania I. Morgan**, Walter S. Leal. University Of California, Honorary Maeda-Duffey Lab, Department Of Entomology, Davis, CA
- 1:12 71 Novaluron, Benzoylphenyl Urea Chemistry for Insect Control. **Curtis L. Sandberg**¹, Stephen Colbert², and Tim Weiland³. ¹Crompton Crop Protection, Elk Grove, CA, ²Crompton Crop Protection, Fresno, CA, ³Crompton Crop Protection, World Headquarters, Middlebury, CT

Section C

- 1:24 72** Responses of Scolytid Beetles to Coast Live Oaks Infected with *Phytophthora ramorum*. **Brice A. McPherson**¹, David L. Wood², Andrew J. Storer³, Pavel Svihra⁴, and Nadir Erbilgin². ¹University of California, Center for Forestry, 145 Mulford Hall, Berkeley, CA, ²University of California, Division of Insect Biology, 201 Wellman Hall, Berkeley, CA, ³Michigan Technological University, School of Forest Resources and Environmental Science, 1400 Townsend Drive, Houghton, MI, ⁴University of California Cooperative Extension, 1682 Novato Drive, Novato, CA
- 1:36 73** Significance of Petals and Pollen Structures in Modulating Bee Visitation to Flowers of Wild Roses. **Heidi E. M. Dobson**. Department of Biology, Whitman College, Walla Walla, WA
- 1:48 74** Updating Integrated Pest Management Systems for Pitch Canker: Known and Potential Insect Vectors. **Nadir Erbilgin**¹, David L. Wood¹, Andrew J. Storer², Thomas R. Gordon³. ¹University of California, Division of Insect Biology, Berkeley, CA. ²Michigan Technological University, School of Forestry and Wood Products, Houghton, MI. ³University of California, Department of Plant Pathology, Davis, CA
- 2:00 75** Behaviorally-Mediated Emergent Impacts in Multiple Predators and Prey Food Webs. **Renée Priya Prasad** and William E. Snyder. Department of Entomology, Washington State University, Pullman WA
- 2:12 76** Biological Studies of Parasitoids (Braconidae) Imported for Control of the Olive Fruit Fly in California. **Karen R. Sime**, Kent M. Daane, Hannah Nadel, Russell H. Messing, John W. Andrews. University of California, Division of Insect Biology and Center for Biological Control, Berkeley, CA
- 2:24 77** Overwintering of the Corn Leafhopper and Corn Stunt Spiroplasma in the San Joaquin Valley. **Charles G. Summers**¹, Albert S. Newton¹, and Dan C. Opgenorth². ¹University of California, Department of Entomology, Davis, CA. ²California Department of Food and Agriculture, Sacramento, CA
- 2:36 78** Effect of an Alternative Host in the Aphid-Vector Distribution and Epidemiology of PLRV. **J. M. Alvarez**, R. Srinivasan, S. D. Eigenbrode and N. A. Bosque-Perez. University of Idaho, Aberdeen R&E Center, Aberdeen, ID

2:48 79 Bee Communities in a Complex, Unpredictable Desert Landscape. Why Is the Fauna So Diverse? **Olivia Messinger**¹ and Terry Griswold². ¹Utah State University, Logan, UT. ²USDA-ARS Bee Biology and Systematics Laboratory, Utah State University, BNR 244, Logan, UT

3:00 80 Oviposition Preference and Larval Performance of Wheat Stem Sawfly (Hymenoptera: Cephidae) on Wheat and Cheat Grass (Cyperales: Poacea). **Joel Perez-Mendoza**, David K. Weaver and Wendell L. Morrill. Montana State University, Department of Entomology, Bozeman, MT

3:12 81 Using the Chemical Language of Plants to Improve Conservation Biological Control in Crop Protection. **David G. James**, Tessa R. Grasswitz, and Sandra Castle del Conte. Department of Entomology, Washington State University, Prosser, WA.

Section E

3:24 82 Suppression of a Subterranean Termite Community Using the Sentricon Termite Colony Elimination System: A Case Study in Chatsworth, California. **Gail M. Getty**¹, Christopher W. Solek, Ronald J. Sbragia², Michael I. Haverty³, and Vernard R. Lewis⁴. ¹University of California, Berkeley, Department of Environmental Science, Blue Jay, CA. ²Dow AgroSciences, Placerville, CA. ³Pacific Southwest Research Station-Forest Service, Berkeley, CA. ⁴University of California, Berkeley, Department of Environmental Science, Policy and Management Division of Insect Biology, Division of Insect Biology, Berkeley, CA

3:36 83 Big Bale Compression for Control of Hessian Fly in Exported Hay. **Victoria Y. Yokoyama**, Gina T. Miller, and Gail E. Sergent. USDA, Agricultural Research Service, San Joaquin Valley Agricultural Sciences Center, Parlier, CA

3:48 Break

Section F

4:00 84 Comparison of Three Chemical Treatments to Determine Efficacy on Two Spiders, *Tegenaria agrestis* and *Latrodectus Hesperus*. **M. M. Gaver** and L. D. Hansen. Spokane Falls Community College, Biology Department, Spokane, WA

- 4:12 85 Carpenter Ant Management Strategies Using New Management Tools and Application Techniques. **Laurel D. Hansen**. Biology Department, Spokane Falls Community College, Spokane, WA
- 4:24 86 What if: Avoiding and Fixing Problems in Crop Protection. **R. Duncan Carter**. Walnut Creek, CA
- 4:36 87 Refinements of Integrated Pest Management Strategies for Alfalfa Weevils in California Alfalfa. **L. D. Godfrey**¹, K. Windbiel¹, R. Lewis¹, D. Putnam², M. Canevari³, S. Orloff⁴, D. Marcum⁵, J. Schmierer⁶, and D. Haviland⁷. ¹ Dept. of Entomology, Univ. of California, Davis, CA. ² Dept. of Agronomy and Range Science, Univ. of California, Davis, CA. ³ Univ. of California Cooperative Extension – San Joaquin Co., Stockton, CA. ⁴ Univ. of California Cooperative Extension – Siskiyou Co., Yreka, CA. ⁵ Univ. of California Cooperative Extension – Shasta Co., McArthur, CA. ⁶ Univ. of California Cooperative Extension – Colusa Co., Colusa, CA. ⁷ Univ. of California Cooperative Extension -- Kern Co., Bakersfield, CA
- 4:48 88 Seed Treatment Insect Control in Spring Wheat, 2004. **David Bragg**¹, Cathlin Donohue¹, Kurt Tetrick². ¹ Washington State University, Extension Entomology, Pomeroy WA, ² USDA-ARS WREPMIC Central Ferry, WA
- 5:00 89 History of Pea Aphid Outbreaks on Peas in the Palouse. **Steve Clement**. USDA, ARS Plant Germplasm Introduction and Testing Research Unit, Washington State University, Pullman, WA
- 5:12 90 Attract-and-Kill Bait Stations Reduce Cutworm Numbers in Washington Concord And Wine Grape Vineyards. **Holly Ferguson**, Douglas Walsh, Tim Waters, Chase Metzger, and Ron Wight. Department of Entomology, Washington State University, Prosser, WA
- 5:24 91 Monitoring of Citrus Peelminer (*Marmara gulosa*) in the Central Valley of California Using Internet-Based Reporting Methods. **Gregory H. Montez** and Elizabeth E. Grafton-Cardwell. Department of Entomology, University of California, Riverside, CA
- 5:36 92 The Influence of Spray Adjuvants on the Insecticidal Activity Of Spinosad in Vegetables. **John C. Palumbo**¹ and Jesse M. Richardson². ¹ University of Arizona, Department of Entomology, Yuma Agricultural Center, Yuma, AZ. ² S Dow AgriSciences LLC, Hesperia, CA

- 5:48 93 Comparative Efficacy of Neonicotinoid Insecticides for Controlling Citricola Scale (*Coccus Pseudomagnoliarum*). **Christopher A. Reagan** and Elizabeth E. Grafton-Cardwell. Department of Entomology, University of California, Riverside, CA
- 6:00 Adjourn
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Graduate Student Symposium Session A:
Saplings in the Forest: Current Graduate Studies in Systematics
Chapel
Tuesday, 1:00 – 2:50 P.M. (ESA Section A)
Organizer and Moderator: **Cory Unruh**,
Department of Entomology, University of California, Davis, CA

- 1:00 Introduction, **Cory Unruh**
- 1:10 94 Phylogeographic Structure of Tongue Length and Its Relationship to Floral Resources in the Long-tongued Horsefly Pollinator *Philoliche rostrata* (Diptera: Tabanidae). **Shelah Morita**, Population Biology Graduate Group, University of California, Davis, CA
- 1:30 95 S.O.S. (Systematics at Oregon State). **Joshua R Ogawa**. Department of Zoology, Oregon State University, Corvallis, OR
- 1:50 96 A Pan-Pacific Odyssey: The Diversification Of Polynesian Weevils in the Genus *Rhyncogonus* (Curculionidae: Entiminae). **Elin M. Claridge**, George K. Roderick, and Rosemary G. Gillespie. University of California, Berkeley, Essig Museum of Entomolgy, Berkeley, CA
- 2:10 97 Phylogeny and Historical Biogeography of the Worldwide Dragonfly Genus *Sympetrum* (Odonata: Libellulidae). **Erik M. Pilgrim** and Carol von Dohlen. Department of Biology, Utah State University, Logan, UT
- 2:30 98 Phylogenetics and Evolution of the Figitidae (Hymenoptera: Cynipoidea). **Matt Buffington**. Department of Entomology, University of California, Riverside, CA
- 2:50 Adjourn

**Graduate Student Symposium Session B:
Exploring the Depths of Entomology: Graduate Research
Across the Pacific Branch**

Chapel

Tuesday, 3:10 – 5:00 P.M. (ESA Sections A-F)

Organizer and Moderator: **Hannah Burrack**,

Department of Entomology, University of California, Davis, CA

- 3:10** Introduction, **Hannah Burrack**
- 3:20** **99** Phylogeny and Natural History of the Paussinae, an Enigmatic Group of Bombardier Beetles. **Wendy Moore**. Department of Entomology, University of Arizona, Tucson, AZ
- 3:40** **100** A Protocol for Using the Mite Brushing Machine for Measuring Densities of Mite on Winegrapes. **Craig W. Macmillan** and Michael J. Costello. California Polytechnic State University, Horticulture & Crop Science, San Luis Obispo, CA
- 4:00** **101** Natural Enemy Biodiversity and Aphid Biological Control. **Cory S. Straub** and William E. Snyder. Washington State University, Department of Entomology, Pullman, WA
- 4:20** **102** Insect Ecology on Bahamian Islands and a Potential Cancer Cure. **M. Fran Keller**. University of California, Department of Entomology, Davis, CA
- 4:40** **103** Virulence of *Metarhizium Anisopliae* Conidia Produced Under Nutritional, Physical and Oxidative Stress Conditions. **Drauzio E. N. Rangel**¹, Diane G. Alston¹, Anne J. Anderson¹ and Donald W. Roberts¹. ¹Utah State University, Department of Biology, Logan, UT
- 5:00** Adjourn

Dinner, Crocker Dining Hall, Tuesday, 6:00 - 7:00 P.M.

Linnaean Games

Chapel

Tuesday, 7:00 - 9:00 P.M.

Moderators: **Sue Blodgett, and William Lanier**

Graduate Student Mixer

Chapel

Tuesday, 9:00 – 10:00 P.M.

Students Only

An Evening with Monarchs and Other Friends

Open to the Public

Organizer and Moderator: **David James**,
Washington State University, Prosser, WA

Monarch Experience

Fred Farr Forum

Tuesday, 7:00 – 8:00 P.M., 9:30 – 10:00 P.M.

Monarch Lectures

Kiln

Tuesday, 8:00 – 9:30 P.M.

Wednesday, March 2

Breakfast, Crocker Dining Hall, Wednesday, 7:30 – 9:00 A.M

Final Business Meeting

Hearth

7:30 – 8:00 A.M.

Presiding: **Victoria Yokoyama**

Exhibits

Hearth

8:30 A.M. – 12:00 Noon

Employment Opportunities

Hearth

9:00 A.M. – 12:00 Noon

**Symposium: West Nile Virus in California: Applied Entomology
At the Sharp End of the Spear**

Fred Farr Forum

Wednesday, 8:30 A.M. – 12:00 Noon (ESA Section D)

Organizer and Moderator: **Daniel Strickman**,

Santa Clara County Vector Control District, San Jose, CA.

- 8:30 104** Introduction, Integrated Disease Management as an Amalgam of Entomology and Public Health, Role of the Mosquito and Vector Control Association of California West Nile Virus in California: Applied Entomology at the Sharp End of the Spear **Dan Strickman**, Santa Clara County Vector Control District, Environmental Health Department, San Jose, CA
- 8:40 105** Organizing and Prioritizing Efforts Toward West Nile Virus in a Rural County. **Dennis Boronda**. Northern Salinas Valley Mosquito Abatement District, Salinas, CA
- 9:00 106** Operational Response To WNV: Integration of Science, Surveillance, and Practical Field Experience. **Chindi A. Peavey** and James H. Counts. San Mateo County Mosquito Abatement District, Burlingame, CA
- 9:20 107** West Nile and St. Louis Encephalitis: A Tale of Two Viruses in California. **Bill Reisen**, Center for Vectorborne Diseases, School of Veterinary Medicine, University of California, Davis, Arbovirus Field Station, Bakersfield, CA
- 9:40 108** Birds and WNV. **Tom Scott**, University of California, Riverside, CA

- 10:00** Break
- 10:15 109** West Nile Virus Surveillance Based on Dead Birds in Santa Clara County. **Noor Tietze**, Daniel Strickman and Michael Stephenson. Santa Clara County Vector Control District, San Jose, CA
- 10:35 110** Public's Perception of and Role in Minimizing WNV. Panic, Concern Or Complacency: How Governmental Agencies Can Affect The Public's Perception of West Nile Virus. **Kriss Costa**. Santa Clara County Vector Control District, San Jose, CA
- 10:55 111** The Public Health Medical Response to West Nile Virus. **Sara H. Cody, MD**. Disease Prevention and Control Program, Santa Clara County Public Health Department, San Jose, CA
- 11:15 112** Role of State Resources in Performing Testing, Standardizing Results and Collating Data Regionally. **Al Hom**. Vector Borne Disease Section, California Department of Health Services, Richmond, CA
- 11:35** Questions and panel discussion
- 12:00** Adjourn
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**Symposium: Physiology, Ecology, and Pest Management
of the Navel Orangeworm**

Kiln

Wednesday, 8:25 A.M. – 12:00 Noon (ESA Section C)

Organizers and Moderators: **Charles Burks**, USDA-ARS, Parlier, CA, and **Bradley Higbee**, Paramount Farming, Bakersfield, CA.

- 8:25** Introduction, **Charles Burks**
- 8:30 113** Population Dynamics and Relation between Abundance and Damage in Figs, Pistachios, and Almonds. **Charles S. Burks**, USDA ARS, Parlier, CA, and Bradley S. Higbee, Paramount Farming, Bakersfield, CA

- 8:54 114** Reverse Chemical Ecology: Novel Molecular-based Approach for Identification of NOW Pheromone System. **Walter S. Leal**¹, Ana Lia Parra-Pedrazzoli¹, Douglas J. Pesak², Karl-Erns Kaissling¹, Tania I. Morgan¹, Edward A. Dundulis², Charles S. Burks³, Bradley S. Higbee⁴, and Frank G. Zalom¹, ¹Univ. of California, Dept. of Entomology, Davis, CA, ²Bedoukian Research. Inc., Danbury, CT, ³USDA-ARS, Parlier, CA, ⁴Paramount Farming, Bakersfield, CA
- 9:18 115** Mating and Mate Finding Behavior of the Navel Orangeworm. **Robbie Girling** and Ring T. Cardé, Dept. of Entomology, Univ. of California, Riverside, CA
- 9:42 116** Re-examination of Synthetic Attractants for Navel Orangeworm Adults. **L. P. S. Kuenen**, Richard Gill, and H. C. Rowe, USDA ARS, Parlier, CA
- 10:06** Break
- 10:30 117** Use of Entomopathogenic Nematodes to Control Navel Orangeworm in Fallen Pistachios. **Joel Siegel**¹, Patricia Noble¹, Lerry Lacey², Bradley Higbee³, Robert Fritts Jr.⁴, and James Bettiga⁵, ¹USDA ARS, Parlier, CA, ²USDA ARS, Wapato, WA, ³Paramount Farming, Bakersfield, CA, ⁴Certis USA, Columbia, MD, ⁵S & J Ranch, Madera, CA
- 10:54 118** What is the Potential for Biological Control of Navel Orangeworm? **Kent Daane** and Glenn Yokota, Division of Insect Biology, Univ. of California, Berkeley, CA
- 11:18 119** Mating Disruption and Integrated Control of Navel Orangeworm. **Bradley Higbee**, Paramount Farming, Bakersfield, CA, and Charles Burks, USDA-ARS, Parlier, CA
- 11:42** Concluding Remarks
- 12:00** Adjourn

Symposium: Biology and Conservation of the Monarch Butterfly
Chapel

Wednesday, 8:00 A.M. – 12:00 Noon (ESA Section C)

Organizer and Moderator: **David G. James**,
Washington State University, Prosser, WA

- 8:00** Introduction, **David G. James**
- 8:05 120** Chasing Western Monarchs: New Views on Migration Routes. **Robert M. Pyle**, The Xerces Society, Grays River, WA
- 8:25 121** Development of Protocols for Long-Term Habitat Management of Overwintering Monarch Butterfly Sites in California. **Kingston L. H. Leong**. Department Of Biological Sciences, California Polytechnic State University, San Luis Obispo, CA
- 8:45 122** Project Monarch Alert - Studies of Population Dynamics in Western North America. **Dennis Frey** and Shawna Stevens. Biological Sciences Department, California Polytechnic State University, San Luis Obispo, CA
- 9:05 123** Using Climate Patterns to Study the Local Recruitment Hypothesis. **Shawna Stevens**. Biological Sciences Department, California Polytechnic State University, San Luis Obispo, CA
- 9:25 124** Patterns of Habitat Use by Overwintering Monarchs (*Danaus Plexippus*) in Monterey County, CA. **Nellie Thorngate** and Jessica Griffiths. Ventana Wilderness Society's Big Sur Ornithology Lab, Monterey, CA
- 9:40 125** Monarchs Tagging: What Tag Recoveries Tell Us about the Migration. **Orley R. 'Chip' Taylor**. Department Of Ecology And Evolutionary Biology, University Of Kansas, Lawrence, KS
- 10:00** Break
- 10:15 126** New Perspectives on Migration in Monarch Butterflies: Insights from Long-Term Monitoring and Citizen Science. **Andrew K. Davis**. Dept. Of Environmental Studies, Emory University, Atlanta, GA

- 10:30 127** Deterioration of the Prime Overwintering Habitat in the Monarch Butterfly Biosphere Reserve in Mexico. **Lincoln P. Brower**¹, Linda S. Fink¹, Daniel E. Slayback² and David R. Perault³. ¹Sweet Briar College, Sweet Briar, VA & University of Florida, Gainesville, FL. ²Science Systems And Applications, Inc., Biospheric Sciences Branch, NASA Goddard Space Flight Center, Greenbelt, MD, ³School Of Sciences, Lynchburg College, Lynchburg, VA
- 10:50 128** A Remote-sensing Overview of Forest Cover Change in the Monarch Butterfly Overwintering Region in Mexico. **Daniel A Slayback**¹, Isabel Ramirez², Lincoln P. Brower³, David Perault⁴, Linda S. Fink³. ¹Science Systems & Applications, Inc., Biospheric Science Branch, Code 614.4, Goddard Space Flight Center, Greenbelt, MD. ²Institute of Geography, UNAM, Mexico City, Mexico. ³Biology Department, Sweet Briar College, Sweet Briar, VA. ⁴Department of Environmental Sciences, Lynchburg College, Lynchburg, VA
- 11:05 129** Designing the Forest with the Trees: Quantitative Assessment Of Forest Structure for Overwintering Monarch Butterflies. **Stuart B. Weiss**. Creekside Center For Earth Observations, Menlo Park, CA
- 11:20 130** Monarch Butterflies in Changing Environments: Parasites, Migration, and Phenotypic Variation. **Sonia Altizer**. Department of Environmental Studies, Emory University, Atlanta, GA
- 11:40 131** Potential Effects of Climate Change on Eastern North American Monarch Butterfly (*Danaus Plexippus*) Distributions. **Karen Oberhauser**¹, Reba Batalden² and A. Townsend Peterson³. ¹University Of Minnesota, Department of Fisheries, Wildlife And Conservation Biology, St. Paul, MN. ²University of Minnesota, Department Of Ecology, Evolution and Behavior, St. Paul, MN. ³University of Kansas, Natural History Museum And Biodiversity Research Center, Lawrence KS
- 12:00** Adjourn

Lunch, Crocker Dining Hall, Monday, 12:00 Noon - 1:00 P.M.

End of the 89th ESA Pacific Branch Meeting

MEETING NOTES

The 89th annual meeting of the Pacific Branch of the Entomological Society of America will begin with on-site registration and a Photo Salon on Sunday, February 27 and end at noon on Wednesday, March 2. The scientific program will feature nine symposia, submitted papers and posters, a graduate student symposium, and student paper and poster competitions. Enjoy a Monday night mixer and dance. Tuesday evening will feature, “An Evening with Monarchs and Other Friends,” a public lecture and outreach program, and the Linnaean Games followed by a Student Mixer. An Awards Luncheon will be held on Tuesday at noon.

PROGRAMS:

Printed programs will be available at the meeting and electronically at <http://pbsa.prosser.wsu.edu> after January 31, 2005.

ABSTRACTS:

Abstracts will be available after January 31, 2005 at <http://pbsa.prosser.wsu.edu>. Feel free to download and print abstracts at your convenience because paper copies will not be available at the meeting.

POWERPOINT SLIDESHOW PRESENTATIONS:

The presentation format will be PowerPoint files viewed with laptop computers and video projectors. We are requesting symposia and submitted paper moderators to bring their own laptop computers for their session. Extra laptops will be available at the meeting. **POWERPOINT FILES SHOULD BE SENT TO THE SESSION MODERATOR BY EMAIL, CD-R DISK, OR A USB MEMORY STICK BEFORE THE MEETING, OR ARRANGEMENTS MUST BE MADE WITH THE MODERATOR FOR LOADING PRESENTATIONS ON SITE.** The meeting Operations Committee will assist with preparation of A/V equipment at each session during the meeting. Please contact Bill Chaney at wechaney@ucdavis.edu for questions about meeting rooms and A/V operations.

POSTER DISPLAY PRESENTATIONS:

Student poster displays will be presented in the *Afterglow* room on Monday, February 28 from 9:00 A.M. to 5:45 P.M. The general poster session will be presented in the *Afterglow* room on Tuesday, March 1, from 9:00 A.M. to 5:45 P.M. The *Afterglow* room will be available for authors to set up their displays in advance on both days from 8:00-9:00 A.M. Displays should be taken down by 6:00 P.M. on the day of the presentation. Posters should not exceed 4 ft. x 4 ft. in size. Authors need to bring their own pushpins. **Authors are expected to be present at their posters from 11:00 A.M. -12:00 Noon. and from 1:00-2:00 P.M. on the day of their presentation.**

MODERATORS:

Session moderators are responsible for keeping speakers on schedule. If a presentation is completed early, or cancelled, the moderator must ensure that the next presentation begins at the scheduled time.

MEETING INFORMATION AND SCHEDULE CHANGES:

Notices, meeting schedule changes and general information will be posted throughout the meeting at the Registration Desk. Information on points of interest, dining, and entertainment will be available at the registration desk.

REGISTRATION:*Front Desk*

Sunday, February 27	3-6 P.M., 7-9 P.M.
Monday, February 28	8-12 A.M., 1-4 P.M.
Tuesday, March 1	8:00 A.M. – 12 Noon

Everyone attending the Pacific Branch meeting must register. Registration will be located at the *Front Desk*. Those who are pre-registered may pick up registration materials there. On-site registration is \$100.00 for members, \$120.00 for non-members, and \$35.00 for students, emeritus, honorary, and guests. Credit cards cannot be accepted.

EXECUTIVE COMMITTEE:

The Pacific Branch Executive Committee will meet Sunday evening, February 27, from 4:00-6:00 P.M. in the *Hearth* room.

BUSINESS MEETINGS:

The preliminary business meeting will be held at the end of the opening session at 10:45 A.M. on Monday, February 28 in the *Chapel*. The final business meeting will be held from 7:30-8:00 A.M. on Wednesday, March 2 in the *Hearth* room. Plan to attend to vote for officers and other important Pacific Branch business.

PHOTO SALON:

Photographs will be shown in the Chapel on Sunday, February 27 from 7:00-7:30 P.M. Pacific Branch members are invited to submit photos by email or disk to be presented by PowerPoint in a Sunday evening competition. Photographs must have an entomological topic and multiple submissions are accepted. Cash prizes will be offered for 1st through 3rd place and honorable mentions for 4th through 13th place. Please send your photo(s) and title of photo(s), name and address, and any inquiries to Richard Coviello at rlcoviello@ucdavis.edu.

GRADUATE STUDENT PAPER/POSTER COMPETITIONS:

Competitions include oral paper presentations and poster displays. Senior authors must be student members of the Pacific Branch and be registered for the meeting. First and second place prizes will be awarded at the Awards Luncheon for the best 10-minute oral presentations and posters in two categories, one for

Masters and one for Ph.D. candidates. Judging will be based on scientific merit, organization, clarity, and format. Please contact Diane Alston at diana@biology.usu.edu for questions about this contest.

AWARDS:

Recipients of the prestigious C.W. Woodworth Award; John Henry Comstock Graduate Student Award; ESA National Recognition Awards; and graduate student paper and poster contest awards will be presented at the Awards Luncheon Tuesday, March 1, Crocker Dining Hall, 12 Noon – 1 P.M.

MIXER, PRESIDENT’S RECEPTION, AND AWARDS LUNCHEON:

A Pacific Branch Mixer and President’s Reception will be held Monday, 7:00 P.M – 10:00 P.M. in the Fred Farr Forum with light fare, cash bar, and dancing. Entry to the mixer is included in the registration fee and access to the mixer is by ticket only. There is a nominal fee of \$15.00 for the mixer for non-registered guests with tickets available at the registration desk. The Awards Luncheon is scheduled for Tuesday noon and a ticket is included in the registration fee for those who register by noon on Monday. Access to the Awards Luncheon is by ticket only. Non-registered guest lunch tickets will be available for \$20.00 if purchased at the registration desk before noon on Monday.

LINNAEAN GAMES:

The Games will be held on Tuesday, March 1 from 7:00-9:00 P.M. in the *Chapel*. The winning Pacific Branch team will be eligible to compete in the National ESA Linnaean Games in Fort Lauderdale, FL November 6-9, 2005. Contact Sue Blodgett at blodgett@montana.edu for more information.

EMPLOYMENT OPPORTUNITIES:

An employment opportunities desk will be located in the *Hearth* room. Anyone seeking employment is invited to provide a résumé, and any employer seeking to fill a position is encouraged to provide a description of the position and the name of a contact person attending the Branch meeting. Please contact Patrick Weddle at pweddle@igc.org for further information.

AIRPORTS AND GROUND TRANSPORTATION:

San Francisco International Airport SFO, 105 miles north; San Jose Airport (SJC), 75 miles north; and Monterey Peninsula Airport (MRY), 10 miles east, services major carriers and regional providers with non-stop service from San Francisco, Los Angeles, and Phoenix. Ground transportation from SFO (\$35) or SJC (\$30) is by Monterey Salinas Airbus. Ground transportation from MRY is by cab (\$25 or more), or Monterey-Salinas Transit bus system---after boarding the bus, transfer to the #1 bus at the Monterey Transit Center downtown to arrive at the front gate of Asilomar after a 30 minute ride (\$1.75 one way). All major car rental companies serve the Monterey area.

DIRECTIONS BY AUTO:**From San Francisco International Airport/San Jose Airport & Points North:**

Take Highway 101 South, to Highway 156 West, to Highway 1 South; exit at Pebble Beach/Pacific Grove; turn right on Holman Highway/68 West (Holman Highway/68 West) becomes Forest Ave. after 3.5 miles; travel one mile on Forest Avenue; turn left on Sinex Avenue; travel less than one mile to the front gates of Asilomar Conference Grounds. Follow the signs to the Asilomar Front Desk where the Pacific Branch Registration Desk is also located.

From Los Angeles, Santa Barbara, San Luis Obispo & Points South: Take Highway 101 North, to Highway 156 West, and follow the directions above from Highway 1 South to the Asilomar Conference Grounds.

From Salinas: Take Highway 68 West (Highway 68 West overlaps with Highway 1 South for about 5-6 miles); exit at Pacific Grove and follow the directions above from the Pebble Beach/Pacific Grove exit to the Asilomar Conference Grounds.

LODGING:

Asilomar Conference Grounds, Pacific Grove, California is a California State Park and lodging includes meals from Sunday dinner through Wednesday lunch. All rooms are standard and the rates are \$526.70 for 1 person, \$324.38 per person for 2 people, \$260.42 per person for 3 people, and \$189.62 per person for ages 3-17, per room for 3 nights and all meals. The Asilomar Conference Grounds offers these reasonable rates for lodging and meals from February 27 through March 2 only. If you have questions about meeting or lodging arrangements, please contact Bill Chaney at wechaney@ucdavis.edu.

FOOD SERVICE:

The Crocker Dining Hall serves Breakfast from 7:30 – 9:00 A.M., Lunch from 12 Noon – 1:00 P.M., and Dinner from 6:00 – 7:00 P.M. for those with lodging at the Asilomar Conference Grounds. Meal tickets for those lodging elsewhere can be purchased at the Asilomar Front Desk and an additional \$8.00 California State Park Day Use Fee will be charged. Light fare will be served at the Monday evening Mixer and President’s Reception, and at the Tuesday evening Student Mixer. The Awards Luncheon will have a special buffet menu. Snacks will be served at the mid-morning and mid-afternoon breaks.

LOCAL ATTRACTIONS AND INFORMATION:

Asilomar State Beach; Pacific Grove Monarch butterflies and Museum of Natural History; Pebble Beach Golf Course and 17-Mile Drive; Monterey Bay Aquarium, Fisherman’s Wharf, and Steinbeck’s Cannery Row; Carmel by the Sea shopping and wineries; Big Sur and Point Sur Lighthouse. The Asilomar website at www.visitasilomar.com has numerous links to help answer questions regarding your travel and visit. Select “Discover Asilomar” at the website to see a video of the conference grounds or learn about the flora and fauna of the area by selecting “Monterey Bay National Marine Life Sanctuary.” Select “Attractions” at the website for local and area activities, and at “Local

Attractions” select “Monterey Bay Aquarium” to find the live camera links for viewing the sea otters, penguins, sharks, outer bay marine life, and kelp beds.

WEATHER:

Throughout most of the year, Asilomar’s midday temperatures average about 60-65 degrees F. A warm sweater or lightweight jacket is recommended and bring an umbrella for the occasional shower.

ASSISTANCE:

If you need help please contact Victoria Yokoyama, 2005 ESA Pacific Branch President at vyokoyama@fresno.ars.usda.gov or visit the Pacific Branch website at <http://pbesa.prosser.wsu.edu>. A list of all volunteer Pacific Branch Committee Members with contact information is also available on the website.

PACIFIC BRANCH OFFICER NOMINATION

The Pacific Branch Nominations Committee composed of Keith Pike (Chair), Diane Alston, and Frank Zalom recommends Dr. Helmut Riedl for President-Elect of the Pacific Branch.



Dr. Riedl is Professor of Entomology at Oregon State University’s Mid-Columbia Agricultural Research and Extension Center in Hood River, Oregon where he conducts research on the biology, ecology and management of arthropod pests and their natural enemies on pears, apples and sweet cherries. His research interests include forecasting of pest phenology, insecticide resistance, biological control, impact of pesticides on natural enemies, and IPM as part of

Integrated Fruit Production (IFP) systems. Dr. Riedl has a degree in forestry from the University of Vienna, Austria and received his Ph.D. degree in Entomology from Michigan State University. Dr. Riedl has held previous positions with the University of California at Berkeley and the New York State Agricultural Experiment Station/Cornell University at Geneva.

Honors and professional activities include a Fulbright Scholarship and Oregon State University’s Award for Excellence in International Agriculture, chairing the Western Regional Coordinating Committee WRCC-43, the Western Orchard Pest and Disease Management Conference, and helping to organize EPA and IR-4/NAPIAP field tours. Dr. Riedl has served the tree fruit industry as a participant in NAPIAP Review Teams and various EPA/IR-4 Food Use Workshops, and as a member of Research Advisory Committees, the Science Advisory Committee of the Northwest Horticultural Council, and the Integrated Fruit Production (IFP) Committee of the Hood River Grower Shipper Association. In addition, Dr. Riedl has lectured or consulted on tree fruit IPM overseas in Argentina, Brazil, Mexico, South Korea, northern Italy, Spain, Switzerland and South Africa.

Dr. Riedl served on the Scientific Advisory Board of the Journal of Applied Entomology from 1980 to 1999 and served the Pacific Branch of the Entomological Society of America as a member of the Awards Canvassing Committee (1990-91).

AWARDS

The C. W. Woodworth and John Henry Comstock Awards will be presented during the opening session on Monday, February 28. All other awards will be presented during the awards luncheon on Tuesday, March 1.

JOHN HENRY COMSTOCK AWARD



This year's winner of the Comstock Award for the Pacific Branch of the ESA is **Deirdre A. Prischmann**. Ms Prichmann is a Ph.D. candidate at Washington State University. She is working with Dr. David G. James. Currently, she is investigating biological control of spider mites by predatory mites in wine grape vineyards, with an emphasis on effects of pesticides and potential control by generalist-feeding phytoseiid mites. She received her M.S. from Oregon State University in 2000, where I worked with Dr. Brian A Croft on how surrounding vegetation affects pest and predatory mite populations within grapes. She received her B.A. in 1997 from Alfred University in upstate New York.

C. W. WOODWORTH AWARD



The C. W. Woodworth Award annually recognizes a person in the Pacific Branch of the Entomological Society of America who has made outstanding contributions to entomology during the past decade. The 2004 Woodworth Award goes to **Dr. John Stark** of the Department of Entomology, Washington State University, Puyallup, WA. Dr. John Stark has worked on developing the field of ecotoxicology over the past fifteen years and is recognized as a world authority in this area. Dr. Stark has worked on melding of the two fields of toxicology and ecology, which is a very difficult task because these two fields of study ask questions in such different ways. Toxicologists evaluate the effects of pollutants by examining effects on individuals and parts of individuals (enzyme systems, cell cultures etc.). On the other hand ecologists work with nature on a large scale asking questions about populations, communities and food webs. Dr. Stark has found that estimates of toxicity based on individuals do not translate to larger scales such as populations and communities. One of the problems with taking measurements of individuals is that exposure to chemicals can result in mortality but more commonly multiple effects occur

such as effects on reproduction, weight gain, behavior, cancer, mutations etc. Toxicologists measure mortality and sometimes one sublethal effect. However, multiple sublethal effects can be manifested. Dr. Stark has developed a new approach to evaluate the effects of pollutants. His approach is based on the development of life tables for populations exposed to chemicals and a direct measurement of population growth rate called the instantaneous rate of increase. By measuring population growth rate, all toxic effects are evaluated together. Dr. Stark has taken this approach further by developing a mathematical model that measures how populations recover after exposure to pollutants. The model is called the delay in population growth index and is based on the population growth rate method mentioned above. This approach can be used to improve risk assessment for endangered species. Based on these new ideas, Dr. Stark was invited to submit a review paper highlighting his work and the work of others for the annual review of entomology, the most prestigious journal in entomology. In a recent paper, published in 2004 in the proceedings of the national academy of science, Dr. Stark used the delay in population growth model to show that the current ecological risk assessment process (the way in which decisions are made to protect threatened and endangered species from toxic chemicals) is flawed and went on to show a better approach for estimating risk. The risk assessment process involves comparing a plot of acute lethal concentration estimates (Lc_{50}) for as many species as possible along with a plot of measured environmental concentrations for a specific chemical. If there is overlap of the two plots and 10% or more of the species Lc_{50} values overlap with observed environmental concentrations, then the chemical is considered to pose a significant ecological risk. Dr. Stark questioned this approach. He reasoned that different species have very different life history traits. In other words, some species have very short life spans and produce large numbers of offspring while other species may live a long time and produce few offspring. A measure of mortality for two species with very different life history traits therefore may not be comparable. A reduction of 50% of a population that produces large numbers of offspring may have little effect on this species while the same 50% reduction in a long-lived species that produces few young could lead to extinction. Dr. Stark found that this was indeed true and that Lc_{50} s cannot be compared among species when used in risk assessment. Dr. Stark also found that population growth rates are negatively correlated with susceptibility to stress. In other words, species with high population growth rates were less susceptible to stress than species with low growth rates. This can be taken into account when conducting risk assessment by using weighting factors and thus improving the risk assessment process. The results of his work have major implications for combining pesticides and biological control agents in integrated pest management programs.

Dr. Stark's history of research and service contributions to the entomological sciences, and the economic importance of his work will bring distinction to the C. W. Woodworth Award.

**ENTOMOLOGICAL SOCIETY OF AMERICA
PACIFIC BRANCH COMMITTEES
2004-2005**

Program: Lisa Neven

Registration: Lucia G. Varela

Local Arrangements: William E. Chaney (Chair), Franklin Dlott

Operations Committee: Charles G. Summers (Chair), Russell Groves,
Charles Pickett, Craig Macmillan

Awards Canvassing: Douglas B. Walsh

Awards Selection Committee: Anonymous members

C. W. Woodworth Award Sponsor: Brian Holden

Nominations Committee: Keith S. Pike (Chair), Diane G. Alston, Frank Zalom

Membership: Frank Zalom

Graduate Student Symposium: Hannah J. Burrack (Chair), Corinne Unruh

Linnaean Games: Sue Blodgett (Chair), William T. Lanier

Student Paper and Poster Contest: Diane G. Alston

ESA Committee on Student Affairs, Pacific Branch Representative:

Rodrigo Krugner (2003-2005), Timothy Waters (2004-2006)

Hannah J. Burrack (2005-2007)

Exhibitor Arrangements: Curtis L. Sandberg

Photo Salon: Richard Coviello

Employment Opportunities: Patrick Weddle

Auditing: Tad Gantenbein

Resolutions: James D. Barbour

Plaques: Kurt Volker

Pacific Branch Website: David Allison

Site Selection Committee: Brian L. Bret (Chair), John D. Stark

AUTHOR INDEX

Senior Author	Initial	Paper #	Type	Time
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Bautista	R	P28	POSTER	Tues. 9:00
Bentley	W	63	SYMP	Tues. 2:48
Bextine	B	51	SYMP	Tues. 11:12
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Blua	M	45	SYMP	Tues. 8:34
Boronda	D	105	SYMP	Wed. 8:40
Bragg	D	88	PAPER	Tues.4:48
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Key to Presentation Types:

PAPER	Submitted 10 minute Paper
SC-MS	Student Comp. Paper (M.S.)
SC-PHD	Student Comp. Paper (Ph.D.)
POSTER	Submitted Poster Display
DSC-MS	Student Comp. Poster Display (M.S.)
DSC-PHD	Student Comp. Poster Display (Ph.D.)
SYMP	Symposium Presentation
AWARD	Woodworth or Comstock Award Winner

PROGRAM SUMMARY

Sunday, February 27

3-6 PM, 7-9 PM	<i>Front Desk</i>	Registration
4:00-6:00 PM	<i>Hearth</i>	Exec. Com. Meeting
7:00-7:30 PM	<i>Chapel</i>	Photo Salon
7:30-8:30 PM	<i>Chapel</i>	ESA Re-organization

Monday, February 28

8:00 AM-12 Noon 1:00-4:00 PM	<i>Front Desk</i>	Registration
8:30 AM-6:00 PM	<i>Hearth</i>	Exhibits
9:00AM-6:00 PM	<i>Hearth</i>	Employ. Opportunity
9:00AM-5:45 PM	<i>Afterglow</i>	Student Poster Comp.
8:30-11:30 AM	<i>Chapel</i>	Opening Session
1:30-5:48 PM	<i>Fred Farr</i>	<i>Symp.</i> Insecticides with Novel Modes of Action
1:30-5:12 PM	<i>Kiln</i>	<i>Symp.</i> Pest Management and Water Quality
1:30-5:00 PM	<i>Chapel</i>	Student Paper Comp.
7:00-10:00 PM	<i>Fred Farr</i>	Reception/Mixer/DJ

Tuesday, March 1, Morning

8:00 AM-12 Noon	<i>Front Desk</i>	Registration
8:30 AM-12 Noon	<i>Hearth</i>	Exhibits
9:00 AM-12 Noon	<i>Hearth</i>	Employ. Opportunity
9:00 AM-12 Noon	<i>Afterglow</i>	Submitted Posters
8:30 AM-12:00 Noon	<i>Fred Farr</i>	<i>Symp.</i> Post Harvest Insect Control
8:30 AM-12 Noon	<i>Kiln</i>	<i>Symp.</i> Biology of Sharpshooter/Xylella
8:30 AM-11:48 AM	<i>Chapel</i>	<i>Symp.</i> Biodiversity on the Farm
12 Noon-1:00 PM	<i>Dining Hall</i>	Awards Luncheon

Tuesday, March 1, Afternoon-Evening

1:00-6:00 PM	<i>Hearth</i>	Exhibits
1:00-6:00 PM	<i>Hearth</i>	Employ. Opportunity
1:00-5:45 PM	<i>Afterglow</i>	Submitted Posters
1:30-6:00 PM	<i>Fred Farr</i>	<i>Symp.</i> IPM in Organic Production Systems
1:00-6:00 PM	<i>Kiln</i>	Submitted Papers
1:00-5:00 PM	<i>Chapel</i>	<i>Symp.</i> Grad Student
7:00-9:00 PM	<i>Chapel</i>	Linnaean Games
9:00-10:00 PM	<i>Chapel Sun Rm.</i>	Grad Student Mixer
7:00-8:00 PM	<i>Fred Farr</i>	Evening with Monarchs
8:00-9:30 PM	<i>Kiln</i>	Monarch Lectures
9:30-10:00 PM	<i>Fred Farr</i>	Monarch Experience

Wednesday, March 2

7:30-8:00 AM	<i>Hearth</i>	Final Business Meeting
8:30 AM-12 Noon	<i>Hearth</i>	Exhibits
9:00 AM-12 Noon	<i>Hearth</i>	Employ. Opportunity
8:00-12 Noon	<i>Chapel</i>	<i>Symp.</i> Biology and Conservation Monarch
8:25-12 Noon	<i>Kiln</i>	<i>Symp.</i> Management of the Navel Orangeworm
8:30-12 Noon	<i>Fred Farr</i>	<i>Symp.</i> West Nile Virus in California