

Ist International Symposium on Biological Control of Arthropods

DRAFT PROGRAM (version 18, March 20, 2001)

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1. **Title of Meeting:** 1ST International Symposium on Biological Control of Arthropods..
2. **Time and Place:** September 17-21, 2001, Radisson Waikiki Prince Kuhio hotel in Honolulu, HI. Marshall Johnson and Russell Messing are the local arrangements committee
3. **Duration of Meeting:** The meeting will last 5 days (Mon. – Fri., September 17-21), with 1 day (Wed.) being an optional tour of biological control sites and points of local interest.
4. **Listserve and website for meeting.** I have developed an email listserve to contact participants. (bcmeeting-L@ent.umass.edu). Tom Bellows has developed a website for the meeting, (www.isbca.ucr.edu).
5. **Meeting Brochure:** A brochure describing the meeting is available from Tom Bellows (UC Riverside) that gives many useful details about attending this meeting. Electronic copies also available.
6. **Regional Coordinators:** We have recruited “Regional Coordinators” to promote awareness of the meeting among biological control workers in specific geographic areas. These are:
 1. Europe and Russia, Ullie Kuhlmann, Cabi-Bioscience
 2. South and Central America, Elizabeth De Nardo
 3. U.S., Canada and Mexico, Mark Hoddle, UC Riverside, CA, USA
 4. Japan-open
 5. China, Dr. Da-Wei Huang
 6. Southeast Asia-Banpot Napompeth, NBCRC, Kasetsart University
 7. Australia, New Zealand and Oceania, Don Sands, CSIRO, Brisbane, Australia
 8. South Asia (India, Pakistan and surrounding areas)-open
 9. The Middle East, Moshe Coll, Rehovot, Israel
 10. Africa, Peter Neuenschwander (IITA).
7. **Registration Coordinator:** Registration will be via paper forms that will be sent back to Roy Van Driesche along with the registration fee. Invited registration will be from Jan. 1 to Feb. 15 (via mailings) and open registration will begin Feb. 15 (via downloadable forms from our website). Total registration is capped at 250.
8. **Program Parameters:** Regular talks will be 25 minutes, keynote addresses will be 30 minutes. We will meet from 8:30AM to 12:00, resume from 1:00 to 5:00. There will be four meeting days (Mon., Tues., Thur., Fri.) and one field trip (Wed.). There will be approximately 60 speakers, plus 4 keynote presentations; there is no limit on posters.
9. **Content of talks:** Other than each day’s one keynote speaker, all talks should present original data from specific projects. Speakers should be specific and avoid presenting overviews, summaries, or material that is already widely known. Our goal is to stimulate ideas by presenting new information.

Ist International Symposium on Biological Control of Arthropods

Monday: Classical Biological Control

Opening presentation: R. Van Driesche: -Reasons for and goals of meeting.

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Key note speaker: Mark Hoddle “Classical Biological Control of Arthropods in the 21st Century” (Contact: Univ. of CA, Riverside, CA, USA, mark.hoddle@ucr.edu) :

Honoree: D. Waterhouse (CSIRO), honoring his lifetime achievements, by D. Sands¹ and J. Cullen² (contact: ¹CSIRO, Entomology, 120 Meiers Road, Indooroopilly 4068 Australia, phone 617-3214-2803, email d.sands@brs.ento.csiro.au; ²CSIRO Entomology, GPO Box 1700, Canberra, ACT, Australia 2601, phone 612-6246-4028; jimc@ento.csiro.au)

Session 1: Key Issues in the Future Expanded Use of Classical Biological Control

Organizer: Roy Van Driesche, Univ. of Mass.

1. Matthew Cock “Benefits and risks of classical biological control” (Contact: CABI-Bioscience, Ascot, Berks, United Kingdom; m.cock@cabi-bioscience.ch)
2. Lloyd Loope and Frank Howarth “Globalization and the rate of pest invasion: where will we be in 5 years time?” (Contact: US Park Service, Haleakala NP, Hawaii, Lloyd.Loope@usgs.gov; Bishop Museum, 1525 Bernice St, Honolulu, HI, fhowarth@bishopmuseum.org)
3. Barbara Barratt “Legal issues surrounding importation of natural enemies” (Contact: AgResearch, Ltd., Invermay Agricultural Centre, Private Bag 50034, Mosgiel, New Zealand, barrattb@agresearch.cri.nz)
4. Don Sands¹ and Roy Van Driesche² “Host range testing: techniques for use with parasitoids and predators” (Contact: ¹CSIRO Entomology, Private Bag No. 3, Indooroopilly, Queensland, 4068, Australia, phone 617-3214-2803, email d.sands@brs.ento.csiro.au; Dept. Entomology, Fernald Hall, University of Massachusetts, Amherst, MA, 01003, USA, phone 413-545-1061; email, vandries@fnr.umass.edu).

Session 2 - Better Methods to Colonize, Evaluate & Monitor Natural Enemies

Organizers: John Goolsby and Roger Fuester, USDA-ARS

1. Kim Hoelmer¹ and John Goolsby² “Release, establishment, and monitoring of *Bemisia* parasitoids and predators.” (Contact: ¹USDA-ARS European Biological Control Laboratory, Campus International de Baillarguet, CS 90013 Montferrier-sur-Lez, 34988 St. Gely du Fesc, Cedex, FRANCE, khoelmer@ars-ebcl.org ²USDA-ARS, Australian Biological Control Laboratory, 120 Meiers Rd., Indooroopilly, Queensland, Australia 4068, telephone: 07-3214-2821, fax: 07-3214-2815, telephone international: 617-3214-2821,

john.goolsby@brs.ento.csiro.au

2. Paul Debarro¹ and Stefan Schmidt² “The relationship between parasitoids and their native whitefly hosts in Australia - the development of rules for host specificity testing” (contact: ¹CSIRO Entomology, Long Pocket Laboratories, 120 Meiers Rd., Indooroopilly, Queensland, Australia 4068; phone 617-3214-2811; paul.debarro@brs.ento.csiro.au; ²CSIRO Entomology, Black Mountain Laboratories, GPO Box 1700, Canberra, ACT 2601; phone 617-6246-4262; email: stefan.schmidt@ento.csiro.au)
3. Timothy D. Paine “Biological control of eucalyptous borer in California.” (Contact: Department of Entomology, University of California, Riverside, CA 92521 USA, tpaine@ucr.edu)
4. Y. Argov. “Biological control of citrus leafminer in Israel: successes and failures of the establishment of the introduced parasitoids” (Contact: The Israel Cohen Institute for Biological Control, Citrus Marketing Board of Israel, P. O. Box 80, Bet Dagan, 50250, Israel. argov@netvision.net.il)
5. Rachid Hanna¹, J.S. Yaninek² and Muaka Toko³. “Classical biological control of cassava green mite in Africa” (Contact: ¹International Institute of Tropical Agriculture, 08 BP 0932, Cotonou, Benin, r.hanna@cgiar.org; ²Department of Entomology, Purdue University, Lafayette, Indiana, steve_yaninek@entm.purdue.edu; ³International Institute of Tropical Agriculture, 08 BP 0932, Cotonou, Benin, t.muaka@cgiar.org)

Session 3 - Application of Molecular Methods to Processes of Classical Biological Control

Organizer: Marjorie A. Hoy. (5 minute introduction)

1. Juan M. Alvarez (presenter) and Marjorie A. Hoy “Molecular markers in classical biological control of the citrus leafminer: taxonomic and ecological evaluations” (contact: Department of Entomology and Nematology, University of Florida, Gainesville, FL 32611-0620, mahoy@GNV.IFAS.UFL.EDU and jalva@GNV.IFAS.UFL.EDU)
2. Marjorie A. Hoy and A. Jeyaprakash “Evaluating Asian citrus *Psylla* parasitoids in quarantine for disease” (contact: Department of Entomology and Nematology, University of Florida, Gainesville, FL 32611-0620, mahoy@GNV.IFAS.UFL.EDU)
3. Marlijn Hoogendoorn and George Heimpel “Estimating predation frequency using PCR-based gut content analysis of insect predators” (Contact: Department of Entomology, University of Minnesota, 219 Hodson Hall, 1980 Folwell Av., St. Paul, MN 55108, Tel: 612-625-7055, hoog0012@tc.umn.edu)
4. Matthew H. Greenstone “Assessing insect endoparasitism by PCR: applications to biological control” (Contact: USDA-ARS-PSWCRL, 1301 N. Western Street, Stillwater, OK 74075, Tel: 405-624-4141, ext. 230, pardosa@attglobal.net)

Session 4 - Modeling and Theory as Tools to Clarify Causes of Success or Failure of BC projects

Organizer: Nigel Barlow

1. N.D. Barlow, J.M. Kean and S.L. Goldson “Biocontrol lessons from modelling New Zealand successes and failures” (Contact: Biocontrol and Biosecurity Group, AgResearch, PO Box 60, Lincoln, New Zealand, Nigel.barlow@agresearch.co.nz)
2. Maurice Sabelis “How plants influence predator-herbivore interactions: models and lessons for biocontrol systems” (Contact: Institute for Biodiversity and Ecosystem Dynamics, Kruislaan 320, 1098 SM Amsterdam, The Netherlands, sabelis@bio.uva.nl)
3. William Murdoch “Use of models and experiments to detect mechanisms of control of California red scale” (Contact: Department of Ecology, Evolution and Marine Biology, University of California, Santa Barbara, CA 93106. USA, murdoch@lifesci.ucsb.edu)
4. Nick Mills “Parasitoid interactions and biological control” (Contact: Insect Biology, Wellman Hall, University of California, Berkeley, CA 94720-3112, USA, nmills@nature.berkeley.edu)

Tuesday: Biological Control through Augmentative and Conservation of Natural Enemies

Keynote speaker: H. F. van Emden, "Conservation biological control: from theory to farmer practice" (contact: Dept. Hort. & Landscape, Univ. Reading, UK. h.f.vanemden@reading.ac.uk)

Session 5 - Nectar feeding by parasitoids

Organizers: George Heimpel (Contact: Dept. Ent, Univ. of Minnesota, heimp001@tc.umn.edu and Bob Pfannensteil (USDA, Weslaco, TX)

1. Dan Mahr, Paul Whitaker, and Shawn Steffan. “Providing floral resources in annual and perennial cropping systems: experiences in Wisconsin.” (Contact: Department of Entomology, Univ. of Wisconsin. Madison, WI 53706. dmahr@entomology.wisc.edu)
2. Wratten S.D., Berndt L, Tylianakis J., Didham,R. and Gurr G.M. “Adding floral diversity to apples, vines and cereals to enhance efficacy of parasitoids.” (Contact: Division of Plant, Soil and Ecological Sciences, PO Box 84, Lincoln University, Canterbury, New Zealand. Phone (Outside NZ) (+64) 3 325 2811 (Ext. 8221), Phone (Inside NZ) (03)325 2811 (Ext. 8221), Fax (Outside NZ) (+64) 3 325 3844, wrattens@lincoln.ac.nz)
3. Jana Lee and George E. Heimpel "Sugar feeding by parasitoids in cabbage fields and the consequences for pest control." (Contact: Dept. of Entomology, University of Minnesota, St. Paul MN 55108, leex1228@tc.umn.edu)
4. Mike Keller"Impact of conservation biological control practices on natural enemy behaviour: a case study of diamondback moth and its parasitoids." (Contact: Department of Applied and Molecular Ecology, Adelaide University, Waite Campus, Private Bag 1, Glen Osmond,

South Australia 5064 Tel: (08) 8303 7263 International: (618) 8303 7263 Fax: (08) 8379 4095 International: (618) 8379 4095 mike.keller@adelaide.edu.au)

Session 6 - Alternative hosts and habitat refuges for parasitoids and predators

Organizers: Bob Pfannenstiel (USDA, Weslaco, TX) and George Heimpel (Dept. Ent, Univ. of MN)

1. Nancy A Schellhorn and Tish Siberbauer. "Increasing the effectiveness of predators and parasitoids of *Helicoverpa* spp. in Australian cotton: the role of crops and surrounding vegetation." (contact: Nancy A. Schellhorn, CSIRO Entomology, CSIRO Cotton Research Unit, Locked Bag 59, Narrabri NSW 2390, Australia, Tel 02 6799 1538, Int 61 2 6799 1538, Fax 02 6793 1186, Int 61 2 6793 1186, nancys@mv.pi.csiro.au)
2. Jason Harmon and David Andow "Alternative foods as a mechanism to enhance a generalist ladybird's predation of target prey".(contact: 219 Hodson Hall, 1980 Folwell Ave., St. Paul, MN 55108; harm0086@tc.umn.edu; phone:612-624-3423; fax: 612-625-5299).
3. D.A. Landis and T.B. Fox. "Impact of Habitat Management on Generalist Predators of the Soybean Aphid, *Aphis glycines*." (contact: Douglas A. Landis, 204 Center for Integrated Plant Systems, Michigan State University, E. Lansing MI 48824-1311, Phone (517) 353-1829, FAX (517) 353-5598, landisd@pilot.msu.edu)
4. R. S. Pfannenstiel and T. R. Unruh (USDA-ARS, Yakima, WA). "Conservation of leafroller parasitoids through provision of alternate hosts in near crop habitats" (contact: Robert S. Pfannenstiel, USDA-ARS, BIRU, 2413 East Hwy 83, Weslaco, TX 78596, , Ph (956) 969-4858, Fax (956) 969-4888, rpfannenstiel@weslaco.ars.usda.gov).

Session 7 - Post-release Dispersal, Distribution, and Impact of Augmented Natural Enemies in Field Settings

Organizer: Livy Williams, USDA

1. James R. Hagler and C. Glen Jackson. "Novel methodologies to measure dispersal of the whitefly parasitoid, *Eretmocerus ethiopia*." (Contact: USDA-ARS Western Cotton Research Laboratory, Phoenix, AZ, USA., jhagler@wcr.ars.usda.gov)
2. Jonathan Lundgren and George Heimpel. "Augmentation of *Trichogramma brassicae* for control of cruciferous Lepidoptera." (Contact: University of Minnesota, Department of Entomology, St. Paul, MN, USA. lund0319@tc.umn.edu)
3. Valerie Fournier, Jay Rosenheim, Marshall Johnson, and Jacques Brodeur. "Augmentative releases of the predatory mite, *Phytoseiulus macropilis* in papaya crop grown in Hawaii. (Contact: University of California-Davis, Department of Entomology, Davis, CA, USA, vfournier@ucdavis.edu)
4. Imad Bayoun and Greg Walker. "Evaluation of egg parasitoids attacking beet leafhopper, *Circulifer tenellus*" (Contact: University of California-Riverside, Department of Entomology, Riverside, CA, USA. imad.bayoun@ucr.edu)

Session 8 - Survey of Actual and Potential Use in Outdoor Crops

Organizer: Bob Luck, UC Riverside

1. Robert F. Luck. "Augmentative biological control in North America as a foundation for agricultural pest management: its potential and limitations." (Contact: Department of Entomology, University of California, Riverside CA 92521, robert.luck@ucr.edu)
2. V.H. Paes Bueno "The popularity of augmentative biological control in Latin America: history and state of affairs" Dept. of Entomology, Federal University Lavras, Caixa Postal 37, Lavras, MG, 3700-000, Brazil, VHPBueno@ufla.br)
3. Donald P. Elliot¹ and M. Angela² Hale (presenter) "Successes and challenges in augmentative biological control in outdoor agricultural applications: a producer's perspective" (Contact: ¹President Bionomics Ltd., bug@islandnet.com, and, ²President, Association of Natural Biocontrol Producers (ANBP) and Innovation Manager Nature's Alternative International Inc. angieh@bcsupernet.com)
4. Shimon Steinberg,¹ Eric Palevsky,² and Yael Argov³ (presenter) "Augmentative biological control in the Mediterranean basin and southern Europe in annual and perennial crops: potential and limitations." (Contact: ¹Head Research and Development, Bio-Bee Biological Systems, Sde Eliyahy, Bet Shean Valley 10810 Israel, s_stein@bio-bee.com; ²Department of Entomology, Institute of Plant Protection, Volcani Center, P.O. Box 6, Bet Degan 50250, Israel, palevsky@netvision.net.il; and ³"Israel Cohen" Institute for Biological Control, Citrus Marketing Board of Israel, P.O. Box 80, Bet Degan 50250 Israel, argov@netvision.net.il)

Wednesday: Island Tour and Field Trip

OPTION 1: Scientific Tour plus Dinner at Sea Life Park*: will consist of on-site visits to locations on Oahu where biological control activities and research are in progress. This will include the Hawaii Department of Agriculture Biological Control Branch in Honolulu that conducts exploration, importation and introduction of natural enemies as well as visits to pineapple and papaya plantings in the agricultural areas of Oahu where research is on-going on augmentation and conservation of natural enemies. The 'entomology' portion of the tour will end around 3:30 PM when the bus arrives at Sea Life Park near beautiful Makapu'u Point on Oahu's east end. Participants will be able to visit the wonders of Sea Life Park and see live exhibits of marine life on display. Supper at Sea Life Park will be included as part of the total trip package. The tour will originate from the Radisson Hotel at 9:00 AM and buses will leave Sea Life Park at 8:00 PM, returning to the Radisson Hotel around 8:45 PM. Lunch will be on your own on the North Shore of Oahu. Cost of tour with dinner at Sea Life Park is \$48.00 per person. Seats available for 53 people only; seating based on first-come basis.

OPTION 2: Scenic Tour plus Dinner at Sea Life Park*: will consist of visits to historical and scenic locations on Oahu commonly visited by tourists. This will include stops at The Arizona Memorial in Pearl Harbor; Pali Lookout in the Ko'olau Mountains (view beautiful Kaneohe Bay area); Koolau Country Club on the Windward Side for no host lunch; and Hawaii Hidden Treasures in Waimanalo for Hawaiian gifts. The tour will end at 3:30 PM when the bus arrives at Sea Life Park near beautiful Makapu'u Point on Oahu's east end. Participants will be able to visit the wonders of Sea Life Park and see live exhibits of marine

life on display. Supper at Sea Life Park will be included as part of the total trip package. The tour will originate from the Radisson Hotel at 9:00 AM and buses will leave Sea Life Park at 8:00 PM, returning to the Radisson Hotel around 8:45 PM. Cost of tour with dinner at Sea Life Park is \$48.00 per person. Seats available for 53 people only; seating based on first-come basis.

OPTION 3: Dinner at Sea Life Park*: will consist of a bus trip to Sea Life Park, near beautiful Makapu'u Point on Oahu's east end, where participants will have supper and visit the wonders of Sea Life Park and see live exhibits of marine life on display. The supper excursion will originate from the Radisson Hotel at 2:15 PM and buses will leave Sea Life Park at 8:00 PM, returning to the Radisson Hotel around 8:45 PM. Cost of bus trip and supper at Sea Life Park is \$40.00 per person. Seats available for 106 people only; seating based on first-come basis.

Thursday: Biological Control through Augmentation and Conservation of Natural Enemies

Key note speaker: Kevin Heinz "Successes in the use of biological control agents in greenhouse crops." (Contact: Dept. Entomology, Texas A and M University, KMHeinz@tamu.edu)

Session 9 - Successes in Augmentative Biological Control

Organizer: Kevin Heinz

1. Nick Mills. "Augmentation in orchards: *Trichogramma* inundation as a case study". (Contact: Environ. Sci. Policy and Mngt., Univ of Cal., Berkeley, nmills@nature.Berkeley.edu)
2. Moshe Coll and Shimon Steinberg, "Spatial dynamics and intraguild interactions: effects on augmentative biocontrol in greenhouse pepper." (Contact: Dept of Ent., Rehovot, Israel, coll@agri.huji.ac.il and s_stein@seliyahu.org.il)
3. Paul van Rijn. "Pollen improves thrips control with predatory mites: the importance of supply method and predator response."(contact: Univ. of Amsterdam, Inst. for Biodiversity and Ecosystem Dynamics (IBED), Kruislaan 320, 1098 SM Amsterdam, The Netherlands, ph (31)-20-5257711; fax: (31)-20-5257754, rijn@bio.uva.nl)

Session 10 - Economics of Production and Use of Reared Natural Enemies

Organizer: Ron Valentin, Koppert Canada, Inc., valentinrjp@aol.com

1. James E. Carpenter "Performance of natural enemies reared on artificial diets" (Contact: USDA-ARS Insect Biology & Population Management, Research Laboratory, Tifton, GA, 31793-0748, Phone: 912 387 2348; FAX: 912 387 2321; email: jcarpent@tifton.cpes.peachnet.edu)
2. Karel Bolckmans "An overview of the world-market for biological control with natural enemies" (Contact: Koppert Biological Systems, Postbus 155, 2650 AD Berkel en Rodenrijs, The Netherlands; Phone: +31 10 5140444; Fax: +31 10 5115203; KBolckmans@koppert.nl)

3. Ronald Valentin "Economics of Marketing and technical support to bio control users" (Contact: Koppert Canada Limited, 50 Ironside Crescent, Unit 2, Scarborough, Ontario, M1X 1G4, Canada, Phone: 1(416) 291 0040; Fax: 1(905) 628 5395; email ValentinRJP@aol.com)
4. Suzanne Wainwright "Economics of Biological control of Ornamentals in Florida" (Contact: Entomologist / Quality Control Green2go, 4410 N. State Road 7, Bldg. J, Suit 303, Lauderdale Lakes, FL 33319; phone 954 757 7234 office)

Session 11 - Effects on Natural Enemies of Using Bt Crops in IPM Systems

Organizer: Brian Federici, (Contact: Department of Entomology, University of California-Riverside, Riverside, California. brian.federici@ucr.edu)

1. Galen Dively and Robyn Rose "Effects of Bt transgenic and conventional insecticides control strategies on the natural enemy community in sweet corn." (Contact: Department of Entomology, University of Maryland, College Park, Maryland 20742. gd7@umail.umd.edu.)
2. William J. Moar¹, Micky Eubanks¹, Barry Freeman¹, Sam Turnipseed², John Ruberson³, and Graham Head⁴. "Effects of Bt cotton on biological control agents in the southeastern United States." (Contact: ¹Department of Entomology, Auburn University, Auburn, Alabama 36849. ²Department of Entomology, Clemson University, Edisto Experiment Station, Blackville, South Carolina 29817, ³Department of Entomology, University of Georgia, Athens, GA 30602, and ⁴Monsanto Company, 700 Chesterfield Village Parkway, St. Louis, MO 63198. wmoar@acesag.auburn.edu.)
3. Kevin Steffey and Maria Venditti "Field effects of Bt corn on the impact of parasitoids and pathogens on European corn borers in Illinois." (Contact: Department of Crop Science, University of Illinois, Champaign, Illinois 61801. ksteffey@uiuc.edu)
4. Steve E. Naranjo and Peter C. Ellsworth "Arthropod communities and transgenic cotton in the Western United States: Implications for biological control." (Contact: USDA-ARS, Western Cotton Research Laboratory, Phoenix, Arizona. snaranjo@wcr.l.ars.usda.gov)
5. Jennifer A. White¹ and David A. Andow², "Natural enemies and resistance management in Bt corn: Parasitoid searching behavior and host spatial distribution." (Contact: University of Minnesota, St. Paul, MN 55108. ¹Department of Ecology, Evolution and Behavior and Center for Community Genetics, and ²Department of Entomology and Center for Community Genetics. dandow@umn.edu)

Session 12 - Pesticide Effects on Natural Enemies

Organizer: Livy Williams, USDA (contact: LWilliams@ars.usda.gov)

1. James R. Hagler and Steve E. Naranjo. "Sublethal effects of insecticides on predator feeding behavior: a gut content evaluation." (Contact: USDA-ARS Western Cotton Research Laboratory, Phoenix, AZ, USA. , jhagler@wcr.l.ars.usda.gov)
2. John R. Ruberson, Mark R. Abney, and Philip Roberts. "Sublethal effects of novel insecticides on *Trichogramma*: behavior and reproduction." (Contact: University of Georgia, Department of Entomology, Tifton, GA, USA. ruberson@tifton.cpes.peachnet.edu)

3. W. Powell, P. A. Umoru, L. Birnie, and I. Denholm. “Novel approaches to assessing the effects of pesticides on aphid parasitoids and implications for their efficiency as biological control agents.” (Contact: IACR-Rothamsted, Harpenden, Hertfordshire, UK wilf.powell@bbsrc.ac.uk)
4. John D. Stark. “Population-level outcomes of differential susceptibility among life stages of the aphid parasitoid, *Diaeretiella rapae* to pesticides.” (Contact: Washington State University, Department of Entomology, Puyallup, WA, USA. , starkj@wsu.edu)

Friday: Classical Biological Control – Examples

Keynote speaker: Tom Bellows

Session 13: Importation Biological Control

Organizers: Tom Bellows, (contact: Department of Entomology, University of California, Riverside bellows@ucr.edu) and Tom Unruh, (Contact: USDA, WA unruh@yarl.ars.usda.gov)

1. T. Bellows “Biological control: a view from the trenches. (Contact: Dept. of Entomology, University of California, Riverside, CA, 92521, phone: 909-787-5735; email bellows@ucr.edu)
2. Jim Nechols “Fortuitous biological control of a mealybug in Guam” (Contact: Dept. of Entomology, Kansas State University, Manhattan Kansas, USA; jnechols@oznet.ksu.edu)
3. S. L. Goldson and N. D. Barlow. “Biological control lessons from a depauperate ecosystem” (Contact: AgResearch, Canterbury Agriculture and Science Centre, P O Box 60, Lincoln, New Zealand; stephen.goldson@agresearch.co.nz, nigel.barlow@agresearch.co.nz)
4. Jeya Kathirithamby “Strepsiptera as biocontrol agents in Papua New Guinea” (Contract: Department of Zoology, South Parks Road, Oxford OX1 3PS; phone:01865 271196; Fax:01865 310447; jeyaraney.kathirithamby@zoology.oxford.ac.uk)

Session 14 Importation Biological Control

Organizers: Tom Bellows, UC Riverside & Tom Unruh, USDA, WA

1. P. Michaud and H. Browning. “Three targets of classical biological control in the Caribbean: success, contribution, and failure..” (Contact: University of Florida, Citrus Research and Education Center, Lake Alfred Florida, jpmi@lal.ufl.edu)
2. C. Borgemeister. “Impact assessment of *Teretriosoma nigrescens* Lewis (Col.: Histeridae) in West Africa, a predator of the larger grain borer *Prostephanus truncatus* (Horn) (Col: Bostrichidae)” University of Hannover, Germany; email borgemeister@ipp.uni-hannover.de).
3. Masami Takagi “Biological control of citrus scale pests in Japan” (Contact: Faculty of Agriculture Kyushu University, Fukuoka 812-8581 JAPAN)
4. D. Dahlsten “Biological control of introduced psyllids on eucalyptus” (Contact: Center for Biological Control, University of California, 201 Wellman Hall, Berkeley, CA, 94720-3112; ph 510-643-5325; donaldd@nature.berkeley.edu)

Session 15 Monitoring for Effects of Biocontrol Agents on Nontarget Organisms

Organizer: Russell Messing

1. Russell Messing¹ & Jian Jin Duan² "Improving predictability in non-target risk assessment: can we characterize the selection pressures that lead to parasitoid host shifts?" (Contact: ¹University of Hawaii at Manoa, messing@hawaii.edu and ²Monsanto Corp. , St. Louis, Missouri)
2. Elizabeth De Nardo¹ & Keith Hopper² "Using the literature to evaluate host range of parasitoids proposed for biological control introductions" (Contact: ¹Embrapa Meio Ambiente-Brasil; Laboratorio de Quarentena ACB, edenardo@yahoo.com , ² USDA-ARS BIIRL, Newark Delaware)
3. Ulrich Kuhlmann & P. G. Mason "Non-target risk assessment in classical biological control of arthropods: The use of field host surveys in the area of origin to predict natural enemy habitat and host ranges" (Contact: ¹CABI Bioscience Centre, Switzerland, Delmont, CH-2800, Switzerland, u.kuhlmann@bluewin.ch ²Agriculture and Agri-Food Canada, Saskatoon, Saskatchewan, Canada)
4. Barbara Barratt¹, Colin Ferguson¹, Craig Phillips², & Stephen Goldson² "Predicting non-target effects of parasitoids - where to from here?" (Contact: ¹New Zealand Pastoral Agriculture Research Institute, Ltd., Invermay Agricultural Center, Mosgiel, New Zealand, barbara.barratt@agresearch.co.nz and ²Canterbury Agriculture and Science Center, New Zealand)

Session 16 Importation Biological Control

Organizers: Tom Bellows, UC Riverside & Tom Unruh, USDA, WA

1. Kent M. Daane, Dan Gonzalez, Raksha Malakar-Kuenen, Mary Bianchi, Walter J. Bentley "Abiotic and biotic pest refuges hamper biological control of mealybug pests in California vineyards" (Contact: Division of Insect Biology, Wellman Hall, University of California, Berkeley, CA 94720-3112; e-mail daane@uckac.edu)
2. M. Coombs. Post-release evaluation of *Trichopoda giacomellii* and non-target effects'. (Contact: CSIRO Entomology Tel: 07 3214 2810, Long Pocket Laboratories Fax: 07 3214 2885, Meiers Road Indooroopilly, Qld, 4068, Australia, email marc.coombs@brs.ento.csiro.au)
3. Seiichi Moriya. "Biological control of chestnut gall wasp" (Contact: Insect Ecology Laboratory, Department of Entomology and Nematology, National Agricultural Research Center (NARC), 3-1-1, Kannondai, Tsukuba 305-8666, Japan; Tel:+81-298-38-8939; Fax:+81-298-38-8837; Email: moriya@affrc.go.jp)
4. M. Kenis¹, R.A. Casagrande², T. Haye², M.S. Gold² and L.A. Tewksbury². Selection and importation of European parasitoids for the biological control of the lily leaf beetle in North America, and prospects for control in Europe. (Contact: ¹ CABI Bioscience Centre, Switzerland 1, Rue des Grillons, 2800 Delemont, Switzerland; TEL: +41 32 421 48 84; FAX: +41 32 421 48 71; email m.kenis@cabi-bioscience.ch; ² Plant Sciences Dept. University of Rhode Island, Kingston, R.I. 02881 USA).

Close of Meeting: plans for next meeting – Van Driesche, or Bellows, or Unruh, or etc.: Closing remarks, announcements, etc.

