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# IOBC - NRS Newsletter

International Organization for Biological Control  
Nearctic Regional Section

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## Distinguished Scientist Award 2003



Bob Luck

**Dr. Robert "Bob" Luck** was the recipient of the IOBC-NRS's Distinguished Scientist Award for 2003. He was honored for his achievements in biological control in a ceremony during the IOBC-NRS annual meeting held with

the Entomological Society of America meeting in Cincinnati, Ohio in October 2003.

Bob started his work in entomology through his interest in forestry. After doing a tour of duty in the navy from 1966-68 he started working on his PhD at UC Berkeley. During that time the Berkeley faculty consisted of such biocontrol greats as Huffaker, van den Bosch, Hagen and Dahlsten. Dahlsten was Bob's major professor. During his PhD research he studied the control of the pine needle scale. These scales had become an upset pest following area-wide sprays with malathion against mosquitoes.

After he finished his PhD in 1973 he applied for a series of positions in Forestry, but was told in no uncertain terms by van den Bosch that he should take the position in the department of Biological

Control in Riverside. Upon his arrival there Bob initiated work on the biological control of the elm leaf beetle, and eventually got involved with the biological control of the citrus red scale (CRS). This territory has been occupied for a long time by Paul DeBach. Bob became very interested in the reasons why the successful parasitoid *Aphytis lignanensis* was replaced by the parasitoid *Aphytis melinus*. The reasons for this displacement were found through detailed studies of the oviposition and sex allocation of the parasitoids, work done in cooperation with the student Sue Opp. *A. melinus* appeared to be able to produce daughters on smaller scales than *A. lignanensis*, eventually leading to the displacement of *A. lignanensis*. To study the dynamics of the interaction between the CRS and *Aphytis melinus*, a large-scale, multi-year study was initiated, in which the density of both CRS and the parasitoids was monitored. This work was done together with the PhD student Dicky Yu who designed a large portion of the software used for databasing and analyzing this information, and also with Bob's long time research associate Lisa Forster. The population dynamic aspects of the interaction were analyzed together with Bill Murdoch from UC-Santa Barbara.

During that time Bob also became interested

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## IOBC-NRS Student Award 2003



Jonathan Lundgren

**Jonathan G. Lundgren** was presented the IOBC-NRS Outstanding Graduate Student Award at the Business Meeting, held at the ESA Meeting in Cincinnati, Ohio during October 2003.

Jonathan defended his Ph.D. dissertation at the University of Illinois in December, 2003, for which his research consisted of assessing risk of feeding on transgenic pollen

by the coccinellid predator, *Coleomegilla maculata*. Jon's research examined nutrition of pollen for development of *C. maculata*, rates of pollen consumption in lab and field experiments, effects on development of *C. maculata* when feeding on different amounts of pollen from corn plants expressing the genes for producing Bt-toxins, and the effects of corn anthesis on prey and pollen feeding by *C. maculata*.

In addition to his dissertation work, Jonathan has worked on the invasion of an agromyzid leafminer in the Midwest, and is an integral player

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## FROM the PRESIDENT

### Thoughts About Biocontrol In Australia

Since I am on sabbatical in Brisbane, Queensland, Australia, I was not able to attend the IOBC-NRS Informal Conference in Cincinnati. However, I understand it was a tremendous success. I would like to thank Richard Stouthamer, who spoke about Bob Luck's career in biological control. I would also like to thank our Distinguished Scientist, Bob Luck, who not only turned up to be honored, but also donated the honorarium/travel funds to IOBC to help ensure continued funding of the Distinguished Scientist and the Outstanding Student awards. I understand Jon Lundgren, this year's Outstanding Student, gave an excellent talk, as did the symposium speakers. Thanks to Nick Mills, who organized the symposium, and to Rob Wiedenmann, who ran the meeting in my absence.

I thought I would spend the remainder of this column talking about Australian biological control. An Australian folk poet, Banjo Patterson, said "It's grand to be a rabbit, and breed 'til all is blue/ And then to die in little heaps because there's nothing left to chew." In Australia the pest problems, and the struggles to control them sometimes seem to take on mythic proportions.

In many ways, Australian biological control resembles biological control in North America. Sweet potato whitefly is a major pest here, having arrived only years behind its arrival in the US, and here in Queensland, red imported fire ants have recently arrived (they are still the target of an eradication effort that does not appear to be working).

Among other targets, Australian weed biological control ecologists are working on weeds familiar to NRS members such as scotch thistle, nodding thistle and scotch broom.

There's always a 'through the looking glass' aspect to things in Australia, however; the more things seem familiar, the odder it is that the sun is in the North, the drivers are on the left and the constellation Orion stands on his head. This quality pertains to biological control as well. We can envy the Australians a more straightforward protocol for biological control introductions, a protocol that builds consensus at several stages, and encompasses arthropod as well as weed agents, complete with a flow chart. We should probably not envy the Australians for the pest challenges they face.

Australia often comes to mind when we think of the great biological control successes in the first half of the last century against prickly pear and rabbits. What not everyone knows is that these struggles, particularly the one against rabbits, continue today. While myxomatosis was tremendously successful in the 1950's, killing >99% of infected rabbits, its virulence became attenuated and it now kills <50% of infected rabbits. Rabbit calicivirus, accidentally released while under study in quarantine, is now contributing to biocontrol, but with less spectacular results and the specter of virulence attenuation ahead. Other exotic vertebrates with devastating ecological effects such as foxes, feral cats, cane toads and mice are the target of long, sustained research into biological control that are necessarily innovative, but with several serious hurdles ahead.

The cane toad provides a case in point. Introduced to tropical Queensland in the 1930s in an infamous biological control program, immortalized in celluloid in *The Cane Toad: An Unnatural History*, the cane toad is widely acknowledged to have played havoc with Australian wildlife both large (predators get poisoned by it) and small (everything smaller than its gape gets eaten by it). The cane toad recently entered the World Heritage site Kakadu National Park and continues to spread across northern Australia and south into New South Wales. When all natural viruses tested were found to be too general to be useful, the research at CSIRO turned to using a weakened virus to vector a cane toad-specific gene that interferes with metamorphosis when expressed at an early age. While perhaps the best avenue available, the challenges are obvious – first to make a virus sufficiently weak that when broadcast, it will not harm native amphibians, yet is infectious enough to spread through cane toad populations. Second, it may be difficult to get species-specific expression of the metamorphosis-blocking gene. And if that wasn't enough, convincing skeptics of the safety of such a release seems a daunting task.

In spite of these challenges and others, most Australians are generally convinced of the value of biological control and the ecologists in the discipline make extraordinary contributions for a country with less than one-twelfth the population of the United States.

— Molly Hunter

### Student Awards —Continued from page 1



in a new organic-transition project, examining the roles of carabid predators in organic crop habitats. Jon has also been involved in the IOBC Global

GMO Guidelines Project, many outreach activities, and has been one of the members of the University of Illinois debate team for recent ESA meetings.

Prior to his work at Illinois, Jonathan received an undergraduate degree in biology and a M.S. degree in entomology, both from the University of Minnesota. Jonathan also worked as a technician

for USDA-APHIS-PPQ.

Dr. Jonathan Lundgren represents IOBC-NRS well as the 2003 Outstanding Graduate Student Award winner. He is currently a post-doc at Illinois, working on a USDA-funded Organic Transition project, looking at the roles of carabids and other predators in organic systems.



## IOBC-NRS BUSINESS

### IOBC-NRS Newsletter Available By E-Mail

It was decided at the last Governing Board meeting that subsequent issues of this newsletter will be made available in electronic format to any members who request it.

The electronic newsletter will be identical to the printed version, but will be sent as a Portable Document File (pdf) by email. The electronic version would be sent to members whenever the file is sent to the printer — meaning you would receive it sooner than if you wait for the Post Office to deliver your paper copy!

Electronic subscriptions will help cut our printing and mailing costs so

membership dues can be used for other activities, such as meetings and symposia. And just think what this can do for the clutter in your office!

If you would like to receive the IOBC-NRS newsletter electronically **instead** of a printed copy beginning with the summer issue, please send an email request to:

Susan Mahr  
semahr@facstaff.wisc.edu.

[You must still be a paid member to receive the newsletter electronically!]

### Summer Issue To Be Published Early

Because of travel commitments, the next issue of the IOBC-NRS newsletter will be published earlier than normal — in early May rather than June. If you would like to submit articles for this issue, please note that **items for the Summer Newsletter are due by May 1<sup>st</sup>.**

— Susan Mahr

### Apply Now For The IOBC-NRS Student Award

**IOBC-NRS presented the second** annual award for Outstanding Graduate Student in Biological Control to Jonathan Lundgren of the University of Illinois (see article on page 1). Now is the time for you — or your promising graduate student(s) — to apply for the 2004 award. The recipient will be recognized at the IOBC NRS Informal Conference held at the Annual Entomological Society of America meeting, will receive a cash award of \$250, and will give the lead talk in the IOBC-NRS symposium.

All individuals who are enrolled in a graduate program and are members of the IOBC NRS at the time of the application deadline are eligible. Students who are *not* planning to attend the Entomological Society of America Meetings

would ordinarily be less likely to be considered for the award. We note that students may join IOBC-NRS at the time of submitting their application (membership application on page 9; for more details see the web site at <http://www.entomology.wisc.edu/iobcnrs.htm>).

Also, while finishing Ph.D. students may be more likely to be able to demonstrate scholarship and achievement than Masters students, promising Masters students are also encouraged to apply.

**The deadline for the application is April 1, 2004.** Please:

- send a letter which details the significance of your research and its relevance to biological control;

- include a 2 page CV that includes contact information, education, honors & awards, presentations, and publications; and
- ask 2 referees to send letters of reference to Rob Wiedenmann, President-Elect IOBC-NRS.

We also ask that you confirm your plans to attend the Ent. Soc. Mtg. in Salt Lake City in November 2004 in the letter. To facilitate sharing of applications among the Student Award Committee members, we ask that you send the documents as Microsoft Word attachments to <rwieden@uiuc.edu>. A decision will be made and the recipient notified in time for the recipient's talk title and abstract to be entered in the ESA online submission system.

### Distinguished Scientist Award Nominations Requested

**At this time**, the IOBC-NRS is soliciting nominations for the 2004 DSA. Nominees must have spent most of their career in the Nearctic Region (essentially Canada and the U.S.), and have made significant contributions to biological control, but need not be members of IOBC. Nominations are restricted to one page in length and should include the name and current contact information of both nominator and nominee, as well as

a thorough but concise summary of the principle contributions of the nominee.

This is our organization's main way of telling people how much their work is appreciated. The recognition of those scientists who have made outstanding contributions to the science and implementation of biological control over extended and illustrious careers is an important function of IOBC. Many members have expressed to me their enjoy-

ment of seeing colleagues honored with our Distinguished Scientist Award. Help us honor our deserving colleagues!

Please send nominations by **April 1, 2004** to the IOBC-NRS President, Molly Hunter. Because Molly is on sabbatical in Australia until August, she requests nominations be submitted **ONLY** by email to [mhunter@ag.arizona.edu](mailto:mhunter@ag.arizona.edu).



## Elections for IOBC-NRS Officers Coming Soon — Nominations Needed

**Nominations for the different offices** of the Nearctic Regional Section Governing Board for 2005-2006 are open and should be submitted by **April 1**. The duties of the various offices are outlined in the NRS Statues (see below). You may submit the name of someone you feel would be qualified or you own name if you have an interest in serving the Section. Please contact nominees in advance to determine their willingness to serve. **Note: all officers serve a term of two years.**

Please submit names to the IOBC-NRS President, Molly Hunter, by email ONLY to mhunter@ag.arizona.edu.

**President-Elect.** The President-Elect shall serve two years as President-Elect and the following two years as President. The President-Elect shall assume the office of President at the close of the annual meeting held at the end of the term of the incumbent President. A vacancy in the office of the President-Elect shall be filled as soon as practical by written ballot. The President-Elect is

the chair of the membership committee.

**President.** The President shall provide leadership for the Region, insure that the goals and objectives of both the Regional Section and the global organization are carried out, and preside at annual meetings. The President shall also serve as the chair at the Governing Board meetings. The President shall also have the authority to appoint members to committees or groups in order to meet the objectives and functions of the Regional Section and global organization. (nominations not required)

**Past-President.** The Past-President shall serve as an advisor and consultant to the President, in order to provide continuity in the development and implementation of the long-term policies of the Section. (nominations not required)

**Vice-President.** The Vice-President serves as the program chair for the Regional Section. In case of the inability of the President to serve, the Vice-President shall become President for the remainder of the current term of office.

**Secretary-Treasurer.** The Sec.-Treasurer shall have custody of all accounts, securities, property, and records of the Region. The Secretary-Treasurer shall prepare an annual budget, maintain membership and fee records, and pay the annual global membership fee and subscriptions to *BioControl*.

**Corresponding Secretary.** The Corresponding Secretary shall be responsible for publication of the Regional Newsletter and shall act as a liaison for Regional information to be included in the global newsletter. The Corresponding Secretary shall also keep minutes of annual meetings and meetings of the Governing Board.

**Members-at-Large.** The Members-at-Large shall serve as chairs of special committees or projects established by the membership or the Governing Board to facilitate meeting the objectives of the Regional Section and global organization. (nominations required for 3 members at large)

## Minutes of the IOBC-NRS Governing Board Meeting

**The Annual Meeting** of the Nearctic Regional Section Governing Board was held 27 October 2003 in Cincinnati, Ohio in conjunction with the Annual Meeting of the Entomological Society of America. Those present included Jacques Brodeur, Del Delfosse (guest), Julie Gould (guest), Stefan Jaronski, Dan Mahr, Susan Mahr, Nick Mills, Sujaya Rao, and Rob Wiedenmann. The meeting was conducted by President-elect Wiedenmann because President Molly Hunter was on sabbatical in Australia. The following is a condensed version of the minutes of the GB meeting.

### OFFICER AND COMMITTEE REPORTS

1. **Vice-President's report** (Mills)—Details of the symposium later in the week included a decision to publicly thank Drs. Maurice and Katy Tauber for their \$300 contribution to the Student Award at the

meeting. John Ruberson obtained the plaques to present to the winners of the Distinguished Scientist Award (DSA) and Outstanding Student Award.

2. **Secretary-treasurer's report** (Jaronski) — Membership declines continue with a significant number of non-renewals in the past year. E-mails were sent to non-renewers, with little response. A follow-up mailing is planned. It was suggested that we mail the newsletter to everyone in February, publishing a list of non-renewals to encourage delinquent members to renew. The tentative financial report was presented; not all expenses for 2003 had been received yet. Costs for the newsletter were significantly lower (\$700) than anticipated (\$1500).

Difficulties in maintaining the records were discussed relative to having members pay for multiple years, and

it was suggested it be either an annual payment or for a specific number of years. The possibility of setting up credit card payments through a website will be investigated. Although it would make renewal easier, this would cost ~2% more because of administrative costs.

3. **Corresponding secretary's report** (S. Mahr) — The number of newsletters being mailed out dropped below the minimum needed for bulk mail (200), so they have been sent out with first class postage.

- Winter issue – (8 pages) 350 copies
- Summer issue (8 pages + ballot) 175 copies
- Fall issue (6 pages) 175 copies

The possibility of switching to electronic distribution of the newsletter was discussed. The membership will be informed in the Winter newsletter issue of

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## Governing Board Meeting —Continued from page 4

the impending change and those that request electronic distribution and provide their email address will not be sent the printed copy.

The IOBC-NRS website was only updated once this year.

4. **Membership Committee** (Weidenmann) – a letter sent out to all biocontrol students after the ESA meeting last year did not generate many new members. Currently there are only 12 student members, but there are many more students working in BC.

5. **Student Awards Committee report** (Weidenmann) – there was only a single application for the 2003 award by the original deadline, so this was extended. Several groups were solicited for applicants, but there were only 3 applications. This award needs to be better publicized through the newsletter, renewal letters, letters to chairs of regional committees in US and Canada, and other avenues. The deadline for 2004 is April 15. Jaronski volunteered to put a notice in the newsletter of the Society for Invertebrate Pathology.

6. **Biocontrol Management Board representative's report** (Wiedenmann) – there was no report because the Board did not meet.

7. The **Greenhouse Working Group** provided a written report of their activities in 2003. Proposed activities include co-organizing meetings for the XXII International Congress of Entomology in Brisbane, Australia in 2004 and a joint meeting of the NRS and WPRS greenhouse IPM working groups will be held April 10-14, 2005 in Turku, Finland.

### OLD BUSINESS

1. **Operations Manual** – a list of duties for each office and committee needs to be completed and coordinated into a single document. Electronic copies will be compiled by the Corresponding Secretary. Eventually an annual calendar of events will be developed.

2. **Distinguished Scientist Award** – a request for nominations will be included in the Winter newsletter and also be solicited from the general membership at the annual meeting. Nominees from previous years will be carried over

but additional names will be included.

3. **NRS-sponsored Conferences** – Brodeur presented information on The Biocontrol Network of Canada and proposed having a joint meeting with IOBC in Quebec in late May, 2005. This could be a good time as a follow-up to the Bozeman meeting. Also, the Global IOBC has inquired about the possibility of the NRS sponsoring a Global meeting; there could be a possibility of combining this all together. Brodeur will proceed with organizing such a joint sponsorship with NRS's support.

### NEW BUSINESS

1. **Changes in APHIS regulations** on hand-carrying organisms to the US were discussed by guests Julie Gould and Del Delfosse. The change came about through OIG report 33601-4-CH of March 2003 "APHIS CONTROLS OVER PERMITS TO IMPORT *BIOHAZARDOUS MATERIALS*." Delfosse suggested that IOBC-NRS respond with a letter to include the points that there was no notice or comment period (which regulation changes are supposed to allow, but may claim it is exempt); application to biocontrol agents that were never mentioned in original report; no alternatives to hand-carrying were suggested; how will the material be handled at plant inspection stations if the package cannot be opened except in a quarantine facility. Notice of public meeting on Dec 9-10 in Washington, D.C. to address regulatory issues was put in Federal Register Vol. 68 No. 172 of Sept 5, 2003. It was suggested that a representative from IOBC should attend the workshop on the 10<sup>th</sup> on permit systems. Some problems exposed in the report include no tracking, permits for quarantine facilities that were never inspected, and more. This change will not materially affect biocontrol, but will probably increase the costs of bringing exotic agents into the country.

2. **Meeting location for next year** – will again be in conjunction with the ESA meeting 14-17 November, 2005 in Salt Lake City, Utah.

3. **A topic for the 2004 symposium** program has not been determined.

Jaronski suggested integrating insect predators with pathogens to enhance biocontrol through synergism using multiple tools – this would bring in insect pathologists that attend ESA.

4. **Changes in IOBC global** were discussed by Wiedenmann, particularly the impending lack of support by AGROPOLIS of the permanent secretariat. Concerns are slower response to problems with Kluwer, reduced interactions between regional groups, and the potential disruption of elections in 2004. IOBC-Global has not indicated what they expect to do. One possibility for maintaining a permanent secretariat is contributions by regional groups to financially support the position (which would probably fall to WPRS and NRS since the other sections are too small). Is a full time position really necessary, or can the duties of the secretariat be performed at a lesser appointment or even by a professional individual donating their time and support staff? There are some definite advantages to having a dedicated position, particularly during the transition from one publisher to another; this support may not be as necessary now. Without this support, perhaps the sale of *Biocontrol* to Kluwer (as proposed in previous years by them) may make more sense. These suggestions will be passed on to representative Les Ehler.

6. **Associate Editor for Journal** – H. Hokkanen is looking for a new Associate Editor in the area of predators for the journal beginning next January. An announcement will be made at the business meeting. He is also looking for more submissions to the journal.

*If you move, please send your new address to the Secretary/Treasurer or Corresponding Secretary so this newsletter will continue to reach you.*



## Poster and Paper Presentation Summaries From the ESA Meeting

The following brief summaries are just some of the numerous presentations at the annual meeting of the Entomological Society of America, October 26-29, 2003 in Cincinnati, Ohio that dealt with biological control. Only the presenting author is included. The number in parentheses refers to the presentation number in the program. Complete abstracts for these and many more presentations can be viewed by using the Personal Scheduler on the ESA website at <http://esa.confex.com/esa/2003/scheduler/>. You can search keywords, names, and/or abstract title, or view program sessions with a list of papers that were scheduled to be presented there, and then click on a paper title to read the abstract (assuming one was submitted).

**Can we suppress turfgrass pests using conservation biological control?** — S. Frank, Univ. Maryland (0101). Conservation strips of alyssum, coreopsis, and switchgrass adjacent to golfcourse fairways increased predators (even more than just coming from the rough) with some movement into the fairway. There was increased predation of tethered cutworms in fairways at 6 and 10 m away from the conservation strips. These strips also offer more alternative prey, such as collembola, than would be found in the rough.

***Beauveria bassiana* for the microbial control of tarnished plant bug, *Lygus lineolaris* (Heteroptera: Miridae) in wild host plants** — J. Leland, USDA-ARS, Stoneville, MS (0606). TPB migrate from wild host plants on field margins into cotton. Treatment with *Beauveria bassiana* might prevent crop infestation. Natural infection ranged from 10-60% in the San Joaquin Valley, but was less than 1% during the summer in the Mississippi Delta. The fungus has some impact on lacewings and *Orius*, with minor effects on lady beetles. Several field-collected isolates and different formulations are being examined for increased efficacy over commercially-available products, and the best 1 or 2 will be field tested.

**Laboratory and field studies of microbial insecticides for control of adult emerald ash borer, *Agrilus planipennis* (Coleoptera: Buprestidae)** — L. Bauer, USDA-FS, E. Lansing, MI (0607). BotaniGard (*Beauveria bassiana* var. GHA) caused 10% infection of adults when applied to leaves; 17% when applied to uninfested logs; and 60% when sprayed on the bark of infested logs and beetles became infected upon emergence. Fungal bands don't work well because EAB doesn't move along the tree trunks like cerambycids do. Several commercial Bts were screened, producing 66-98% infection in the lab. Foray, a lepidopteran-infecting type, was used in subsequent field tests, where persistence dropped off significantly after 3 days; more research is needed.

**Persistence and population dynamics of *Metarhizium anisopliae* in peat and bark based potting media** — D. Bruck, USDA-ARS, Corvallis, OR (0608). Potting medium affects fungal populations. *Metarhizium anisopliae* persists at higher levels in peat-based potting medium than in bark-based medium, and was still active after one year sufficient to control last-instar BVW larvae. A premix (adding fungus to 1/3 of the mix a week before planting to allow for germination and growth, and then final mixing just before planting) was better than incorporation just before planting. Fungal populations were 10 times higher in rhizosphere soil than just ordinary soil.

**Natural enemies of emerald ash borer, *Agrilus planipennis* (Coleoptera: Buprestidae) in Michigan** — L. Bauer for H. Liu, Michigan State Univ. (0614). EAB has few naturally-occurring natural enemies in Michigan, where the first infestations were detected. Surveys found only 1.7% fungal infection of larvae (5 species of fungi), and 0.3 and 0.7% parasitism of eggs and larvae/pupae, respectively. Potential parasitoids included ichneumonids, braconids, chalcids, eupelmids and more, plus a few predatory beetles. These are not sufficient for control, so exploration in Asia needs to focus on more host-specific natural enemies.

**Differential foraging response of pea aphid predators to reduced stipule and afila leaf of peas** — A. Legrand, Univ. Connecticut (0717). Lacewing and lady beetle predation was higher on reduced-leaf type peas than on normal types, while aphid populations were about the same.

**Impact of a detrital subsidy on feeding preferences of spiders and carabids in cucurbit crops: a stable-isotope analysis** — D. Wise, Univ. Kentucky (0719). Adding detritus to cucumber or squash plots increased generalist predators, but didn't affect predation on crop pests. Alternate prey – mainly collembola and fly maggots – were used by smaller predators, but not the larger predators that feed primarily on pests.

**Distribution and establishment of *Mecinus janthinus*, a classical biological control agent of Dalmatian toadflax, in the western US** — R. Hansen, USDA-APHIS-PPQ, Fort Collins, CO (D294). *M. janthinus* has been released throughout much of the western US, where Dalmatian toadflax is a major pest, and is established in many states with impacts already observed in some areas. The impact in western Canada – with a longer release and distribution history – suggests dramatic weevil population increases and significant toadflax mortality can be expected in the near future. Unfortunately, this weevil is seldom effective against the closely-related yellow toadflax (*L. vulgaris*), also a widespread pest in the US.

**Oviposition behavior and host discrimination by *Ageniaspis citricola* (Hymenoptera: Encyrtidae), a parasitoid of citrus leafminer *Phyllocnistis citrella* (Lepidoptera: Gracillariidae)** — L. Zappalá, Univ. Florida (0729). *A. citricola* avoids self and conspecific superparasitism, even for inexperienced females. Wasps spend less time on leaves with already-parasitized CLM eggs, suggesting that females mark the area. Mated females produced mainly 3 offspring, while unmated females only produced 2.



**Effects of host plant species on the hymenopteran parasitoids of an exotic leafminer, *Liriomyza huidobrensis*** — S. Goodfellow, Univ. Guelph (D348). *L. huidobrensis* is a new pest in Ontario since 1999. Several naturally-occurring parasitoids (Braconidae, Pteromalidae) are parasitizing this leafminer, with greatly varying rates of 6–28% depending on the host plant.

**Diurnal predators of plum curculio larvae on an orchard floor** — D. Jenkins, Univ. Georgia (D358). Red imported fire ant was the most abundant predator of PC larvae in this study, but other, especially nocturnal, predators and birds may also be important in its natural control.

**Identity and impact of hymenopteran parasitoids of the black locust leafminer, *Phyllonorycter robiniella* (Lepidoptera: Gracillariidae), in three northeastern states** — C. Maier, Univ. Connecticut (0728). Of the 13 species of parasitoids recovered from BLL larvae, only 5 were primary parasites. Overall mortality of 40 to 90% varied by generation (generally increasing from the first to second generation) and location (where host density also varied, although this was not correlated with parasitism). The majority of the mortality was due to parasitism (32–85%), with three wasps being most prevalent: *Pholetesor ornigis* (40%), *Achrysochoroides gaheri* (30%), and *Sympiesis gordius* (24%). However, none of these are suitable candidates for importation to Europe as potential biocontrol agents – they are already there or have too wide a host range (*P. ornigis*).

**Temperature-dependent development of *Macrocentrus iridescens* (Hymenoptera: Braconidae) reared on the obliquebanded leafroller (Lepidoptera: Tortricidae): Implications for field synchrony of the parasitoid and host** — R. Krugner, UC-Berkeley (0730). The parasitoid *M. iridescens* is the most promising biocontrol agent of OBLR in CA. Lab experiments determined the optimum temperature for development (28°C) and lower threshold (7.6). The parasitoid is well synchronized with its host, requiring 750 DD for complete development (OBLR takes 700 DD), and produces one generation for every OBLR generation, which in San Joaquin Valley pistachios is 3. Field parasitism by this wasp is low in the first generation and in sprayed orchards, but can reach 95% by the end of the season when pesticides are not used.

**Sublethal effects of a copper sulfate fungicide on development and reproduction in three coccinellid species** — A. Grant, Kansas State Univ. (D513). Three species of lady beetles tested showed differential mortality to a copper sulfate petroleum oil formulation fungicide used for disease control in Florida citrus. *Olla v-nigrum* had a small increase in development time (0.7 days) and a 13% decrease in female fecundity, but this overall 8.1% reduction in its intrinsic rate of increase probably would not translate in measurable decrease in field populations. *Harmonia axyridis* and *Curinus coeruleus* were unaffected, leading to the conclusion that sulfate fungicides are relatively safe for coccinellids and unlikely to disrupt biocontrol in citrus groves.

***Coenosia attenuata*: an Old World predator newly discovered in North American greenhouses** — E. Sensenbch, Cornell Univ. (D514). This generalist predator was first discovered in a greenhouse in Syracuse, NY. The adults and larvae feed on pest insects and therefore are potential beneficial insects in greenhouses. In lab studies, larvae of this fly were unable to complete development on fungus gnat pupae or 1<sup>st</sup> instar maggots, but 65–75% survived to pupation on other instars of fungus gnats. Flies were collected from other NY greenhouses from the Buffalo area to eastern Long Island; California; Ontario, Canada; and Maine, with unconfirmed reports from other states.

**Populations of flower thrips and the predator *Orius insidiosus* in different varieties of peppers** — S. Reitz, USDA-ARS, TAMU, FL (D558). Nitrogen fertility did not affect the abundance of thrips in different bell pepper cultivars. Although hot pepper cultivars vary in flower size, the per flower densities of thrips did not differ. *Orius* is able to track thrips populations across different pepper varieties, further demonstrating its value as a natural enemy in greenhouses.

**Improved UV-protection of *Metarhizium anisopliae* var *acridum* spores using a lignin-based coating** — Y. Chen, Virginia Tech (D580). The lignin matrix in this formulation provides UV protection. Although the coating may reduce infectivity, *M. anisopliae* can still infect hosts. Testing the trade-off between reduced mortality and longer field persistence needs to be done.

**Laboratory evaluation of entomopathogenic fungi for microbial control of the greenhouse pests *Myzus persicae* and *Aphis gossypii*** — M. J. Filotas, Cornell Univ. (D581). Four fungi were tested against green peach aphid and melon aphid: *Beauveria bassiana*, *Metarhizium anisopliae*, *Lecanicillium* sp. (formerly *Verticillium lecanii*), and *Paecilomyces fumosoroseus*. Adults of both aphid species were highly susceptible to most fungal strains, but reproduction was not sufficiently reduced to effectively control pest populations. This suggests that nymphal stages should be the target when screening fungi against aphids. Nymphs were much less susceptible than adults in general, probably because fungal spores are molted off prior to penetration of the cuticle. The most effective isolates against nymphs were not always the most effective against adults.

**Establishment and control success of *Aphthona lacertosa* and *A. nigriscutis* (Coleoptera: Chrysomelidae) introduced to control leafy spurge, *Euphorbia escula* L., in Minnesota** — L. Skinner, Univ., Minnesota (D517). Two species (of 5 introduced) of flea beetles became established over the three year study period. *A. lacertosa* was the dominant species, established across a range of site types, and was responsible for the majority of control success. Introductions of 5–10,000 beetles are recommended for management of leafy spurge in MN, and release sites should be monitored for a minimum of two years post-release.



## PUBLICATIONS

### Announcing a New Introductory Book on Biological Control *Natural Enemies: An Introduction to Biological Control*, by Ann Hajek

Since 1997, I have been teaching an introductory course on biological control for non-major undergraduates. Over time, many entomology majors have also taken the course. I've consistently had good enrollment in the course, ranging from 25-45 each time it's been taught, with students coming from a diversity of majors. I've been frustrated by the lack of an appropriate, up-to-date book on biological control to use for this course so I've now written a book for this purpose. It will be published by Cambridge University Press in mid-January and the paperback version will cost \$45. [Editor's note: Amazon.com lists this soft bound for \$50, hard bound for \$110 and was not available at press time.]

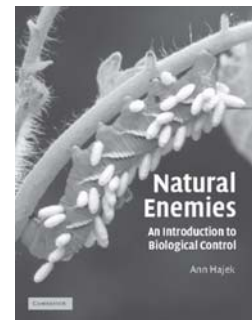
The book covers the major strategies used in biological control, different types of natural enemies used for biological control of invertebrates, vertebrates, weeds and plant pathogens, and the ecological underpinnings behind each type of biological control. My philosophy in coverage of topics was to cover all subdisciplines and demonstrate the breadth and diversity within the field of biological control. Non-target issues are discussed along with present day use of biological control and integration of biological control with other pest management strategies.

Throughout the book, specific examples and case studies from around the world are provided. The book includes

many illustrations, graphs and tables, along with selected references for further reading at the end of each of the 19 chapters.

I believe that the best way to expand and strengthen biological control is to teach a broad audience about this field, so I hope this book fulfills this purpose.

— Submitted by Ann E. Hajek, Department of Entomology, Cornell University, Ithaca, NY 14853-0901, (607) 254-490, aeh4@cornell.edu.



### TEAM Leafy Spurge Documentary Now Available on ARS Website

With the aid of ARS Information Staff in Beltsville, MD, the award-winning TEAM Leafy Spurge documentary *Purging Spurge: Corraling an Ecological Bandit*, is now available on the national ARS website at [www.ars.usda.gov/is/video/vnr/spurge.htm](http://www.ars.usda.gov/is/video/vnr/spurge.htm). TEAM Leafy Spurge representatives, working with IS Public Affairs Specialist Jim DeQuattro in Beltsville, provided the footage for inclusion in ARS' national video archive.

*Purging Spurge* was produced in 2002 by the TEAM Leafy Spurge program in partnership with North Dakota's

Prairie Public Broadcasting and was subsequently named a 2003 Finalist in the documentary category of the 24th Annual Telly Awards (the non-network equivalent of an Emmy).

The *Purging Spurge* documentary debuted on Prairie Public Television in June 2002 and was distributed nationally in April 2003. The documentary, which focuses on grassland health and the impact of invasive weeds like leafy spurge, was developed to help increase public awareness of noxious weeds and to bring all segments of society on board

to help control them. A VHS videotape of the documentary is available free from TEAM Leafy Spurge by contacting the USDA-ARS Northern Plains Agricultural Research Laboratory at P.O. Box 463, Sidney, MT 59270; or by phone at 406-433-2020; by fax at 406-433-5038; or by e-mail at [team1s@sidney.ars.usda.gov](mailto:team1s@sidney.ars.usda.gov).

— from the USDA, ARS, Northern Plains Areas weekly activity report. Submitted by Larry Charlet, USDA-ARS Northern Crop Science Laboratory, Fargo, North Dakota

## ANNOUNCEMENTS

### 2004 Midwest Institute for Biological Control

The 2004 Midwest Institute for Biological Control short course, "Insect Pathology", will be held June 28 - July 1, 2004 at the University of Illinois. The course will summarize the infectious diseases of insects including the bacteria, fungi, nematodes, protozoans, and viruses. The morphological, biological and pathological features of these organisms will be presented, as well as their use and potential for use in biological control/IPM programs. Each pathogen group will be discussed in a lecture format us-

ing handouts and photographic slides, and live materials in laboratory sessions. Microbial control, epizootiology, and diseases of beneficial insects will also be covered. General knowledge about the use of compound and field microscopes is helpful, but not required.

The course instructors will be Dr. Rich Humber (USDA/ARS, Ithaca, NY), Dr. Lerry Lacey (USDA-ARS, Yakima, WA) and Dr. Lee Solter (Illinois Natural History Survey/University of Illinois).

This course is limited to 20. Regis-

tration is \$150 for students and \$300 for non-students, including post-docs. On or off-campus lodging available. One scholarship is available to cover costs of registration and on-campus double room — see the registration packet, which will be available on April 15, 2004.

Address inquiries to Dr. Lee Solter, Illinois Natural History Survey, 140 NSRC, 1101 W. Peabody Dr., Urbana, IL 61801, ph. (217) 244-5047, messages: ph. (217)-333-6656, fax (217) 333-4949, email: [lsolter@uiuc.edu](mailto:lsolter@uiuc.edu).



## Distinguished Scientist Awards —Continued from page 1

rearing of parasitoids, and his PhD student Tom Unruh pioneered the use of allozyme studies for natural enemies. The fact that the *A. melinus* was capable of producing females on smaller hosts than *A. lignanensis* led to Bob's interest in sex allocation. This resulted in a number of papers dealing with the theory of optimal sex ratios together with Len Nunney. In their theoretical work on local mate competition sex ratios they particularly emphasized the uncertainty females face regarding the number of foundresses when they oviposit in a patch. In addition, other sex ratio problems were addressed through the work of the student Barry Bai in *Trichogramma*, who did detailed observations of the oviposition behavior of *Trichogramma* to determine the sex of the offspring produced.

At around the same time Bob and I studied the causes of parthenogenesis in *Trichogramma* wasps, with these studies resulting in the discovery of *Wolbachia* bacteria as a cause of complete parthenogenesis in parasitoid wasps. Further studies on the sex allocation behavior and optimal sex ratios were done by the PhD student Dave

Kazmer. He also field tested one of Bob's favorite gripes about biocontrol: the use of parasitoids that are too small because they are reared on suboptimal hosts. Dave and Bob found that indeed the size of the *Trichogramma* wasps released in the field is an extremely important predictor of their chances of finding host eggs. Later these findings were applied through the work of the PhD student Jeff Honda in the biocontrol of Lepidoptera pests in avocado.

In the 1990's Bob decided that it was time to apply all this knowledge gained from the studies on *Aphytis* to the real world. Together with Lisa Forster, they initiated the implementation of a biological control program for the CRS in the San Joaquin valley of California. In this area CRS remained a problem despite the release of *Aphytis*. They discovered that the critical period for the parasitoid is the summer. In summer, the available scales are so small that the wasps are not able to produce sufficient daughters. Consequently, at the time when the scale population starts to explode in fall, very few parasitoids are available. By doing timed releases from February to November the scale population can be

brought down over time and complete biological control is possible. Just when this program was starting to be implemented, the glassy winged sharpshooter (GWSS) became a large problem in California and the area wide chemical control used on this species has made the implementation of the biocontrol of the CRS in those areas much more difficult. At present Bob, is involved in trying to biologically control the GWSS and finding ways to implement the biocontrol of the CRS in the presence of the GWSS.

Bob's approach to biological control has always been to first try to understand the biology of the system in great detail, and from that knowledge design a control program that works. This approach has not only been very successful in the practical implementation of biological control, but has also resulted in a valuable extension of our knowledge of the biology of the pest and its natural enemy. While this is only a short summary of Bob's accomplishments over the last 35 years, I am happy to report that we can expect more of this — Bob is not close to retiring yet!

— Richard Stouthamer, University of California-Riverside

### Selected publications:

- Luck, R. F. and D. L. Dahlsten. 1975. Natural decline of a pine needle scale *Chionaspis pinifoliae* [Fitch], outbreak at South Lake Tahoe, California following cessation of adult mosquito control with malathion. *Ecology* 56: 893-904.
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- Unruh, T. R., W. White, D. Gonzalez, G. Gordh, and R. F. Luck. 1983. Heterozygosity and effective size in laboratory populations of *Aphidius ervi* (Hym.: Aphidiidae). *Entomophaga* 28: 245-258.
- Opp, S. B. and R. F. Luck. 1986. Effects of host size on selected fitness components of *Aphytis melinus* and *A. lignanensis* (Hymenoptera: Aphelinidae). *Ann. Ent. Soc. Amer.* 79: 700-704.
- Nunney, L. and R. F. Luck. 1988. Factors influencing the optimal sex ratio in a structured population. *Theoretical Popul. Biol.* 31: 1-31.
- Murdoch, W. W., R. F. Luck, S. J. Walde, J. D. Reeve, and D. S. Yu. 1989. A refuge for red scale under control by *Aphytis*: structural aspects. *Ecology* 70: 1707-1714.
- Stouthamer, R., R. F. Luck, and W. D. Hamilton. 1990. Antibiotics cause parthenogenetic *Trichogramma* (Hymenoptera/Trichogrammatidae) to revert to sex. *Proc. Natl. Acad. Sci. USA* 87: 2424-2427.
- Yu, D. S., R. F. Luck, and W. W. Murdoch. 1990. Competition, resource partitioning and coexistence of an endoparasitoid *Encarsia perniciosi* and an ectoparasitoid *Aphytis melinus* of the California red scale. *Ecol. Entomol.* 15: 469-480.
- Kazmer, D. and R. F. Luck. 1995. Field tests of the size-fitness hypothesis in the egg parasitoid *Trichogramma pretiosum*. *Ecology* 76: 412-425.
- Huigens, M. E., R. F. Luck, R. H. F. Klassen, M. F. P. M. Mass, M. J. T. N. Timermans, and R. Stouthamer. 2000. Infectious parthenogenesis. *Nature* 405: 178-179.



## MEETING CALENDAR

### 2nd Latin-American Short Course on Biological Control of Weeds

June 7-10, 2004

Montelimar, Nicaragua

This course will provide participants with a basic understanding of the principles and concepts of biological control of weeds using insects and pathogens. Participants will receive training in the procedures involved in the implementation of a weed biocontrol program. Group discussions will focus on the prospects for and limitations of biological weed control in the Latin-American region. For course information see *II Curso Latinoamericano en Control Biológico de Malezas* (biocontrol.ifas.ufl.edu/materials/cursonic04.pdf) or contact:

Dr. Julio Medal, Course Coordinator

Entomology and Nematology Dept., Univ. of Florida  
Gainesville, FL 32611, USA

Email: Medal@ifas.ufl.edu

Phone: 1-352-392-9807

Fax: 1-352-392-0190.

### 2004 California Conference on Biological Control IV: Biological Control and Organic Production

July 13-15, 2004

Berkeley, California

This conference will focus on elements of biological control that are key to successful organic farming: The Use of Suppressive Soils and the Importance of the Soil Microenvironment to Biological Control; Habitat Manipulation and Management for Biological Control and Organic Production; Natural Enemy Use and Conservation within Current Organic Farming Regulations; and Opportunities/Research Needs for Providing Greater Use of Biological Control. Approximately \$120 by July 2, 2004. To be added to the mailing list and to request registration information, please e-mail Lynn LeBeck (llebeck@nature.berkeley.edu) or call (559) 360-7111.

### XXII International Congress of Entomology — Strength in Diversity

August 15 - 21, 2004

Brisbane, Australia

This Global Congress features a diverse program and a range of associated meetings and activities, including many in biological control. The section on Biological Control, Entomophagous Insects & Insect Pathology will include symposia on Deployment of Transgenic Organisms - Compatibility With Biological Control & IPM; Movement of Natural Enemies of Agricultural Pests: Increasing Abundance & Effectiveness; Egg Parasitoids; Conservation Biological Control in the Cotton Agroecosystem; Entomopathogenic Nematodes & Symbiotic Bacteria: Past & Future; Working at the Interface of Art & Science: How Best to Select an Agent for Classical Biological

Control?; Genes, Variation, & The Ecology of Natural Enemies: Implications for Theory & Biological Control, and Contributed Papers in Insect Pathology. Registration cost varies by category and date. For more information see the conference website at [www.ccm.com.au/icoe/home/default.htm](http://www.ccm.com.au/icoe/home/default.htm).

### Association of Natural Biocontrol Producers (ANBP) Conference

October 1-2, 2004

Colorado Springs, CO

The conference entitled *Commercial Bio-control: Private Industry and Public Support* will include numerous sessions and keynote speakers. For more information visit the ANBP conference webpage at [www.anbp.org/ANBP%20Conference%202004.htm](http://www.anbp.org/ANBP%20Conference%202004.htm) or contact:

Maclay Burt, ANBP Executive Director

E-mail: [execdir@anbp.org](mailto:execdir@anbp.org)

Phone/fax: 714 544 8295

### Integrated Control in Glasshouses and Outdoor Nursery Stocks

April 10-14, 2005

Turku, Finland

The joint meeting of the NRS and WPRS greenhouse IPM working groups will feature four days of presentations and workshop discussions on integrated pest and disease management in glasshouses, and will include a research tour of the glasshouse industry in the Turku region. In addition, one day will be dedicated to "IPM in outdoor nursery stocks."

For more information, visit the conference website at [www.agrsci.dk/plb/iobc/meet2005.htm](http://www.agrsci.dk/plb/iobc/meet2005.htm). To be placed on the mailing list to receive further details, please contact:

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E-mail: [Irene.Vanninen@mtt.fi](mailto:Irene.Vanninen@mtt.fi)

### 2nd International Symposium on Biological Control of Arthropods

September 12-16, 2005

Davos, Switzerland

This is a continuation of the first international symposium on the biological control of arthropods in Hawaii in January 2002. The intent of these symposia is to create a meeting for practitioners, a forum for information exchange, an event to build cohesion among the research community and to foster discussions of issues affecting biological control work, particularly pertaining to the use of parasitoids and predators as biological control agents. Approximate costs of \$300 registration, \$120/night. For more information contact the ISBCA Symposium Secretary in Switzerland ([ISBCA@bluewin.ch](mailto:ISBCA@bluewin.ch)).



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<http://www.entomology.wisc.edu/iobc/nrs.htm>

IOBC website: <[www.iobc.agropolis.fr](http://www.iobc.agropolis.fr)>

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**Send items for the  
Summer 2004 IOBC-NRS Newsletter  
by 1 May to:**

**Susan Mahr  
Department of Horticulture  
University of Wisconsin  
Madison WI 53706 USA  
Phone (608) 265-4504  
FAX (608) 262-4743  
e-mail: [semahr@facstaff.wisc.edu](mailto:semahr@facstaff.wisc.edu)**

The International Organization for Biological Control - Nearctic Regional Section Newsletter is published 3 times a year in February, June, and October to provide information and further communication among members of the Region (Bermuda, Canada, and the United States).

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