



IOBC-NRS NEWSLETTER

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Reply to Peterson & Sing: “Releasing Biocontrol Agents; Risk Assessment and Overdue Reform”

For many biocontrol scientists, a recent article in the IOBC NRS newsletter by Peterson and Sing struck a false cord, prompting this reply. The Peterson and Sing article projected the view that biological control is risky (i.e., low success rate), uncertain (lottery approach), and unregulated (practitioners are blinded by vested interests). The authors used such characterizations to argue for formalized risk assessment of natural enemy introductions. While seemingly reasonable, if implemented the rigid approach advocated would likely steer outcomes toward less rather than safer biological control activity in the future. We, in contrast, believe there is an increasing need for biological control, while enhancing safety to reasonable levels.

Things NOT said:

(1) Risk assessments are already widely used for introductions of agents attacking invasive weeds. TAG assessments in the U.S.A. (and via NAPPO, for North America) have been in place for decades and involve extensive consideration of possible risks from herbivore introductions. Many agents are rejected. Others are never brought to the review stage because researchers conclude agents pose unacceptable risks. While no such system exists for parasitoids and predators targeted against invasive arthropods, voluntary systems of review are now being used, through the production of Environmental Assessments. The recent review of parasitoids released against the massively damaging emerald ash borer is a good example of this process. What is missing in the U.S.A. is a “Biological Control Act” providing clear jurisdiction for a single federal agency for all aspects of biological control, including risk assessments for all categories of agents.

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***Cactoblastis cactorum*: classical bio-control success story or a pest?**
Photo by Peggy Garb

A REPLY TO VAN DRIESCHE ET AL.

We thank Van Driesche, Hoddle, and Center for their response to our brief, invited article, “Releasing Biocontrol Agents: Risk Assessment and Overdue Reform,” published in the Summer 2007 IOBC-NRS Newsletter. The intent of this article was to stimulate analysis and discussion of current decision-making practices and the wider regulatory environment associated with classical biological control. We therefore welcome and encourage this type of exchange and hope that it leads to additional discussion. We would like to make only a few points here in response.

Although both of us have active research in biological control, we believe there is substantial value in novel perspectives on biocontrol risks and benefits from those who are not specialists. The history of science is replete with examples of how this type of “hybrid vigor” advances disciplines and contributes significantly to the greater good.

Continued page 3



*The IOBC-NRS
increases its relevancy
outside the United
States*

BALLOT ISSUE

BEST PRACTICES CERTIFICATE

(see insert)

*More information on
the meeting can be
found at*

*[http://
entomology.uark.edu/
iobcsymp.html](http://entomology.uark.edu/iobcsymp.html)*

Message From the President: Mexico or Canada? IOBC Members Have a Choice

This fall IOBC-NRS members have a choice as to where they may attend an IOBC supported meeting in North America. As many members know, our regional section is jointly sponsoring the conference "Biological Control without Borders" in association with the IOBC-Neotropical Section and the Mexican Society for Biological Control. The meeting will be held in Merida, Mexico, (13-15 November) and will focus on ecological interactions of GM crops and biological control, the use of biological control in greenhouses, and biological control of weeds. IOBC-NRS Past-President Robert Wiedenmann has contributed significantly to developing and organizing this meeting. For those individuals interested in the archaeology of Mexico's Yucatan peninsula, this is a must-do opportunity.

Various aspects of augmentative biological control will be the focus of the upcoming meeting "Maintaining Worldwide Connections for Quality Assurance in Arthropod and Nematode Rearing" in Montreal, Canada, from 28 October to 1 November. This meeting is being supported by several groups including the IOBC Global Working Group on Arthropod Mass Rearing & Quality Control and the Association of Natural Bio-control Producers. Several IOBC-NRS members will be presenting information at the meeting. Symposia will focus on partnerships in biological control, the state of the biological control industry, use of artificial diets for production of entomophagous arthropods, production of sterile insects, future concepts for mass production of phytoseiid mites, education and training in arthropod rearing, optimum use of cold storage for storing natural enemies, and quality assurance of commercially produced natural enemies. This is an excellent venue for those interested in the production of natural enemies. There is still time to register at: http://www.anbp.org/joint_meeting.htm

Please take advantage of these meeting opportunities to hear about new developments in biological control research and the practical benefits that our science provides to society. Additionally, use these conferences to meet and interact with fellow biological control enthusiasts from Mexico and Canada.

*Marshall W. Johnson
Department of Entomology
University of California
Riverside, CA*

Over the past 2-3 years, the governing board of the NRS-IOBC has been discussing the development of a 'best practices' certificate process that would be mediated by the NRS IOBC. The purpose is to provide an optional service by which the IOBC could led support to biological control scientists that are in the process of doing classical biological control releases. The

ideas outlined below were publicized and discussed at the most recent NRS-IOBC symposium at the ESA meeting in Indianapolis. Here we are polling our membership to gauge support for the idea. Please look over the outline below and send in a ballot reflecting whether you support the creation of a best-practices certificate process at NRS-IOBC. Thanks for

your help in this matter.

*George Heimpel
Department of Entomology
University of Minnesota*

IOBC-NRS TEAMS UP WITH MEXICAN BIOCONTROL SOCIETY IN MERIDA, MEXICO

The IOBC-Nearctic and Neotropical Regional Sections and the Mexican Society for Biological Control would like to invite you to participate in an upcoming event. The collaborative symposium, entitled "Biological Control Without Borders" will happen on November 13-15, in Merida (Yucatan), Mexico. The venue is the Hyatt Regency Merida. The meeting will be held in conjunction with the Mexican Society's 30th Annual Congress of Biological Control, and immediately following the Mexican

Society's National Short Course on Biological Control (Nov 11-13). In addition, the NCERA-125 regional Biological Control committee will meet (Nov 12-13) in conjunction with the Merida meeting.

The meeting will begin the evening of the 13th with an opening ceremony, special presentations, and a social. The meeting itself will run for two full days, concluded by a banquet the evening of the 15th. Three symposia sponsored by the IOBC-NRS are Ecological interactions of GM

Crops and Biological Control; Biocontrol in Greenhouses; and Biological Control of Weeds. A number of other symposia will be organized by the Mexican Society.

Please feel free to contact me for any questions or suggestions (even suggestions for guest program and tours) you may have. I truly hope to see you in Merida.

*Robert Wiedenmann
Department of Entomology
University of Arkansas
Fayetteville, AR*

RESPONSE TO PETERSON AND SING, CONT.

(2) Biological control projects on the whole are successful. Reviews of success rates for classical biological control (Hall et al., 1980; Julien et al., 1984; Greathead, 1986; Waage, 1990; Hoffmann, 1996; McFadyen, 1998; Page & Lacey, 2006) show that **60% of projects have a positive effect.** In 17% of projects, natural enemy introductions against arthropods and weeds provide complete control (invader no longer considered a pest) and in 43% of cases, the extent of ecological damage or the amount of pesticide used are reduced.

(3) Most damage from invasive species has nothing to do with the importation of biological control agents. Better control of the largely unregulated commerce in exotic organisms would provide greater reductions in non-target impacts than would stricter controls on biological control agents. Indeed, excessive restriction on importation of biological control agents is likely to make invasive species problems worse, by delaying or preventing needed suppression of high impact invasive insects and weeds.

Things that were said:

"Classical biological control is best viewed as a tactic within IPM." Typically, classical biological control projects operate regionally and are independent of IPM tactics applied on specific blocks of land. Some successful IPM programs do not even include natural enemies as a management tactic.

"Risk assessment is currently lacking in biological control." Weed biological control is

well regulated and voluntary codes of good practice are being used for arthropod natural enemies and are promoted by FAO and NAPPO.

"A formal risk assessment system, legalistic and adversarial, would be the best." Any new biological control laws should contain mandates to both enhance the safety of natural enemy releases **AND** promote the use of biological control to resolve problems caused by high impact invasive species.

"Current practice is guess work (a "lottery" approach)." The selection procedure for biological control agents is an information-based process that involves thoughtful decision making. Biological control practitioners know that finding, collecting, studying, releasing, and establishing natural enemies is a challenging task. They have every interest in determining as early as possible which species are likely to be most effective.

"In all cases, only the 'most effective' agent should be introduced." This is a naïve goal that has no ecological basis. The biological control literature has clear examples of projects that have required multiple agents to provide control (e.g., MacPhee et al., 1976; Hoffmann & Moran, 1998).

"Risk assessments written by biological control researchers would be inherently biased." Biological control scientists seek to reduce impacts of damaging pests, improving productivity or protecting nature. Since specific

individuals make natural enemy introductions, they know their professional credibility will be judged by project outcomes. In contrast, assessments written by relatively anonymous regulators would likely be biased against action because they would not be held accountable for failure to control the invader but would be judged harshly for even moderate non-target damage.

In conclusion, we endorse careful risk assessment but we say that IOBC should remain a positive spokes-organization promoting the benefits of biological control. We believe more and safer projects can be realized in an environment in which biological control scientists are respected partners and the legal framework is balanced and transparent. Simply creating a cadre of Risk Analysis Specialists within APHIS (an agency already severely challenged to carry out its current responsibilities) is likely to lead to fewer rather than safer biological control introductions.

Roy Van Driesche
University of Maryland
Mark Hoddle
University of California
Ted Center
USDA, Fort Lauderdale

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Page & Lacey 2006. *Economic Impact Assessment of Australian Weed Biological Control*.
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A widely successful, and environmentally safe, classical biological control program currently targets purple loosestrife using *Galerucella* beetles.

RESPONSE TO VAN DRIESCHE ET AL., CONT.

The term "risk assessment" is frequently used as a catch-all label to describe activities covering a broad range of investigative approach and rigor. Risk assessment is a formalized, systematic process in which assumptions and uncertainties are objectively considered and clearly presented. Technical Advisory Group (TAG) documents and Environmental Assessments seldom meet this standard. The TAG process is generally more ad-

vanced with respect to risk assessment than others associated with the release of biocontrol agents. However, we assert that TAG reports more accurately present hazard assessments, rarely providing a formal exposure assessment, risk characterization, or associated uncertainty analysis. The value of risk assessment (and by extension, benefits assessment) lies in its unbiased, logical, stepwise process—value that is not

being advantageously leveraged by biocontrol researchers.

We maintain that: (1) comprehensive risk and benefit assessments must be a standardized part of the process, and (2) assessments must be conducted or verified by those who have no vested interest in the outcome of the regulatory decision.

Bob Peterson
& Sharlene Sing
Montana State University

JOB ANNOUNCEMENTS

Post-doc in Biological Control

The North Central Agricultural Research Laboratory (USDA-ARS) in Brookings, SD, is seeking a POST-DOCTORAL RESEARCH ASSOCIATE (Research Entomologist) for a TWO-YEAR APPOINTMENT. A recent Ph.D. is required. Salary is commensurate with experience (\$45,239-\$54,221 per annum) plus benefits. Citizenship restrictions apply. The incumbent will study the feeding behavior of natural enemies and how biodiversity within cropland influences the biological control of insects. Closing date: NOVEMBER 30, 2007. Please contact Dr. Jonathan Lundgren for more information (jlundgren@ngirl.ars.usda.gov). USDA-ARS is an equal opportunity provider and employer.

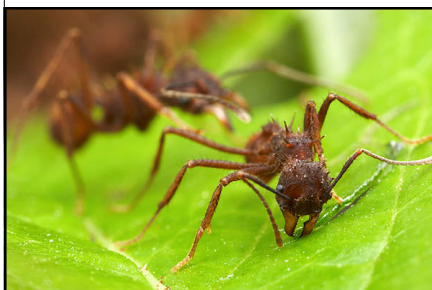
To increase the relevance of the newsletter to our members, we will include biocontrol-related job announcements in future newsletters. Please send any notices to the newsletter editor



IOBC-NRS Symposium at the ESA Meeting in San Diego, Dec. 9-12, 2007: "Biocontrol: Economic, Social and Ethical Factors Shaping its Success"

Biological control of pests, weeds and diseases represents a proven and safe alternative to synthetic pesticides and herbicides. Despite its success in a number of areas (agriculture, forestry, recreation, urban dwellings, etc.), only 2-3% of money spent on pest management is devoted to biological control, and this strategy has not been adopted to any significant extent. Success of biological control is strongly influenced by socio-economic factors that have little to do with biological control science. This symposium analyzes the context in which biocontrol researchers conduct their work to help them understand what non-biological factors need to be addressed for individual projects to succeed, and for the kinds of public and industry support that is necessary to achieve the potential of this science. This symposium will examine the interplay of economic, business, policy, and ethical factors shaping the adoption and development of biological control, and will discuss how the IOBC-NRS could foster public trust in it.

Jean-Louis Schwartz
University de Montreal
Montreal, Quebec



A leaf-cutter ant in action.
Photo © Alex Wild.

BIOCONTROL MUSINGS

Biological control by ants- for ants

We might think that as humans we are the only ones that engage in biological control. Not so! There are cases of 'biological control' by non-human animals, and as you might expect at least one of them involves ants. A number of species of leaf-cutter ants that cultivate mutualistic 'garden' fungi as food carry antibiotic-producing actinomycete bacteria on their bodies that inhibit the growth of *Escovopsis*,

a fungal parasite of the garden fungi. In one study, colonies of *Acromyrmex* ants from which the actinomycetes were experimentally removed produced smaller fungus gardens that had higher levels of parasite infection. This system has all of the elements of a biological control interaction: a pest (*Escovopsis*), an organism that is damaged by the pest (the garden fungus, and thus indirectly, the ant), and a natural enemy (the actinomycete).

George Heimpel
Department of Entomology
University of Minnesota
St. Paul, MN

Meetings for the Datebook

ESA National Meeting

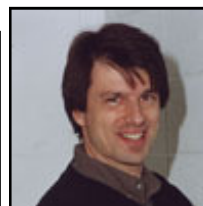
San Diego, CA
December 9-12

http://www.entsoc.org/annual_meeting/index.htm

Theoretical Population Ecology & Practical Biocontrol - Bridging the Gap

Warwickshire, UK
December 5-6

www.aab.org.uk/contentok.php?id=46&basket=wssshowconfdets



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- Currie et al. 1999. *PNAS* **96**, 7998-8002
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RESEARCH BRIEFS

Native Plants to Attract Beneficial Insects

For decades, biological control specialists have recognized that many natural enemies benefit from pollen and nectar resources in their environment. Manipulating these resources to enhance biological control is known as habitat management and is an established part of conservation biological control. Similarly, providing diverse plant resources in agricultural landscapes can support populations of native pollinators. However, we were struck with how frequently these practices rely on manipulation of plants exotic to the area of study and so we set out to determine the attractiveness of Michigan native plants to natural enemies and pollinators.



A prairie strip neighboring cropland.

We contrasted the attractiveness of 43 Michigan native prairie and savanna plants with five of the most commonly recommended non-native plant species. From this we have developed a list of 26 native plants that are broadly attractive to a wide diversity of predators, parasitoids, and bees. Many of these plants are native to large areas of the northeastern and Midwest US, they establish well in this region, and they can provide overlapping blooms through the growing season. Floral area was the most significant predictor of overall attractiveness to natural enemies and pollinators, suggesting that the search for attractive native plants in other locations may be aided by a focus on species with large floral areas during their bloom period.

Research results are available to the public through a web site entitled: *Enhancing Beneficial Insects with Native Plants* <http://www.nativeplants.msu.edu/>. The site addresses both natural enemies and pollinators and now contains Power Point presentations and Extension Bulletins in PDF format that may be of interest to biocontrol specialists, Extension educators, Master Gardeners etc.

Doug Landis, Anna Fiedler,
Julianna Tuell & Rufus Isaacs,
Department of Entomology
Michigan State University



A syrphid feeding at a native flower species

References

Fiedler, A. K., and D. A. Landis. 2007. Attractiveness of Michigan native plants to arthropod natural enemies and herbivores. *Environ. Entomol.* 36: 751-765.

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NEWSLETTER WRAP-UP

The ethics of classical biological control is at the forefront of yet another IOBC newsletter. Roy Van Driesche and colleagues point out many of the benefits provided by classical biological control programs, as perceived by our discipline. We have all learned and taught these tenets in the classroom on our way to becoming biocontrol scientists and educators.

The prospect of increased regulation of biocontrol agent releases as proposed by Peterson and Sing is understandably unsettling to many biological control scientists. After all, classical biocontrol programs are often funded on a shoestring budget, and

additional economic and procedural hoops are likely to prohibit many future biocontrol efforts. Whether the increased biosafety of released agents that result from more formalized risk assessment procedures would outweigh the associated costs is an interesting question worthy of discussion.

A question can be raised as to what the role of the IOBC is in supporting scientists who wish to release classical biological control agents. After several years of development, a group of IOBC members (led by George Heimpel) has created a framework whereby the IOBC can endorse biological control projects that are deemed environ-

mentally safe. Now is the time for the membership of the IOBC to determine whether this is something that they want their society to support.

Regardless of whether you specialize on classical biological control, your voice and decisions on this issue matter, and I hope that you will take the time to respond to the ballot, either through regular mail or e-mail.

Jonathan Lundgren
IOBC-NRS Newsletter Editor
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International Organization for Biological Control of Noxious Animals and Plants
Nearctic Regional Section
Organisation Internationale de Lutte Biologique Contre Les Animaux et Les Plantes Nuisibles: Section De La Region Nearctic

<http://www.entomology.wisc.edu/iobc.nrs.htm>
IOBC website: www.iobc.agropolis.fr



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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