



# IOBC-NRS NEWSLETTER

## INSIDE THIS ISSUE:

<i>From the President</i>	2
<i>Graduate Student Awards</i>	3
<i>Bob O'Neil; 1955-2008</i>	3
<i>IOBC Awards Announcements</i>	4
<i>MBCI Announcement</i>	4
<i>Research Briefs</i>	5

## Governing Board

### President

Marshall Johnson  
UC-Riverside

### President-Elect

Les Shipp  
Agri-Food Canada

### Past President

Robert Wiedenmann  
Univ. of Arkansas

### Vice President

James Hagler  
USDA-ARS, Arizona

### Secretary/Treasurer

Stefan Jaronski  
USDA-ARS, Montana

### Corresponding Secretary

Jonathan Lundgren  
USDA-ARS, South Dakota

### Board Members-At-Large

James Harwood  
Univ. Kentucky

Ruth Hufbauer  
Colorado State Univ.

Bill Overholt  
Univ. Florida

## Dr. Ernest "Del" Delfosse Recognized for Outstanding Achievements in Biological Control

Dr. Ernest S. Delfosse, Senior National Program Leader (NPL) for Weeds with USDA-ARS, was presented the 2007 Distinguished Scientist Award by IOBC-NRS. Delfosse is internationally respected in the field of biological control of weeds, with particular expertise in risk management and ethics in biological control.

Delfosse began his career in biological control with his doctoral research (UF-Gainesville) in 1975, studying natural enemies of water hyacinth. During his 12 years in Australia as a Research Scientist and Research Leader with CSIRO, Delfosse conducted and directed numerous programs on biological control of weeds. It was during this period that he developed the *Relatedness Testing Procedure* for assessing host specificity in natural enemies.

In 1991, Delfosse returned to the U.S. as the Director for the National Biological Control Institute (NBCI), with a mission to "promote, facilitate and provide leadership for biological control". For his NBCI work, Delfosse received an award from Vice President Gore in 1994. In 1997, he became NPL for Weed Science at USDA-ARS in Maryland, and later became Senior NPL for Weeds Science in 2006. He provides scientific leadership for weed science IPM in the U.S., overseas laboratories, and the Biological Control Documentation Center, which includes over 60 scientists and requires a \$60 million budget.

Delfosse' service and contributions to our discipline have been enormous. To date, Delfosse has published 110 scientific articles, received > \$2 million in grants, and has received many awards. Professionally, Delfosse served the Entomological Society of America as Section Ca (biological control) Chair and Secretary, and was IOBC Global President (1992-1996). Finally, Del has been a valued and respected mentor for the next generation of scientists within the field of biological control.

The IOBC-NRS is thankful to Delfosse' scientific leadership and contributions to our discipline, and look forward to our continuing interactions in the future.

Marshall W. Johnson  
University of California  
Riverside, CA



## Slugs: the Overlooked Invasive Pests of North America?

The soybean aphid. The hemlock woolly adelgid. The gypsy moth. Three exotic pests that justify the major research initiatives currently examining their impact and management in North America.

But is it justified to include slugs as major pests on the same scale of these, and other exotic species, or is their presence of minor consequence to agricultural, horticultural and floricultural production? It is likely that the former of these is the most accurate description. In addition, ask any gardener in temperate regions throughout the world and slugs will be consistently ranked as one of the most important organisms needing control in urban environments.

*Arion hortensis*, a European slug recently found in North America.

-continued page 2



*Three new working groups have recently been created in our society*

## MESSAGE FROM THE PRESIDENT: New IOBC Global Working Groups Being Developed

Members of IOBC NRS may be interested in three new IOBC Global working groups that are currently being organized. The first is focusing on “benefits and risks associated with exotic biological control agents.” This effort is being led by Dr. Peter Mason (Agriculture & Agri-Food Canada, Ottawa Ontario, Canada) and Dr. George E. Heimpel (University of Minnesota, St. Paul, Minnesota, USA). The primary aims of this workgroup are to assess the characteristics of exotic natural enemies that: 1) are considered to be successful biological control agents; and 2) were introduced into a country as biological control agents that subsequently became invasive alien species. Hopefully, accomplishments from this workgroup will provide information that will be valuable in the determination of what natural enemy species should be introduced to new locations and under what conditions. Efforts to develop *Best Practices* guidelines for releasing exotic arthropods would be aided from this activity. IOBC West Palearctic Regional Section (WPRS) has initiated a study group in the same area of interest, which will initially focus on the invasion of Europe by *Harmonia axyridis* (Coccinellidae) (see: [http://www.iobc-wprs.org/wg\\_sg/index.html](http://www.iobc-wprs.org/wg_sg/index.html)). The two groups plan to coordinate their activities.

The second GLOBAL working group will investigate designing agroecosystems that nurture biological control (i.e., landscape ecology and functional biodiversity). Presently, a workgroup exists in IOBC WPRS that focuses on this area. The aim of the WPRS workgroup is “to promote and stimulate basic and applied research activities related to improving cropping and farming system performance, in particular pest, disease and weed management, that adopt a landscape ecological approach.” The group acts as a platform for exchange of concepts and research results. More information may be found on the WPRS working group at: [http://www.iobc-wprs.org/wg\\_sg/index.html](http://www.iobc-wprs.org/wg_sg/index.html).

Lastly, a GLOBAL working group is being organized to focus on “unisexual (pure female lines) and biological control” to address the question of whether it is logical and practical to obtain pure female lines of natural enemies for use in augmentative biological control. Individuals desiring to participate in the new GLOBAL working groups should contact the Secretary General, Stefano Colazza ([colazza@unipa.it](mailto:colazza@unipa.it)). Check the IOBC Global website (<http://www.unipa.it/iobc/view.php>) for updates on these workgroups.

Marshall W. Johnson  
University of California  
Riverside, CA

## SLUGS, CONTINUED

Within Europe, slugs' role as pests of agronomic importance is clearly demonstrated by the extensive literature examining the role of natural enemies in biological control of native and invasive mollusks. The IOBC Western Palearctic Region has a *Slugs and Snails* subgroup within the Insect Pathogens and Entomoparasitic Nematode Working Group that meets every two years to discuss current research directions. These papers are subsequently published in an IOBC Bulletin.

Within the IOBC-NRS region, however, slugs are rarely considered as major pests despite their ability to cause extensive damage to important commodities throughout North America: corn, soybean, cotton, wheat, tobacco, hay, strawberries, apples, peaches, lettuce, etc. In fact, most invasive slugs justify the label of “generalists” because of their capacity to feed on a diverse spectrum of food. Given the continual increases in



***Arion intermedius*, an invasive slug in Kentucky**

suburban environments are essential in identifying new populations of invasive mollusks. The early documentation of new invasive species could subsequently allow control measures to be implemented soon after the initial invasion is reported.

Within Kentucky, two new invasive species to the State, *Arion intermedius* and *Arion hortensis* were reported in multiple urban, suburban, agricultural and forest habitats in 2007. It is likely that further species records will be recorded throughout North America as research in malacology and the impact of invasive mollusks on agricultural production continues to increase.

**Reference cited:**  
Robinson, D.G. (1999). *Malacologia* **41**: 413-438.

James Harwood  
Department of Entomology  
University of Kentucky  
Lexington, KY  
Photos by Rory McDonnell

## IOBC GRADUATE STUDENT AWARDS: MARY GARDINER (PHD) AND KARRIE KOCH (MS)

Ms. Mary Gardiner, PhD candidate in the Department of Entomology at Michigan State University, was named the IOBC-NRS Outstanding Ph.D. Student of 2007. Ms. Gardiner was honored for her work which examines how agricultural landscape structure influences the ecosystem services provided by beneficial insects. The award was presented at the December 2007 meeting of IOBC-NRS in San Diego, CA where she also delivered an invited plenary address.

Directing a team of collaborators in four Midwestern states,

Mary discovered that landscape composition strongly influenced the ability of predator communities to control the soybean aphid, a major new invasive pest of soybean that is driving growers to use more pesticides. Her work demonstrates the potential for farmers to manage landscapes to enhance predator communities and reduce the need for pesticide applications. Her work has significant implications for the incorporation of bioenergy crops into agricultural production systems.

The work was funded by a \$1.5 M USDA Risk Avoidance and Mitigation (RAMP) grant to MSU and collaborating institutions. MSU PI's include Douglas Landis, Christina DiFonzo and Michael Brewer of the Department of Entomology, and Scott Swinton, Department of Agricultural Economics.

*Doug Landis  
Center for Integrated  
Plant Systems  
Michigan State University  
East Lansing, MI*



**Les Shipp and Mary Gardiner,  
PhD award recipient**

Karrie A. Koch received her B.S. degree in 2005 from the University of Wisconsin-Green Bay in environmental science and biology. In the summer of 2005, she began her M.S. program at the University of Minnesota, majoring in entomology. Currently, she is completing her Master's degree, under the direction of Dr. David Ragsdale, in the secondary effects of soybean

rust fungicides on the beneficial fungi infecting the invasive soybean aphid. She anticipates completing her M.S. in the spring of 2008. Concurrently, she has begun class work for her Ph.D. in entomology, with a minor in invasive species and genotypes, after receiving an Integrative Graduate Education and Research Traineeship (IGERT) at the University of Min-

nesota. Karrie's research interests include biological control of agricultural pests and for her dissertation research she plans to focus on the role of beneficial fungi in the natural control of the invasive soybean aphid.

*Dave Ragsdale  
Department of Entomology  
University of Minnesota  
St. Paul, MN*



**Les Shipp and Karrie Koch,  
MS award recipient.**

## Bob O'Neil (1955-2008)

Robert James O'Neil, Professor of Entomology at Purdue University, died February 6, 2008, after a ten-month battle with bladder cancer. Bob O'Neil was well known to IOBC, but many members may not recognize his many contributions to biological control. Born in 1955 in the Boston area, Bob received a BS from the University of Massachusetts at Amherst, an MS in Entomology from Texas A&M and a PhD at the University



of Florida. As a freshly minted PhD, Bob was hired at Purdue University in 1984, working on modeling and insect ecology in soybeans. At that time, everyone "knew" biological control didn't work in the Midwest—especially against

pests in soybeans – but someone forgot to tell Bob. Bob's approach to biological control was the same as his approach to life – full-throttle zeal, while having fun. Bob challenged time-held traditions and theories, such as the relative importance of the functional response for predatory arthropods in field crops. His idea to unite specialists from the Midwest and beyond to teach biological control became the Midwest Institute for Biological Control, now in its 18<sup>th</sup> year; he developed a network of practitioners for foreign exploration for pests of importance to the Midwest; and he helped push the integration of biological control into Ex-



tension publications and education. Through a long association with the Pan American School of Agriculture (Zamorano) in Honduras, Bob led an effort that provided in-service training opportunities to hundreds of Latin American students (at Purdue and elsewhere), who improved English

and technical skills and enrolled in US graduate schools. Bob was an idea person – many of them zany, but nearly all of them were right. Bob was a teacher, advisor, mentor and friend to countless individuals whose lives he changed through his insight and perspective. Bob was a giant in entomology and biological control, and a giant in the impact he had on the world. He is survived by his wife, Liz, and children, Jenny, Nate, Jon and Elspeth.

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



## IOBC Awards Announcements: Distinguished Scientist Award and Outstanding Graduate Student Awards

### Graduate Student Awards

The IOBC-NRS is sponsoring two Graduate Student Awards (one at the PhD level, and one for Master's level students), to be bestowed on students whose contributions are likely to shape the future of biological control. The recipients will be recognized at the IOBC-NRS Informal conference held at the ESA Annual Meeting. Winners will receive cash awards (\$300 for PhD, \$200 for Masters), and the PhD winner will also give a research presentation during the IOBC business meeting. See IOBC-NRS website for information on previous winners

([www.entomology.wisc.edu/iobc/awards.htm](http://www.entomology.wisc.edu/iobc/awards.htm)).

**Eligibility:** All students enrolled in a graduate program in Bermuda, Canada, or the U.S., and who are members of the

IOBC at the time of the application deadline are eligible. Please indicate that you plan to attend the Annual meeting of the ESA— preference will be given to students planning to attend.

**Application Guidelines:** Students should send: a letter that details the significance of their research and its relevance to biological control; a CV that includes contact information; and the names of two referees who will provide letters of support. Criteria (and relative ranking) to be assessed are: publications (15 pts), presentations (15 pts), outreach activities (15 pts), teaching (15 pts), grantsmanship (15 pts), current and future contributions to biological control (15 pts), and letters of support (10 pts). Application materials and questions should be sent electronically to Les Shipp ([shipp1@agr.gc.ca](mailto:shipp1@agr.gc.ca)). **Application deadline is May 30, 2008.**

### Distinguished Scientist Award

The IOBC-NRS is soliciting nominations for the 2008 Award. Nominees must have spent most of their career in the Nearctic Region, and have made significant contributions to biological control, but need not be members of IOBC. Nomination narratives are restricted to one page in length and should contain a thorough but concise summary of the principle contributions of the nominee. The nominator should include the names and current contact information of both nominator and nominee on a separate page. A copy of the nominee's CV (no page limit) should also be included that provides the nominee's professional record (i.e., employment affiliations), list of prior awards, description of biological control related activities (in paragraph form), publications lists, and extramural grant record.

This is a major way for our organization to tell key contributors 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 their enjoyment of seeing colleagues honored with our Distinguished Scientist Award. Help us honor our deserving colleagues!

**Please send nominations or questions electronically by May 10, 2007** to the IOBC-NRS President, Marshall W. Johnson ([mjohnson@uckac.edu](mailto:mjohnson@uckac.edu))

### Biocontrol Musings: *Harmonia* 'Saddam' *axyridis*



What do *Harmonia axyridis* and Saddam Hussein have in common? More than you might think! The driving principle behind biological control can be summarized as 'the enemy of my enemy is my friend'. This principle rears its ugly head in international relations too, as I'm sure you're aware. So - just as Hussein was a great friend of the U.S. while he was fighting Iran in the 1980s, *Harmonia axyridis* (the 'multi-colored Asian lady beetle') was everyone's favorite biological control agent while it was innocently feeding on pest aphids in the orchards of the southeastern U.S. It was regularly sold by biological control companies throughout the U.S. and Europe and no one complained.

In the 1990's though, both Saddam and *Harmonia* started 'acting badly', and their status rapidly changed from friend to evildoer. What did *Harmonia* do? In the U.S., it started overwintering *en masse* in people's homes, hanging around in grape clusters at harvest time (the resulting wine had an . . . interesting musky flavor), and possibly displacing native lady beetles. It is currently spreading through Europe after 'escaping' from its role as a biological control agent of aphids in greenhouses, and is apparently wreaking all kinds of havoc. So, if Saddam were still alive, he and *Harmonia axyridis* could commiserate about their rapid fall from grace in the Western world once their status as enemy of our enemy was overshadowed by misdeeds.

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



## Midwest Biocontrol Institute Presents: Natural History and Taxonomy of Carabidae

A series of national experts on the natural history and taxonomy of carabid beetles will be instructing a short course at the Oak Lake Field Station (operated by South Dakota State University) from June 22-25, 2008. Topics to be covered in this hands-on, unit-

based course will include relating carabid morphology to their ecological functions, effects of land management on carabid diversity, parasitoid carabids, chemical defenses of carabid beetles, methods for analyzing carabid feeding behavior, and a primer

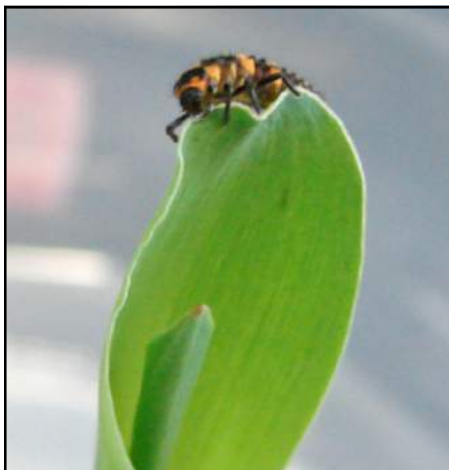
to identifying common carabid genera. Additional course details are still in planning. Please contact Jonathan Lundgren ([jonathan.lundgren@ars.usda.gov](mailto:jonathan.lundgren@ars.usda.gov)) for more information on this course and to reserve a place (participant number is limited).

## RESEARCH BRIEFS

### APHIDOPHAGOUS LADY BEETLE LARVAE INGEST CORN LEAF TISSUE

Several studies have examined Bt-hybrid corn pollen ingestion by coccinellids because transgenic crops may have non-target effects on beneficial predators. Although most of these studies have found no effect of pollen feeding, there have been no studies that have examined the effect of leaf tissue consumption. Although many predaceous coccinellids are known to feed on plant material, such as nectar and pollen, direct feeding on leaf tissue is considered rare.

*Harmonia axyridis* and *Coleomegilla maculata* are highly polyphagous coccinellids that are abundant in corn in North America. We examined if 3<sup>rd</sup> and 4<sup>th</sup> instar *H. axyridis* and *C. maculata* would feed on non-Bt and Cry1Ab Bt corn seedlings. When investigating a new potential food source, predators occasionally feed on inappropriate items. To ensure that leaf tissue consumption is not a case of accidental ingestion, larvae were exposed to seedlings daily during their 4<sup>th</sup> instar.



Larva of *Harmonia axyridis*, feeding on a corn leaf.

We found that both 3<sup>rd</sup> and 4<sup>th</sup> instar *H. axyridis* and *C. maculata* consumed leaf tissue. Fourth instars fed on corn seedlings more frequently than 3<sup>rd</sup> instars for both species. There was no difference in the volume of tissue consumed between species; however, *C. maculata* fed on leaf tissue more fre-

quently than *H. axyridis*. Larvae of both species repeatedly fed on seedlings throughout their 4<sup>th</sup> instar and 30% of *C. maculata* fed on seedlings daily. Life history characteristics, development time and adult size, of *H. axyridis* were not influenced by exposure to seedlings. However, development time of 4<sup>th</sup> instar *C. maculata* increased following Bt-hybrid corn treatments compared to non-Bt corn treatments. Zoophytophagous feeding behavior is thought to sustain predators during times of low prey availability, and leaf tissue feeding by coccinellids has typically been attributed to their need for water. However, in this study, tissue feeding regularly occurred even though coccinellid larvae had constant access to water and a daily *ad libitum* supply of aphids.

Susan Moser  
Department of Entomology  
University of Kentucky  
Lexington, KY

**If you have not renewed your membership for 2008, please take a moment to do so! Contact Stefan Jaronksi ([bug@midrivers.com](mailto:bug@midrivers.com)) with questions.**

### NEWSLETTER WRAP-UP

The strength of our discipline relies on challenging presuppositions; thinking outside the box. Sometimes I feel like biological control scientists necessarily have a particular skill in this area. After all, we typically advise growers and land managers to incorporate sustainable and ecologically sound pest management tactics in the face of what seems like relatively effortless and effective chemically intensive pest management programs. Not always an easy sell.

The capacity of our colleagues to

challenge convention recurs throughout

this newsletter. Slugs have damaged crops without widespread attention from pest management scientists for quite some time. Ladybeetles, some of the best appreciated and easily recognized of entomophagous insects, hit the salad bar a lot more than many realize. By challenging traditional views of the natural history and impact of beneficial and pest species, biological control scientists improve our understanding of the world around us and aid in making biological control more reliable and pre-

dictable.

No one knew the importance of thinking outside of the box better than Bob O'Neil, who helped to pave the way for biological control scientists in the corn/soybean-intensive Midwest. His legacy lives on as the members of our society continue to make traction in areas where biological control is most challenged.

Jonathan Lundgren  
IOBC-NRS Newsletter Editor  
[Jonathan.Lundgren@ars.usda.gov](mailto:Jonathan.Lundgren@ars.usda.gov)

---

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](http://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).

*Send items for the IOBC-NRS Newsletter*

*to:*

*Jonathan Lundgren*

*North Central Agricultural Research*

*Laboratory*

*USDA-ARS*

*2923 Medary Avenue*

*Brookings, SD, 57006*

*E-mail: [jlundgren@ncarl.ars.usda.gov](mailto:jlundgren@ncarl.ars.usda.gov)*

---

International Organization for Biological Control  
Nearctic Regional Section  
c/o Jonathan Lundgren  
NCARL, USDA-ARS  
2923 Medary Avenue  
Brookings, SD, 57006