International Organization for Biological Control of Noxious Animals and Plants. Nearctic Regional Section

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IOBC-NRS NEWSLETTER

INSIDE THIS ISSUE:

Finding Lost Ladybeetles

Three previously common species of native lady beetles (*Coccinella transversoguttata richardsoni*, *C. novemnotata*, and *Adalia bipunctata*) were re-discovered this past summer from non-agricultural habitats in southwestern South Dakota and the Nebraska panhandle. Thirty-four of these rare lady beetles were among roughly one thousand lady beetles found this summer in South Dakota and Nebraska during initial surveys conducted specifically for the Lost Ladybug Project (www.lostladybug.org). These native lady beetles were once abundant and widespread throughout North America, but their abundance has declined precipitously over the last few decades. For instance, *C. novemnotata* had not been recorded from South Dakota since 1977, and only a small number of *A. bipunctata* and *C. transversoguttata* have been collected in eastern South Dakota since 1988. *Coccinella transversoguttata, C. novemnotata,* and *Adalia bipunctata* are known respectively as transverse, ninespotted, and twospotted lady beetles. The goals of the NSF-funded Lost Ladybug Project are to engage researchers and citizen scientists in surveys for extant populations of the three lady beetle species and to study causes of the lady beetles' decline. The project's principal investigators are John Losey and Leslie Allee (Cornell University), Michael Catangui (South Dakota State University), John Pickering (University of Georgia), and Louis Hesler (USDA-ARS). The project was initially based in South Dakota and New York, but project outreach will extend nationally in 2009. Citizen scientists from across the continent are encouraged to submit digital photographs of any lady beetle via the project's website, and they have already submitted photos documenting additional finds of *C. transversoguttata* from various western states.

Louis Hesler
USDA-ARS
Brookings, SD

John Losey
Cornell University
Ithaca, NY

Michael Catangui
SD State University
Brookings, SD

***Coccinella novemnotata*, rediscovered in eastern SD.**

2008 IOBC-NRS Election Results

The results of the 2008 IOBC-NRS Governing Board elections are in, and the face of the IOBC-NRS will change in 2009. Doug Landis was elected as the President-Elect. Ray Carruthers, Mark Hoddle, and Janet Knodel were elected to the be Members-At-Large. The remaining unopposed candidates, Jonathan Lundgren (Corresponding Secretary), Stefan Jaronski (Secretary/Treasurer), and James Hagler (Vice President) will remain in their positions for another 2-year term. In 2009, Marshall Johnson will shift to Past President, and Les Shipp will become the President of IOBC-NRS. A large number of ballots were received for this election, a clear indication of the interest of our members, and the high quality of all of the candidates. Thanks to those who ran, and for those who were elected to serve in the coming 2-year cycle.

Doug Landis

Janet Knodel

Mark Hoddle

Ray Carruthers

Changes to the IOBC Governing Board

MESSAGE FROM THE PRESIDENT:

Increasing Visibility to Strengthen IOBC-NRS

Soon the leadership of IOBC-NRS will change hands again as it does every two years. We have successfully stopped the decline in membership that we have seen in past years. However, more work is needed to recruit members from the large group of scientists, practitioners, insectary workers, regulators, instructors, and students who claim an avid interest in biological control. One fertile source in the USA includes the members of the CSREES regional committees (e.g., W2185, NCERA 125, S1024, S1034, NE1032, and WERA 043) that focus on biological control of arthropods and weeds. Given that all of these groups probably have at least one IOBC member, it may be productive to send literature to the annual meetings of these committees. Ideally, we should send an IOBC representative to present a 5 minute report to these groups on the annual activities supported by our section and IOBC Global. One area we should improve is our IOBC-NRS website. We are currently taking steps to do this, and my successor, Les Shipp, incoming IOBC-NRS President for 2009-2010, is supportive of these efforts. A recent decision by our Governing Board provided a mechanism by which the section can provide monetary support to individuals who wish to organize and present short courses on highly specialized topics in biological control. This action will help make IOBC-NRS a more visible entity in our field. I am sure that there are several more ways that we can increase our visibility, and the incoming leaders of our section can implement these.

Lastly, I would like to thank all members of the Governing Board and other volunteers for their time and efforts that they contributed to IOBC-NRS functions and activities. Special thanks go to: Jon Lundgren, Corresponding Secretary, for overseeing production and distribution of the newsletter; Stefan Jaronski, Secretary / Treasurer, for managing our fiscal account and maintaining section records; James Hagler, for coordinating this year's symposium and mixer scheduled for our 2008 meeting in Reno, NV; and Les Shipp for overseeing the selection process for IOBC outstanding graduate students for 2007 and 2008. Special thanks to Past-President Rob Wiedenmann for service to the section, advice, and assistance. It has been a privilege to serve the section and a rewarding experience to work with some of the world's leading authorities in the field of biological control. I wish the best for Les Shipp and will happily support his efforts to lead the section during his term.

Marshall W. Johnson
University of California
Riverside, CA

Domesticated Olives Reduce Parasitoid Efficiency

Olive fruit fly, *Bactrocera oleae* (Rossi), was discovered in California in the late 1990's. Since that time it has spread to most of the agricultural and urban areas where olives grow. Although adults of this tephritid fruit fly are commonly found outside of olive orchards, the larvae can only feed and develop within olive fruit. Olive fruit vary dramatically in size (based on variety) with larger fruit frequently used for consumption (i.e., table olives) and smaller fruit often pressed for oil . Processors enforce a near-zero olive fruit fly infestation threshold for table olives, whereas olives destined for pressing may be heavily infested (≥ 30%). Presently, growers in some areas (Sacramento Valley, coastal areas) must treat weekly with insecticide baits to manage the pest. Efforts were initiated by researchers at the University of California campuses of Berkeley (Kent Daane) and Riverside (Marshall Johnson) in collaboration with those affiliated with the California Department of Food and Agriculture (Charles Pickett) and USDA Agricultural Research Service (Kim Hoelmer, Allen Kirk) to identify, import, and introduce parasitoids for olive fruit fly suppression. Historically, there has never been a "silver bullet" natural enemy of olive fruit fly that is highly effective across the geographical range of the pest. Over 90 years ago, H. Latiere suggested that African parasitoids that normally parasitize olive fruit fly larvae in thin-fleshed, wild African olives would be ineffective against fly larvae in fleshier domesticated European olives because they possessed short ovipositors. Data recently collected by Xingeng Wang (UC Riverside) and colleagues indicate that Latiere was correct. Measurements of the ovipositors of five braconid species *Utetes africanus*, *Bracon celer*, *Psyttalia lounsburyi*, *P. ponerophaga*, and *P. concolor*, showed a mean range in length from 0.94 ± 0.01 (*U. africanus*) to 2.88 ± 0.10 mm (*P. concolor*). The thickness of fruit pulp for wild African olives was 1.61± 0.06 mm. In contrast, the thicknesses of fruit pulp of medium ripe domesticated European olives typically cured as table olives was 3.06 ± 0.06 mm (Mission variety) to 5.92 ± 0.04 mm (Sevillano variety). Further research showed that for *P. lounsburyi* and *P. concolor* parasitism rates were reduced on larger fruit infested with olive fruit fly larvae in comparison to smaller infested olive fruit.

Marshall Johnson
University of California
Riverside, CA

***Psyttalia concolor*, a parasitoid of olive fly.**

Can Risk Communication be Improved during the Importation of Biological Control Agents ?

The potentially irreversible non-target impacts that might result from the introduction of entomophagous Biological Control Agents (BCAs) are currently at the center of increasingly stringent import regulatory requirements. One of the prospective ways to reduce divergent opinions between regulators and permit petitioners (importers of BCAs) on the level of risk posed by these introductions could be done through the implementation of a carefully planned approach to risk communication. Risk Communication can be defined in this context as a two-way exchange of information about the likelihood and magnitude of an adverse event and the policies to control it. The main purpose of risk communication is to provide individuals with enough information to enable them to make an informed decision about a potential risk. Empirical data are necessary to demonstrate the usefulness of a risk communication framework, and there is a lack of documentation concerning current risk communication practices during the permitting/importation process for entomophagous BCAs.

To build a better understanding of the role and impact of risk communication during the importation of entomophagous BCAs, a web based survey (comprising 19 questions) focusing on different risk communication behaviors was developed using a modification of Dillman's method (Dillman, 2000).

Five hundred stakeholders in biological control, including: federal and state employees, academic researchers, field practitioners, conservationists and, BCA producers were surveyed. Results from the survey (response rate of 23.1%) indicated that the majority of respondents (91.1%) considered risk communication to be an important component of the permitting / importation process. However, respondents indicated that only 30% of the information concerning the risks associated with the importation of entomophagous BCAs was provided by the APHIS-Plant Protection and Quarantine, the National Plant Protection Organization (NPPO) for the United States. Although almost half of the respondents (43.6%) indicated that they received information about the potential risks associated with the importation of entomophagous BCAs at least once a year, only one third of the respondents were satisfied with the information provided by the NPPO (28.7%). The main risk communication avenues identified by respondents included scientific conferences (36%), scientific publications (31.5%) and electronic mail and websites, i.e. list servers, the Federal Registry site, and blogs (33.7%). Furthermore, only one third of the respondents indicated that when the risk communication interactions occurred the NPPO was somewhat effective in fulfilling the key goals of an efficient risk communication framework. These goals include: explaining risks (37.3% somewhat effective) and decisions (33.7%), encouraging feedback (37.3%), responding to questions (38.6%), and explaining petition requirements (37.3%). Almost one third of the respondents (28.7%) never received any type of communication from the NPPO about risks concerning pending importation permits. In addition, respondents indicated that they were somewhat dissatisfied with the quality of their interactions with the NPPO concerning a pending importation permit. Thus only half of the respondents (53.8%) believed that the NPPO website provides sufficient explanation and/or guidance during the permitting / importation process for entomophagous BCAs. In addition, 42% of the respondents felt that there was a definite need for more guidance documents from the NPPO on this issue. These results suggest that improving the effectiveness of risk communication during the permitting importation process of entomophagous BCAs would increase stakeholders' trust in the NPPO decision making system.

Oulimathe Paraiso
Center for Biological Control
Florida A & M University
Tallahassee, FL

Dillman, D.A. 2000. Mail and Internet Surveys, The Tailored Design Method. John Wiley & Sons, Inc.

1st International Entomophagous Insects Conference

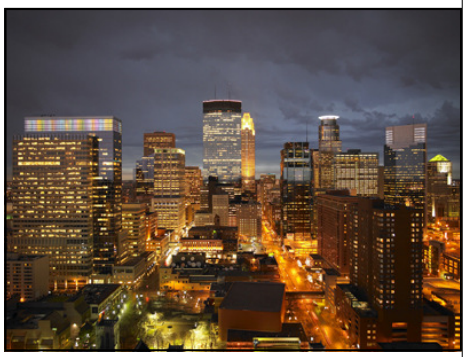
Minneapolis, Minnesota, USA; 27-31 July, 2009

This meeting is a merger of the North American-organized 'International Entomophagous Insects Workshop' (the XVth was held in June 2006 in Newark, Delaware USA) and the European-organized 'European Workshop on Insect Parasitoids' (the Xth was held in September 2007 in Érice (Sicily), Italy). The **new, merged conference** will retain the same focus on the ecology, evolution, systematics and physiology of insect natural enemies that characterized the previous workshops. The 2nd workshop is tentatively scheduled to take place in Antibes, France, in 2011. As in the past, there will only be a single session and we will strive for an informal atmosphere that is welcoming in particular to graduate students and post-doctoral researchers, but also of course to university and government researchers and other interested scientists.

This workshop will take place on the University of Minnesota campus located in Minneapolis-St. Paul, Minnesota, USA. By holding the conference on a University campus in the summer we will be able to keep costs low by offering the possibility of dorm-room stays and using University facilities for the meeting. The Minneapolis-St. Paul airport is also relatively easy to get to with plenty of direct flights from American and European cities. In addition, the cities of Minneapolis-St. Paul have many excellent restaurants, theatres, and museums. An excellent park system provides many easily accessible opportunities for outdoor activities such as hiking and birding. Many natural areas (e.g. deciduous and boreal forests, tall grass prairies, Lake Superior) are within driving distance of the Twin Cities.

George Heimpel
University of Minnesota

Paul Ode
Colorado State Univ.



Minneapolis, venue for the upcoming meeting.

Announcements

Traineeships for Risk Analysis of Introduced Species and Genotypes

The Risk Analysis for Introduced Species and Genotypes IGERT at the University of Minnesota seeks applicants to enter the program in Fall 2009. This Integrative Graduate Education and Research Traineeship (IGERT) program is supported by the National Science Foundation and focuses on policy-relevant research.

The program educates Ph.D. students to conduct research to improve Ecological Risk Analysis and contribute workable solutions to policy questions and problems affecting management of introduced species and genotypes. Trainees will complete a graduate minor in Risk Analysis for Introduced Species and Genotypes and typically receive two years of NSF funding, which includes a stipend of $30,000 and an annual allowance of $10,500 to cover tuition and health insurance. UMN is an EEO employer.

Areas of research interest include:
Biological control of invasives • Invasive plant evolution • Ecology of GMOs and other novel genotypes • Prevention of invasion • Confined ecological risk assessment • Restoration ecology • Science and technology policy

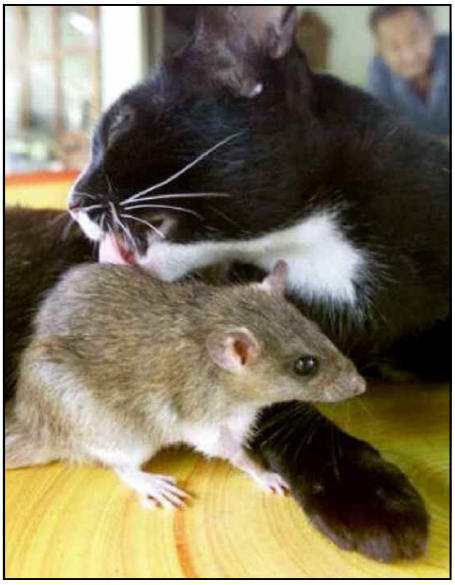
For more information, please contact:
Ray Newman
ISG-IGERT Program
ISGIGERT@umn.edu

Or apply online at:
http://isg-igert.umn.edu/application

Biocontrol Musings: Thwarted cats

The plague, caused by the flea-vectored bacterium *Yersinia pestis* has caused three human pandemics and many more localized epidemics in Europe and Asia over the past 1500 years or so. As you know, the fleas that vector *Y. pestis* are carried by rats and other rodents and then move onto humans to infect them. Apparently rats get to very high densities in times of plague and this is part of the reason that human infection rates are high. My question is this: how can our cats let this happen? Why did cats, which I had thought were ubiquitous in the urban and rural settings where this happened, not keep rat populations under control? I've heard the theory that cats were killed by the thousands due to superstitions against them in medieval Europe, but so far I haven't found any documentation of such actions. On the other hand, it seems significant that cats are themselves quite susceptible to plague - more so than dogs, cows, horses and other non-rodent mammals. And they can catch it by feeding on infected rats. Perhaps *Y. pestis* managed to cause as much devastation as it did in part by wiping out a main predator of the host of its vector.

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



Simpson, W.J. (1905) A Treatise on the Plague. Cambridge University Press, Cambridge, U.K.

Watson, R.P. et al (2001) Veterinary Pathology, 38, 165-172.

IOBC Symposium: A Celebration of the Career and Contributions of Robert J. O'Neil

This year's IOBC Symposium (Tuesday evening, Nov 18) will be honoring the career, contributions, and life of Bob O'Neil. The symposium will have presentations by Susie Legaspi, Luis Canas, Dave Ragsdale and Rob Wiedenmann. The symposium will be followed by a mixer. Please plan to attend and celebrate the contributions that Bob made to IOBC, biological control, and life itself.

RESEARCH BRIEFS

Using Snail-killing Fly Larvae as Biological Control Agents of Invasive Slugs

Natural enemy – slug interactions have been widely studied in Europe, leading to a variety of management recommendations promoting biological control, but little information pertaining to their regulation has been reported in North America. Four species of the snail-killing fly genus *Tetanocera* (Sciomyzidae) are capable of completing their life cycles on slugs. The following is a summary of their slug-killing behavior and implications for biological control.

***Tetanocera clara*, a slug-killing fly endemic to North America**

The natural history of *Tetanocera elata* represents many of the remarkable behaviors expressed in this genus. Newly hatched larvae of this slug predator, little more than one millimeter in length, remain motionless until contact is made with a slug. Once an appropriate host is encountered, the larva crawls under the outer skin of the slug and ingests the mucus. The larva molts, bores into the slug and consumes the dead tissue. The larva then changes behavior, actively pursuing prey and upon contact injects a salivary gland toxin that immobilizes its prey. Once immobile, the larva feeds on the anterior end, while the slug remains alive. During the third larval stage, *T. elata* typically consume 4-9 additional slugs in the genera *Arion, Deroceras*, *Limax* and *Tandonia*, all major agronomic pests in the temperate world.

Similar scenarios are played out in the life cycles of three other species of *Tetanocera*. However, they differ in the nuances of their ecology and host range, thereby presenting opportunities to tailor biological control programs targeting specific regional or habitat-restricted slugs.

Of the four *Tetanocera* examined so far, *T. plebeja* is probably the best candidate for control of slug pests. Firstly, this species has the widest range of habitat preferences, occurring from the margins of grass-sedge marshes, lakes and drainage ditches to flood plain forests and mesic woodlands. Thus, it would likely be possible to maintain populations of *T. plebeja* in habitats adjacent to agricultural fields. Secondly, it has a wide geographic range in both the Nearctic and Palaearctic. Furthermore, *Deroceras reticulatum* and *Arion hortensis* have become established pests of field crops in North America and *T. plebeja* is a major predator of these species. In the Palaearctic, *T. elata* would also be a viable candidate for conservation biological control. One of the most commonly occurring *Tetanocera* species across northern and central Europe, its larval habitat ranges from marshes to dry woodlands from sea level to over 1700 meters in elevation, preying upon major pests such as *Deroceras reticulatum* and *Tandonia budapestensis*. A challenge is to recommend management practices that promote *Tetanocera* diversity in agroecosystems whilst minimizing increases in slug abundance that typically accompany organic, low-input and minimum tillage agriculture.

Eric Chapman &
James Harwood
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 Jaronski (bug@midrivers.com) with questions.

NEWSLETTER WRAP-UP

Without question, the risks associated with biological control need to be communicated to and by regulators and the stakeholders who stand to be affected by the outcome of a release. When the correct stars align, estimating risk can be a fairly straightforward process (hazard × exposure). And under these circumstances communicating risk should be equally straightforward.

But determining which are the "right" risks to estimate is another problem altogether. In part, this is because stakeholders place different values on affected aspects of ecological systems. As a hypothetical example, the potential risk of an oligophagous parasitoid of a key agricultural pest may lead to reduced pesticide use and cost to farmers, but may also reduce the abundance of a handful of non-target species. Some might prioritize the long-term effects on non-target species, while others might prioritize the shorter term negative effects of the pesticides.

With this in mind, a couple of high-profile biological control programs have met with resistance from various stakeholder groups (e.g., emerald ashborer, salt-cedar). Since biocontrol practitioners have historically been viewed as white knights of the environment, I wonder whether the philosophical values of society have shifted recently in ways that might explain some people's response toward a number of recent biological control programs.

The recent survey discussed on page 2 confirms that many in the biological control community feel that communication during the importation/permitting process needs to be improved. While improved communication is a necessity, once all of the information is on the table, I can envision many scenarios where *interpreting* the information in accordance with the prevailing sociological values of the time can still make the release of natural enemies a challenge for members of the IOBC-NRS.

Jonathan Lundgren
IOBC-NRS Newsletter Editor
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 Nuisbiles: Section de la Region Nearctic

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: Jonathan.Lundgren@ars.usda.gov

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