

# IOBC-NRS NEWSLETTER

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## Richard Stouthamer Receives IOBC-NRS Distinguished Scientist Award



Dr. Richard Stouthamer, Professor of Entomology, University of California (UC), Riverside, was recognized as the IOBC Distinguished Scientist for the Year 2010 for his lifetime achievements with biological control. Dr. Stouthamer grew up in The Netherlands and received two BS and an MS degree at Wageningen Agricultural University. He came to America in 1983 and studied under Dr. Robert Luck (also an IOBC-NRS Distinguished Scientist) at UC Riverside for his PhD studies. His PhD research investigated the causes of unisexual reproduction in egg parasitoids of the genus *Trichogramma*. This experience significantly influenced his career path. After receiving his

PhD in 1989, Dr. Stouthamer held post-doctorate positions at UC Riverside and at the University of Rochester. In 1991, he returned to The Netherlands and joined the faculty at Wageningen. In 2001, he returned to UC Riverside as an Associate Professor of Entomology; he was promoted to Professor in 2005.

Over Dr. Stouthamer's career, his research has focused on ecological and evolutionary interactions between insects and their bacterial symbionts, as well as the population genetics of invasive species, using a variety of ecological and molecular genetic techniques. One of his most significant achievements was his discovery . . . *(continued on next page)*

## Short Course on Biodiversity and Biological Control

Cali, Colombia: Co-organized by IOBC-NRS and NTRS — September 12-16, 2011

Biodiversity provides numerous ecosystem services to agroecosystems; biological control of pests is one of the most important. This short course will provide a primer on how biodiversity affects biological control of pests. Lectures by world experts will be paired with hands-on activities to address key concepts. Course topics include: Biodiversity in tropical systems; diversity from landscape to farm-level scales; whether biodiversity is a sink or a source for biological control; importance for small-stakeholder farms; and importance of resource and farm vegetation diversity to biological control. Course instructors include Jonathan Lundgren (USDA-ARS), Kris Wyckhuys (CIAT), Maria Manzano (Universidad Nacional), Takumasa Kondo (Corpoica), and Inge Ambrecht (Universidad del Valle). The course will be held in the Valle de Cauca of Colombia, one of the most biodiverse areas of the world.

Costs TBA, and will be posted on the IOBC Website. For additional info: [Jonathan.Lundgren@ars.usda.gov](mailto:Jonathan.Lundgren@ars.usda.gov).

Jonathan Lundgren USDA-ARS, Brookings, SD  
Kris Wyckhuys CIAT, Cali Colombia





*Doug Landis  
sets the theme  
for 2011-2012*



*Eriborus terebrans*  
(Ichneumonidae)  
photo D. Landis

## MESSAGE FROM THE PRESIDENT:

# Raising our Game: Delivering the Ecosystem Service of Biocontrol

As biocontrol scientists and practitioners, we intuitively recognize the immense value that successful biological control can yield to society, but I'm not convinced that we always do enough to share that message with others. The recent emergence of the concept of Ecosystem Services provides a new opportunity to link our science to a framework that is front and center in many scientific, business, and policy circles.

Ecosystem Services are defined as all the benefits that humans obtain from biodiversity. Broadly speaking, this includes a host of supporting, provisioning, regulating and cultural services. For example, pest suppression by natural enemies is a critical regulating service valued at nearly \$4.5 billion dollars annually to US agriculture alone. Increasingly, businesses and governments are using the concept of ecosystem services to frame their decision-making. For example, both Natural Resources Canada (NRC) and the US Department of Agriculture (USDA) feature the concept on their websites, and ecosystem service markets are being explored worldwide.

I think there is a real opportunity to advance the science of biocontrol by linking its provision with that of other ecosystem services. For example, many of the practices that enhance biological control could also enhance soil conservation, climate mitigation, water and air quality, and pollination, if carefully planned. However, this will require the knowledge and collaboration of many actors. To seize this opportunity, biocontrol scientists and practitioners need to: 1) increase dialogue with a variety of traditional and non-traditional stakeholders including: social scientists, educators, policy makers and land managers, 2) seek out novel win-win solutions and partnerships, e.g. integration with biodiversity conservation, and 3) provide decision-makers with sound science to drive effective policies.

Over the next few years I will be challenging IOBC-NRS to step up to this opportunity and I will be discussing its ramifications in future columns. In the meantime, if you or your colleagues are addressing the nexus of biocontrol with other ecosystem services, drop me a line and let me know what you are doing. I hope to feature interesting work from across our region in the IOBC-NRS Newsletter and on our website.

*Douglas A. Landis  
Michigan State University  
East Lansing*

## 2010 Distinguished Scientist Award to Richard Stouthamer

(continued from front page) . . . . that uniparental (female only) strains of the egg parasitoid *Trichogramma* could be made biparental by feeding the adult females an antibiotic dissolved in honey. Prior to his discovery, it was known that rearing uniparental strains of *Trichogramma* at high temperatures would result in biparental offspring, but the mechanism was not understood. Dr. Stouthamer and his colleagues went on to discover that the presence of bacterial symbionts in the genus *Wolbachia* living in *Trichogramma* resulted in uniparental females. Elimination of the *Wolbachia* resulted in biparental parasitoids. He has continued his work on these symbionts to better understand their impact on various biological control agents. This has resulted in the development of a system to identify a symbiont in predatory mites that causes the mites to lose their ability to detect prey from a distance.

Dr. Stouthamer has also contributed significantly to developing molecular methods to determine the geographic origins of invasive species, thereby providing insights into how invasive

species are moved around, as well as helping to identify where effective natural enemies of the species may be found in the invasive pest's site of origin. He has also aided biological control workers with the identification of sibling species of parasitoids (e.g., *Psytalia concolor* complex; *Anagrus epos* complex) that are difficult to separate morphologically.

The honoree has published more than 110 papers including 96 peer-reviewed journal articles and 16 book chapters.



His achievements have also been recognized by his election as a Fellow of the American Association for the Advancement of Science (AAAS).

*Marshall W. Johnson  
University of California,  
Riverside*

## Jennifer Henke Wins Robert J. O'Neil Outstanding PhD in Biological Control Award



The recipient of the IOBC-NRS Outstanding PhD Student Award for 2010 is Jennifer Henke. Ms. Henke received her BS in Biology from the University of Alabama in 2001. Her Master's work at the University of Georgia examined "The efficacy of different sampling methods and determining length-mass relationships for wetland invertebrates."

Currently she is completing her PhD at UC Riverside, studying "Controlling factors of wetland invertebrate communities, with an emphasis on mosquito biological control."

Jennifer's research focuses on (1) the interaction between biological control agents and biorational control agents for mosquitoes and (2) the use of native biological control agents to promote synergies between biological control and the conservation of native species.

Specifically she has examined the potential for larvivorous fish to prey on mosquito larvae intoxicated by bacterial larvicides, studying whether by removing sublethally intoxicated larvae from populations, fish predation could delay resistance to bacterial toxins.

Moreover, she has studied if the potential use of the native arroyo chub (instead of the exotic *Gambusia*) could result in reintroduction of the native species, enhancing its recovery while providing natural control of mosquito populations.

Jennifer has published two refereed proceedings papers and received numerous grants on support of her research. She has been very active in extension and outreach, delivering over 75 presentations to a variety of audiences.

Her engaging talk for the IOBC Symposium was entitled "Advances in modern biological control of larval mosquitoes."

***Read more about Jennifer' Henke's research on page 5 !***

***Your membership is crucial to our society!***

***If you have not renewed your membership for 2011, please take a moment to do so!  
Contact Stefan Jaronski (bug@middrivers.com) with questions.***

## Wendy Romero Awarded IOBC-NRS Outstanding Master's Student Award

The recipient of the IOBC-NRS Outstanding Master of Science Student Award for 2010 is Wendy Romero. Ms. Romero received her BS degree in Biology from the Universidad del Valle de Guatemala, Guatemala City, in 2005, and her Licenciante in Biology (*cum laude*) in 2007. Her diploma thesis was entitled "Effectiveness of conventional and biological miticides for the control of the avocado brown mite."

She moved to the University of Guelph in 2009 where she is completing her MS on the topic: "Development of reduced risk control strategies for western flower thrips and silverleaf whitefly associated with propagative material."

The focus of her research is on use of novel reduced risk immersion treatments to control these pests in poinsettia and chrysanthemum cuttings.

Her studies at Guelph have demonstrated the potential of significant improvement in biocontrol programs by controlling these pests using alternatives that offer no residual impacts on natural enemies, and reduce initial pest populations, allowing biocontrol to be more effective.

She has presented numerous talks on her work to both scientific and grower audiences, and her methods are being adopted by growers in Canada and the USA.



*Doug Landis presents award to Wendy Romero*

Wendy has previously won awards for her poster presentations as well as several other distinguished student awards.



## IOBC-NTRS Meeting Announcement

May 3-6, 2011, Havana, Cuba

*Exchanges of Experiences in the Mass Production and Use of Biological Control Agents*

The objective of the meeting is to address the challenge of moving from scientific research to industrial production and the use of natural enemies by farmers. The meeting will focus on all issues related to mass production of biological control agents and their release methods, following the principles and practices of quality assurance, integrated with other sustainable agricultural practices.

The program will include a main conference, followed by organized sessions with invited oral presentations and papers submitted as posters. The presentations will serve as a basis for discussion and exchange, with the final aim of promoting collaboration among scientists, biocontrol agent producers and farmers.

### SESSION TOPICS:

1. Biodiversity in Latin America and the provision of natural enemies: What are the possibilities or options?
2. Advances and challenges for mass production, quality control and release methods of natural enemies.
3. Registration of natural enemies and access benefit-sharing in biological control.
4. Recent advances in biological control of the Tomato Leafminer *Tuta absoluta* and other emerging pests for the Neotropical region.
5. Biological control and GMO's: What are the opportunities for combining these two approaches?
6. Impact of educational and extension programs in the use of biological control for local farmers in the region.



The IOBC-NTRS meeting will be held at the Palacio de Convenciones, Havana, Cuba, in conjunction with the larger meeting "CENSA": <http://www.sanidadagropecuaria.com/>

### REGISTRATION FEES:

**Delegates:** 200.00 CUC  
(convertible currency)

**Accompanying persons:** 60.00 CUC

For all questions concerning the IOBC-NTRS Scientific Program, please contact Leopoldo Hidalgo-Diaz directly:

[lhidalgod@infomed.sld.cu](mailto:lhidalgod@infomed.sld.cu);

[lhidalgo@censa.edu.cu](mailto:lhidalgo@censa.edu.cu)



### *Biocontrol Musing:*

## Parasitoids are better taxonomists than entomologists are

Scale insects are perhaps the most bizarre of all insects. They are neotonous bags of cytoplasm that lack legs and antennae, and don't even have a discernible head or thorax. One of the implications of this is that some scale insects are very difficult to identify to the species level. The group is replete with cryptic species: species that are morphologically indistinguishable but still separate species. As an example, California red scale is very difficult to distinguish from the very closely-related yellow scale. Presumably, one could now use DNA evidence to distinguish them, but entomologists working before the advent of such methodologies found another method: parasitoids.

It turns out that many scale insects are attacked by highly specialized parasitoids that will accept one cryptic species and reject another. In other words, the parasitoids are better at distinguishing the scale insect species than the entomologists are! Scale insect taxonomists have therefore developed bioassays using parasitoids to distinguish cryptic scale insect species. In the case of the red scale/yellow scale issue, a Japanese strain of the parasitoid *Comperiella bifasciata* can develop in the yellow scale but not in the red scale. So, if you're confused about which species of scale insect you have, just add *Comperiella*, and if you get parasitoid reproduction, you have yellow scale.

George Heimpel  
Department of Entomology  
University of Minnesota



*Comperiella bifasciata*  
photo T. Pina, [www.gipcitricos.es](http://www.gipcitricos.es)  
(Citrus IPM, Valencia)

Rosen, D. & De Bach, P., 1977. Use of scale-insect parasites in Coccoidea systematics. Virginia Polytechnic Institute and State University Research Division Bulletin, 127, 5-21.

## RESEARCH BRIEFS

### Native fish as mosquito predators: Research in a regulatory net

Using fish to control larval mosquitoes is not new. *Gambusia* (the mosquitofish) has been introduced widely from its native range in eastern and central North America and now inhabits most of the temperate waters of the world. But the use of *Gambusia* is not without controversy: some research indicates it is a poor control agent, while other studies show it to have detrimental impacts on non-target animals.

Our lab has examined the efficacy of a different fish, native to southern California, as a potential control agent for native *Culex* and *Anopheles* mosquitoes inhabiting wetlands associated with natural waterways. The arroyo chub (*Gila orcuttii*) is a small fish that is confined to four watersheds. Due to impacts of urbanization as well as interactions with introduced fish species, the populations of arroyo chub have declined, and it is a species of special concern in California.

We have seen potential for the arroyo chub to be an effective control agent in small man-made earthen ponds and vegetated wetlands, but our ability to fully understand how it would function as part of an integrated mosquito management program in riverine wetland habitats has been complicated by the special status of the fish. Experiments require the coordination of California Department Fish and Game, vector control districts, wetland managers and researchers at more than one institution.

If these administrative hurdles are surmounted, arroyo chub populations could be

increased within their native range, benefiting mosquito management in the region.

Jennifer Henke, UC Riverside  
[jennifer.henke@email.ucr.edu](mailto:jennifer.henke@email.ucr.edu)



Left: Arroyo chub, *Gila orcuttii*. Distance between the two horizontal lines is 7 cm. Right: Seining experimental wetlands (after vegetation is removed) at the UC Riverside Aquatic Research Facility to assess production of arroyo chub. Pictured (left to right) are David Popko, Jennifer Henke (kneeling), Alex van Dam, and Bill Walton. Photo George Peck.

### Vacant Urban Land: New Agroecosystems Under Study

Within Midwestern cities, decades of job loss and economic decline have resulted in significant areas of vacant land -- currently, more than 3,300 acres within Cleveland alone. Across the U.S., municipalities are critically examining vacant property holdings, with the goal of incorporating these lands into a healthier, safer, and environmentally-sound urban revitalization. *Re-imagining a More Sustainable Cleveland* is a working group of neighborhood associations, environmental and social non-profit organizations, urban planners, local and state government agencies and scientific researchers, formed to evaluate how to repurpose vacant land. Its goals are to mitigate storm water runoff, expand public parks, restore natural habitat, provide affordable housing, and produce food. But deciding how to use particular plots of land is difficult, given the lack of understanding of its ecological value within the urban landscape.

My laboratory is examining how the conversion of vacant land from mown turf grass lots to community gardens and farms influences beneficial insects and the arthropod-mediated ecosystems services they support. For the past two years we have measured natural enemy communities and biocontrol services within these sites. We have found that converting vacant land to a community garden reduced



Above (from left): Mary Gardiner, Scott Prajzner (MS student) and Kojo Quaye (high school summer researcher) collecting data from a Cleveland community garden.

Below: Kojo Quaye measures biocontrol services by comparing consumption of Lepidoptera eggs (*Helicoverpa zea*) in open and caged treatments.



some predator groups such as predatory flies but did not have an impact on other key natural enemies such as lady beetles, lacewings, or true bugs. We also found differences in biocontrol services supplied. In the early summer (mid-June) vacant lots supported significant biocontrol services (measured using sentinel egg prey in exclusion cage and predator accessible treatments) whereas community gardens did not. Later in the season (mid-July) both vacant lots and community gardens supported significant biocontrol services.

Moving forward, my laboratory will continue to study how urban land use changes influence beneficial insect communities and their services. MS student Caitlin Burkman is initiating a study of spider community diversity and food web structure in vacant lots, community gardens and planted urban grasslands this summer. In addition to our biological control research, we are also examining pollinator communities and pollination services. MS student Scott Prajzner will be examining the diversity, abundance and activity of pollinators in vacant lots and community gardens this summer.

Mary Gardiner  
 Ohio State University  
[gardiner.29@osu.edu](mailto:gardiner.29@osu.edu)

Visit our website: [www.iobcnrs.com](http://www.iobcnrs.com)  
Renovations to be complete by end of March 2011

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

Send items for the IOBC-NRS Newsletter to:

Newsletter Editor, Don Weber

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Beltsville, MD 20705 USA  
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## Call For Nominations for IOBC-NRS Awards!

### IOBC-NRS Distinguished Scientist Award

The IOBC-NRS solicits nominations for its 2011 Distinguished Scientist Award. Nominees must have spent most of their career in the Nearctic Region, and have made significant contributions to biological control., and 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 principal 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 (employment affiliations), list of prior awards, description of biological control related activities, publications lists, and extramural grant record.

The recognition of those scientists who have made outstanding contributions to the science and implementation of biological control over the course of their careers is an important function of IOBC. Many members have expressed their enjoyment seeing colleagues honored with our Distinguished Scientist Award. Help us honor our deserving colleagues!

Please send nominations or questions electronically by June 15, 2011 to IOBC NRS President, Doug Landis, [LandisD@msu.edu](mailto:LandisD@msu.edu)

### IOBC Graduate Student Awards

The IOBC-NRS sponsors two Graduate Student Awards — The Robert O'Neil Award for Outstanding PhD Student in Biological Control, and a Master's-level award — to be awarded to students whose contributions are likely to shape the future of biological control. The recipients will be recognized at the IOBC-NRS Symposium held at the ESA Annual Meeting in November 2011, Reno, Nevada. Winners will receive cash awards (\$300 for PhD, \$200 for Master's), and the PhD winner will also give a research presentation during the IOBC Symposium and Meeting.

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.

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 two letters of recommendation. See IOBC NRS website for information on previous winners and specific criteria for assessment of nominations.

Application materials and questions should be sent electronically to Jonathan Lundgren, [Jonathan.Lundgren@ars.usda.gov](mailto:Jonathan.Lundgren@ars.usda.gov). Application deadline is June 30, 2011.

## Upcoming Meetings in 2011

**3-6 May IOBC- Neotropical Regional Section Meeting**, Havana, Cuba  
Email Leopoldo Hidalgo-Diaz:  
[lhidalgo@infomed.sld.cu](mailto:lhidalgo@infomed.sld.cu) ;  
[lhidalgo@censa.edu.cu](mailto:lhidalgo@censa.edu.cu)  
see box on page 4 for details



**24-27 July Aquatic Plant Management Society 51st Annual Meeting**, Baltimore, Maryland  
[www.apms.org/2011/2011.htm](http://www.apms.org/2011/2011.htm)

**7-11 August Society for Invertebrate Pathology**  
44th Annual Meeting, Halifax, Nova Scotia  
Email [Susan.Bjornson@smu.ca](mailto:Susan.Bjornson@smu.ca)  
[www.sipweb.org/meeting.cfm](http://www.sipweb.org/meeting.cfm)

**7-12 August Ecological Society of America 96th Annual Meeting**, Austin, Texas: "Earth Stewardship: Preserving and enhancing earth's life-support systems" <http://www.esa.org/austin/>

**11-16 September 13th Int'l Symposium on Biological Control of Weeds**  
Waikoloa Beach, Hawaii  
Email [TracyJohnson@fs.fed.us](mailto:TracyJohnson@fs.fed.us)  
[http://www.uhhconferencecenter.com/xiii\\_isbcw.html](http://www.uhhconferencecenter.com/xiii_isbcw.html)

**19-22 September North American Weed Management Association Annual Meeting**, Winnipeg, Manitoba. <http://www.nawma.org>

**13-16 November Entomological Society of America Annual Meeting**, Reno, Nevada. Email [meet@entsoc.org](mailto:meet@entsoc.org)  
<http://www.entsoc.org>