

# IOBC-NRS NEWSLETTER

## INSIDE THIS ISSUE:

<b>Scientist Award:</b>	1
<b>Jay Rosenheim</b>	
<b>PhD Award:</b>	1
<b>Vincent Hervet</b>	
<b>Early Career Award:</b>	2
<b>Dave Crowder</b>	
<b>MS Award:</b>	2
<b>Ishan Samaranayake</b>	
<b>Musings</b>	3
<b>Elections</b>	4-6
<b>Obituary: Les Ehler</b>	7

### Governing Board

#### President

Don Weber  
USDA-ARS, Maryland

#### President-Elect

Jim Nechols  
Kansas State University

#### Past President

Jon Lundgren  
USDA-ARS, S. Dakota

#### Vice President

Cesar Rodriguez-Saona  
Rutgers University

#### Secretary/Treasurer

James Harwood  
University of Kentucky

#### Corresponding Secretary

Jana Lee  
USDA-ARS, Oregon

#### Board Members-At-Large

Alejandro Costamanga  
University of Manitoba

Mary Gardiner  
Ohio State University

Stefan Jaronski  
USDA-ARS, Montana

## Distinguished Scientist Award: Jay Rosenheim

Dr. Jay Rosenheim has been a professor at University of California Davis since 1990. His most significant achievement to date has been to identify, understand, and quantify intraguild predation in biological control programs. Until Dr. Rosenheim initiated studies on IGP, there was no predictive theory for the ecological function of generalist predators. This was a considerable problem for biological control practitioners because it made it difficult to know which species should be viewed as attractive candidates for importation programs as well as augmentation programs.

Dr. Rosenheim has also contributed



Jay Rosenheim (left) and President—Don Weber (right) in Florida 2016.

to our better understanding of limitations on parasitoid biology. Most biological control scientists

(Jay cont. on p. 4)

## O'Neal PhD Student Award: Vincent Hervet

Vincent Hervet is completing his PhD in Dr. Floate's laboratory in Alberta, Canada. At the start of his MSc thesis, Vince received a colony of wasps from cabbage looper, obtained the correct species identification, and determined that the species was new to North America which was published in Canadian Entomologist. To assess its potential as a bio-control agent, Vince since has tested the ability of this wasp to develop in different species of Lepidoptera – ~50 pest species of Noctuidae. As one facet of this work, Vince recently published a paper that reports use of the artificial diet to rear diverse taxa of Lepidoptera. The value of the paper is that it highlights use



Vincent Hervet (left) and President—Don Weber (right) in Florida 2016.

of an artificial diet that is easily-prepared and stored, which can be used to rear a broad variety of phytophagous insect species. As a second facet of this work, Vince modified the diet to obtain 7 different levels of protein

(Vincent cont. on p. 7)

## Early Career Award: Dave Crowder

Dave Crowder started as a professor at Washington State University in 2012. In just a few years, Dave has built an incredibly productive program aimed at advancing our understanding of the ecological relationships among natural enemies that influence biocontrol services. His work includes studies of predators, parasitoids, and pathogens and contributes broadly and at depth to our biological control knowledge.

The importance of Dave's biological control research is recognized by 5.3 million awarded from extramural sources. He has published his work in top journals including *Ecology*, *Nature*, and *Biological Control*. I first met Dave when he was formulating his review article "*Eating their way to the top? Mechanisms underlying the success of invasive insect generalist predators.*" This paper was published in *Biological Invasions* in 2010 and outlines several hypotheses that have shaped the work of many researchers studying invasive predators.

Dave has also devoted his time to teaching, mentoring, and service. His contributions to teaching include courses focused on entomology fundamentals such as *Ecological and Integrated Pest Manage-*



Dave Crowder (left) and President—Don Weber (right) in Florida 2016.

ment (ENTOM 351), as well as research methods and professional development, with courses such as *Experimental Design and Data Analysis for Agricultural Sciences* (ENTOM 590) and *Science Writing* (ENTOM 590). Dave has served as the advisor to eight graduate students, three postdoctoral researchers, and 21 undergraduates with the majority focused on biological control research.

Mary Gardiner  
Ohio State University

## Outstanding Masters Award: Ishan Samaranayake

Ishan Samaranayake is a MS student with Dr. Alejandro Costamanga at the University of Manitoba. His Master project addresses the control of soybean aphids, particularly on the role of landscape structure in maintaining effective populations of predators that suppress this pest. Ishan conducted a challenging series of field experiments that included a combination of experimental manipulations and sampling of 27 soybean fields. His studies go beyond the typical relationship between landscape complexity and pest suppression by explicitly quantifying insect movement between soybeans and neighboring fields using bidirectional Malaise traps. Ishan's research is one of the first studies that attempts to explain insect interactions at the landscape scale based on their patterns of movement in different habitats. Ishan has also been very active as a teaching assistant and outreach



Ishan Samaranayake (left) and President—Don Weber (right) in Florida 2016.

with elementary school children.

Alejandro Costamanga  
University of Manitoba

## Musings: We need more disease vector biological control



George Heimpel  
University of Minnesota



One of my favorite symposia at the recent International Congress of Entomology meeting in Florida was an IOBC-sponsored series of talks on biological control of mosquitoes that was organized by Matt Thomas and Mike Strand. The speakers confirmed a suspicion I have had for awhile, and that is that biological control is being left behind in the excitement to develop novel genetic methods to control mosquitoes as mosquito-vector diseases become increasingly critical. Biological control of mosquitoes is a well-developed field with lots of promising agents and methodologies, but you wouldn't know it from the media coverage or the funding patterns.

The best known biological agents of mosquitoes are the larvicide-producing bacterium Bti (*Bacillus thuringiensis israelensis*), which is important and useful but has some problems with persistence, and the mosquitofish *Gambusia*, which is now considered too ecologically damaging to use. Beyond this though a number of promising agents have been researched over the years, including fungal entomopathogens such as particular strains of *Beauveria bassiana*, nematodes, copepods, midges, odonates and other predatory insects including other mosquitoes, and even competitors such as *Daphnia*. Although some members of these taxa have shown promise, it appears that follow-up research has in some cases not been well enough supported. The result is limited options at a time when emerging diseases like Zika remind us how critical

vector control is.

A bright light that was highlighted in the symposium was the development of a specialized mosquito trap that dusts the adults with *B. bassiana* spores and includes a larvicide in the water. Adults are allowed to leave the trap and when they do they take fungal spores and traces of the larvicide with them to spread to nearby natural water sources where they kill larvae in hard-to-reach breeding sites. The trap is designed for *Aedes aegypti* (the vector of Zika, dengue and yellow fever) and is being deployed against Zika in Puerto Rico and Florida.

We need more research into creative biological control solutions like this one to complement the high level of activity that is going into genetic and symbiont-based research. We also need to understand better how biological and genetic methods of mosquito control interact, including under what conditions they are complementary versus mutually exclusive.

Vector control is one of the most important human health issues that we face as a global society and it is being exacerbated by species invasions and climate change. *We can't afford to have biological control sitting on the sidelines.*

- Heinig, R. L., K. P. Paaijmans, P. A. Hancock, and M. B. Thomas. 2015. The potential for fungal biopesticides to reduce malaria transmission under diverse environmental conditions. *Journal of Applied Ecology* **52**:1558-1566.
- Kroeger, I., S. Duquesne, and M. Liess. 2013. Crustacean biodiversity as an important factor for mosquito larval control. *Journal of Vector Ecology* **38**:390-400.
- Snetselaar, J., R. Andriessen, R. A. Suer, A. J. Osinga, B. G. J. Knols, and M. Farenhorst. 2014. Development and evaluation of a novel contamination device that targets multiple life-stages of *Aedes aegypti*. *Parasites & Vectors* **7**.



## IOBC Elections

### *President-Elect Nomination: Cesar Rodriguez-Saona*



Cesar Rodriguez-Saona is a Professor and Extension Specialist in Blueberry and Cranberry IPM at Rutgers University. He received his M.S. degree from Oregon State University and his Ph.D. from the University of California, Riverside. Prior to joining Rutgers University, he worked for the USDA-ARS in Phoenix, AZ, University of Toronto, and Michigan State University. He served as member-at-large from 2012 to 2014, and is currently serving as vice-president for the IOBC NRS. The goal of his research program is the development and implementation of cost-effective and reduced-risk IPM practices for blueberries and cranberries that are compatible with biological control agents. He is pursuing this goal by integrating chemical, behavioral, and biological methods in insect control and by gaining a better understanding of the ecology of pests and their natural enemies. His extension program delivers current and critical IPM information to growers. The specific areas of expertise within his research program include Biological Control, Tri-trophic Interactions, Integrated Pest Management, Insect Chemical Ecology, Insect-Plant Interactions, and Host-Plant Resistance.

### *Vice President Nomination: Mary Gardiner*

Mary Gardiner is an Associate Professor at The Ohio State University in Columbus, OH. She is interested in understanding how the site history, design, management, and landscape context of urban greenspaces influences their value for arthropod conservation and the provision of ecosystem services. She advises 7 graduate students and a postdoctoral scientist. Her lab is also actively engaged in outreach related to enhancing home landscapes, greenspaces and small-scale farms as habitats for beneficial arthropods. Gardiner co-instructs courses in insect ecology and presentation skills.



(Jay cont. from p. 1)

believed that the sole factor limiting realized lifetime reproductive success of parasitoids was the time needed for mated females to locate hosts. Dr. Rosenheim's work led to a theory that the cost of reproduction is comprised of two components: by the time required to handle hosts, and by the cost of depleting a finite store of eggs.

Dr. Rosenheim has published 140 peer-reviewed journal articles and 9 book chapters, and awarded more than \$4.7 million in research funding. He serves on the editorial boards of journals, including *Biological Control* and has mentored 18 graduate students and 14 postdocs.

*Marshall Johnson*  
*UC Riverside*

## ***Corresponding Secretary Nomination: Paul Abram***

Paul Abram recently began as a research scientist in entomology and biological control at Agriculture and Agri-Food Canada (AAFC) in Agassiz, British Columbia. Before arriving in Agassiz, he completed a Ph.D. and postdoctoral fellowship at the Université de Montréal and AAFC Saint-Jean-sur-Richelieu (2012-2016), and a Master's degree at Carleton University, AAFC Ottawa, and CABI Switzerland (2009-2012). His work to date has mostly focused on the behaviour and ecology of candidate exotic and indigenous parasitoid biological control agents for invasive arthropod pests in Canada (e.g. brown marmorated stink bug, swede midge, leek moth). His current research program will continue to explore the use of indigenous and exotic natural enemies to address invasive arthropod pest problems in field and greenhouse horticultural production systems, and gaining an understanding of the ecological processes necessary to develop safe and effective biological control programs. He is interested in being involved with IOBC in order to contribute to increased appreciation and adoption of biological control by the public, the scientific community, industry, and government. He is particularly interested in helping increase the IOBC's web presence through consistent website updates and social media outreach.



## ***Secretary-Treasurer Nomination: Stefan Jaronski***

Throughout his career, Stefan Jaronski has had keen interest in the ecology of the entomopathogenic Ascomycete as it affects efficacy of mycoinsecticides, as well as their development as alternatives to conventional pesticides. Jaronski's USDA research at Sidney centers on microbial control of grasshoppers on U. S. rangeland and the wheat stem sawfly, but has also included development of mycoinsecticides for sugarbeet root maggot, and sundry other insects. He has a pilot-scale fungus production facility (created from a mobile home) supplying kilogram quantities of *Beauveria* and *Metarhizium* spores for research uses. His mass production and general applied mycoinsecticide expertise has afforded him technical consulting opportunities in the Republic of Georgia, Senegal, Azores, New Zealand, Germany, as well as in the U.S. In 2013 Jaronski taught a two-week course in Ecuador about commercializing microbial agents, from discovery through development to application and has continued to provide technical guidance to numerous artisanal biopesticide producers in that country. In addition, Jaronski is interested in insects as food, and has spent time in Uganda, helping with mass production of a tettigoniid for human consumption. Jaronski has been a member of the Nearctic and Western Palearctic Regional Sections of the International Organization for Biocontrol (2001-date, and 2010 to date, resp.) and has been involved in the governance of the Nearctic Regional Section of IOBC since 2001, serving as Secretary-Treasurer



## *Member-at-large Nominations:*

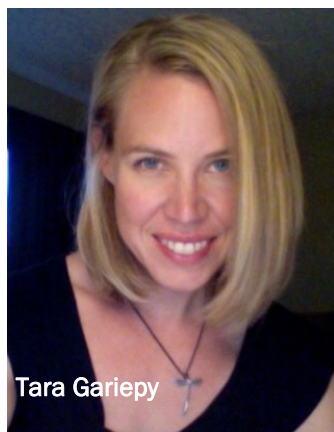
### *Mark Hoddle*

Mark Hoddle, an extension specialist in biological control, Department of Entomology, University of California Riverside, works on the biological control of invasive pests of agricultural, wilderness, and urban importance. Current projects are investigating classical biological control options for the Asian citrus psyllid, brown marmorated stink bug, and avocado pests. Hoddle has had recent projects in Pakistan, Saudi Arabia, and Indonesia on citrus and palm pests. Mark received his MSc from the University of Auckland in New Zealand (biocontrol of the invasive weed gorse, with the gorse seed weevil) and his Ph.D. from the University of Massachusetts, Amherst (whitefly biocontrol in greenhouses with parasitoids). He has published about 180 peer reviewed articles and was the recipient of the IOBC Distinguished Scientist of the Year in 2015.



### *Tara Gariepy*

Tara Gariepy is a Research Scientist with Agriculture and Agri-Food Canada in London, Ontario. Her research focuses on biological control of invasive insect pests in agroecosystems, and the use of molecular diagnostic tools to evaluate trophic interactions. In particular, she is interested in evaluating host-parasitoid associations, and the impact of competitive interactions and hyperparasitism on biological control.



### *Charlie Pickett*

Charles Pickett (Charlie) is a native Californian, and received a B.S. in Biology from UC Irvine in 1976. From there he completed a master's degree in botany at Arizona State University (1978, plant-insect interactions), then a Ph.D. from Texas A&M University in 1985. Between these two degrees he worked in private industry for a start-up company in Arizona developing pheromones as a control tactic for a variety of moth pests, and was based primarily overseas. His Ph.D. program focused on biological control of spider mites. His degree program at Texas A&M University and interactions with others working in biological control hooked him into this field of pest management as a long term career path. Shortly after graduating, Charlie moved to Davis, California where he assumed a post-doctoral research position in the Department of Entomology at UC Davis. With a young family, the city of Davis had a very strong appeal, so he applied for a permanent research position in 1988 at the California Department of Food and Agriculture in nearby Sacramento which had a small group of entomologists and botanists working in applied classical biological control. He has been there ever since exploring for, evaluating, and releasing natural enemies of in total, 10 target pests. Charlie has been an associate editor for the journal *Biocontrol, Science and Technology* since 2004, authored over 50 peer reviewed manuscripts, co-edited a book on conservation biological control, and authored 5 book chapters on biological control of various pests. His current projects include biological control of brown marmorated stink bug, bagrada bug, olive fruit fly, cereal leaf beetle, and olive psyllid. Charlie has a deep commitment to all facets of biological control, but especially classical. He has seen first-hand the power of this tactic, and is committed to keeping it a center piece in pest management.





Les Ehler

### In Memory of Les Ehler 1946-2016

Dr. Lester E. Ehler passed away on September 2, 2016, in Vacaville, California.

Les was born January 3, 1946, in Slaton, Texas, the third of seven children of Ervin & Irene Ehler. He was raised on the family farm in Idalou, Texas, and was enamored with insects from an early age. After graduation from high school, he attended Texas Tech University from which he graduated with a Bachelor's degree in entomology in 1968. Les then attended the University of California-Berkeley, graduating with a Doctorate in entomology in 1972.

Dr. Ehler was a UC Davis emeritus professor of entomology, retiring after 35 years in 2008. Dr. Ehler was a noted entomologist and biological control specialist. Over his career, he taught entomology students and conducted research on many types of insects. He became a respected scientist, not only in academic circles, but also in agriculture in many countries where he provided consulting services to solve for pest problems. He was a prolific author, writing and co-writing publications on various topics in pest management and the use of biological control to eradicate specific pests. In 1990, he co-authored the book *Critical Issues in Biological Control*. In 2003, his book *Genetics, Evolution and Biological Control* was published.

Dr. Ehler was an advocate for biological control of insects and a national leader in the discipline of biological control. In 2000, he was elected president of the International Organization for Biological Control

Visit our website: [www.iobcnrs.com](http://www.iobcnrs.com)

(IOBC) headquartered in Montpellier, France.

An example of his work occurred in the Capitol Park of Sacramento, CA. Obscure scale was threatening the park's oak trees. Les used an imported parasitic wasp to the scale. In a few years, the scale had been significantly reduced. In less than 10 years, scale levels were reduced to near complete control.

An avid fisherman, Les loved fishing the lakes of Northern California as well as a trek or two to Alaska fishing for salmon. His wit and charm and his intellectual perspective will be missed by many.



Pumpkin carving by Danielle Lightle

(Vincent cont. from p. 1)

content. This was done to test the effect of diet quality on larval development of cabbage loopers, and on the suitability of the larvae as hosts for the parasitoid.

Vince is a very enthusiastic speaker during outreach events. He will parasitize caterpillars in advance and hold them at temperatures such that the parasitoid larvae 'erupt' from their host in front of the audience. He also has given numerous presentations on insects to schools and has been the main organizer of the annual 'Insect Discovery Day' at the local Bird of Prey Centre.

*Kevin Floate  
Agriculture and Agri-Food Canada*