



ANBP Student Research Awards for Poster and Presentations at the 2019 Montréal Meeting, IOBC-Aphidophagous Symposium

September 16-20, 2019

Congratulations to our two student awardees, Mireia Solà (poster) and James Miksanek (oral presentation), for their presentations at our fall meeting in Montréal! Both did a tremendous amount of very relevant research to applied biocontrol. Besides certificates, they will receive cash awards. Below are their titles and abstracts and photos from Montreal with Brian Spencer (Applied Bio-nomics), and new ANBP President, Casey Decker (Sierra Biologicals). We wish them all the best as they start their careers!



James Rudolph Miksanek and George E. Heimpel. ***A host-density dependent decline in lifespan and estimation of the age of an aphid parasitoid in the field.*** University of Minnesota.

Parasitoids require nutrients for reproduction and survival. For parasitoids of plant-feeding hemipterans, proteins are acquired directly from the host hemolymph by host feeding and sugars are obtained primarily from the honeydew produced by their hosts. We hypothesized that lifespan would be negatively affected by low host densities and reduced overall in field conditions, and used *Aphelinus certus* (Hymenoptera: Aphelinidae) and soybean

aphid (*Aphis glycines*; Sternorrhyncha: Aphididae) as a study system. *A. certus* is an introduced parasitoid of soybean aphid in North America and obtains its nutrients through honeydew and host feeding. We exposed *A. certus* females to different host densities until death and used a logistic model to calculate the critical host density, which is the amount of hosts required for parasitoids to reach 95% of their maximum lifespan. We found that parasitoid survival decreased with host density. At death, we recorded the number of damaged forewing setae and correlated this value with parasitoid age. Using these data, we constructed a wing wear index to estimate the age of a sample of field-collected parasitoids, which were found to have a lower (but similar) life expectancy compared to parasitoids in the lab. These results detail a relatively unstudied phenomenon, and we discuss their relevance within the contexts of population dynamics and biological control.

Mireia Solà, François Dumont, Geneviève Labrie, Caroline Provost, and Éric Lucas. ***Voracity, functional response and prey preference of Nabis americanoferus feeding on tarnished plant bugs and aphids.*** Université du Québec à Montréal.

The damsel bug, *Nabis americanoferus* (Carayon) (Hemiptera: Nabidae) is a polyphagous predator commonly found in valuable cultures of North America. *Nabis* species can feed on several important agricultural pests such as the tarnished



plant bug (TPB), *Lygus lineolaris* (Palisot de Beauvois) (Hemiptera: Miridae) or aphids such as *Myzus persicae* (Sulzer) and *Aphis gossypii* (Glover) (Hemiptera: Aphididae). Both pest groups can often be found together in strawberry fields and cucumber greenhouses. Understanding functional and numerical responses is important for biological control purposes. However, few information on *N. americanoferus* predatory capacity is available. We tested the level of voracity, the functional response and the prey preference of the predator on these two major agricultural pests under controlled conditions in the laboratory and in the greenhouse. For the laboratory experience, one fastened *N. americanoferus* adult was allowed to feed for 24h on a different density of preys (TPB or *M. persicae*) in a small aerated arena containing one strawberry leaf and the number of survival preys were assessed. For the greenhouse experiment, 3 adult Nabids were introduced in cages with cucumber plants initially infested with: 1)TPB, 2) *A. gossypii* or 3) a mixture of prey. A control with the mixture of preys but without the predator was also prepared. After six weeks, the three populations were evaluated. Results showed that *N. americanoferus* is a high voracious predator feeding on 10 preys when 15 individuals were offered. The predator presented a functional response type III with a maximal prey consumption of 13 preys when 20 TPB were offered and 30 preys when 60 aphids were offered. The results in the greenhouse showed that *N. americanoferus* might perform better in a system with mixed preys. However, further studies need to be done to adjust predator introduction density. Overall, this project provides valuable information of the predatory capacity of *N. americanoferus* to present this species as a potential control agent against tarnished plant bugs and aphids.

ANBP is proud to support and encourage emerging scientists in the field of augmentation biological control. For more information on past student awardees, visit the ANBP webpage: <http://anbp.org/index.php/past-winners>