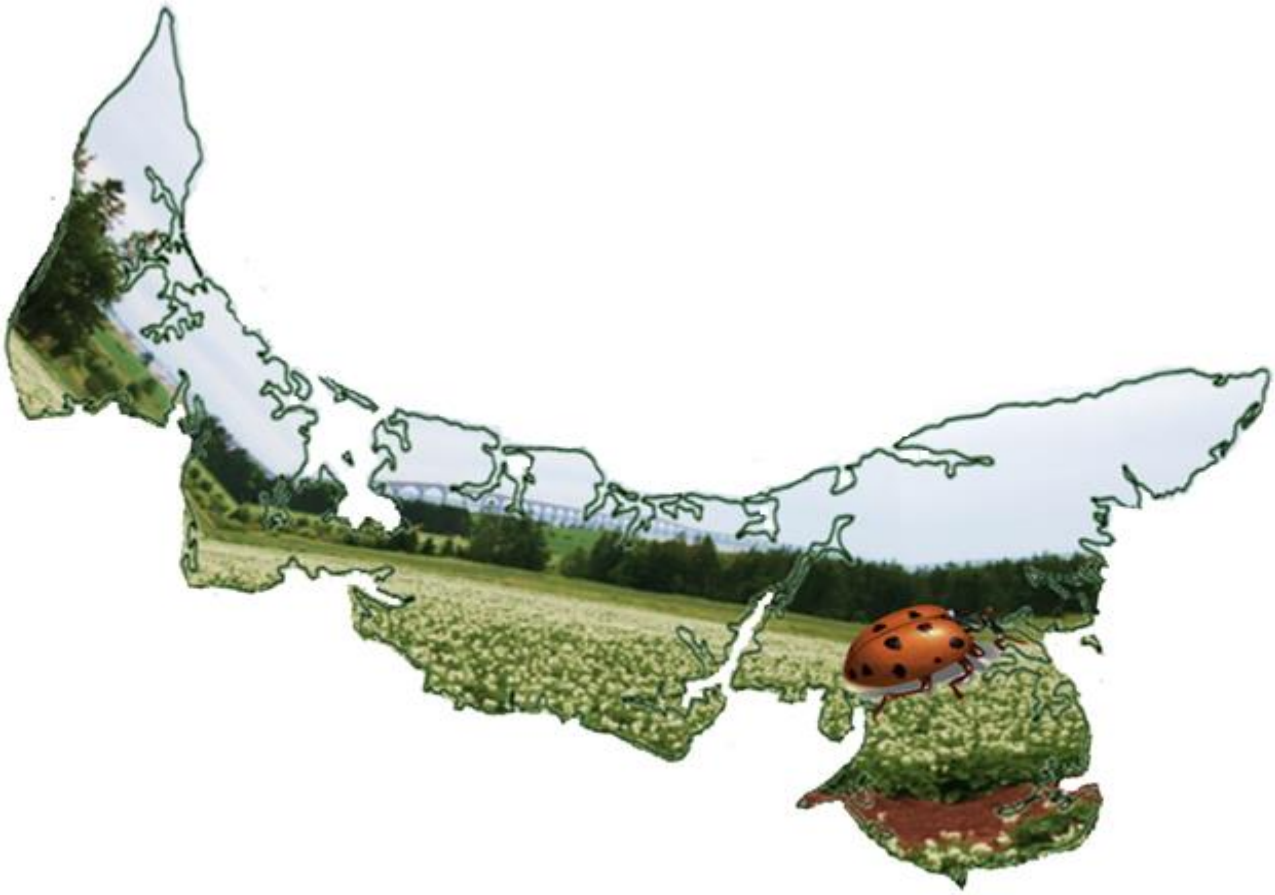
ACADIAN ENTOMOLOGICAL SOCIETY



Aug 6–7

76th Annual Meeting 2017/76t Réunion annuelle

Charlottetown, PEI

Acadian Entomological Society

76TH ANNUAL MEETING 2017/76T RÉUNION ANNUELLE

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Cover page: Typical landscape of Prince Edward Island, including the iconic Confederation Bridge in the map of PEI. The photo was taken by Natasha Boyle. Photo credit for the Asian Lady Beetle is www.orkin.com. The cover page was assembled by Md Bahar.

Schedule of events

SUNDAY (06 AUG 2017)

Location: Upstreet Brewery (41 Allen St. Charlottetown, PE)

19:00 – 22:00 Registration/Mixer

MONDAY (07 AUG 2017)

Location: Richmond Room, Rodd Charlottetown (75 Kent Street, Charlottetown, PE)

8:00 – 8:45 Registration / Poster Set-up
8:45 – 8:50 Introduction and Housekeeping – Christine Noronha
8:50 – 8:55 President's Opening Remarks – Kirk Hillier

Students' Presentations (President's Prize Session)
Moderator: Md Bahar

9:00 – 9:15 **Christopher Andrews and Chris Cutler**: The effect of landscape character on bumble bee colonies in lowbush blueberry fields on Prince Edward Island
9:15 – 9:30 **Andrew Collins**: The Acadia Beekeeping Club: A brief history of humble origins through our future plans
9:30 – 9:45 **Franck Gandiaga and Gaétan Moreau**: Settling in or passing through: differentiating between wood-boring beetle visitation and colonization after a dead wood pulse
9:45 – 10:00 **Catherine Little, T.C. Chapman, and Kirk Hillier**: Effect of color and contrast on susceptibility of highbush blueberries to infestation by *Drosophila suzukii*

10:00 – 10:30 COFFEE BREAK/POSTER SESSION Sponsored by: ADAMA / UAP

Students' Presentations (President's Prize Session) contd.

10:30 – 10:45 **Alexandre Loureiro, Chris Cutler, Vilis Nams and Scott White**: Diversity and dispersal of ground beetles (Coleoptera: Carabidae) within commercial lowbush blueberry fields
10:45 – 11:00 **Alexandre Mourant, Nicolas Lecomte and Gaétan Moreau**: The positive interrelation between the Canadian beaver and saproxylic beetles realized fecundity
11:00 – 11:15 **Sawyer Olmstead and G. Christopher Cutler**: Pollinators and Pollination of Haskap in Southern Nova Scotia
11:15 – 11:30 **Rachel R. Rix and G. Christopher Cutler**: Multigenerational exposure to low doses of imidacloprid preconditions *Myzus persicae* (Hemiptera: Aphididae) to withstand subsequent insecticide stress

11:30 – 11:45 **Matthew Peill, Debra Moreau, Kirk Hillier and Peggy Dixon**: Transmission of strawberry decline disease viruses by *Chaetosiphon fragaefolii* (Hemiptera: Aphididae)

11:30 – 13:00 LUNCH (on your own)

Regular Presentations

Moderator: Sebastian Ibarra

13:00 – 13:15 **Jeff C. Clements, David B. McCorquodale, Denis A. Doucet, and Jeffrey B. Ogden**: The Dusky Cockroach in the Canadian Maritimes: establishment, persistence, and ecology

13:15 – 13:30 **Chris Cutler**: Know thy natural enemy: contributions of natural enemies in blueberry production

13:30 – 13:45 **Nicoletta Faraone, Samantha MacPherson and Kirk Hillier**: Inert granite dust for a more sustainable agriculture: a preliminary study

13:45 – 14:00 **Kirk Hillier, Emily Evans, Adam Discher, and R.C. Evans**: Induced autogamy and reproductive outcomes in *Crocanthemum canadense*

14:00 – 15:00 COFFEE BREAK/POSTER SESSION sponsored by: Bayer Crop Sciences

Regular Presentations contd.

15:00 – 15:15 **Suqi Liu and Christine Noronha**: Understanding the biology of *Agriotes sputator*, the dominant wireworm species in PEI

15:15 – 15:30 **Paul Manning, Eleanor M. Slade, Sarah A. Beynon, Owen T. Lewis**: Effect of dung beetle species richness and chemical perturbation on multiple ecosystem functions

15:45 – 16:00 **Gaétan Moreau and Jean-Philippe Michaud**: Testing the resilience of the association between carrion decomposition stages and the insect community to increasing pre-exposure delays of carrion

16:00 – 17:00 Annual General Meeting

18:30 Banquet (Kent Room, Rodd Charlottetown)

Executive 2016-17

PRESIDENT: Dr. N. Kirk Hillier

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Dr. Christine Noronha (AAFC, Charlottetown, PEI)

Dr. Md Habibullah Bahar (AAFC, Charlottetown, PEI)

Sebastian Ibarra, MPM (PEI Department of Agriculture & Fisheries)

Welcome to PEI

It is my pleasure to welcome you to Charlottetown for the 76th annual meeting of the Acadian Entomological Society. Our organizing committee has been working hard to make this a stimulating experience for you. We sincerely hope that you enjoy the meeting and take this opportunity to connect with fellow entomologists from the region and be inspired by the new and innovative research ideas being presented. August is a nice time of the year to visit PEI; we hope that you get a chance to enjoy what Charlottetown has to offer as well as our provincial parks and beaches.

Dr. Christine Noronha
Chair, Organizing Committee

Abstracts

The effect of landscape character on bumble bee colonies in lowbush blueberry fields on Prince Edward Island (Student–Talk)

C. Andrews* and G.C. Cutler
Department of Plant, Food, and Environmental Sciences, Faculty of Agriculture, Dalhousie University, NS, Canada.

*Email: crs.andrews@gmail.com

Abstract:

Development of bumble bee colonies can be affected by landscape type, shape, and configuration. Our study measures relationships between landscape metrics and development of bumble bee *Bombus impatiens* (Cresson 1863) (Hymenoptera: Apidae) colonies placed for one month near blueberry fields within landscapes that spanned a gradient of natural land coverage. Our results suggest proportion of natural land cover does not correlate with colony development, but landscapes with a greater proportion of grasslands produce larger bumble bee colonies in terms of weight of the hive and brood production. Landscape configuration also had no significant impact on colony growth or reproduction.

Mortality and development of wireworms at various temperatures

M.H. Bahar* and C. Noronha
Agriculture and Agri-Food Canada, Charlottetown, PEI, Canada.

*Email: md.bahar@agr.gc.ca

Abstract:

Temperature is the central driving factor for the survival and development of insects. Wireworms (Coleoptera: Elateridae) are an important pest of potatoes. Information on the effect of temperatures on wireworm is lacking. This study explored wireworm mortality and development at five constant temperatures (10 to 35°C). Our results showed 100% mortality at 35°C. The lowest mortality (10%) was observed at 10°C but no increase in body weight or head capsule size was found. Seventy percent mortality was observed at 30°C with the highest increase in body weight and head capsule size. Temperature range of 20-25°C was found to be optimum for wireworm development and survival. Studies will continue to determine cold tolerance and molecular adaptation of wireworms to extreme temperatures.

Does patch retention act as anticipated on insect communities? (Student–Poster)

B. Chiasson* and G. Moreau
University of Moncton, NB, Canada.

*Email: ebc0227@umoncton.ca

Abstract:

Patches of trees called retention patches can be left behind in harvested areas to serve as habitat or refuge for animals, as well as a source of seeds. However, the conservation value of those patches is lacking for several taxa. This study documented the effect of patch retention on beetle communities of Southern New Brunswick from 2015 to 2016 using flight intercept traps. Results indicated that patch retention modifies the structure of beetle communities but also demonstrated the conservation value of the approach.

The Dusky Cockroach in the Canadian Maritimes: establishment, persistence, and ecology

Jeff C. Clements[1,2*], David B. McCorquodale[3], Denis A. Doucet[4] and Jeffrey B. Ogden[5]
[1] Aquaculture and Coastal Ecosystems, Fisheries and Oceans Canada, Gulf Fisheries Centre, Moncton, NB, Canada
[2] Department of Health Management, Atlantic Veterinary College, University of Prince Edward Island, PEI, Canada
[3] Department of Biology, Cape Breton University, 1250 Grand Lake Road, Sydney, Nova Scotia, Canada.
[4] Fundy National Park of Canada, PO Box 1001, Alma, New Brunswick, Canada.
[5] Nova Scotia Department of Natural Resources, 24 Creighton Road, PO Box 130, Shubenacadie, Nova Scotia, Canada.

*Email: jefferycclements@gmail.com

Abstract:

In Canada, the Dusky Cockroach (*Ectobius lapponicus*), a European native, was first observed from PEI in 1991. Until recently, however, knowledge of whether or not this species has established itself in Canada has remained elusive. Using ad libitum reports of *E. lapponicus* sightings with confirmed species identification, we describe the establishment and persistence of this non-native cockroach in the Canadian Maritimes, highlighting spatial and temporal trends in *E. lapponicus*' records, periods of activity, and likely modes of introduction. Given that this non-native cockroach is now well established in the Canadian Maritimes, detailed studies of its ecology and biology are warranted.

The Acadia Beekeeping Club: A brief history of humble origins through our future plans (Student–Talk)

Andrew Collins
Acadia University, Wolfville, NS.

*Email:139752c@acadiau.ca

Abstract:

Two first year biology students, who didn't know each other, approached their professor to ask why Acadia University didn't have a beekeeping club. This started a chain of events that has led to the installation of a single hive of European Honey Bees (*Apis mellifera*) on the Acadia Campus this summer. We spoke to bee enthusiasts, entomologists, beekeepers, and sustainability coordinators all in an effort to bring students together to learn about and work with three main ideals about beekeeping: sustainability, research, and business. Our campus hive helps to promote the growth of our community garden, provide consistent samples for our Verroa mite research, and engage students and the community in fostering the health and wellbeing of bees in our province.

Know thy natural enemy: contributions of natural enemies in blueberry production

Chris Cutler*
Faculty of Agriculture, Dalhousie University, NS, Canada.

*Email: chris.cutler@dal.ca

Abstract:

We have completed several studies to identify and quantify natural enemy contributions to pest suppression in lowbush blueberry. We showed that blueberry fields harbor a rich community of Carabidae, and several prominent species readily attack insect pests of blueberry. We developed molecular markers for pests and were able to detect their DNA in field-collected beetles, confirming that predation observed in the lab also occurs in the field. Other experiments also showed that insects consume a significant number of weed seeds in blueberry fields, and that upwards of 50% of field-collected blueberry spanworm larvae are killed by parasitoids. Our results demonstrate that natural enemies make valuable contributions to pest and weed suppression in lowbush blueberry fields.

Assessing the Economic Impact and understanding the life cycle of *Brassicogethes viridescens* on its Host Plant *Brassica napus* in field and laboratory conditions (Student–Poster)

Rosemarie Dale[1,2,*], Christine Noronha[1] and Lawrence Hale[2]
[1] Agriculture and Agri-Food Canada, Charlottetown, PEI, Canada
[2] Department of Biology, University of Prince Edward Island, Charlottetown, PEI, Canada.

*Email: rdale@upei.ca

Abstract:

Pollen beetle (*Brassicogethes viridescens*, Coleoptera: Nitidulidae) is an invasive insect pest of canola (*Brassica napus*). Originally from Europe, the pollen beetle was first seen in PEI in the mid-1990s. It is also found in Quebec where it causing damage to the canola crop. This invasive species is predicted to move west across North America and concern about its impact on the multi-million-dollar Canadian canola industry is growing. We conducted a field trial in 2016 to determine the economic threshold and how the stress from the beetle feeding on the plant impacted the quality of seed and oil produced. Results showed a significant difference in pod length but no significant difference in oil quality or yield between treatments. Field trials will continue in 2017.

Inert granite dust for a more sustainable agriculture: a preliminary study

Nicoletta Faraone*, Samantha MacPherson and Kirk Hillier
Department of Biology, Acadia University, NS, Canada.

*Email: nicoletta.faraone@acadiau.ca

Abstract:

The use of dusts such as diatomaceous earth or other silica-based dusts are recognized worldwide as an effective environmentally-friendly method for managing insect pests. Their properties and their mode of action are based mostly on physical interaction with the insects. We investigated the physical and chemical properties, and potential applications of a granite dust that in preliminary trials has already shown insecticidal and repellent activity. No-choice/two-choice bioassays further were used to optimize dosage, application, and compare efficacy of this novel IPM product.

Settling in or passing through: differentiating between wood-boring beetle visitation and colonization after a dead wood pulse (Student–Talk)

Franck Gandiaga* and Gaétan Moreau
Université de Moncton, Moncton, New Brunswick, Canada.

*Email: franck.gandiaga@gmail.com

To determine the effect of resource pulses on animal communities, it is important to differentiate the species colonizing the resource from the ones moving through the system. We surveyed the response of wood-boring beetles following commercial thinning operations by (1) trapping the beetles visiting the plantations and (2) documenting the abundance of beetle emergence holes. Results showed that not all debris were a preferred resource for colonization and that most of the species trapped were not actively colonizing the debris. Thus, we stress the importance of distinguishing between colonization and visitation when studying the response of communities to pulses.

Female autodetection and plasticity of pheromone response in *Helicoverpa zea* (Student–Poster)

Ersa Gjelaj*, N. Kirk Hillier, Russell H. Easy and Rebecca Rizzato
Department of Biology, Acadia University, NS.

*Email: ersa.g@hotmail.ca

Abstract:

Female autodetection has not received necessary attention, due to the assumption that females were anosmic to sex pheromone. This study aimed to determine the function of autodetection in *Helicoverpa zea* (Leipdoptera: Noctuidae) by determining which chemicals and concentrations result in a physiological and behavioural response, the genetic basis correlating to responses, and whether olfactory habituation contributes to compound sensitivity in females. Studies revealed that pheromone pre-exposure affects peripheral sensitivity. This research emphasizes the importance of natural conditions in influencing phenotypic plasticity. This may be employed in screening techniques as well as mating disruption strategies to decrease certain behavioural functions of moth olfaction.

Analysis of multimodal attractiveness cues in the invasive beech leaf mining weevil, *Orchestes fagi* L., in Nova Scotia, Canada (Student–Poster)

Joel Goodwin[1]*, Simon P. Pawlowski[1], N. Kirk Hillier[1], Peter Silk[2], and Jon Sweeney[2]
[1] Department of Biology, Acadia University, NS, Canada
[2] Atlantic Forestry Centre, Fredericton, NB, Canada

*Email: 119748g@acadiau.ca

Abstract:

The invasive beech leaf mining weevil, *Orchestes fagi* L., is a common pest of beech trees in Europe which has recently become established in Nova Scotia, Canada. Adults overwinter and emerge in early spring to feed on and lay eggs in beech leaves. Developing larvae mine beech leaves and cause significant damage, eventually leading to defoliation and death. Larvae complete development and emerge in approximately 30 days. By using bioassays, field trapping experiments, and electroretinograms, this study aims to analyze auditory, chemical, and visual attractiveness cues in *O. fagi* to develop a multimodal monitoring system for this species.

Induced autogamy and reproductive outcomes in *Crocanthemum canadense*

Hillier, N.K.*, Evans, E., Discher, A. and Evans, R.C.
Biology, Acadia University, NS, Canada

*Email: kirk.hillier@acadiau.ca

Abstract:

Insects and plants may influence each other's development via pollination, galling, and a range of different herbivorous interactions, including florivory. Here, we report a novel form of insect-plant interaction in the form of florivory-induced autogamy. Feeding on petal bases by a moth larva on flowers before they open causes self-fertilization and subsequent seed and fruit development. This novel interaction is discussed with respect to dimorphic cleistogamy employed by this plant species, and in context of low genetic variability within the affected population.

Phenological and Monitoring Considerations for Carrot Weevil in Nova Scotia (Student–Poster)

Deney Joseph[1]*, G. Christopher Cutler[1] and Suzanne Blatt[2],
[1] Faculty of Agriculture, Dalhousie University, NS, Canada
[2] Agriculture and Agri-Food Canada, Kentville, NS, Canada

*Email: dn570534@dal.ca

Abstract:

Carrot weevil, *Listronotus oregonensis*, is a pest of carrot throughout Eastern Canada. Development of carrot weevil populations and oviposition were monitored in Nova Scotia. The degree day (DD) timing of population development and oviposition development was compared with DD values for a carrot weevil population in Quebec. Oviposition occurred earlier, and lasted slightly longer in Nova Scotia than Quebec. On carrot plants, oviposition commenced at the 4th true-leaf stage with 70% of eggs laid between the 4th-8th true-leaf stages. Carrot plants that reach the 4th true-leaf stage after 500 DD would potentially escape most carrot weevil oviposition.

Semiochemical control of *Varroa destructor*, a Primary Pest of Western Honey Bees (*Apis mellifera* L.) (Student–Poster)

Michael Light[1*], Dave Shutler[1], Chris Cutler[2] and N. Kirk Hillier[1]
Acadia University, Wolfville, Truro, NS, Canada
Faculty of Agriculture, Dalhousie University, NS, Canada

*Email: michaellight@trentu.ca

Abstract:

The Western honey bee (*Apis mellifera* L.) is one of the most agriculturally important eusocial insects. Chemical communication is critical in maintaining resilience, and may be exploited by some parasites. Varroa destructor (hereafter Varroa) is regarded as one of the biggest threats to apiculture, with annual colony mortalities over 30%. This study is exploring a wide range of odourants which alter Varroa behaviour. Our research will verify behavioural activity elicited from previously identified odourants, and investigate those that evoke minimal response to honey bees. At the same time, this study will compare methods for in-situ capture of hive odours.

Effect of color and contrast on susceptibility of highbush blueberries to infestation by *Drosophila suzukii* (Student–Talk)

Catherine M. Little[1,2,*], Chapman, T.C.[2], and N. Kirk Hillier[1]
[1] Department of Biology, Acadia University, Wolfville NS Canada
[2] Department of Biology, Memorial University of Newfoundland and Labrador, St. John's NL Canada
*Email: cate.little@acadiau.ca

Abstract:

The invasive spotted-wing drosophila (*Drosophila suzukii*) has emerged as a serious pest in soft fruits and berries across N. America, Europe, and parts of S. America. Highbush blueberry (*Vaccinium corymbosum* L.) crops have experienced significant losses. As blueberry fruits mature and ripen, fruit colour changes. Fruits of various degrees of ripeness occur on plants simultaneously. Over the months-long fruit harvesting season, foliage colour also changes. We investigated the influence of these changes in fruit and leaf colour on *D. suzukii* host-finding behaviour. Opposing changes in reflectance spectra of blueberry fruits and foliage provides increased contrast that may act as a visual contextual cue to aid in finding suitable host fruits.

FlySpotter: A novel citizen science initiative to identify native and non-crop hosts for Drosophila suzukii in the Atlantic Provinces (Student–Poster)

Catherine M. Little [1,2*], Peggy Dixon[3], Debra L Moreau[4], Chapman, T.C.[2], and N. Kirk Hillier[1]
[1] Department of Biology, Acadia University, Wolfville, NS, Canada
[2] Department of Biology, Memorial University of Newfoundland and Labrador, St. John's, NL, Canada
[3] Agriculture and Agri-Food Canada, St. John's, NL, Canada
[4] Agriculture and Agri-Food Canada, Kentville, NS, Canada
*Email: cate.little@acadiau.ca

Abstract:

To date, more than 150 species of fruits from more than 30 plant families have been identified world-wide as suitable hosts for *D. suzukii*. However, the suitability of the vast majority of plant species is largely unknown. Of particular concern to many researchers is which plants are used by *D. suzukii* in the spring and summer to initiate increasing population numbers to damaging levels prior to harvest times for commercial fruit crops. The FlySpotter project will be beta-tested in the Atlantic Provinces with emphasis on those areas of previously inaccessible for *D. suzukii* monitoring efforts. Citizen scientists will collect samples of fruits from native and ornamental plants from across Nova Scotia and Newfoundland and Labrador. Samples will be sent to Acadia University to confirm plant identification. Fruit samples will be monitored daily for emerging insects. We will develop resources to promote participant involvement, track sample collection, and communicate results on-line via a website and blog. The project will help to determine the potential spread of *D. suzukii* across Atlantic Canada. Through the active participation of citizen scientists, we hope to identify native and ornamental fruits that harbor *D. suzukii* and improve public awareness of the impacts of invasive species. Identifying reservoir plants will also improve crop growers' ability to manage risks.

Understanding the biology of Agriotes sputator, the dominant wireworm species in PEI

Liu, Suqi* and Christine Noronha
Agriculture and Agri-Food Canada, Charlottetown, PEI, Canada

*Email: suqi.liu@canada.ca

Abstract:

To better understand the biology of the principal insect pest *Agriotes sputator*, an intensive study was undertaken in 2016. The research results indicated that both larvae and adults are phytophagous, carnivorous, and cannibalistic. Adults were found to mate multiple times and a single female can produce anywhere from 30 to 114 eggs after one mating. More than 95% eggs were produced before the beginning of the July and 90% hatch rate was recorded. Considering the wide distribution and high adaptive capacity of this species, understanding the biology of this pest is crucial to finding control options, and research will continue.

Diversity and dispersal of ground beetles (Coleoptera: Carabidae) within commercial lowbush blueberry fields (Student–Talk)

Alexandre Loureiro*, Chris Cutler, Vilis Nams and Scott White
Faculty of Agriculture, Dalhousie University, NS, Canada

*Email: Alexandre.Loureiro@Dal.Ca

Abstract:

Carabidae can be important pest control agents in many agricultural systems. In laboratory experiments, I showed that *Pterostichus melanarius* and *Poecilus lucublandus* did not feed on common lowbush blueberry weed seeds. I will also discuss two field experiments of mine. In the first, which is about the diversity distribution of Carabidae in lowbush blueberry, I am developing regression models using distance from field edge to explain Carabidae diversity. In the second, I am investigating *Harpalus rufipes* dispersal by measuring how far individuals may move over time.

Damages of onion by *Delia* spp. (Student–Poster)

Maggie B. MacDonald*,
Agriculture and Agri-Food Canada, Kentville, NS,Canada

*Email: maggie.macdonald@canada.ca

Abstract:

Root maggot fly species are serious pests in onion across Canada. Onion maggot, *Delia antiqua* (Diptera: Anthomyiidae) is considered the predominant pest in onions. It is unknown whether *D. antiqua* alone is damaging onion or if it is part of a complex with *D. platura* and *D. florilega*. Our objectives are to evaluate the *Delia* species present in 5 commercial onion fields and quantify the effect each species has on onion development. Results will provide onion growers with accurate information concerning *Delia* pest species that will lead to the development of pest management strategies to reduce economic loss in commercial onion.

Effect of dung beetle species richness and chemical perturbation on multiple ecosystem functions

Paul Manning[1,2,3,*], Eleanor M. Slade[2,4], Sarah A. Beynon[2,3] and Owen T. Lewis[2]
[1] Faculty of Agriculture, Dalhousie University, Bible Hill, NS, Canada
[2] Department of Zoology, University of Oxford, Oxford, UK
[3] Dr. Beynon's Bug Farm, Lower Harglodd Farm, St David's, Pembrokeshire, UK
[4] Lancaster Environmental Centre, Lancaster University, Balrigg, UK

*Email: paul.manning@dal.ca

Abstract:

The relationship between biodiversity and ecosystem functioning is typically positive but saturating, suggesting widespread functional redundancy within ecological communities. Theory predicts this apparent redundancy can be reduced or removed when systems are perturbed, or when multifunctionality (the simultaneous delivery of multiple functions) is considered. Using semi-field experiments, we tested whether higher levels of dung beetle species richness enhanced individual functions and multifunctionality, and whether these relationships were affected when perturbed by a veterinary anthelmintic. We found higher species richness enhanced ecosystem multifunctionality, but poorly explained variation in single functions. Benefits of higher species richness for multifuctionality were lost under perturbation

Will repeated exposure to insecticides facilitate rapid adaptation to resistant host varieties in the Colorado potato beetle?

Chandra Moffat*
Agriculture and Agri-Food Canada, Fredericton, NB, Canada

*Email: chandra.moffat@canada.ca

Abstract:

The Colorado potato beetle (*Leptinotarsa decemlineata* (Say), CPB) is a devastating defoliator of potato (*Solanum tuberosum*), now infamous for its ability to rapidly evolve resistance to new classes of insecticides. A long held hypothesis is that CPB's propensity for insecticide-resistance is rooted in its co-evolutionary history with the glycoalkaloid-rich Solanum species.

New resistant cultivars (hybrids between cultivated potato and wild Solanum species, outside the host range of the CPB) show promising resistance to CPB. But will contemporary populations of CPB, which have been selected so strongly for adaptation to novel toxins, be able to rapidly evolve tolerance to hybrid cultivars?

Testing the resilience of the association between carrion decomposition stages and the insect community to increasing pre-exposure delays of carrion

Gaétan Moreau* and Jean-Philippe Michaud
Université de Moncton, Moncton, NB, Canada

*Email: gaetan.moreau@umoncton.ca

Abstract:

The current framework in forensic entomology considers decomposition as a rather continuous process in which no abrupt change in taxonomic composition corresponds to decomposition stage boundaries. However, this does not imply that the likelihood of a given species being present is not related to decomposition stages. Here, we document the association between carrion decomposition and the insect community in Alberta, Canada and examine whether increasing pre-exposure delays affect this association. Results support the notion that there are no clear groups of insects in each decompositions stage, but that some insect taxa are indeed attracted to specific stages.

The positive interrelation between the Canadian beaver and saproxylic beetles realized fecundity (Student–Talk)

Alexandre Mourant[1,2*], Nicolas Lecomte[2], Gaétan Moreau[2]
[1] Département de biologie, Université de Moncton, Moncton, New Brunswick, Canada
[2] Canada Research Chair in Polar and Boreal Ecology, Université de Moncton, Moncton, NB, Canada.

*Email: eam6536@umoncton.ca

Abstract:

Environmental modifications by ecosystem engineers could influence food web characteristics by altering resource accessibility/availability in newly created habitats. Here, we investigated the impact of the Canadian beaver on the realized fecundity of saproxylic beetles. To do so, we quantified beetle emergence holes on snags around beaver-altered or unaltered watercourses, within the Kouchibouguac National Park. Our results suggest that engineered habitat patches enhance the reproduction of many saproxylic beetle species, which modulate nutrient cycling processes in forest ecosystems. The complementary relationship between the Canadian beaver and saproxylic beetles hereafter demonstrates the potential for conservation measures encapsulating all these organisms.

Pollinators and Pollination of Haskap in Southern Nova Scotia (Student–Talk)

Sawyer Olmstead* and G. Christopher Cutler
Faculty of Agriculture, Dalhousie University, NS, Canada

*Email: sw829379@dal.ca

Abstract:

Haskap is an emerging crop in N.S that relies on cross-pollination for fruit production. Due to the early blooming period, there are concerns regarding what native pollinators are available to supplement managed honey bees, and what pollinators are best-suited for haskap in N.S. In spring of 2016 and 2017, pollinator availability, effectiveness and efficiency were measured through pan trapping, transect walking, single visit pollen deposition, flower visits per minute, and other endpoints. Our results indicate honey bees can be effective pollinators of haskap, but bumblebees appear to be the most efficient pollinators.

Transmission of strawberry decline disease viruses by *Chaetosiphon fragaefolii* (Hemiptera: Aphididae) (Student–Talk)

Matthew J. Peill[1*], Debra L. Moreau[2], Kirk Hillier[1] and Peggy L. Dixon[3]
[1] Department of Biology, Acadia University, Wolfville, NS, Canada
[2] Agriculture and Agri-Food Canada, Kentville, NS, Canada
[3] Agriculture and Agri-Food Canada, St. John's, NS, Canada

*Email: matthewpeill@acadiau.ca

Abstract:

In 2012, strawberry decline disease was identified in commercial strawberry fields in Nova Scotia. The disease was caused by strawberry mild yellow edge virus and strawberry mottle virus, which are primarily vectored by *Chaetosiphon fragaefolii*. A new virus was also identified and named strawberry polerovirus 1(SPV1). The objectives of this project are to determine the distribution of alternate host plants of the viruses (*Fragaria* spp. and *Potentilla* spp); the presence of C. *fragaefolii* and strawberry viruses in selected commercial strawberry fields; and the transmission characteristics of SPV1 by C. *fragaefolii*. This project will have implication in controlling strawberry virus spread.

Multigenerational exposure to low doses of imidacloprid preconditions *Myzus persicae* (Hemiptera: Aphididae) to withstand subsequent insecticide stress (Student–Talk)

Rachel R. Rix* and Chris Cutler
Dept of Biology, Dalhousie University, NS, Canada

*Email: Rachel.Rix@dal.ca

Abstract:

Hormetic preconditioning, whereby exposure to mild stress primes organisms to better tolerate subsequent stress, is well documented. It is unknown if hormetic insecticide exposure trans-generationally primes insects to better tolerate insecticide stress. We examined if exposure to mildly toxic and hormetic concentrations of imidacloprid reduced *Myzus persicae* Sulzer (Hemiptera: Aphididae) susceptibility to insecticides across generations. Exposure to hormetic concentrations of imidacloprid primed offspring to better survive exposure to imidacloprid, but not spirotetramat. Our findings demonstrate that hormetic insecticide exposure can prime insects to better withstand chemical stress, but this is dependent upon exposure scenario, and may be subtle over generations.

Performance of the tomato *Tuta absoluta* and their natural enemies on tomato resistant plants (Student–Poster)

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Abstract:

We evaluated in field, the performance of the tomato leafminer (*Tuta absoluta*) and its biological control agents on four resistant genotypes: two of *Solanum lycopersicum* (BGH674 and BGH1497); and two of *S. habrochaites* (BGH6902 and PI127826). The susceptible variety Santa Clara was used as a control. The plants were infested with adults and the performance of the offspring was evaluated every day until they become adults. Plant resistance against *T. absoluta* was greater in the *S. habrochaites* genotypes; biological control observed in these genotypes was lower. Therefore, the performance of tomato leafminer was similar in all tomatoes genotypes.

Efficacy of entomopathogenic nematodes as a pest management strategy against *Listronotus oregonensis* (Student–Poster)

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Abstract:

This study is testing entomopathogenic nematodes as a treatment to control carrot weevil (*Listronotus oregonensis*) in Nova Scotia. Steinernema System and Carpocapsae System nematode products (BioBest) were applied to a commercial carrot field in the Annapolis Valley, Nova Scotia. Soil samples taken at regular intervals were used to determine percent infectivity and nematode persistence in soil. Preliminary project findings show that both nematode products persist in the soil for 30+ days, although Steinernema System is showing higher percentage infectivity and survivorship, relative to Carpocapsae System. At harvest, damage to carrots by *L. oregonensis* in experimental plots will be compared between treatments.

Response of the Colorado potato beetle to mineral oil treated potato foliage (Student–Poster)

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Abstract:

Mineral oil is commonly used to control the transmission of the potato virus Y (PVY), vectored by multiple aphid species. Although the intended use of mineral oil is to prevent virus transmission, it has also been observed that potato plants (*Solanum tuberosum*) sprayed with mineral oil appear to have less colonization by the Colorado potato beetle (*Leptinotarsa decemlineata* (Say), CPB) than those that have not been sprayed. We tested the hypothesis that mineral oil may impact the Colorado potato beetle, by determining the effects of mineral oil application to potato foliage on herbivory by the CPB in an experimental setting.

Photo: Attendees at the 76th Annual General Meeting 2017 in Charlottetown.