

PROCEEDINGS OF THE 63RD ANNUAL MEETING OF THE



Entomological Society of Alberta

October 1st-3rd 2015
Jasper, Alberta

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Entomological Society of Alberta Board of Directors for 2015

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Scientific Program Chair.....Felix Sperling
Registration and Finance Committee.....Caroline Whitehouse

Entomological Society of Alberta President's Address

We must thank the staff of the Best Western for their hospitality and to our keynote speaker, Dr. Paul Galpern.

I'd like to reflect on my year as your president. I took my lead from John Acorn's speech last year on the founding of our society based around public involvement. To that end we conducted a bioblitz at the Barrier Lake Field Station in Kananaskis in July, co-sponsored by the ESA and the U of C. My first reflection of this can be summed up in three words 'Risk Management, AHHHHH!!'

In spite of that I must thank the following people: Dave Lawrie, Tom and Mark Oliver, Grishma Shrestha, Evan Nelson, Lincoln Best, Lisa Neame, Rob Longair, Haydee Peralta Vazquez, David Robinson, Bette Beswick, Cameron Swann, Diane Edwards, Ashley Tremblay, and Gloria Visser-Niven for their help with this event. We met over 160 of the general public that weekend and tried to convey our love of entomology and natural history. All I've gotten is positive feedback and many people are keen for us to get the results website up and running.

This to me is the greatest asset of the science we do – the general public can participate and make a significant difference. In dealing with the general public whether they get hooked then on insects, plants or the dreaded snails, like my son, we can get the public to connect more with our environment. I firmly believe we can make our communities better appreciate what we have around us. Our enthusiasm for nature can be infectious so please continue to infect our province with our love of biology.

It has been an honour to serve as your president. I have to single out Mike and Felix for their words of wisdom, I thank you both. Caroline and Ken we all owe you a round of applause as you are the backbone of our society [pause and lead applause]. But finally I do have a bone to pick with Mike and Felix: When I agreed to go on the executive, I was given the impression that when I abdicated my family and I would be sent to live in exile in the south of France. We even put our son in French immersion and I gathered now this won't be happening? Thank you all.

J.E. Swann
ESAB 2015 President

**Program of the 63rd Annual Meeting of the
Entomological Society of Alberta**

Venue: Jasper Inn & Suites, 98 Geikie Street, Jasper, AB

18:00-20:00 Board of Directors Meeting (room - Business Centre) 19:00-22:00
Registration and Mixer (room - Upstairs At The Inn)

Friday 2 October, 2015 (room - Upstairs At The Inn) 08:00-09:00 Registration

09:00-10:15 Conference Welcome and Keynote Address 10:15-10:45 Break (Coffee)
10:45-12:00 Contributed Papers Session 1 [5 x 15 min] 12:00-13:15 Lunch (salad and
sandwich lunch provided) 13:15-14:30 Contributed Papers Session 2 [5 x 15 min] 14:30-
15:00 Break

15:00-16:30 Contributed Papers Session 3 [6 x 15 min] 18:30-19:00 Cash Bar (Upstairs
At The Inn) 19:00-22:00 Banquet Buffet (Upstairs At The Inn)

After Dinner Speaker: Dave Smith, Biologist, Fire and Vegetation **Title:** Fire and Pest
Management In Jasper National Park

Saturday 3 October, 2015 (room - Upstairs At The Inn) 08:45-10:00 Contributed Papers
Session 4 [5 x 15 min] 10:00-11:00 Annual General Meeting (Upstairs At The Inn)

Scientific Program

Friday 2 October 2015 – Oral Presentations

09:00 Welcome and Announcements (room - Upstairs At The Inn) 09:15 Mapping the
bumble bee: a geography of pollinator peril

Galpern, Paul 10:15-10:45 Coffee

Contributed Papers Session 1. Moderator - F. Sperling (room - Upstairs At The Inn)

10:45 Measuring diversity within butterfly communities: a matter of richness and
abundance MacDonald, Zachary G. and Acorn, J.H.

11:00 The Alberta Butterfly Roundup, a citizen science project after its first year. Acorn,
John H.

11:15 Collecting on the edge of everything. Swann, John and Bette Beswick

11:30 Edges of agricultural fields and communities of prairie bees. Cosh, Jennifer L.,
Swann, J., Cartar, R. and Best, L.R.

11:45 Conflicted conservation rankings in the *Apodemia mormo* complex. Sperling,

Felix, Dupuis, J.R. and Proshek, B.

12:00-13:15 Lunch

Contributed Papers Session 2. Moderator – S. Hoover (room - Upstairs At The Inn)

13:15 Nutrition, sex and season contribute to variation in fat and glycerol levels in the long-lived moth, *Caloptilia fraxinella* Andrea, S.J., Mori, B.A. and Evenden, Maya L.

13:30 Attempts to enhance attraction and foraging behavior of *Apanteles polychrosidis* to *Caloptilia fraxinella*-infested green ash trees in Edmonton, Alberta Hoefele Danielle, Evenden, M. and St. Onge, A.

13:45 Attempts to enhance parasitism of *Caloptilia fraxinella* by *Apanteles polychrosidis* on green ash in Edmonton through manipulation of parasitoid habitat. McPike, Sarah, Evenden, M.

14:00 Seasonal occurrence of *Lygus* bugs (Hemiptera: Miridae) and their parasitoids on alfalfa fields in Southern Alberta.

Fernández, D. Catalina, Cárcamo, H., Herle, C. and Laird, R. 14:15 Of lygus and canola: where is the threshold?

Carcamo. Hector A., Otani, J., Harker, N., Reid, P., Broatch, J., Meers, S., Barkley, S., Daniels, S.

14:30-15:00 Break

Contributed Papers Session 3. Moderator – C. Whitehouse (room - Upstairs At The Inn)

15:00 High throughput DNA sequencing to assess bacteria carried by *Ixodes scapularis* ticks Sperling, Janet

15:15 SNP marker development for mountain pine beetle. Trevoy, Stephen, Janes, J., Muirhead, K., Coltman, D., Boone, C., Murray, B., Evenden, M. and Sperling, F.A.H.

15:30 Comparative genomics and phylogenetics of candidate genes involved in overwintering and host colonization physiology of *Dendroctonus ponderosae*. Batista, Phil D., Huber, D.P.W. and Sperling, F.A.H.

15:45 When a tree talks in the forest, do mountain pine beetles hear? Fenton, M., Yack, J., Reid, Mary L.

16:00 Developing improved survey tools for early detection of invasive wood-boring insects: effect of lure type, trap height, and length of funnel traps. Gomez, C., Flaherty, L., Pohl, G., Sweeney, J. and Silk, P.

16:15 Mark-release-recapture to test the attractive radius of semiochemical-baited traps to

the pea leaf weevil (*Sitona lineatus*). Sjolie, Dylan M., Reddy, G.V.P., Carcamo, H.A. and Evenden, M.L.

Saturday October 3, 2015 - Oral Presentations Contributed Papers Session 4.

Moderator - TBA (room - Upstairs At The Inn)

08:45 Ecomorphology of bumble bee wings. Manning, C.G. and Cartar, Ralph V.

09:00 Pollination, insect visitation, and nectar availability in commercial canola (*Brassica napus* L.). Robinson, Samuel V.J., Cartar, R.V., Hoover, S.E.R. and Pernal, S.F.

09:15 Bee pollination effectiveness in hybrid seed canola measured with an interview bouquet. Waytes, R., Cartar, R. and Hoover, S.

09:30 How well does weather explain colony initiation and development in bumble bees? Kutby, Rola and Cartar, R.

09:45 Maternal and immediate host effects on the performance of a leaf-galling wasp. Holmes, G., Laird, R., DeClerck-Floate, R.

Presentations and Abstracts
(Alphabetically by presenting author)
All Presentations are Oral (No Posters)

1. The Alberta Butterfly Roundup, a citizen science project after its first year.

Acorn, John H.¹, Anweiler, G.G.², Macaulay, D.³, and Pohl, G.R.⁴

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³ 141 Athabasca Drive, Devon, AB; ⁴ 62, 52152 RR225, Sherwood Park, AB

The Alberta Butterfly Roundup is a citizen science project, coordinated through the Alberta Lepidopterists' Guild. Its objective is to confirm the continued presence in Alberta of all 173 species of butterflies known from provincial records. After its first season, 120 species have been confirmed, and an additional species was added to the provincial list (*Speyeria idalia*, the Regal Fritillary). As well, a number of rarely encountered species were documented, as well as a further range extension for *Euphyes vestris*, the Dun Skipper. All records required photographic evidence, and were submitted to one or more of the following: e-Butterfly.org, the ALG Facebook page, or the Albertaleps, Albertabugs, or ENCMembers listserves. All of these sources generated records, as did personal emails to the Roundup coordinators. Next season, targeted searches will be promoted for the remaining 53 species, and the project will hopefully continue for a number of years, with the goal of distinguishing species with small, local populations, species that are extirpated, and species that are "accidental" in Alberta, and unlikely to be recorded with any regularity.

2. Comparative genomics and phylogenetics of candidate genes involved in overwintering and host colonization physiology of *Dendroctonus ponderosae*.

Batista, Phil D.^{1,2}, Huber D.P.W.² and Sperling F.A.H.¹

¹ Dept. Biological Sciences, University of Alberta; pbatista@ualberta.ca

² Ecosystem Science and Management Program, University of Northern British Columbia

In its most recent outbreak, the mountain pine beetle (MPB), *Dendroctonus ponderosae*, has recently experience a north and eastward range expansion in Canada. This range expansion has resulted in MPB overcoming previously climatic conditions and establishing on a novel host, jack pine, posing a significant threat to the boreal forest. Described in various population genetic analyses, this range expansion has resulted in a north-south genetic structuring among Canadian MPB populations. In order to understand the specific genetic mechanisms associated with this structuring a comparative genomic approach was used on specific candidate genes previously identified in host-colonization and overwintering studies of MPB. Using genome sequences from eight populations of MPB, this study uses single nucleotide polymorphisms (SNPs) to identify genetic differentiation at specific loci and identify novel variants of these candidate genes for future functional characterization.

3. Of lygus and canola: where is the threshold?

Carcamo, Hector A.¹, Otani, J.², Harker, N.³, Reid, P.³, Broatch, J.⁴, Meers, S.⁵, Barkley, S.⁵, Daniels, S.¹

¹ Agriculture & Agri-Food Canada, Lethbridge Research Centre; Hector.Carcamo@AGR.GC.CA
² Beaverlodge Research Farm; ³ Lacombe Research Centre; ⁴ Alberta Agriculture and Forestry, Lacombe; ⁵ Alberta Agriculture and Forestry, Brooks.

Lygus bugs are polyphagous endemic pests of multiple crops across the temperate world. In the prairies they are significant pests of seed alfalfa, canola, flax, and faba beans, among others. Economic thresholds for lygus in canola were set at 1-2 per sweep during the early and mid-pod stages based on conventional cultivars that have been replaced by herbicide tolerant hybrids. Changes in lygus species composition, geographic variation in climate and lygus life histories, and novel canola cultivars make it necessary to update the economic threshold. Ongoing studies to address this include manipulations of lygus densities using caged canola plants, and insecticide spray trials on plots and commercial canola farms. This presentation will provide a status update of these studies with some preliminary conclusions.

4. Ecomorphology of bumble bee wings.

Manning, C.G.^{1,2} and Cartar, Ralph V.¹

¹ Dept. Biological Sciences, University of Calgary; cartar@ucalgary.ca

² Institute for the Oceans and Fisheries, University of British Columbia

In vertebrates, wing shape is well understood as reflecting wing use. In particular, there is a tradeoff between efficiency of flight and maneuverability, reflected in a wing's aspect ratio (wing span / wing chord), with owners of high aspect ratio wings being efficient flyers, but not particularly maneuverable. There is also a tradeoff between maneuverability and cost of transport (COT), reflected in wing loading (wing area/body mass), such that owners of wings with high wing loading enjoy lower costs of transporting loads, but at the price, again, of not being particularly maneuverable. Bumble bees rely on their wings to bring pollen and nectar resources from flowers back to their colony, and should also be sensitive to energy costs as well as maneuverability when flying in the complex, obstruction-filled environments they experience during flower visitation. In this study, we examine wing shape of bumble bee workers of 8 species collected in rough fescue prairie in south-western AB. We find support for the maneuverability-COT hypothesis (wing loading), but weak support for the maneuverability-efficiency hypothesis (aspect ratio). It appears that in bumble bee species whose wings seem superficially similar, evolution has adjusted wing shape to reflect wing use.

5. Edges of agricultural fields and communities of prairie bees.

Cosh, Jennifer L., Swann, J., Cartar, R. and Best, L.R.

Dept. Biological Sciences, University of Calgary; coshy_5@hotmail.com

Edge effects can result from a diversity of mechanisms. In the interface between native grassland and agriculture fields in south-central AB, we carried out a study to evaluate some of the mechanisms that produce distance-based patterns. Over an 11 week period in the summer of 2014, we sampled the community of bee pollinators in pitfall traps on native prairie at different distances from crop fields. Roughly 2,000 bees were collected and identified. We found that species richness was lower close to fields (1 m and 20 m) than further from fields (50 m and 100 m). This diminution of diversity near agricultural fields implies negative spillover effects from fields, or higher levels of predators/parasitoids at the edge, or higher-quality habitat away from habitat edges. Our study suggests an "edge effect" of prairie fields of a scale somewhere between

20 and 50 m, which exceeds the typical width of field edges in Alberta's agroecosystems. Further study to define the specific causal mechanism is needed, though

we propose possible

We discuss the implications for conservation of native bees in Alberta agroecosystems.

6. Nutrition, sex and season contribute to variation in fat and glycerol levels in the long-lived moth, *Caloptilia fraxinella*.

Andrea, S.J., Mori, B.A. and Evenden, Maya L.

Dept. Biological Sciences, University of Alberta; mevenden@ualberta.ca

The ash leaf cone roller, *Caloptilia fraxinella* (Ely) (Lepidoptera: Gracillariidae), is an invasive leaf-mining moth pest of horticultural ash, *Fraxinus* spp., in the Canadian Prairie Provinces. *Caloptilia fraxinella* over winter as adults in reproductive diapause and mating occurs after overwintering in the spring. This study tests the effect of a carbohydrate food source on fat and glycerol reserves throughout the long adult life stage of this moth. Insects collected as pupae were given access to either water or sugar water upon adult eclosion. Moths sampled before (summer and fall) and after overwintering in the spring were weighed and analyzed for either glycerol or lipid content. Moth sex, food regime, and season of collection affected moth weight and glycerol concentration. Although female moths were heavier than males, males had a higher glycerol concentration than females. Sugar-fed moths were heavier and had a higher glycerol concentration than water-fed moths. Moths collected in the spring after overwintering were lighter and had lower glycerol content than moths collected before winter. Moth body lipid content was influenced by feeding regime and season, with sugar-fed moths having more fat than water-fed moths; however, this difference was smaller in the summer than the fall or spring.

7. Seasonal occurrence of *Lygus* bugs (Hemiptera: Miridae) and their parasitoids on alfalfa fields in Southern Alberta.

Fernández, D. Catalina^{1, 3}, Cárcamo, H.¹, Herle, C.² and Laird, R.³

¹ Agriculture & Agri-Food Canada, Lethbridge Research Centre; catalina.fernandez@agr.gc.ca

² Retired, Lethbridge, Alberta; ³ Dept. Biological Sciences, University of Lethbridge.

Native plant bugs from the genus *Lygus* feed on a wide number of plant species and a few are economically important pests of crops such as seed alfalfa and canola. To mitigate their effect on alfalfa crops, management methods rely mainly on insecticides and few alternative methods have been developed. Biological control with native and exotic *Peristenus* parasitoid wasps (Hymenoptera: Braconidae: Euphorinae) that attack lygus nymphs may provide one such alternative. Given their importance as potential biological control agents, a long term data set including recent data from the ongoing year was collected in order to obtain information about their seasonality, species composition, and synchronism with the pest. The dominant *Lygus* species were *L. elisus*, *L. keltoni* and *L. borealis*. Parasitism rate was calculated using rearing and dissecting methods. Three native *Peristenus* species were recognized, and each one is univoltine attacking a different generation of lygus bugs. Predicting emergence and peak activity of adult parasitoids will help growers to time insecticide applications to avoid harming this beneficial wasp.

8. Keynote. Mapping the bumble bee: a geography of pollinator peril.

Galpern, Paul

Faculty of Environmental Design, University of Calgary; paul.galpern@ucalgary.ca

The hard work of a century of entomologists has left us with a fabulous historical record for bumble bees. In my lab we are engaged in a project to use nearly 1,000,000 of these bumble bee observations to investigate risks for pollinators. A growing body of evidence points to the harmful effects of neonicotinoid insecticides for wild bees, but the jury remains out on whether these field-level findings are detectable across larger regions and continents where they could have profound effects on ecosystems. To address this question, we made some maps and had a look. Anthropogenic warming is an identified threat for the distribution of many species, but little is known about its impact on pollinators. We also mapped where bumble bee species were found in North America and Europe before and after the onset of rapid climate change. In this talk I report on the emerging geography of pollinator peril, and conclude by discussing two new projects that we have started in Alberta which aim to dig deeper into the mechanisms behind the patterns we report.

9. Developing improved survey tools for early detection of invasive wood-boring insects: effect of lure type, trap height, and length of funnel traps.

Gomez, C.¹, Flaherty, L.¹, Pohl, G.², Sweeney, J.³ and Silk, P.³

¹ MacEwan University, Edmonton; gomezc3@mymacewan.ca

² Natural Resources Canada – Northern Forestry Centre, Edmonton;

³ Natural Resources Canada – Atlantic Forestry Centre, Fredericton.

The introduction and spread of exotic insects continues to threaten North American forests. Exotic wood-boring beetles are among the most dangerous; their cryptic life cycle causes difficulty to detect and intercept in international trade. The purpose of this study is to improve the tools used for early detection of exotic wood-boring beetles. Early detection will reduce the cost of elimination after successful establishment. We conducted an experiment in Edmonton in 2014 that evaluated the effect of lure type and trap height. In 2015, we evaluated the effect of trap height and the length of the funnel trap. Both experiments used Lindgren funnel traps and varied the heights of the traps by either placing them at the understory, or the tree canopy. In 2014, Lindgren 12-funnel traps were baited with either the standard ethanol used in many biosurveillance programs or an enhanced blend of ethanol + six host tree volatiles. In 2015, Lindgren funnel trap lengths were varied to either 12 or 4-funnels and baited with ethanol + six volatiles. Results suggest the efficacy of detecting invasive species could be improved by using a combination of trap height, length, and lure type as some species are attracted to different trap combinations.

10. Attempts to enhance attraction and foraging behavior of *Apanteles polychrosidis* to *Caloptilia fraxinella*-infested green ash trees in Edmonton, Alberta

Hoefele, Danielle, Evenden, M. and St. Onge, A.

Dept. Biological Sciences, University of Alberta; dhoefele@ualberta.ca

Caloptilia fraxinella, or the ash-leaf cone-roller, is an invasive, aesthetic nuisance pest on local horticultural ash (*Fraxinus*, L.) in Edmonton, Alberta. *Apanteles polychrosidis* is a native parasitic wasp in Edmonton that has adopted the ash-leaf cone roller as a host in its invasive range. The purpose of this research was to determine if there is a way to increase parasitism of the ash-leaf cone-roller by *A. polychrosidis*, and minimize the damage this pest does to ash trees. We tested a synthetic herbivore-induced volatile, methyl salicylate, which is known to be detected by

A. polychrosidis, as an attractant to enhance parasitoid orientation to infested green ash trees. A source of food in the form of sugar water was also added to increase wasp foraging and parasitism of ash-leaf cone-roller. At experimental sites in Edmonton, the density of *A. polychrosidis* and other parasitoids was enumerated using sticky traps positioned in green ash trees. Parasitism rates were also measured at these same sites. The dose of methyl salicylate tested resulted in fewer first generation *A. polychrosidis* wasps orienting to ash trees. Addition of a sugar food source had no effect on wasp density throughout the season. Neither methyl salicylate nor sugar had a significant effect on percent parasitism of the ash-leaf cone-roller.

11. Maternal and immediate host effects on the performance of a leaf-galling wasp.

Holmes, G.^{1, 2}, Laird, R.¹, DeClerck-Floate, R.²

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²Lethbridge Research Centre, Agriculture and Agri-Food Canada, 5403 1st Avenue South

Maternal effects caused by environmental conditions of the parents may affect insect offspring performance when introduced to a novel host. A potential biological control agent for hawkweeds, the leaf-galling wasp *Aulacidea pilosellae* Kieffer. (Hymenoptera: Cynipidae), was observed in a European study to gall the most abundant host in mixed *Pilosella* spp patches. We aimed to identify the wasp's baseline performance on two common hosts, and to determine if maternal effects could influence insect performance on alternate hosts. Individual mated female wasps were introduced to either *Pilosella caespitosa* Dumort. or *P. glomerata* Froel, two common hosts of *A. pilosellae* (i.e. maternal host), and their offspring were then reciprocally introduced to either host (i.e. immediate host), resulting in four maternal-immediate host treatments. We observed increased gall number per female on *P. caespitosa* in the maternal and immediate generation, and increased gall volumes and final instar larvae weights in the immediate generation in *P. caespitosa*. Maternal effects were present and increased insect performance only when *P. caespitosa* was the maternal host. We conclude from our experiment that *P. caespitosa* is a physiologically superior host than *P. glomerata*, which could have implications in its application as a biocontrol agent against hawkweeds.

12. How well does weather explain colony initiation and development in bumble bees?

Kutby, Rola, and Ralph Cartar, R.

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A host of biotic and abiotic influences potentially shape the establishment and success of bumble bees. In this study, we examine the impact of weather (temperature, precipitation) on bumble bees using nest boxes set out in semi-natural forested landscapes of the eastern slopes of SW AB. At each of 13 study sites across Alberta's SW slopes, between Crowsnest Pass and the Ghost Watershed, we set out 12 tree-installed and 12 ground-installed domiciles in the spring, for occupancy by nest-searching bumble bee queens. We relate the occupancy of these boxes, and development colonies that were established in these boxes to weather measured at stations within 50 km of the site. This study will offer insights into the importance of abiotic influences on native pollinators, and will be a useful contrast with explanations of these same patterns based on biotic influences (particularly food availability, competitors, and parasitoids).

13. Measuring diversity within butterfly communities: a matter of richness and abundance.

MacDonald, Zachary G., and Acorn, J.H.
Dept. of Renewable Resources, University of Alberta; zmacdona@ualberta.ca

Species richness, abundance, and evenness represent the three most commonly measured components of diversity in conservation biology. Composite diversity indices such as the Simpson's and the Shannon-Wiener index account for both species richness and evenness. These measures are often applied to particular taxonomic groups, such as butterflies, that may serve as indicators of diversity at the ecosystem level. We compared the components of diversity using ten years of survey data on abundance and richness of butterflies in the North Saskatchewan River Valley in Edmonton, Alberta, and suggest that abundance and richness interact within the composite indices in a manner that renders these indices unsuitable for assessing conservation values. Species richness and abundance of individuals are positively correlated within butterfly communities, while richness and abundance are negatively correlated with evenness. Recent criticisms of using richness as a surrogate for diversity are based on richness' failure to account for species evenness. We argue that as butterfly abundances increase, and communities become more speciose, they tend towards decreasing evenness, rendering evenness, and composite indices that account for evenness, questionable as a measure of butterfly diversity for conservation purposes.

14. Attempts to enhance parasitism of *Caloptilia fraxinella* by *Apanteles polychrosidis* on green ash in Edmonton through manipulation of parasitoid habitat.

McPike, Sarah, Evenden, M.

Dept. Biological Sciences, University of Alberta, Edmonton; mcpike@ualberta.ca

An onslaught of pests is increasing the challenges for keeping the popular boulevard trees, *Fraxinella* sp., thriving in urban communities in Alberta. One of these is an invasive pest, the ash-leaf cone roller, *Caloptilia fraxinella* (Lepidoptera: Gracillariidae). Previous work in our laboratory illustrated that a native parasitoid, *Apanteles polychrosidis* (Hymenoptera: Braconidae) responds to ash-produced volatiles to orient to *C. fraxinella* on ash trees. The current research is focused on enhancing attraction to and retention of *A. polychrosidis* in ash- infested by *C. fraxinella*. Here we test the effect of two plant volatiles and a carbohydrate food source on attraction of *A. polychrosidis* and parasitism of *C. fraxinella* in treated trees. Counts and identification of attracted wasps are on-going but rates of parasitism and the effect of carbohydrate nutrition on wasp longevity will be discussed. A better understanding of how to best support this parasitoid wasps could enhance urban integrated pest management of this system.

15. When a tree talks in the forest, do mountain pine beetles hear?

Fenton, M.¹, Yack, J.², Reid, Mary L.^{1,3}

¹ Dept. Biological Sciences, University of Calgary; mreid@ucalgary.ca

² Dept. Biology, Carleton University; ³ Environmental Science Program, University of Calgary.

For several decades, there has been speculation that insect herbivores could detect the acoustic emissions of xylem cavitation of drought-stressed plants. We tested this idea in mountain pine beetles (MPB), *Dendroctonus ponderosae*, and their host trees lodgepole pine, *Pinus contorta* var. *latifolia*. We first established the frequency spectrum of the sounds produced by MPB themselves in mating and stress contexts, and determined that pine produce acoustic emissions in that spectrum. Pine cavitation increased over the day and summer, consistent with water stress. However, in a lab choice experiment, we did not detect a preference of MPB for logs producing

acoustic emissions. Thus, while it is possible for MPB to obtain information about tree water stress from acoustic emissions, there is not yet evidence that they do so.

16. Pollination, insect visitation, and nectar availability in commercial canola (*Brassica napus* L.).

Robinson, Samuel V.J.¹, Cartar, R.V.¹, Hoover, S.E.R.² and Pernal, S.F.³

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² Alberta Agriculture and Forestry, Lethbridge, AB;

³ Agriculture and Agri-Food Canada, Beaverlodge, AB.

Commercial canola (*Brassica napus*) is an important part of the agricultural landscape of Alberta. In addition to forming a valuable cash crop, the nectar and pollen of *B. napus* flowers constitute a valuable resource to pollinating insects. It is frequently visited by wild and managed insects, such as honey bees, leafcutter bees, and hover flies, making it both an economically and ecologically important plant. However, it is unclear how *B. napus* crops interact with sources of pollinators, such as wild insect habitat or honeybee apiaries. Insect visitation decreases with depth into *B. napus* fields, which may contribute to higher pollination rates at the edge of crops. Composition of insect visitors may change with depth into the field, so regional differences in visiting insect communities may cause differing effects on evenness of pollination. I will present some of our preliminary investigation into these topics, specifically addressing the relationship between pollen deposition, insect visitation, and seed yield in *B. napus* at varying field depths.

17. Mark-release-recapture to test the attractive radius of semiochemical-baited traps to the pea leaf weevil (*Sitona lineatus*).

Sjolie, Dylan M.¹, Reddy, G.V.P.², Carcamo, H.A.³ and Evenden, M.L.¹

¹ Dept. Biological Sciences, University of Alberta, Edmonton, AB; sjolie1@ualberta.ca

² Western Triangle Agriculture Research Station, Montana State University, Conrad, MT

³ Agriculture and Agri-Food Canada, Lethbridge Research Centre, Lethbridge, AB

Recent research has illustrated that pitfall traps baited with semiochemical lures can attract male and female pea leaf weevils, *Sitona lineatus* (Coleoptera: Curculionidae) in pea fields in southern Alberta. Traps are attractive to reproductive weevils in the spring and non-reproductive weevils preparing for overwintering in the fall. The objective of the current study was to determine the range of attraction of different semiochemical lures to the pea leaf weevil using a mark-release-recapture protocol. Adult pea leaf weevils were collected by hand in alfalfa fields around Lethbridge, Alberta in mid-August. Weevils were marked on their pronotum using different colours of nail polish. Three harvested pea fields were selected as release sites; each field site had a trap line with 8 pitfall traps spaced 75m apart and baited with two traps of each treatment (aggregation pheromone in an Eppendorf tube, aggregation pheromone in rubber septa, aggregation pheromone plus bean volatile, unbaited controls). Two hundred and fifty marked individuals were released at each of 7 distances (-100m, 10m, 25m, 50m, 100m, 500m, 1000m) downwind of the trap line. Traps were checked after 24 hours and then at weekly intervals for four weeks thereafter. Semiochemical-baited traps attracted pea leaf weevils but no marked individuals have been recovered as of yet. Results comparing the attractiveness of the different lures tested will be presented.

18. Conflicted conservation rankings in the *Apodemia mormo* complex.

Sperling, Felix A. H., Julian Dupuis, J.R., Proshek, B.

Dept. Biological Sciences, University of Alberta; felix.sperling@ualberta.ca

Metalmark butterflies of the *Apodemia mormo* species complex occur as a series of isolated and variable colonies in dryland areas across western North America. In Canada, separate populations have conservation listings as endangered in British Columbia and threatened in Saskatchewan. In California, Lange's Metalmark, *A. m. langei*, was one of the first butterfly taxa to receive an endangered species listing. We have used mitochondrial DNA, microsatellites and genotyping-by-sequencing (GBS) to evaluate the qualifications of these populations as Evolutionarily Significant Units. We found substantial genetic divergence within the complex, especially across the Continental Divide, but only weak correspondence between genetic clusters and prior taxonomic divisions based on wing colour and pattern. Genetic support for prior conservation rankings of these populations was ambiguous, underscoring the need for clear and consistent criteria for conservation prioritization that openly take into account the human and social component of such delimitations.

19. High throughput DNA sequencing to assess bacteria carried by *Ixodes scapularis* ticks.

Sperling, Janet L.H.

Dept. Biological Sciences, University of Alberta; jhaley@ualberta.ca

Black legged ticks (*Ixodes scapularis*) vector a variety of bacterial diseases. In order to assess the potential for disease transmission of these ticks, I used Ion Torrent technology to survey bacterial 16S rRNA. Ticks were sampled from Atlantic Canada, including a region where Lyme borreliosis is endemic. I assessed bacterial 16S diversity using three approaches to generate sequence datasets for diagnostic PCR fragments: 1. two 16s regions (V1-2 and V5-6) amplified using custom primers; 2. the V4 region, sequenced by a US commercial lab; and 3. a commercial primer kit that amplified 7 of 9 variable 16S regions. The three resulting sequence datasets were compared using four different bioinformatics analysis pipelines. My results showed that no one variable region of 16S rRNA gene fully described the bacterial microbiome of the sampled ticks. Most bacteria were in phyla Proteobacteria and Spirochaetes, with identification to genus in many cases, including *Borrelia*. Bacterial diversity assessment was consistent when sequenced in two separate facilities and when data was analyzed with all four bioinformatics pipelines.

20. Collecting on the edge of everything.

Swann, John¹ and Beswick, B.²

¹ Dept. of Biological Sciences, University of Calgary; jeswann@ucalgary.ca

² 63 Lott Creek Hollow, Calgary Alberta

Beauvais Lake Provincial Park is on the edge of the foothills, the Rocky Mountains and the continental divide. It is also an interface between native and agricultural vegetation. For the past 3 years the second author has been actively hand collecting invertebrates to develop a faunal list for the park. This year we've added three continuously run Malaise traps for over 4 months in addition to hand collecting. We are currently processing the material and our preliminary results will be discussed.

21. SNP marker development for mountain pine beetle.

Trevoy, Stephen¹, Janes, J.^{1,2}, Muirhead, K.¹, Coltman, D.¹, Boone, C.³, Murray, B.⁴, Evenden, M.¹ and Sperling, F.A.H.¹

¹ Dept. Biological Sciences, University of Alberta; strevoy@gmail.com

² Environment and Parks, Government of Alberta, Edmonton, Alberta;

³ Université Libre de Bruxelles, Brussels, Belgium ⁴ University of Northern British Columbia, Prince George, BC, Canada

Recent improvements in the production and analysis of genetic data have given rise to many new techniques in genetics. Here we describe the development of a genome-wide library of SNP markers for the mountain pine beetle (*Dendroctonus ponderosae* Hopkins), an important pest of western North American forests, through the use of Genotyping by Sequencing (GBS) with complexity reduction by restriction enzymes. These markers offer many possible uses for studies in population genetics, functional genomics and linkage analysis at a fraction of the effort and cost of previous methods. In order to determine the utility of this library for answering biological questions, we are using the markers in a pilot survey of the population structure of the invasive range of MPB. Work is also currently underway for the creation of a linkage map for the *D. ponderosae* genome as a resource for further functional genomic studies. This has necessitated multi-generational lab rearing of *D. ponderosae*, which has presented unexpected insights that challenge conventional wisdom on their life history.

22. Bee pollination effectiveness in hybrid seed canola measured with an interview bouquet.

Waytes, R.¹, Cartar, R.¹, and Hoover, S.²

¹ Dept. Biological Sciences, University of Calgary; waytes@gmail.com

² Lethbridge Research Centre, 5403 1 Ave S, Lethbridge, AB

Hybrid seed canola fields in Alberta, composed of hermaphroditic “male” and male-sterile “female” morphs, rely on insect pollinators for the facilitation of cross-pollination. Managed honey bees and alfalfa leafcutter bees are often used for this purpose, although wild pollinators may also contribute (Zink 2013). These pollinators may differ in size, behaviour, and the way in which they carry pollen, which can affect the efficiency of pollen deposition. To test differences in pollination efficiencies, we used an interview bouquet technique (Thomson 1981) to present virgin inflorescences to different pollinator taxa. Visited stigmas were collected to determine pollinator efficiency through pollen deposition counts. Pollinator taxa, the floral morph on which the pollinator was originally foraging, and time spent on the flower were all considered as possible predictors of pollination efficiency. We also obtained videos of pollinator behaviour to compare between pollinator responses to interview bouquet flowers (avoidance, rejection, or acceptance). Response to flowers was compared amongst pollinators to see if pollinator taxa responded differently to the interview bouquet method. Results and implications will be presented.

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**Minutes of the Entomological Society of Alberta
Executive/Board of Directors Fall Meeting
Jasper October 1 2015**

Meeting called to order at 6:03pm

Chair: John Swann (President)

In Attendance: Mike Dolinski (Past-President), John Swann (President), Shelley Hoover (Vice-President), Ken Fry (Secretary), Caroline Whitehouse (Treasurer), Mark Oliver (Central Director), Alec McClay (Webmaster), Rob Longair (Regional Director to ESC)

Regrets: Amanda St. Onge (Proceedings Editor), Kevin Judge (Northern Director)

1. Agenda approval

MOVED by Rob, Seconded by Alec that the agenda, as amended be approved; Carried

2. Approval of Fall 2014 Executive Meeting Minutes

MOVED by Caroline, Seconded by Mark that the minutes be approved; Carried

3. Report from the Treasurer (Caroline Whitehouse)

- See attached report
- take note that there will \$9K to support future initiatives
- term deposits renewed for 5 years

MOVED by Caroline, Seconded by John that the Treasurer's report be received with subsequent revision; Carried

4. Report from Secretary (Ken Fry)

- See attached report
- is it possible to get list of students from faculty
- wait for students or other applicants to ask to be admitted to FaceBook
- who records deaths of entomologists?
 - regional reports to include deaths and Secretary to notify general membership

MOVED by Ken, Seconded by John that the Secretary's report be accepted as amended; Carried

5. Regional Reports

-
- a. Report from Northern Director (Kevin Judge)
 - Received after the meeting

- See attached report
- b. Report from Central Director (Mark Oliver)
- See attached report
- c. Report from Southern Director (Jeremy Hummel)
- None received
- d. Regional Director to the ESC (Rob Longair)
- See attached report
 - switched over to Strauss Associates running the administration of the Society
 - National Society no longer owns any property
 - required to have AGM within 6 months of end of financial year but received a waiver for this change over of end of financial year
 - must prepare for insurance coverage when local society hosts national meeting (formerly only national society had taken out insurance)
 - analogue documents sent to a storage locker
 - reminded members that there is a backlog of books for review
 - Public Encouragement program has funds that local societies should apply
 - symposia at national meeting includes Canada and its insect fauna and one to commemorate Lloyd Dosedall on agricultural ecology
 - should have been charging GST and PQ sales tax on meeting registration (now rationalised as the registration includes those taxes)
 - Caroline to forward Alec our status as a registered organisation
 - ICE, ESC, ESA JAM in 2016
 - student travel awards available (14 at each of \$750)
 - ESC-sponsored symposia welcomed
 - No Canada Jam in 2016
 - 2017 is Manitoba
 - 2018 ESA ESC in Vancouver
 - Gold Medal awarded to John Sweeney
 - C Gordon Hewitt Cory Scheffield
 - Criddle - Louis Handfield - PQ butterflies and moths
 - Lloyd Dosedall Memorial Scholarship

MOVED by Mark, seconded by Rob, to accept the reports as submitted; Carried

6. Report from Webmaster (Alec McClay)

- See attached report
- still need to redesign the site
- Honorary member files updated
- Number of hits is recorded
- John wants to link Bioblitz to ESA site

MOVED by Alec, Seconded by John to accept the Webmaster's report; Carried

7. a. Fall Meeting Plans Update

- After dinner speaker issue; instructed to not speak on certain topics
- need to remember to note that many of the registrations will be student registrations which are much lower
- when organising a meeting, it is better to have it where the local organising committee resides so they can best vet the site
- should get out and hustle for funds from small companies
- get government to fund a student award
 - would need to write a grant
- organisation of JAM will change in future with Strauss handling all of the business side of it and the local society will organise the scientific program
- need to have at least \$1,750 each year for awards therefore we need to have a meeting that is more than break even

b. Student Awards

- Undergrad award: unanimous agreement
- Student travel grants
 - awards committee (Mike and Rob) will make decisions and announce at the banquet
 - The travel grant is \$300 in total and divided up if multiple applications
 - according to the website travel grants are a maximum of \$300 and up to 5 grants are awarded
 - discuss what the Society can afford and then award accordingly (up to a maximum of \$1500 with no single award more than \$300)
 - Undergraduate award is \$500
 - Student talk award in 2014 was \$500, split 2 ways (donation from Mike), this was a one time award

8. Old Business

a. Honorary members

- by-laws state 5% of members in good standing (paid up over the last 18 months)
- membership drive will not provide enough members to recognize senior entomologists
- honorary members receive a reduced registration so there is a cost but it is a small cost
- the honor is what is important
- need to notify membership at least 21 days prior to a vote (perhaps at next AGM)
- currently have 3 right now
- John to prepare a brief on honorary membership for the next AGM

b. Digital Archives

- password provided to executive
- cow hide with founding signatures still in Lethbridge at AAFC site
 - i. Strickland museum could host it but a formal request would have to be made

9. New Business

- a. Resolutions
 - none brought forward
- b. 2016 meeting
 - South is supposed to host (due to out of sequence Olds in 2013)
 - earliest JAM would be 2020
 - look to receive a bid from a group, could be either central or south
- c. Membership Drive
 - have local organising committee push for local members (city employees, business employees, provincial employees)
- d. Minimum Meeting Registration Fee
 - add at least an extra \$20 to the fee to pad the budget to approach break even or even show a profit
 - chase sponsorships more aggressively

MOVED by Caroline, that the Local Organising Committee is encouraged to achieve a profit from the Annual Meeting, seconded by Shelley: Carried

- e. Dosedall Scholarship
 - Teresa, Lloyd's widow, has initiated the scholarship out of his estate
 - one scholarship or two per year depending on qualifications
 - in a grad program, M.Sc or PhD., anywhere, in aquatic ecology or agricultural ecology

MOVED by John, that the Executive recommend to the membership that the Society make a one time donation of \$1000 to the Lloyd Dosedall Scholarship in recognition of a prominent former member and President, seconded by Ken: Carried

Adjournment

MOVED by Mike, Adjourn the meeting at 8:16pm

**DRAFT Minutes of the Entomological Society of Alberta
63rd Annual General Meeting**

Jasper, Alberta October 03, 2015

Minutes prepared by Ken Fry, ESA Secretary

Attendees:

Martine Baicaen	Paul Galpern	Tom Oliver
Philip Batista	Gregory Holmes	Jennifer Retzlaf
Bette Beswick	Shelley Hoover	Janet Sperling
Héctor Cárcamo	Rola Kutby	Felix Sperling
Ralph Cartar	John Acorn	Rosanna Punko
Diana Catalina Fernández	Sarah McPike	Stephen Trevoy
Samuel Robinson	Christina Gomez	John Swann
Mike Dolinski	Megan Evans	Dylan Sjolie
Maya Evenden	Alec McClay	Riley Waytes
Ken Fry	Rob Longair	Caroline Whitehouse
Zachary MacDonald	Mark Oliver	Tonya Mousseau
Mary Reid		

Meeting called to order at 10:17AM by John Swann (President)

1. 1. Approval of agenda

MOVED to accept, Tonya Mousseau; seconded, Rob Longair: Carried

2. 2. Approval of minutes from the 2014 AGM

MOVED to accept, Mike Dolinski; seconded, John Swann; Carried

3. 3. Webmaster's Report (Alec McClay)

- see attached report

- solicited a replacement, no takers at this meeting

MOVED to accept, Alec McClay; seconded, Hector Carcamo; Carried

4. 4. Secretary's Report (Ken Fry)
- see attached report

MOVED to accept, Ken Fry; seconded, Mary Reid; Carried

5. 5. Report from Regional Director to Entomological Society of Canada (Rob Longair)
- Oral report provided
 - See attached report provided after the meeting
 - Strauss Associates providing administrative services for the society
 - Financial year ends on 30th June now instead of December, transition not requiring an additional AGM
 - House property sold, hard copy journals moved to a storage space
 - Education fund needs to be accessed
 - Meetings coming up:
 - Montreal 2015
 - ICE/ESA/ESC Orlando 2016
 - will have ESC heritage lecture and business meetings
 - will have ESC student travel awards
 - Manitoba 2017
 - Gold Medal to John Sweeney
 - C. Gordon Hewitt to Cory Scheffield
 - New Fellow: Charles Vincent
 - Criddle: Louis Handfield
 - Lloyd Dosedall Scholarship

MOVED to accept, Rob Longair; seconded, Mark Oliver; Carried

6. 6. Treasurer's Report (Caroline Whitehouse)
1. - See attached report

MOVED to accept, Caroline Whitehouse; seconded, Maya Evenden; Carried

7. 7. Nominations (Mike Dolinski): nominations were presented as follows:
1. President – Shelley Hoover
 2. Past President – John Swann
 3. Vice President – Ralph Cartar
 4. Treasurer – Caroline Whitehouse
 5. Secretary – Ken Fry
 6. Southern Director – Megan Evans
 7. Central Director – Mark Oliver
 8. Northern Director - Sarah McPike
 9. Proceedings Editor – Tonya Mousseau
 10. Webmaster – Alec McClay

MOVED that nominations cease, John Swann; seconded, Shelley Hoover; Carried.

Nominated slate Acclaimed.

8. 8. Appointment of society financial auditors
- Janet Sperling and Zach MacDonald accepted.

9. 9. Resolutions: the following resolution was prepared and read by Rola Kutby and Riley Wayte;

Whereas the 2015 Annual Meeting of the Entomological Society of Alberta was great food, fun, interesting insects and was possible only through the help of the after dinner speaker, staff of the Best Western, food and drink staff, meeting chairs Mike Dolinski and Felix Sperling, local arrangements chair Mike Dolinski, scientific programme chair Felix Sperling, registration and finance committee; Caroline Whitehouse, the keynote speaker Paul Galpern, the after dinner speakers Kirsten and Dave, and the financial sponsors Mike Dolinski and Dr. Terry Carlyle, be it resolved that we provide a round of applause for them and that the President write a letter of thanks to the Jasper Inn and Dr. Terry Carlyle.

MOVED that the resolution be accepted, Rola Kutby; seconded, Riley Wayte; Carried.

10.

11. Old Business

10. Digital Archives (Ken Fry)

- all files from 2002 onward now on Google Drive
- need to investigate paying for increased storage (\$3.50/month for 250GB)

MOVED that the Secretary purchase a back-up storage device to mirror all digital archives, Mike Dolinski, seconded by Felix Sperling; Carried

- proceedings will be processed in a timely fashion, with assistance from prior proceedings editor (Megan Evans) and others

12. New Business

11.1 Dosedall Scholarship

- Scholarship endowed by Lloyd's widow
- for aquatic ecology and or agricultural ecology

MOVED that the ESA donate \$1,000.00 to the Lloyd Dosedall Scholarship be accepted, John Swann; seconded, Shelley Hoover; Carried.

11.2 Honorary Members

- By-Laws dictate that no more than 5% of membership can be an honorary member
- John Swann to draft guidelines for executive for nomination as an honorary member
- An amendment to the by-laws to be proposed for next AGM

11.3 2016 meeting

- Calgary has put forward a proposition

Proceedings of the 60th Entomological Society of Alberta Annual Meeting

- potentially the UofC
- fallback would be Kananaskis
- Hotel Alma on campus plus motel across the street
- Since ICE at end of September, should have it end of October

12. President's Address

- See attached remarks

1. 13. Adjournment

MOVED to adjourn, Megan Evans

- meeting adjourned at 11:16AM

2015
Entomological Society of Alberta
Regional Director to the Entomological Society of Canada - Report
to the Board of Directors of the Entomological Society of Alberta

Information from the 2014 Joint Annual Meeting was included in my Fall 2014 report. The timing of the ESC JAM for 2015 is later in the year, so this report will be briefer than the last. Attended ESC Board of Directors meeting and Annual General Meeting of ESC - Saskatoon, 30 Sept 2014.

Business items

Strauss Associates of Winnipeg is now the Association Management Company for the ESC handling many day-to-day administrative tasks. The ESC ended the employment of the single staff member in Ottawa late in 2014 and provided transition support. The house in Ottawa owned by the ESC which housed the ESC offices and a tenant has been sold.

Insurance coverage for meetings, etc. has been emphasized as a point of note on several occasions. In particular, affiliate societies hosting JAM are responsible for obtaining insurance coverage for meetings.

Financial year end changed (from 31 December to 30 June) along with separation of General Budget and Scholarship Budgets.

The society's gavel will be kept in the storage locker, in addition to many other significant articles (hard copies of TCE, etc., etc.)

The Canadian Entomologist - special issues on Emerald Ash Borer (June 2015) and Forest Entomology (late 2015)

Books available for review in TCE - Committee members are reminded to assist in the search for suitable reviewers so that reviews can be carried out in a timely manner.

A reminder that there are funds available from the Public Encouragement programme of the ESC which may be applied for this year..

Meetings

ESC AGM - 8-11 November in Montreal - theme is Entomology in the Anthropocene includes the following symposia that might be of particular interest:

Canada and Its Insect Fauna - 35 years later
In memory of Lloyd Dosdall: Ecology, Diversity and management of insects in agroecosystems
as well as symposia on Chemical Ecology, Invasive Insects, and Arctic Entomology

International Congress of Entomology - 25-30 Sept 2016 - Orlando, FL - Hosted by the Entomological Society of America - ESC is a participant and will be holding its annual business meetings at this event. ESC is also sponsoring a symposium.

Student Travel Awards available? 14 @ \$750

As a result, there will be no JAM in 2016

Future JAMs

2017 - Manitoba

2018 - Proposed meetings with Entomological Society of America in Vancouver

ESC was approached concerning joint meetings with the Canadian Phytopathological Society in

Vancouver in 2023; decided to offer to organize a symposium - too many joint meetings in BC, not enough overlap with CPS.

Awards

Gold Medal - Jon Sweeney - Forest Insect Ecology, Brown Spruce Longhorn Beetle (invasive) in NS; service to ESC

C. Gordon Hewitt - Cory Sheffield - Royal SK Museum - bee systematics, biology and conservation including use of DNA barcoding, examining regional bee diversity, pollination

Fellow of the ESC - Charles Vincent - AAFC St. Jean-sur-Richelieu, QC - international leader in agricultural entomology with emphasis on alternative insect management methods to conventional pesticides

Criddle Award - Louis Handfield - title lawyer by profession - amateur for 40+ years with interests in butterflies and moths of Quebec

Lloyd Dosedall Memorial Scholarship - this is being established as an ESC scholarship

Prepared by Robert Longair
1 October 2015

2015
Entomological Society of Alberta
Northern Director's Report to the Entomological Society of Alberta
6 October 2015

Events

Dr. Claire Kremen (Department of Entomology, University of California Berkeley) gave the annual Strickland Memorial Lecture for 2015 on March 20th. Her talk was entitled, "Pollinators: a poster child for what's wrong with our food system and how to fix it".

On February 28th, the Lepidopterists' Guild of Alberta hosted the 2015 Feralia Symposium, organized by John Acorn (U. of Alberta). This year the symposium's topic was Lepidoptera in art, and several speakers gave invited talks, including: Ian Sheldon, "Ars, anima et Feralia: a butterfly illustrator resurrects the dead"; Lisa Claypool, "Insect Orientalism"; Gary Anweiler, "Tail tales: an introduction to the esoteric world of moth genitalia"; Adrian Thyse, "Photographing Lepidoptera, from snapshot to fine art"; and Melissa Baron, "Learning to draw Lepidoptera".

Newly Eclosed Students

Christianne MacDonald, MSc (advised by Felix Sperling, U. of Alberta) - defended July 2015.

Thesis title: "Integrative taxonomy of *Polygonia* Hübner 1819 (Lepidoptera: Nymphalidae) in Alberta"

Nymphal Students

Sarah McPike, MSc candidate (advised by Maya Evenden, U. of Alberta) – started September 2015.

Thesis subject: Ways of enhancing parasitism of *Caloptilia fraxinella* by *Apanteles polychrosidis* through habitat manipulation.

Matthew Meehan, MSc candidate (advised by Heather Proctor, U. of Alberta) – started September 2015.

Thesis subject: Patterns in diversity of soil Mesostigmata relative to human impacts, likely with a focus on the oil sands region of Alberta.

Victor Shegelski, MSc candidate (advised by Felix Sperling, U. of Alberta) – started September 2015.

Thesis subject: Mountain pine beetle

Emilee Whissel, MSc candidate (advised by Felix Sperling, U. of Alberta) – started September 2015.

Thesis subject: Spruce budworm

2. one MSc student successfully defended in July this year: Christianne MacDonald

Kevin Judge
MacEwan U.

2015
Entomological Society of Alberta
Central Region Report, October 2015

University of Calgary

John Swann, jeswann@ucalgary.ca

- 4 students successfully defended their undergrad theses/2 semester projects;
 - 2 co-supervised with Ralph Cartar
 - 1 co-supervised with Mary Reid
 - 1 co-supervised with Steve Vamosi
 - Of these, two are trying to pursue medical studies, two are in Masters programs at U of C
- Biosurvey and Bioblitz of Kananaskis Valley was successful – trapping is continuing until the end of the month – details are in John’s report
- Biosurvey of Beauvais Lake Provincial Park with Bette Beswick wrapped up collecting for the season on approximately September 20th
- One student from Ambrose University will be studying the Neuroptera collected at Beauvais for his undergrad thesis
- Two undergrad students will tentatively be doing undergrad theses with Ralph Cartar, Paul Galpern and my help this year.
- Jenn Cosh is starting her masters with Ralph Cartar and Paul Galpern, working on bumblebees (will be presenting her undergrad project at the Jasper meetings)
- Starting to ramp up the volunteer program again with the start of the fall semester.
- Continuing to help vet med with a study of the feeding preferences/gut contents of urban starlings.

Dr. Mary Reid, mreid@ucalgary.ca

- Leanna Lachowsky successfully defended her PhD thesis on the Ecology of Sex Ratios in Mountain Pine Beetles.
- John Swann and I also supervised a senior undergraduate study by Dimitra Evangelopoulus on the sawflies of the Waterton area.

Dr. Rob Longair, longair@ucalgary.ca

- First offering of a “Field course in Tropical Biology” (May 2015) with an emphasis on tropical biodiversity and conservation at Lamanai Outpost Lodge, Orange Walk District, Belize - 18 students spent one week on campus followed by two weeks in the field with a substantial insect component. Malaise and pan trap samples taken during the course will be added to the collection at University of Calgary.

- Ellis Bird Farm Bug Jamboree - Saturday, 9 August 2015 - table with displays/information on cavity-nesting solitary wasps (as well as one live specimen compliments of Ken Fry) and Alberta social wasps.
- BioBlitz at Barrier Lake Field Station of the Biogeoscience Institute, Kananaskis - participant - 11-12 July 2015.
- Multiple media interviews during late August about yellowjackets, including one on someone being stung numerous times (with little long-term effect) while walking outside Foothills Hospital with an IV bag.

Olds College (Dr. Ken Fry, esalberta@gmail.com)

The Horticulture program has had significant changes:

- The Horticultural program has been re-structured and now includes three courses with entomology content. The Agriculture Management major has one course on pest management, offered online.

There are several projects underway on campus:

- Five students were employed during the fall and winter semesters to aid in servicing elm bark beetle traps and Lindgren funnel trap samples for the alien invasive species surveillance program funded by the Society to Prevent Dutch Elm Disease. These programs have contributed several hundred specimens to the Olds College Insect Collection.
- One undergraduate student from Brazil was employed over the summer to service fruit and vegetable insect pest surveillance traps and process the elm bark beetle and alien invasive species samples.

Ken Fry participated in the Ellis Bird Farm Bug Jamboree, August 8, 2015.

Field Trips/Outreach

Dry Island Buffalo Jump Butterfly Count, July 2015 (Dr. Charles Bird)

Charley participated (of course) in the annual butterfly count. However, the report has not yet been published (should be in the Autumn 2015 newsletter of the Alberta Lepidopterists' Guild).

Ellis Bird Farm Bug Jamboree, August 8, 2014 (Dr. Charles Bird)

Charley participated (of course) in the annual jamboree. However, the report has not yet been published (should be in the Autumn 2015 newsletter of the Alberta Lepidopterists' Guild).

Charley notes that he has been continuing his Lepidoptera research, though at a somewhat reduced rate.

Submitted by Mark Oliver, Central Director

2015
Entomological Society of Alberta
Webmaster's Report

Since the October 2014 meeting, the site has been updated with the 2015 Board information. Articles on Bob Byers and Peter Harris were posted to the Honorary Members page. I have not received the 2013 Proceedings for posting. Hosting with Blacksun was renewed for a 5-year term running from January 8, 2015 to January 8, 2020 at a cost of \$860.46 including GST. A job opening was posted for a Live Animal Technician at the Royal Alberta Museum. Information on the 2015 Annual Meeting was posted as received, and Paypal buttons were installed to receive registration and membership payments. The redesign of the site is still pending. As always I thank all those members who have provided information or pointed out changes that need to be made to the site, and I welcome these suggestions at any time.

Respectfully submitted
Alec McClay, Webmaster
October 1, 2015

2015
Entomological Society of Alberta
Secretary's Report
Fall Executive Meeting
01 October 2015

Report for the Period October 17, 2014 – October 01, 2015

- A. I received/tracked three (3) topic of discussion in my capacity as ESA Secretary:
1. Honorary Membership
 2. Archive
 3. AGM
- B. I retained discussions and correspondence conducted via email totaling one hundred and seventy six (176) messages.
- C. As Secretary I issued fourteen (14) Email & FaceBook notices to the executive or membership including Annual Meeting announcements, Strickland Memorial Lecture, BioBlitz, employment opportunities, volunteer opportunities, and the passing of Andrew Nimmo.
- D. InformAlberta and HealthLink Alberta were provided updated Society contact information.
- E. Letters/items retained
1. Letter of Announcement for ESC Awards
 2. Society's Annual Return to the Province
 3. All digital files have been uploaded to Google Drive
 - a. files from 2002 onward
 - b. analogue files predominate from 1999 to 2006
 - c. digital files predominate from 2007 onward
 - d. all records kept by the Secretary, excepting official correspondence and AGM attendance sheets, are digital
- F. Caretaking items:
- The FaceBook membership has 141 members up from 127 members. 34 postings (not including follow-ups to individual postings) were made to the group since October 16, 2014
 - Numerous applications for membership denied due to lack of connection to entomology
 - This is an on-going issue

Respectfully submitted,

Ken Fry

Proceedings of the 60th Entomological Society of Alberta Annual Meeting

2015
Entomological Society of Alberta
Treasurer's Report
Year-end Financial Report

Caroline Whitehouse
02 October 2015

Memberships - 2014:

Total memberships (in good standing / (on the books)	
Regular	50 / 84
Student	32 / 70
Honourary	3
Free library	20
Subscription library	1 / 2

Opening balance January 1, 2014:

Assets

Cash (bank account)	15,060.03
Term deposits	15,000.00
Common shares (Credit Union shares)	679.55
Total Assets	<u>30,739.58</u>

Liabilities & Equity

Total liabilities	0.00
Equity	30,739.58
Liabilities plus Equity	<u>30,739.58</u>

Lethbridge, AB - ESAB Annual Meeting 2014:

Costs

Student awards	(1,350.00)
Speaker expenses	(751.43)
Paypal fees	(118.05)
Food and room rental	(4,889.15)
Misc expenses	(38.85)
Total Costs	<u>(7,147.48)</u>

Revenues

Registration	3,595.00
Banquet tickets (extra)	200.00
Student award donation - Sticky Wisdom	250.00
Membership dues	740.00

Proceedings of the 60th Entomological Society of Alberta Annual Meeting

Total Revenues	<u>4,785.00</u>
AGM Revenues minus Costs	<u>(2,362.48)</u>

Other Transactions

Credits:

Patronage payment	1.38
Investment interest	182.50
Membership renewal	240.00
Total Credits	<u>423.88</u>

Debits:

Catering: ESAB 2013	(2,175.80)
Service fees	(7.25)
Postage/courier	(35.58)
Cheque purchase	(115.14)
Total Debits	<u>(2,333.77)</u>

Total Credits plus Debits	<u>(1,909.89)</u>
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Closing balance December 31, 2014:

Assets

Cash (bank account)	10,787.66
Term deposits	15,000.00
Common shares (Credit Union shares)	706.65
Total Assets	<u>26,494.31</u>

Liabilities & Equity

AGM Late fee reimbursement - A. Sturm	(15.00)
Total liabilities	<u>(15.00)</u>

Equity	<u>26,494.31</u>
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Liabilities plus Equity	<u>26,479.31</u>
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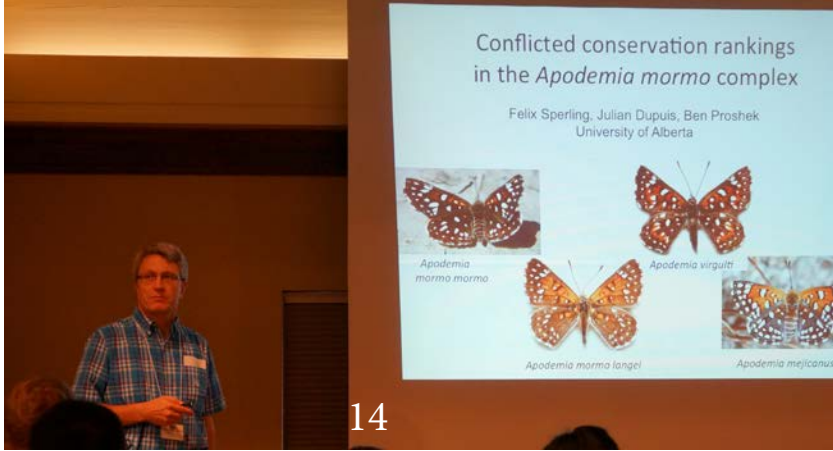
Photos



1. Alec McClay and Janet Haley. 2. Maya Evenden and John Swann. 3. Zachary MacDonald and John Swann. 4. Phil Batista 1. 5. Paul Galpern and Mark Oliver. 6. Greg Holmes Shelley Hoover



7. Ralph Cartar 8. John Acorn and Tonya Mousseau. 9. Mary Reid 10. Mike Dolinski and Mrs. Dolinski. 11. Riley Wayte and John Swann.



12. Rola Kutby 13. Bette Beswick 14. Felix Sperling



15. Jennifer Cosh. 16. Janet Sperling 17. Rob Longair and Bette Beswick

**Entomological Society of Alberta
List of Members**

Last	First	Organization/Address	City
Honorary Members			
Ball	George	Dept. of Biological Sciences	Edmonton, AB
Byers	Bob	AAFC Research Centre	Lethbridge, AB
Gurba	Joe		
Gushul	Evan		
Shemanchuk	Joseph		
Regular Members			
Acorn	John		
Barr	William	City of Edmonton	Edmonton
Bercha	Robert		
Beswick	Betty		
Cárcamo	Héctor	AAFC Research Centre, Crop Sciences Section	Lethbridge, AB
Cartar	Ralph	University of Calgary	Calgary, AB
Cuny	Robert	Lakeland College	Lloydminster, AB
Dolinski	Michael		
Evans	Megan		
Evenden	Maya	University of Alberta	Edmonton, AB
Friesen	Leanne		
Fry	Ken	Olds College	Olds, AB
Fulkerth	Christine	Olds College	Olds, AB
Galper	Paul		
Gomez	Christina		
Heming	Bruce	University of Alberta	Edmonton, AB
Hilchie	Gerald	University of Alberta	Edmonton, AB

Holmberg	Robert	Centre for Science	Athabasca, AB
Hoover	Shelley	Agriculture and Rural Development	
Judge	Kevin	Grant MacEwan University	Edmonton, AB
Longair	Robert	University of Calgary	Calgary
			Sherwood Park,
			AB
McClay	Alec	McClay Ecoscience	
Meers	Scott	Alberta Agriculture	Brooks, AB
Mousseau	Tonya	Mount Royal University	Calgary, AB
Oliver	Mark		
		Department of Natural Resources, Canadian Forest Service,	
		Northwest Region	Edmonton, AB
Pohl	Greg		
Proctor	Heather	Dept. of Biological Sciences	Edmonton, AB
Reid	Mary	Dept. of Biological Sciences	Calgary, AB
Retzlaff	Philip		
Schwarzfeld	Marla	University of Alberta	Edmonton, AB
Smith	Alexander	University of Alberta	Edmonton, AB
Sperling	Felix	University of Alberta	Edmonton, AB
Swann	John	University of Calgary	Calgary, AB
Thyssen	Adrian		
Walter	Dave	University of Alberta	Edmonton, AB
Whitehouse	Caroline	University of Alberta	Edmonton, AB
Williams	Daryl		
Student Members			
Balcaen	Martine		
Batallas	Ronald	University of Alberta	Edmonton, AB
Batista	Philip	University of Alberta	Edmonton, AB
Cosh	Jennifer		
Dupuis	Julian Rowe		
Fernandez	Diana Catalina	University of Lethbridge	Lethbridge, AB
Hervet	Vincent	University of Lethbridge	Lethbridge, AB

Hoefele	Danielle	University of Alberta	Edmonton, AB
Holmes	Gregory	University of Lethbridge	Lethbridge, AB
Kutby	Rola		
MacDonald	Zachary	University of Alberta	Edmonton, AB
Mcpike	Sarah		
Oliver	Tom		
Punko	Rosanna	University of Calgary	Calgary, AB
Robinson	Samuel	University of Calgary	Calgary, AB
Schmitke	Michaela		
Sperling	Janet		
St. Onge	Amanda	University of Alberta	Edmonton, AB
Trevoy	Stephen	University of Alberta	Edmonton, AB
Waytes	Riley		

Library Subscriptions

Archives, Entomological Society of Alberta	Agriculture and Agri-Food Canada, Lethbridge Research Station	Lethbridge, AB
Athabasca University College Library	Athabasca University College	Athabasca, AB
Augustana University College Library	Augustana University College	Camrose, AB
Cameron Library, University of Alberta	Cameron Library, 5th floor, Periodicals, University of Alberta	Edmonton, AB
Colorado State University Libraries	Colorado State University Libraries	Fort Collins, CO
Concordia University College Library	Concordia University College	Edmonton, AB
Glenbow Alberta Institute	Glenbow Alberta Institute	Calgary, AB
Grande Prairie Regional College Library	Grande Prairie Regional College	Grande Prairie, AB
Lakeland College Library	Lakeland College	Vermilion, AB

Lethbridge Research Centre	Agriculture and Agri-Food Canada, Lethbridge Research Station	Lethbridge, AB
Medicine Hat College Library	Medicine Hat College	Medicine Hat, AB
N.A.I.T. Library	N.A.I.T.	Edmonton, AB
National Library of Canada	National Library of Canada, Serials Records Section, Acquisitions and	Ottawa, ON
Northern Forestry Centre Library	Bibliographical Services	Edmonton, AB
Olds College Library	Canadian Forest Service, Northern Forestry Centre	Olds, AB
Provincial Museum and Archives	Olds College	Edmonton, AB
Red Deer College Library	Provincial Museum and Archives	Red Deer, AB
S.A.I.T. Library	Red Deer College	Calgary, AB
Strickland Library	S.A.I.T.	Edmonton, AB
University of Calgary Library	University of Alberta	Calgary, AB
University of Lethbridge Library	University of Calgary	Lethbridge, AB
	University of Lethbridge	

The Entomological Society of Alberta

The Entomological Society of Alberta was organized November 27, 1952, at a meeting held in Lethbridge, Alberta, as an affiliate of the Entomological Society of Canada. A certificate of incorporation was obtained under the Societies Act of Alberta on February 19, 1953.

The membership of about 70 paid-up members at that time consisted mainly of Dominion (Federal) entomologists at the Science Service Laboratories in Lethbridge (now an Agriculture and Agri-Food Canada Research Station), the Suffield Research Station, the Forest Zoology Laboratory in Calgary, and students and staff from the University of Alberta.

The objective of the Entomological Society of Alberta (ESAB) shall be to foster the advancement, exchange, and dissemination of the knowledge of insects in relation to their importance in agriculture, horticulture, forestry, public health, industry, the environment, and for its own sake, among the people of the province of Alberta.

Membership is open to anyone interested in Entomology. Annual dues are \$20.00 (\$10.00 for students and retired members). Contact the Treasurer via the society website:

<http://www.entsocalberta.ca/esa.htm>

