

PROCEEDINGS OF THE 65th ANNUAL MEETING OF THE



Entomological Society of Alberta

September 28 – 30, 2017

Crowsnest Pass, Alberta

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The Entomological Society of Alberta

The Entomological Society of Alberta (ESA) 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* 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 Lethbridge Research and Development Centre of Agriculture and Agri-food Canada), Suffield Research Station, the Forest Zoology Laboratory in Calgary, and students and staff from the University of Alberta.

The object of the ESA 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). Membership application is available at <https://entsocalberta.ca/about-the-esa/become-a-member/>

Entomological Society of Alberta Board of Directors for 2017

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Vice-President	Bette Beswick
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Event Planner	Ashley Tremblay
Scientific Program	Mary Reid and Ralph Cartar
Speaker Arrangements	Paul Galpern
Local Arrangements.....	John Swann, Jennifer Retzlaff, Riley Waytes, Sam Robinson
Mixer Coordinator	Haydee Peralta Vasquez
Registration and Finance.....	Megan Evans, Caroline Whitehouse, Camille Sinanan

President's Address - Ralph Cartar - 30 September 2017

Thanks for permitting me the honour of serving as the society's president this year. This society reflects a shared interest at the meaningful level: local. We all are valued colleagues who share a common (spatial) context.

I start my address by questioning the role of our society in a world in a state of ecological crisis. Are we fiddling with esoteric issues of science while Rome burns?

Clearly not. Entomology matters more now than ever. Not just for its immediate applications in problem-solving to understand and reduce impacts of pest insects (like flea beetles), often using other insects, or to enhance the maintenance and application of crop-beneficial insects like pollinators in our agro-ecosystems.

We're also in a severe biodiversity crisis. We recognize that biodiversity is mostly arthropod, and that we're not close to cataloging it, let alone understanding its functioning.

Insect collections play a big role in this, and Alberta has a number of important collections, at its 2 largest universities, its provincial museum, its community colleges (like the collection at Olds College, enhanced by Ken Fry), and at its research organizations with deep historical roots (like the Agriculture & Agri-food Canada station in Lethbridge).

Part of enhancing our description of biodiversity comes from the excellent work of collections managers. I single out the important recent efforts of UofC's John Swann to organize and curate the fast-growing insect collections at the University of Calgary.

We continue to engage the public in entomology outreach, which includes important annual events like the Bioblitz in Ellis Bird Farm, and Insect Discovery Day near Lethbridge. It also includes the frequent radio interviews of our members; the ones I hear most on local CBC being Ken Fry & John Swann.

On a personal level, the outreach I notice involves increasing interest by naturalist groups in deploying nesting structures for native bees.

I also note an ongoing engagement with artists. The personal examples with which I have been involved are Ruth Marsh's Ideal Bounds installation in the New Gallery in Calgary last year, UofC architecture students designing novel domiciles for bees, and a UofC arts graduate student doing the same (with an artistic flare). To me, such blending of arts and science is a pinnacle of entomological experience.

One person really stands out on Alberta's insect biodiversity scene this year: Megan Evens, our Southern Regional Director. Not only did she do the lion's share of organizing our annual meeting, for which we are all truly grateful, but she facilitated the Castle Bioblitz in July (another initiative of John Swann), also a very successful event. Megan initiated and organized the Alberta Native Bee Council, a new group that will meet immediately after our AGM. And she engages with naturalists to construct and deploy domiciles for bumble bees. Megan does all this while working in a position I see as hugely important for nature: being the ecologist for the new Castle Provincial Parks, *the* biodiversity highlight of Alberta's Parks system. She is a great face for the future of entomology in Alberta. Here's a formal shout-out to her.

Finally, let me acknowledge the important work of the executive of the Ent Soc, starting with the 2 stalwarts who effectively do the work and herd us cats: Secretary Ken Fry, and Treasurer Caroline Whitehouse. Ken is stepping down from his position this year, and he will be sorely

missed. His contributions through the many years are many, and important. Helping fill in the interstices between Ken and Caroline are regional directors Sarah McPike, Mary Reid, and Megan Evans (again!), webmaster Dylan (Jason) Sjolie, proceedings editor Tanya Mousseau, past president Shelley Hoover (now enjoying novel foods in Istanbul), and vice-president Bette Beswick. Bette has ambitious plans for outreach involving the education curriculum in public schools.

To close, let me continue to advocate keepin' on, not just doing cutting edge research (and communicating it to each other, as done at this meeting), but by involving the public in many ways.



65th Annual Meeting of the
Entomological Society of Alberta

28-30 Sept 2017

Crowsnest Pass, Alberta



THURSDAY, SEPTEMBER 28, 2017	
6-8	Board of Director's Meeting
6-10	Mixer and Registration

FRIDAY, SEPTEMBER 29, 2017	
7:30	Breakfast
8:30	Welcome
8:45	Keynote Speaker: Alejandro C Costamagna University of Manitoba: Agricultural pests and their natural enemies in prairie landscapes
SESSION 1	CROP PESTS
9:30	Carcamo, H. A. , Costamagna, A., Nagalingan, Brandt, R., Daniels, S. Otani, J., Wist, T. Striped flea beetles in southern Alberta: implications for canola pest management
9:45	Catton, H. A. , Cárcamo, H. A., Costamagna, A. C. Quantifying the value of cereal leaf beetle and its predators
10:00	REFRESHMENT BREAK
SESSION 2	POLLINATORS
10:30	Robinson, S.V.J. and Galpern, P. Causal modelling of the effect of canola on wild bee populations
10:45	Waytes, R. , Cartar, R., and Hoover, S. Competitors facilitate pollinator movement in hybrid canola
11:00	Canuel, M. and Cartar, R. Does wing wear affect distance-based flower choice in bumble bees?
11:15	Fjordbotten, K. , Acharya, S., Cartar, R., and Hoover, S. The value of sainfoin as a forage crop for wild and managed pollinators

11:30	Retzlaff, J.L. , Galpern, P., Cartar, R.V. Bumble bee community structure: how body size mediates abundance in a prairie agroecosystem
11:45	Cartar, Ralph. Using nest boxes to learn about the natural history of bumble bees in Alberta
12:00	LUNCH
SESSION 3	FORESTRY
1:00	Guevara-Rozo, S. , Classes G., Hussain A., and Erbilgin N. Comparison of nutrient and secondary composition between live standing trees and bolts
1:15	Ivanova, M. , Hutchison, I., and Reid, M.L. Is bigger better? Tree size effects on bark acceptance by pine engravers

1:30	Ahn, S. , Reid, M. Opening a can of worms: a study on the symbiotic relationship between phoretic nematodes and bark beetles
1:45	Nelson, T.D. , Sperling, F.A.H. Does phenology limit gene flow between spruce budworm taxa (Lepidoptera: Tortricidae)?

POSTERS	
	Wingert, B. , Sperling, F.A.H. Pulling out patterns: using molecular information to delimit crescent butterfly species
	J. Lahr, Adler, N., Bachmann, J., Blanckenhorn, W.U., Düring, R-A., Floate, K.D. , Römbke, J., Tixier, T., Lumaret, J-P. and Jensen, J. Proposal for a 'standard' field study for the evaluation of the effects of parasiticides on dung and soil organisms

FRIDAY EVENING	
5:30	Cocktails and Cash Bar
6:30	Dinner
7:30	Guest Speakers: John and Kathleen Hancock: Darwin, Sexual Selection and the Spider
8:30	After dinner mingle

SATURDAY, SEPTEMBER 30, 2017	
SESSION 4	BIODIVERSITY AND EVOLUTION
7:30	Breakfast
8:45	Reid, M.L. , Ivanova, M., Hutchison, I. Is bigger better? Female preference for male body size in pine engravers
9:00	French, R.L.K. , and Sperling, F.A.H. Patterns of sexual dimorphism in <i>Monochamus scutellatus</i> and <i>M. notatus</i> (Coleoptera: Cerambycidae)
9:15	De Clerck-Floate, R.A., Floate, K.D. Evidence for <i>Wolbachia</i> -induced speciation in a gall-forming wasp
9:30	Bezanson, G. , Floate, K.D. Assessing the diversity of dung beetles (Coleoptera: Scarabaeidae) in pasture and forested areas in southern Alberta
9:45	Lumley, L. , Giacobbo, V., Thorsen, A., Mark, M., Cobb, T. Post-fire recovery of oribatid mites in a dry mixedwood peatland
10:00	REFRESHMENT BREAK
10:15	ANNUAL GENERAL MEETING!

Contributed Abstracts (Alphabetically by presenting Author)

Oral Presentation

1. Opening a can of worms: a study on the symbiotic relationship between phoretic nematodes and bark beetles

Ahn, S.^{1,2}, Reid, M.¹

¹Department of Biological Sciences, University of Calgary, Alberta, Canada

²Department of Biological Sciences, University of Lethbridge, Alberta, Canada

The mountain pine beetle (*Dendroctonus ponderosae*) (MPB) is one of the most significant pest species in North America. Symbionts have been recognized as an integral part of MPB biology and have been at the forefront of contemporary studies. The pinewood nematode, a phoretic symbiont of bark beetles is responsible for pine wilt, a significant economic pathogen. Phoretic mites have also been shown to help with the transmission of blue-stain fungus, a well-studied pathogens affecting the Canadian logging industry. Due to the importance phoretic symbionts of bark beetles appear to play in forest ecosystems, this paper investigates the phenology of phoretic nematodes of mountain pine beetles independently, as well as in relation to beetle life history. We found evidence of dispersal synchrony of phoretic nematodes relative to MPB along with high levels of aggregation. We also found significant evidence of nematodes preferring healthier MPBs, and male MPBs over female MPBs. We expect these observations are aligned with the unique dispersal process of their bark beetle hosts. Further studies into the nature of the symbiotic relationship between MPB and phoretic nematodes are necessary, however this project reveals evidence that a relationship may be present.

Oral presentation

2. Assessing the diversity of dung beetles (Coleoptera: Scarabaeidae) in pasture and forested areas in southern Alberta

Bezanson, G.^{1,2}, Floate, K.D.¹

¹ Lethbridge Research and Development Centre, Agriculture and Agri-Food Canada, Lethbridge, AB

² Department of Biological Sciences, University of Lethbridge, Lethbridge, AB

Bioturbation activity of dung beetles facilitates nutrient cycling, while also reducing breeding sites for pest flies and parasites of livestock. Dung beetle diversity has been documented in North America, mainly on grassland pastures while very few studies have focused on forested pastures. To address this lack of knowledge, two sites in southern Alberta were chosen to assess and compare the diversity among both pasture grass lands and forested areas. Purple Springs (PS), is a low elevation (720m) pasture with only native grass land ($n = 10$ traps). Cypress Hills Interprovincial Park (CH), is a high elevation (1400m) pasture that has both untreed ($n = 10$ traps) and treed areas ($n = 10$ traps). Each trap was emptied and rebaited weekly with bovine dung between May and October.

In Year 1 (2016) of this 2-year study, 23 122 dung beetles were collected: 21 308 = PS, 1 512 = CH (untreed) and 302 = CH (treed). The difference in elevation between the two sites could suggest the large difference in catches as well as the differences in dominant species, *Diapterna hamata* at PS and *Chilothonorax distinctus* at CH. However, these same differences also occurred between the forested and pasture areas within CH, which documents a direct effect of tree cover. Year 2 of this study is currently underway.

Oral presentation

3. Does wing wear affect distance-based flower choice in bumble bees?

Canuel, M.¹ and Cartar, R.²

^{1,2} Department of Biological Sciences, University of Calgary

Animals have a limited budget of time and energy, and therefore are expected to complete fitness related tasks efficiently. With increasingly costly flight imposed by wing wear, bumble bees may reduce flight costs by flying shorter distances between flowers. We sampled bees visiting toadflax (*Linaria vulgaris*) and dandelion (*Taraxacum officinale*)—using an interview bouquet method in the summer of 2017 on Nose Hill Park, Calgary, Alberta. Using flowers of the species on which worker bees were presently foraging, bees were offered a choice between a smaller, closer floral reward, or a larger, further floral reward. Choices were captured on video, and after a choice was made, the bee's wings were photographed to quantify the presence of wing wear. Bees chose the closer reward more often than the far one. In both flower species, wing worn bees did not choose the closer reward significantly more than the far reward, but the trend was as expected by the hypothesis of wing wear altered flight costs. In dandelions, trends showed that extremely worn bees preferred the distant option. Our results are preliminary, and await more statistically powerful tests, controlling confounding variables. Currently we have no strong support for the hypothesis, but intriguing trends.

Oral presentation

4. Striped flea beetles in southern Alberta: implications for canola pest management

Carcamo, H. A., Costamagna, A., Nagalingan, Brandt, R., Daniels, S. Otani, J., Wist, T.

Abstract to come later.

Oral presentation

5. Using nest boxes to learn about the natural history of bumble bees in Alberta

Ralph Cartar¹

¹ Department of Biological Sciences, University of Calgary, Calgary, AB

Finding bumble bee nests in the wild is not easy, and therefore knowledge of nesting biology of bumble bees in the wild is limited. Starting in 1960 in Alberta, Lethbridge's Gordon Hobbs pioneered the widespread use of artificial nest boxes in which nest-searching queen bumble bees start colonies. This work was extended in the 1970s by Ken Richards. Starting in 1994, I have continuously deployed bumble bee nest boxes in the foothills forests of Alberta (now a 23 year time series). More recently, graduate students in my lab have used nest boxes in similar Alberta forests. In this talk, I describe the fate of nest boxes set out for bees, and their habitat, seasonal and year-to-year trends. Finally, I consider whether use of nest boxes is of any value without comparison to natural nests.

6. KEYNOTE: Agricultural pests and their natural enemies in prairie landscapes **Alejandro C Costamagna¹**

¹Department of Entomology - University of Manitoba

Landscape-scale processes mediate the interactions between pests and their natural enemies in agroecosystems. Processes affected include field colonization, movement and aggregative responses and overwintering by insect populations. Early landscape-scale studies typically showed that the proportion of natural and semi-natural habitats was associated with higher predator abundance, diversity and pest control services (e.g. pest suppression and parasitism). However, more recent studies have found varied patterns of association between natural and semi-natural habitats and pests, especially when they can serve as overwintering habitats, suggesting that system specific studies are needed to understand the role of different habitats in the landscape ecology of pests and their natural enemies. Here I present initial results of three novel systems studied in the Canadian prairies: 1) the cereal leaf beetle, *Oulema melanopus* and its parasitoid, *Tetrastichus julis*, 2) the soybean aphid, *Aphis glycines* and generalist predators, and 3) the flea beetles, *Phyllotreta striolata* and *P. cruciferae*.

Oral presentation

7. Quantifying the value of cereal leaf beetle and its predators

Catton, H. A.¹, Cárcamo, H. A.¹, Costamagna, A. C.².

¹Agriculture and Agri-Food Canada, Lethbridge Research and Development Centre, Lethbridge, Alberta, Canada

² University of Manitoba, Department of Entomology

Agricultural fields contain a mix of arthropod species, including some that cause crop losses (pests) and others that provide value (beneficials). Since pesticides affect both groups, optimal chemical control requires producers to have information on both the economic losses caused by their target pest, and the economic value provided by the beneficials.

Cereal leaf beetle (*Oulema melanopus*, Coleoptera: Chrysomelidae) is an invasive crop pest from Eurasia, new in Alberta since 2005. Larval feeding causes yield loss, and economic thresholds for insecticide application in wheat (*Triticum aestivum*) are estimated in the USA to be 0.4-1.0 larvae per flag leaf. Since 2009, the larval parasitoid *Tetrastichus julis* (Hymenoptera: Eulophidae) has been widely relocated across the Canadian prairies, and is expected to prevent cereal leaf beetle populations from reaching damaging levels. Generalist predators (e.g., spiders, lady beetles, carabids, nabid bugs) may also consume cereal leaf beetle larvae.

We present preliminary results from a randomized complete block outdoor cage experiment aiming to assign value to cereal leaf beetle, *T. julis*, and generalist predators in a Canadian prairie agroecosystem. We manipulated numbers of cereal leaf beetles, *T. julis*, and generalist predators to assess effects on insect communities at harvest, plant biomass, and grain yield.

Oral Presentation

8. The value of sainfoin as a forage crop for wild and managed pollinators.

Fjordbotten, K.¹, Archarya, S.², Cartar, R.³, and Hoover, S.⁴.

¹ Dept. Neuroscience, University of Lethbridge; krista.fjordbotten@uleth.ca

² Agriculture and Agri-Food Canada, Lethbridge, AB;

³ Dept. Biological Sciences, University of Calgary;

⁴ Alberta Agriculture and Forestry, Lethbridge, AB.

Sainfoin has regained attention in recent studies given its drought tolerance, ability to prevent bloat in mixed stands with alfalfa, and, recently with new varieties developed by AAFC, persistence over multiple cuts. There have been numerous research projects examining the benefits derived by ruminants fed sainfoin, as well as reports of high yields of quality honey, however there is a gap in the literature describing the value of sainfoin as a resource for both managed and wild pollinators. This research gap was addressed by surveying several sainfoin varieties at the Lethbridge Research Station to determine individual and population flowering phenology and availability of resources throughout the day. Within a 1 m² subplot all visiting pollinators were recorded 6 times to determine bee visitation at varying times throughout the day and season. Honey bees, bumblebees, and wild bees were videoed visiting sainfoin racemes for 1 minute to obtain handling times and directionality. From these observations, we will relate bee visitation throughout the day with flower density, season, resource availability, and the type of resource being collected. We will present preliminary results and implications of this study, with a focus on the connection between visitation trends throughout the season and resource availability.

Oral presentation

9. Evidence for *Wolbachia*-induced speciation in a gall-forming wasp

De Clerck-Floate, R.A.¹, Floate, K.D.¹

¹Lethbridge Research and Development Centre, Agriculture and Agri-Food Canada, Lethbridge, AB

Aulacidea pilosellae (Hymenoptera: Cynipidae) is a European species of gall-forming wasp being studied as a potential biological control agent for release into North America against multiple species of invasive hawkweeds (*Pilosella* Vaillant, Asteraceae). Field studies have identified populations that are either specific to *P. officinarum*, or which can develop on a larger number of *Pilosella* spp. (but not on *P. officinarum*). Molecular markers identify genetic differentiation between the two population types, but not sufficiently so to ascribe them to cryptic species. Thus, for now, they are considered biotypes; i.e., Biotype 1 = *P. officinarum*; Biotype 2 = *Pilosella* spp. Results of laboratory studies confirm differences in host specificity between the two biotypes. Results also show populations of Biotype 1 to be multivoltine (facultative diapause) and parthenogenetic (no males), whereas populations of Biotype 2 are univoltine (obligate diapause) and bisexual. Next-generation sequencing shows populations of Biotype 1 to be uniformly infected with *Wolbachia*. Populations of Biotype 2 comprise both *Wolbachia*-infected and uninfected individuals. *Wolbachia* are maternally-inherited bacteria that are common symbionts of diverse arthropod taxa and are known to induce parthenogenesis in other species of wasps. These collective results suggest that infections of *Wolbachia* have induced parthenogenesis in a subset of *A. pilosellae* populations to cause genetic divergence associated with differences in host range and voltinism. If so, these biotypes may be examples of symbiont-induced incipient speciation.

Poster

10. Proposal for a ‘standard’ field study for the evaluation of the effects of parasiticides on dung and soil organisms

J. Lahr¹, Adler, N.², Bachmann, J.², Blanckenhorn, W.U.³, Düring, R-A.⁴, Floate, K.D.⁵, Römbke, J.⁶, Tixier, T.⁷, Lumaret, J-P.⁷ and Jensen, J.⁸

¹Alterra, Wageningen University and Research Centre, Wageningen, The Netherlands

²Federal Environment Agency, Dessau-Roßlau, Germany

³Institute of Evolutionary Biology and Environmental Studies, Zurich, Switzerland

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⁵Agriculture and Agri-Food Canada, Lethbridge Research and Development Centre, Lethbridge, Alberta, Canada

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⁸Aarhus University, Department of Bioscience, 8600 Silkeborg, Denmark

European registration of new veterinary medical products (VMPs) necessitates that they be assessed for non-target effects. Pending the outcome of laboratory bioassays, subsequent field or “higher tier” tests may be required. However, no guidelines for such studies have been approved by the Organisation for Economic Co-operation and Development (OECD). To address this need, we developed and validated a field test method in four countries under varying conditions of climate, soil, and endemic coprophilous fauna; i.e., Lethbridge (Canada), Montpellier (France), Zurich (Switzerland), Wageningen (the Netherlands). Using the VMP ivermectin as the test substance, our method produced comparable results across sites when assessing the effect of ivermectin on: (1) insects breeding in dung of ivermectin-treated cattle, (2) coprophilous organisms in the soil beneath the dung, and (3) rates of dung degradation. Results of this international study were published in a series of articles in *Environmental Toxicology and Chemistry* (2016. Vol. 35(8):1914-1977). This poster summarizes the “lessons learned” from a methodological point of view. In brief, our field method meets OECD requirements for a higher tier field test. It provides for detailed recommendations regarding the selection and description of the study site, experimental design (e.g., replicate number), application of the test substance (including verification of residue concentration), key structural and functional endpoints, and how to measure these endpoints. Our field test method recently has been published for public consultation by the European Medicine Agency as part of a longer term process for acceptance as an OECD approved guidance document.

Oral presentation

11. Patterns of sexual dimorphism in *Monochamus scutellatus* and *M. notatus* (Coleoptera: Cerambycidae)

French, R.L.K¹, and Sperling, F.A.H.¹

¹Department of Biological Sciences, CW 405 Biosciences Centre, University of Alberta T6G 2E9

In studies of sexual selection and conflict, female mating preferences are frequently linked to the evolution of exaggerated male traits. Yet sexual dimorphism is not always obvious; in some beetles, tarsal size, shape, or ultrastructure differ significantly between sexes, but these differences need to be confirmed by measurement or microscopy. Such subtly dimorphic structures have received little attention.

To assess sexual dimorphism in tarsi, relative to that in sexually selected characters, we measured 31 morphometric traits in *Monochamus scutellatus* (Coleoptera: Cerambycidae) and *M. notatus* from Alberta. There was strong male-biased dimorphism in all traits except body length and elytral length. Further, principal components analysis completely separated males from females, and PC1 was correlated with the sizes of the protarsi, mesotarsi, antennae, tibiae, and femora. Thus, results for both species suggest similar degrees of sexual dimorphism in the protarsi, in the mesotarsi, and in recognized, sexually selected traits. Large tarsi may be adaptive in male *Monochamus*, which use their legs to grasp resistant females. However, male *M. scutellatus* lack the sexually selected male adhesive tarsal setae found in other beetles. This study provides further evidence of sexual dimorphism in *Monochamus*, and insight into the structures that mediate mating in beetles.

Oral Presentation

12. Comparison of nutrient and secondary composition between live standing trees and bolts

Guevara-Rozo, S.^{1,3}, Classes, G.², Hussain A.³, and Erbilgin N.³

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³ Department of Renewable Resources, University of Alberta. Emails: altaf2@ualberta.ca and erbilgin@ualberta.ca

In North America, mountain pine beetle has killed trees on millions of hectares over the past decade. In Canada, beetle outbreaks had been restricted to B.C., but have recently expanded to pure jack pine forests in Alberta. In general, studies use various techniques to evaluate the effects of host tree quality on the development of beetles, including bolts, phloem sandwiches, and rearing tubes. Yet, whether host quality changes between live standing trees and these techniques have not assessed. Particularly, changes in nutrient and secondary composition of bolts vs. standing live trees have not been quantified before. To determine whether monoterpenes, macro and micro nutrients differ between bolts and standing live trees, healthy jack pines occurring in both dry and wet sites in Lac La Biche were selected and sampled for phloem tissues. Then these trees were cut and two bolts (35 cm long) were obtained from each tree (n=30) and stored at 4°C. Three and six months after cutting, the bolts were re-sampled. In all samples, we determined nutrients and monoterpenes and compared between before and after cutting. We found significant differences in defense chemistry and nutrients. Levels of some monoterpenes including α -pinene, β -pinene, myrcene, limonene, and camphene are higher in the bolts compared with the standing trees. There was no difference between three and six month-old bolts. In the case of the nutrients, nitrogen, calcium, and potassium also increase after cutting. Three month-old bolts tend to be similar to the standing trees in terms of their nutrient content.

Oral presentation

13. Is bigger better? Tree size effects on bark acceptance by pine engravers

Ivanova, M.¹, Hutchison, I.², and Reid, M.L.^{1,2}

¹ Environmental Science Program, University of Calgary

² Dept. of Biological Sciences, University of Calgary

Larger trees are disproportionately killed by tree-killing bark beetle species. This pattern is generally attributed to beetle preference for larger trees due to the trees' thicker phloem (inner

bark) in which the beetles reproduce. This mechanism should apply to all phloem-feeding bark beetles. In this study, we tested whether pine engravers, *Ips pini*, preferred the bark from larger lodgepole pine trees in a lab study where bark was freshly removed from trees. We obtained bark samples from small, medium and large lodgepole pine, *Pinus contorta*, from four sites each of young (50 years old) and old (> 100 years old). As expected, larger trees had thicker phloem than smaller trees. In the lab, we added two male pine engravers to the bark samples (outer and inner bark) to determine the beetles' entrance behaviour. Contrary to the expected benefits of thick phloem, beetles were more likely to enter the bark of smaller trees than larger trees. We propose that larger trees may not be preferred because of their thicker outer bark that is harder to penetrate, or because of greater constitutive defences.

Oral Presentation

14. Post-fire recovery of oribatid mites in a dry mixedwood peatland

Lumley, L.¹, Giacobbo, V.¹, Thorsen, A.¹, Mark, M.¹, Cobb, T.¹

¹Royal Alberta Museum, Edmonton, AB, Canada

Fire is both a natural and anthropogenic disturbance that can completely alter habitat and species composition. Little is known about how fire affects soil-dwelling oribatid mite communities. Shortly after a fire broke out near the town of Duffield, Alberta on April 17, 2016, we began sampling burned and unburned locations to monitor changes in oribatid mite abundance and diversity. Questions of interest include: Which species were able to survive the fire? How long will it take for oribatid mite communities to recover from the fire? How do the communities change over time? And, how does fire intensity affect these communities? Here, we will present our results to date for this study.

Oral Presentation

15. Does phenology limit gene flow between spruce budworm taxa (Lepidoptera: Tortricidae)?

Nelson, T.D.¹, Sperling, F.A.H.¹

¹ Biological Sciences Building, University of Alberta, Edmonton, Alberta, Canada T6G 2E9

Spruce budworm taxa (Lepidoptera: Tortricidae) are insect defoliators of major ecological and economic importance that range across the boreal forest of North America. In Western Canada, the three taxa of greatest concern are the spruce budworm, *Choristoneura fumiferana*; the western spruce budworm, *Choristoneura occidentalis occidentalis*; and the two-year-cycle spruce budworm, *Choristoneura occidentalis biennis*. Though inter-taxon pairings can successfully produce fertile offspring in laboratory settings, hybrid individuals are rarely found in the field despite parapatry between taxa. Our aim is to determine whether distinct flight periods limit natural interbreeding between spruce budworm groups. We used pheromone traps to capture adult *Choristoneura* in the foothills of the Rocky Mountain Range, choosing sites with known admixture. Contrary to our prediction, we found only one significant peak of spruce budworm flight at each site. These results differ from findings in the Cypress Hills Interprovincial Park, where *C. fumiferana* and *C. o. occidentalis* have near-isolated flight periods that act as a gene flow barrier. This may indicate that Cypress Hills is a unique habitat for *Choristoneura*. Our study reinforces the importance of extensive sampling to monitor and predict insect pest behaviour.

Oral presentation

16. Is bigger better? Female preference for male body size in pine engravers

Reid, M.L.^{1,2}, Ivanova, M.¹, Hutchison, I.²

¹ Environmental Science Program, University of Calgary

² Dept. of Biological Sciences, University of Calgary

Body size is widely positively correlated with individual fitness. In general, we expect that females should prefer larger mates to smaller ones. In pine engraver bark beetles, *Ips pini*, males tend to be slightly larger than females, which is opposite of the usual sexual size dimorphism in insects and therefore further suggests that larger males have a fitness advantage. In the lab, we tested the preference of female pine engravers for male body size in a two-choice test. Two males, one large and one small, were allowed to establish nuptial chambers in fresh lodgepole pine bark, and then one female was introduced to the bark arena. We found that females were more likely to join the small males, contrary to expectation. We explore reasons for this unexpected pattern.

Oral Presentation

17. Causal modelling of the effect of canola on wild bee populations

Robinson, S.V.J.¹ and Galpern, P.²

¹University of Calgary, Biological Sciences

²University of Calgary, Environmental Design

Management of wild pollinator populations in agro-ecosystems depends on understanding their interaction with crops, as well as their year-to-year population dynamics, neither of which are typically well-understood. Causal networks provide a framework for understanding these complex interactions, and hierarchical Bayesian models provide methods for estimating them. Canola is a large part of the Canadian prairie agro-ecosystem, and has been both positively and negatively implicated in wild bee population changes. In this work, we present a novel method for testing the year-to-year effects of crop bloom on wild bee populations, while marginalizing across other confounding variables.

We used blue vane traps to collect wild bees in ditch margins in the summers of 2015 and 2016, in fields with varying levels of canola in each year. We used JAGS to specify model structures and estimate path strengths between measured and latent variables. We will discuss results for several wild bee species.

Oral presentation

18. Competitors facilitate pollinator movement in hybrid canola

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

¹Department of Biological Sciences, University of Calgary, 2500 University Dr NW, Calgary, AB T2N 1N4

²Alberta Agriculture and Forestry, Lethbridge Research Centre, 5401-1 Ave S, Lethbridge, AB T1J 4V6

Production fields of hybrid canola consist of ‘female’ (male-sterile) and ‘male’ (hermaphroditic) flowers spatially separated into bays. Females require pollen transfer from male flowers for pollination, which is facilitated by insect vectors (bees). Sexual dimorphism between the floral morphs promotes floral constancy by pollinators to a particular morph, which reduces cross-pollination. However, competition for floral resources could influence pollinator transfer between morphs, as increased competition should decrease local rewards. This should result in more pollinators sampling or switching to floral alternatives. We examined how local competition could drive cross-pollination by two managed pollinators, honey bees and alfalfa leafcutting bees, in hybrid canola fields in Southern Alberta. We measured overall pollinator movement between bays and compared this to 1) conspecific pollinator density, 2) conspecific and heterospecific pollinator density, and 3) taxon richness. We determined that, after controlling for floral rewards, higher local conspecific pollinator density increased overall movement between the bays. Increasing the density of conspecific pollinators could promote cross-pollination of female flowers in fields of hybrid canola.

Poster

19. Pulling out patterns: using molecular information to delimit crescent butterfly species

Wingert, B.¹, Sperling, F.A.H.¹

¹Biological Sciences Building, University of Alberta, Edmonton, AB, T6G 2E9

The *Phyciodes tharos* species group of butterflies demonstrates a complex species delimitation problem. The species recognized in this group (*P. cocyta*, *P. tharos*, *P. batesii*, and *P. pulchella*) occupy different, but overlapping, geographic ranges across North America and are historically difficult to tell apart due to variable morphological characters. My master’s project will focus on delimiting these species using a combination of traditional morphological techniques and advanced molecular techniques. Previous studies have found introgression of mitochondrial DNA between species where ranges overlap. I am similarly exploring the relationships of this group within Alberta, the only region in North America where all four species interact. I am using an integrative phylogenetic approach by analyzing both mitochondrial COI barcodes and single nucleotide polymorphisms (SNPs). I will compare the resulting genetic patterns with observable morphological characters to produce a resolved phylogeny and I will develop improved identification tools using the most reliable and consistent characters. This will be done considering the implications of introgression on genomic integrity and the resulting species delimitation. I will present my preliminary findings and what I hope to achieve in the coming year.

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**Minutes of the Entomological Society of Alberta
Executive/Board of Directors Fall Meeting
Crownsnest Pass September 28 2017**

Meeting called to order at 6:25pm

Chair:Ralph Cartar (President)

In Attendance:Ralph Cartar (President), Ken Fry (Secretary), Caroline Whitehouse (Treasurer), Mary Reid (Central Director), Haley Catton (Regional Director to ESC), Tonya Mousseau (Proceedings Editor), Megan Evans (Southern Director), Bette Beswick (Vice-President)

Regrets:Sarah McPike (Northern Director), Shelley Hoover (Past President), Dylan Sjolie (Webmaster)

1. Agenda approval

MOVED by Mary, Seconded by Tonya that the agenda, be approved; Carried

2. Approval of the Fall 2017 Executive Meeting Minutes

MOVED by Tonya, Seconded by Ken that the agenda, be approved; Carried

3. Approval of Spring 2017 Executive Meeting Minutes

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

3. Report from the Treasurer (Caroline Whitehouse)

- See attached report
- Discussion on status of delinquent members
 - o Ask delinquent members to pay arrears (if are professional) but not if students have lapsed
 - Mention to membership that large cash balance will be necessary for organizing the JAM in 2020

MOVED by Mary, Seconded by Haley that the Treasurer's report be received; Carried

4. Report from Secretary (Ken Fry)

- See attached report
- Vote to amend bylaws in 2018 to allow for increase to 10% for honorary members
 - o Send notice a minimum of 8 days prior to the AGM
 - o Solicit a list of nominees for induction in 2020 at the JAM
 - Board needs nomination packages 30 days prior to
 - AGM

MOVED by Ken, Seconded by Mary that the Secretary's report be accepted; Carried

5. Regional Reports

- a. Report from Northern Director (Sarah McPike, presented by Ken Fry)
 - Delivered by Ken Fry
 - See attached report
- b. Report from Central Director (Mary Reid)
 - See attached report
- c. Report from Southern Director (Megan Evans)
 - See attached report
- d. Regional Director to the ESC (Haley Catton)
 - See attached report
 - Add to AGM agenda the proposal for strategic planning for the ESC

MOVED by Tonya, seconded by Megan, to accept the reports as submitted; Carried

6. Report from Webmaster (Dylan Sjolie, presented by Ralph)

- See attached Report
- Add to AGM Agenda to have approval to spend funds on redesigning the website

MOVED by Megan, seconded by Tonya, to accept the reports as submitted; Carried

7. Fall Meeting

- a. Fall Meeting Plans Update
 - all good
- b. Student Awards
 - awards committee to evaluate the two candidates and prepare the decision for the banquet

8. Old Business

- a. Honorary memberships
- b. Definition of Student - current example

9. New Business

- a. Resolutions
 - Proceedings of the 65th Entomological Society of Alberta Annual Meeting

- What is a need that ABMI does not serve that we could advocate for
- Is there any policy or legislation pending change that we can influence
- none brought forward
- b. 2018 meeting
 - northern meeting
 - two people committed to be on local organising committee
 - Christina Elliot, Leah Flaherty
 - Likely in Edmonton
 - 2019 in south, 2020 central, then back to normal north, central, south
 - 2020 to be Friday(Biocontrol), Saturday (Board of Governors) to Friday (24-27)
- c. insurance
 - only need it if you are at a small facility, usually hotels have their own insurance
 - Caroline to pursue whether the directors need insurance
- d. National Society JAM Model
 - Haley to present changes at AGM

10. Adjournment

MOVED by Megan, Adjourn the meeting at 8:56pm

**Entomological Society of Alberta
Secretary's Report
Fall Executive Meeting
28 October 2017**

Report for the Period October 31, 2016 – September 28, 2017

- A. I received/tracked/sent notices of twenty (20) topics of discussion in my capacity as ESA Secretary:
1. BioBlitz Castle Mountain
 2. ESC Awards Nominations
 3. ESA Proof of Filing
 4. Inform Alberta update
 5. Scott's Directories Update
 6. Strickland Lectures & Dinner
 7. Annual Meeting preparations
 8. ESC Education Committee Representatives
 9. Job Advertisements (four)
 10. Archive material
 11. Insect Discovery Day Coaldale
 12. ESA Annual Meeting Announcements (three)
 13. ESC JAM Financial Arrangements
 14. ESC Strategic Planning
 15. Honorary Members
 16. Insurance for annual meetings
 17. Wild Species Report
 18. ESC Directory of Faculty at Canadian Universities and Colleges
 19. Insect Identification requests (three)
 20. ESC Bulletin Updates (two)
- B. I retained discussions and correspondence conducted via email totaling two hundred and eighty-nine (289) messages.
- C. As Secretary I issued sixteen (16) Email & FaceBook notices to the executive or membership including Annual Meeting announcements.
- D. InformAlberta, HealthLink Alberta, and Scott's Directories 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. ESC Financial Arrangements documentation

4. Student Travel Grant and Undergraduate Award documentation

F. Caretaking items:

- The FaceBook membership has 175 members up from 155 members. 44 postings (not including follow-ups to individual postings) were made to the group since January 1, 2017, up from 16 last year.

Respectfully submitted,

Ken Fry

Treasurer's Report
Fall Executive Meeting – 28 September 2017
Prepared by Caroline Whitehouse

Member Status - 2016

Type	In good standing	Delinquent but on the books
Free library	20	--
Library	1	1
Honourary	3	--
Regular	42	21
Retired	2	--
Student	38	24
Total	106	46

AGM 2016 overview – Calgary, AB

Registration	5,700.00
Expenses	(6,708.86)
Awards	(950.00)
University of Calgary donation	3,000.00
Net profit	1041.14

Member Status 2017 – as of September 25

Type	In good standing	Delinquent but on the books
Free library	20	--
Library	--	1
Honorary	3	--
Regular	37	28
Retired	2	--

Student	22	38
Total	84	67

AGM 2016 attendance

Day	3	
Regular	26	
Student/retired	31	
Total	60	

AGM 2017 attendance

Day	2	
Non-member	3	
Regular	15	
Student/retired	11	
Total	31	

Income Statement
Entomological Society of Alberta
Reporting period: 2017-01-01 to 2017-09-25
Created: 2017-09-25

<u>Accounts</u>	<u>Balance</u>
Revenue	
Interest - Bank Account	6.01
Term deposit cash-in	7850.26
Membership Dues	660.00
Annual Meeting Income (e.g. Registration)	6740.00
Total Revenue	15256.27
GROSS PROFIT	15,256.27
Operating Expenses	
AGM - Registration Refund	245.00
AGM 2016 Expenses (facilities, speaker expenses)	2938.05
AGM 2017 Expenses	300.00
Paypal Fees	227.71
Total Operating Expenses	3710.76
NET PROFIT	11,545.51

Balance Sheet

Entomological Society of Alberta

Reporting period: 2017-01-01 to 2017-09-25

Created: 2017-09-25

<u>Account</u>	<u>Balance</u>
Asset	
Cash on Hand	11,545.61
Common Shares	758.56
Total for Current Asset	12,304.17
Bank	
Paypal	6,693.14
GIC term deposits	23,307.30
Total for Bank	30,000.44
Total Assets	42,304.61
Liability	
Total Liabilities	-
Equity	
Previous Year(s) Earnings	30,759.10
Current Year Earning	11,545.51
Total Equity	42,304.61
Total Liabilities and Equity	42,304.61

**ESC Regional Director Report to ESAb
Blairmore, AB
September 28, 2017
Haley Catton**

Because of the 2016 ESC AGM was in Orlando last September, there has not been an ESC AGM since last ESAb AGM. However, there were a few board of directors meetings by phone.

1) Next ESC meeting is Oct 22-25 in Winnipeg, JAM with ESMB. Theme = "Small is beautiful"

- Society is undergoing strategic planning to define direction and purpose of the society. Strategic plan will be reviewed every 2-3 years.

- partly a result of financial concerns, declining membership, changing demographics, society, access to information (online resources).

- regional societies were asked their input into these questions. Thank you to those from Alberta who participated.

- Financial concerns: projected deficit this year ~\$19k. The ESC is looking for ways to boost revenues and reduce losses. One possibility is securing national sponsors for annual meetings.

2) Executive changes

- Neil Holliday will complete his term as President in October 2017, and will be replaced by Patrice Bouchard.

- Kevin Floate will become ESC's 1st Vice-President 2017-2018, and then President in 2018-2019. (replacing Fiona Hunter who stepped down).

- Former Secretary Aynsley Thielman has stepped down and is now replaced by Vincent Hervet.

- Treasurer Christopher Dufault is looking to step down after 3 years of service as soon as a replacement can be found.

3) JAMs

- JAM GST arrears: ESC has decided to put this file on hold indefinitely due to incomplete data.

- New financial agreement created between ESC and regional societies for JAMs. ESC assumes more risk. Regional societies were asked for input.

- There is usually a 7-year rotation for JAMs among Canadian regional societies. But ESAM wants to host their AGM in Canada every 4 years (twice in a row in the same venue), limited to big cities. This will shift the order of JAMs between provinces around a bit if we choose to co-host with ESAM.

- ESC is more actively pursuing sponsorship for JAMs, especially stable sponsors at the national level.

- Upcoming meetings

- 2018 in Vancouver, joint with Entomological Society of America, November 11-14. Theme is "Crossing borders: entomology in a changing world"

- 2019 in Fredericton, joint with Canadian Society of Ecology and Evolution (CSEE), **mid-August**. The decision to partner with CSEE as a bit controversial as involves some financial risk and shifts timing of the meeting.

- **2020 Alberta - ESC waiting for ESAb to solicit a letter of invitation. We need to assemble a team and decide on a proposed location.**

4) Public Education Committee

- We filled the vacant representative from Alberta, with Robin McQueen.

- New Chair: Tyler Wist.

5) Publications

- ESC is beginning a negotiation to re-new contract with Cambridge University Press

- Kevin Floate is ending his term as Editor-In-Chief of the Canadian Entomologist, will be replaced in October by Dezene Huber, UNBC

Northern Directors Report 2016/17
October 2017
Sarah McPike

The following happenings have been reported for October 2016-October 2017:

From the lab of Dr. Felix Sperling:

PhD completion by Giovanni Fagua: June 2017: His work is on the relationships of moth genus *Choristoneura*

Two major collections were donated to the Strickland Museum of Entomology:

- Charles and Ann Bird (38,000 pinned specimens of mainly Lepidoptera)
- Lorie Taylor Leech (7500 vials of mainly spiders).

From the Lab of Maya Evenden:

Amanda St. Onge successfully defended her MSc thesis in April 2017: "Optimization of semiochemical monitoring for pea leaf weevil, *Sitona lineatus* (Coleoptera: Curculionidae), in the Prairie Provinces".

Amanda Jorgensen (MSc) was a University-level finalist in the 3 Min Thesis competition, April 2017.

Kelsey Jones (MSc) received a NSERC PGSM scholarship to support her studies at UofA.

Chaminda Weeraddana (PhD) won first place in the graduate student poster presentation award in Insect Chemical Ecology at the International Congress of Entomology, Sept. 2016.

Asha Wijerathna (PhD) won runner-up in the graduate student poster presentation award in Agricultural and Forest Entomology at the International Congress of Entomology, Sept. 2016.

Sarah McPike (MSc) won best MSc student oral presentation award at the R.E. Peter Biology Conference, University of Alberta.

Ronald Batallas (PhD) was selected to be included in the graduate-student showcase symposium at the upcoming ESC meeting in Winnipeg in October.

Long time technician Dylan Sjolie will be taking a leave from the lab starting in the middle of October.

From Canadian Forestry Service:

Daryl Williams (entomology technician at NoFC) retired in July after 29 years of service.

Jaime Pinzon was hired as a research scientist at NoFC in January 2017: He brings his knowledge and enthusiasm for spiders to landscape ecology research.

Philip Hoffman has been hired on as a term technician to assist with biodiversity research.

Retirement:

Dr. John Spence retired from Renewable Resources Dept. at the University of Alberta, in June, after 37 years.

Central Director's Report September 2017
Entomological Society of Alberta
Submitted by Mary Reid (University of Calgary)

Olds College

1) Olds College continues to support the Society to Prevent Dutch Elm Disease (StopDED) and the Canadian Food Inspection Agency (CFIA) efforts to survey for alien invasive species and vectors of Dutch Elm Disease by processing trap samples collected from around the province.

2) Progress has been made in the introduction of a parasitoid to manage the invasive Lily Beetle in Alberta and this project continues into next year.

Both efforts employed students over the summer as technical assistants.

3) Ken Fry attended a week-long Insect Collections Manager Workshop hosted by the Entomology Collection's Network in Milwaukee, Wisconsin. A wealth of resources was obtained (template policy documents, best practices, etc.) and are available for sharing with interested parties.

University of Calgary

John Swann (Manager, Invertebrate Collections) organized a Bioblitz in the new Castle Parks, 15-16 July 2017. Approximately 50 people from Calgary through Lethbridge attended. This was the first public programming event held at the Westcastle Field Station in Castle Mountain Provincial Park. Thanks to Dr. Erasmus Okine, VP Research at University of Lethbridge, and Trevor Armstrong (station manager) for hosting this collaborative event with the U of C, Alberta Parks (which provided us with interpreters) and our Society.

The invertebrate collection continues to grow. Material is pouring in from Beauvais Lake courtesy of Bette Beswick and from the Castle area via Megan Evans. More Heteroptera were identified courtesy of Dr. G.G.E. Scudder at UBC. John has updated the collections' webpage with the rough holdings (http://bio.ucalgary.ca/zoology_museum) and now has Specify 7 loaded onto a university server and will soon have portions of the collection online for the general public. John completed the entomology displays for the Dean of Science's new collection space. They include displays on pollinators (bees and butterflies), odonates, and ladybugs, with seven different displays focusing on some of the strengths of our collection.

John Swann and Diane Edwards gave presentations about small crawling and flying animals to 19 classes of grade 2 students throughout the city on behalf of the U of C and the Alberta Science Network.

Dr. Rob Longair retired from the University of Calgary and has moved to the Ottawa area with his continued enthusiasm for things entomological. Thanks Rob! Our new invertebrate instructor is Dr. Mindi Summers who is supervising projects on molecular taxonomy of aquatic invertebrates.

South Region Director's Report
Submitted by: Megan Evans
September 27, 2017

PEOPLE:

Giselle Bezanson began her MSc program in May under the supervision of Kevin Floate (AAFC Lethbridge) and Cam Goater (U. Lethbridge). Her thesis research examines the diversity of dung beetles on native grasslands near Taber and in Cypress Hills Interprovincial Park.

Sunil Shivananjappa began his MSc program in September under the supervision of Kevin Floate, Paul Fields (AAFC Winnipeg) and Rob Laird (U. Lethbridge). Sunil will study factors that induce and terminate diapause in khapra beetle (Dermestidae).

Diana Wilches successfully defended her MSc thesis in November. Under the supervision of Kevin Floate, Paul Fields and Rob Laird, she studied the tolerance of different life stages of khapra beetle to extreme heat and cold. Diana was the University of Lethbridge's 2017 recipient of the School of Graduate Studies Medal of Merit, Master of Science.

Vincent Hervet also successfully defended his PhD thesis in November. Under the supervision of Kevin Floate and Rob Laird, Vince studied the host range on species of cutworms (Noctuidae), of a Eurasian species of braconid wasp newly reported in North America. Vince was the 2016 recipient of the Robert O'Neil Award for Outstanding PhD Student in Biological Control, awarded by the International Organization for Biological Control (Nearctic Region) at a special event in Orlando, FL. He also was nominated for the University of Lethbridge's 2017 PhD Medal of Merit.

Riley Waytes successfully defended his these (U of C, supervisors Hoover and Cartar) on pollination efficacy and bee behaviour in seed canola fields.

Kevin Floate will become First Vice-President of the Entomological Society of Canada at the ESC/ESM JAM in Winnipeg on October 24th.

EVENTS:

Insect day at the Birds of Prey Centre:

The 7th Annual Insect Discovery Day was held on August 12, at the Alberta Bird of Prey Centre in Coaldale. Under the direction of Amanda St.Onge, entomophiles swarmed to the Centre to bask in the sun and tour various static and live exhibits.

Ed Gregor Stewardship Day:

A bumble bee box building workshop was held again this year as part of the Ed Gregor Memorial Stewardship Day, Saturday, June 3, Crowsnest Pass, Alberta. Members of the

public looked at native bee specimens and learned about native bee diversity and how to create bee habitat. The public were also able to build and take home their very own bumble bee box.

Going Wild:

Saturday August 12 in the Crowsnest Pass. A native bee display was set up for this event, which highlighted local groups and organizations showcasing everything wild!

Castle Park Bioblitz:

Roughly 50 people attending the Castle Park Bioblitz on July 15 and 16th. The event was held at the University of Lethbridge Research Station and was hosted by Dr. Erasmus Okine and organized by John Swann. Members of the public interacted with subject area experts to identify plants, birds and wildlife and to collect aquatic and terrestrial invertebrates.

Respectfully Submitted,

Megan Evans

Minutes of the Entomological Society of Alberta
65th Annual General Meeting

Crowsnest Pass, Alberta September 30, 2017

Minutes prepared by Ken Fry, ESA Secretary

Attendees:

Ahn, Sangwook	Giacobbo, Victoria
Beswick, Bette	Lumley, Lisa
Bezanson, Giselle	Mousseau, Tonya
Cartar, Ralph	Punko, Rosanna
Catton, Haley	Reid, Mary
Evans, Megan	Retzlaff, Jennifer
Floate, Kevin	Shivananjappa, Sunil
Fjordbotten, Krista	Thorsen, Ashley
Fry, Ken	Waytes, Riley
	Whitehouse, Caroline

Meeting called to order at 10:20 AM by Ralph Cartar (President)

1. Approval of Agenda

MOVED to accept, Mary Reid; seconded, Megan Evans: Carried

2. Approval of minutes as amended from the 2016 AGM

MOVED to accept, Riley Waytes; seconded Mary Reid; Carried

3. Webmaster's Report (Dylan Sjolie, as presented by Ken Fry)

- see attached report

MOVED to accept, Bette Beswick; seconded, Kevin Floate; Carried

4. Secretary's Report (Ken Fry)

- see attached report

MOVED to accept Lisa Lumley; seconded, Haley Catton; Carried

5. Report from Regional Director to the Entomological Society of Canada (Haley Catton)

- See attached report
- Asked strategic planning questions of membership
 - o Mentioned that there is a blog, facebook page, student job postings.
 - o Post to ESA facebook what ESC is up to
 - o What price point is appropriate or acceptable for membership
 - o Is there a longer term student membership rate
 - o If member of regional society could you get a discount
 - o Who is the audience of the society
 - o Webinars on specific topics
- Financial arrangements of JAM
 - o Advance increased from \$4,000.00 to \$8,000.00
 - o ESC handles registrations
 - o Must pay back \$8,000.00 if there is a profit
 - o If no profit then ESC takes on >50% of deficit
 - o Discussion about national sponsors versus local sponsors and that local sponsor money be exempt from the profit calculation
- Education Committee has representative from Alberta – Robin McQueen
- Upcoming meeting dates reviewed, including 2020 JAM with ESA

MOVED to accept Tonya Mousseau ; seconded, Jennifer Retzlaff ; Carried

6. Treasurer's Report (Caroline Whitehouse)

- See attached report
- 2016 audited statement was filed with province
- review of assets now provides room for website development and to have cash on hand for JAM preparations
- Question about why charge a membership fee – for tracking members, show value for the privilege
- can we produce merchandise that is logo'd and sell at meetings

MOVED to accept, Jennifer Retzlaff; seconded, Mary Reid; Carried

7. Nominations (Ralph Cartar): nominations were presented as follows:

President – Bette Beswick
Past President – Ralph Cartar
Vice President – Lisa Lumley
Treasurer – Caroline Whitehouse
Secretary – Hector Carcamo
Southern Director – Diana Wilches
Central Director – Mary Reid
Northern Director - Sarah McPike
Proceedings Editor – Tonya Mousseau
Webmaster – Dylan Sjolie

Regional Director to ESC - Haley Catton

MOVED that nominations cease, Kevin Floate; seconded, Megan Evans; Carried.

Nominated slate Acclaimed.

8. Appointment of society financial auditors

- Tyler Nelson and Brittany Wingert accepted.

9. Resolutions: the following resolution was prepared and read by Samuel Robinson;

We would like to thank all the fine folks who made the 2017 meeting of the Entomological Society of Alberta possible. First off, we would like to thank the organising committee for their hard work: Haley Catton, Shelley Hoover, Hector Carcamo, Kevin Floate, Rose DeClerck-Floate, Bette DeWitt, and especially Megan Evans. Thank you to Alejandro Castamanga for his keynote lecture on biocontrol and landscape ecology. Thanks to all the session moderators, including Sunil, Riley, Jenn, and Ralph, and to Giselle for running the registration table. Thanks to Carolyn Whitehouse and Ken Fry for organising the registration. Now, onto the food! Thanks to Dawn from Country Encounters for keeping us well fed, and to Katie for dispensing ethanol. For their fantastic introduction to the sex lives of spiders in last night's presentation, we thank John and Kathleen Hancock from Pincher Creek. Finally, we thank Ginny and the other folks at the Island Lake Christian Retreat Centre for hosting us here. We extend a round of applause for them, and we resolve that the President will write letters of thanks to our funders.

MOVED that the resolution be accepted, Tonya Mousseau; seconded, Jennifer Retzlaff; Carried.

10. Old Business

a. Honorary Members

- 10% of full membership is a common limit for other societies
- support for this limit to be adopted by ESA

b. Conference Proceedings

- To be prepared for release shortly

11. New Business

a. ESC JAM Financial Arrangements

- Discussed under ESC Regional Director Report

b. 2018 Meeting

- Caroline Whitehouse reported that the Edmonton area is prepared to host and two local organizing committee members have been identified

MOVED to accept, Mary Reid; seconded, Haley Catton; Carried

c. ESC/ESA JAM 2020

- Asked by ESC to invite them to Alberta for a JAM

- Banff Centre for Fine Arts has been suggested with UofC as an alternative

- timing will be late October tentatively

- requires rescheduling AGM meetings to accommodate the Central Region hosting out of sequence

d. Website

- Dylan will be on leave for the near term

- need to get the site redesigned

- solicit a professional to design or go in-house or advertise to students at universities

- strike a committee to oversee redesign

Tonya Mousseau, Micky Ahn, Robert Bercha (to be approached), Caroline Whitehouse, Dylan Sjolie suggested/volunteered for the committee

e. Merchandise for Society

wear - Jennifer, Ken Fry, Megan Evans to form a committee to investigate logo

- Bette Beswick to investigate casino options for funding

- good discussion of pros and cons

e. Social Media Representative

- attached to Secretary

- intention is to formalize the role as a Board Member

12. President's Address

- See attached remarks

13. Adjournment

MOVED to adjourn, Megan Evans

- meeting adjourned at 11:55AM

Entomological Society of Alberta

Webmaster's Report

Since the October 2016 meeting, the site has been updated with the 2017 Board information. The 2016 Proceedings have not been posted as I have not received them. The 2013 and 2014 Proceedings have also yet to be posted or submitted.

No new job postings were submitted over the year.

Information on the 2017 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. I have looked into using other website server services such as WordPress and Squarespace, but not in enough detail to begin putting together a proposal. I hope to be able to put more time into preparing a proposal/business plan ready over the next few coming months.

It took some time, but I can gladly say I am now very confident with my abilities to add content and manage the Entomological Society of Alberta website. It continues to be quite the learning experience, but one that has been quite enjoyable.

Thank you to all the members who have provided information or pointed out corrections to the website.

Thank you,

Dylan Sjolie, Webmaster

September 28, 2017

Entomological Society of Alberta
2017 Membership

Last Name	First Name	Organization	Location
Honorary Members			
Ball	George	University of Alberta	Edmonton, AB
Byers	Bob	Agriculture and Agri-Food Canada	Lethbridge, AB
Shemanchuk	Joseph		Lethbridge, AB
Regular Members			
Acorn	John	University of Alberta	Edmonton, AB
Bahreini	Rassol	Alberta Agriculture and Forestry	Edmonton, AB
Barkley	Shelley	Alberta Agriculture	Brooks, AB
Barr	William	City of Edmonton	Edmonton, AB
Bercha	Robert		Calgary, AB
Best	Lincoln		
Beswick	Bette		Calgary, AB
Brant	Randall	Agriculture and Agri-Food Canada	Lethbridge, AB
Briere	Charity		Red Deer
Brumec	Vesna		
Cárcamo	Héctor	Agriculture and Agri-Food Canada	Lethbridge, AB
Cartar	Ralph	University of Calgary	Calgary, AB
Catton	Haley	Agriculture and Agri-Food Canada	Lethbridge, AB
Chelle-Anderson	Cheryl	Agriculture and Agri-Food Canada	Raymond, AB
Chen	Xuedong		Lethbridge, AB
Coker	Alex		
Cuny	Robert	Lakeland College	Lloydminster, AB
Daniels	Sheree	Agriculture and Agri-Food Canada	Lethbridge, AB
DeClerck-Floate	Rosemarie	Agriculture and Agri-Food Canada	Lethbridge, AB
Evans	Megan	University of Calgary	Calgary, AB
Evenden	Maya	University of Alberta	Edmonton, AB
Flaherty	Leah	Grant MacEwan University	St. Albert, AB
Floate	Kevin	Agriculture and Agri-Food Canada	Lethbridge, AB
Friesen	Kevin	Grant MacEwan University	Edmonton
Fry	Ken	Olds College	Olds, AB
Fulkerth	Christine		Olds, AB
Gabert	Keith	Canola Council	Innisfail, AB
Galpern	Paul		
Gavin	Michael		
Giacobbo	Victoria	Royal Alberta Museum	Edmonton, AB
Gomez	Christina		
Heming	Bruce	University of Alberta	Edmonton, AB
Hilchie	Gerald	University of Alberta	Edmonton, AB
Hoover	Shelley	Agriculture and Rural Development	Edmonton, AB
Hoover	Trent		
Hossain	Mohammad		
Jones	Bradford		
Judge	Kevin		
Kristalovich	Myles		Calgary

Last Name	First Name	Organization	Location
Kwok	Kevin		Medicine Hat, AB
Laird	Robert	University of Lethbridge	Lethbridge, AB
Longair	Robert	University of Calgary	Calgary, AB
Lumley	Lisa	Royal Alberta Museum	Edmonton, AB
McClay	Alec	McClay Ecoscience	Sherwood Park, AB
Meers	Scott	Alberta Agriculture	Brooks, AB
Mousseau	Tonya	Mount Royal University	Calgary, AB
Oliver	Mark		Calgary, AB
Pohl	Greg	Canadian Forest Service	Edmonton, AB
Proctor	Heather	University of Alberta	Edmonton, AB
Reid	Mary	University of Calgary	Calgary, AB
Retzlaff	Philip		
Schwarzfeld	Marla	University of Alberta	Edmonton
Sheffied	Cory		
Sjolie	Dylan	University of Alberta	Edmonton, AB
Smith	Alexander		Edmonton, AB
Spence	John	University of Alberta	Edmonton, AB
Sperling	Felix	University of Alberta	Edmonton, AB
Swann	John	University of Calgary	Calgary, AB
Thomson	Don		Calgary
Thorsen	Ashley	Royal Alberta Museum	Edmonton, AB
Thyssen	Adrian	University of Alberta	Edmonton, AB
Vickruck	Jess	University of Calgary	Calgary, AB
Walter	Dave	University of Alberta	
Whitehouse	Caroline	Alberta Agriculture and Forestry	Edmonton, AB
Williams	Daryl	University of Lethbridge	
Retired Members			
Dolinski	Michael		Edmonton, AB
Holmberg	Robert	Athabasca University	Athabasca, AB
Student Members			
Ahn	Micky	University of Alberta	Calgary, AB
Balcaen	Martine		
Batallas	Ronald	University of Alberta	Edmonton, AB
Batista	Philip	University of Alberta	Edmonton, AB
Bezanson	Giselle	University of Lethbridge	Lethbridge, AB
Canuel	Maddison	University of Calgary	Calgary, AB
Correal Wilches	Diana	Agriculture and Agri-Food Canada	Lethbridge, AB
Domnich	Ilan		
Dufton	Shelby		
Dupuis	Julian Rowe		
	Diana		
Fernandez	Catalina	University of Lethbridge	Lethbridge, AB
Fjordbotten	Krista	University of Lethbridge	Lethbridge, AB
French	Rowan		
Ghavami	Hadi		
Glass	Haley		
Goulding	Megan		
Grocock	Nicholas		

Last Name	First Name	Organization	Location
Guevara Rozo	Sydne	University of Alberta	
Hervet	Vincent	University of Lethbridge	Lethbridge, AB
Hoefele	Danielle	University of Alberta	
Holmes	Gregory	University of Athabasca	Lethbridge, AB
Hummel	Jeremy	University of Alberta	Edmonton, AB
Ivanova	Mariya		Calgary, AB
Jones	Kelsey		
Jorgensen	Amanda		
Kohler	Monica	University of Alberta	Edmonton, AB
Kutby	Rola	University of Calgary	Calgary, AB
Lachowsky	Leanna	University of Calgary	Calgary, AB
Lebunasin Arachchige	Pasan		
Leo	Sarah	University of Lethbridge	Lethbridge, AB
MacDonald	Zachary		Edmonton, AB
MacInnis	Donna		
Mader	Caitlin		
Marshall	Valerie		
Mcpike	Sarah		
Meehan	Matthew		
Murphy	William		
Musso	Antonia		
Nelson	Tyler	University of Alberta	Edmonton, AB
Oliver	Tom		Calgary, AB
Pain	Rebecca		
PERRY	ALEXANDER		
Philipsen	Laurens	University of Lethbridge	Patricia, AB
Punko	Rosanna	University of Manitoba	Westlock, AB
Retzlaff	Jennifer	University of Calgary	Calgary, AB
Robinson	Samuel		Calgary, AB
Ross	Michael		
Schmitke	Michaela	University of Lethbridge	Lethbridge, AB
Shegelski	Victor		
Shivananjappa	Sunil	University of Lethbridge	Lethbridge, AB
Sosiak	Christine	Department of Renewable Resources	
Sperling	Janet	University of Alberta	Edmonton, AB
St. Onge	Amanda	University of Alberta	Edmonton, AB
Sturm	Ashton	University of Alberta	
Subramaniam	Ravindran	University of Calgary	
Trevo	Stephen	University of Calgary	Edmonton, AB
Vandervalk	Lynae	University of Alberta	Granum
Waytes	Riley		
Wingert	Brittany	University of Alberta	Edmonton, AB
Woodman	Samuel		Lethbridge, AB

Libraries	Institution	Location
Archives, Entomological Society of Alberta	Agriculture and Agri-Food Canada	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	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	Augustana University College	
Lethbridge Research Centre	Agriculture and Agri-Food Canada	Lethbridge, AB
Medicine Hat College Library	Medicine Hat College	Medicine Hat, AB
N.A.I.T. Library	Northern Alberta Institute of Technology	Edmonton, AB
National Library of Canada	National Library of Canada	Ottawa, ON
Northern Forestry Centre Library	Northern Forestry Centre	Edmonton, AB
Olds College Library	Olds College	Olds, AB
Provincial Museum and Archives	Provincial Museum and Archives	Edmonton, AB
Red Deer College Library		
S.A.I.T. Library	Southern Alberta Institute of Technology	Calgary, AB
Strickland Library	University of Alberta	Edmonton, AB
University of Calgary Library	University of Calgary	Calgary, AB
University of Lethbridge Library	University of Lethbridge	Edmonton AB