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PROCEEDINGS OF THE 55th ANNUAL MEETING OF THE



Entomological Society of Alberta

**25-27 October 2007
Olds, Alberta**



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TABLE OF CONTENTS

ESAB Board of Directors	2
Meeting Committee Members	2
President's Address	3
Program of Events.....	4
Abstracts of Submitted Papers and Posters.....	7
Author Index of Abstracts	19
Minutes of the Fall Executive Meeting.....	21
Minutes of the Annual Business Meeting	25
Annual Reports of Directors, Officers and Committees	28
Photographs.....	40
ESAB Membership List.....	46
About the ESAB	back cover

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President's Address

Greetings all!

Thank you for staying on for the Society's business meeting. Your participation in the meeting is an important part of being a member. We will try to keep things brief.

Olds has proven to be an excellent setting for this year's meeting. The hard work of all the organizational committees has made the 55th Annual General Meeting of the Entomological Society of Alberta a great success. I extend a special thank you to Ken Fry and his students who organized the meeting rooms, banquet and food. The Scientific committee, consisting of Tonya Mousseau, Rob Longair, Mary Reid and Ralph Carter, organized an excellent symposium followed by a diverse and informative selection of papers and posters. Our treasurer, Lisa Lumley, skilfully handled the registration duties and meeting budget. Thank you also to all the members that attended and to those who presented talks, especially the students. Without your participation and attendance, the meeting would not be what it is. I hope the students will return next year and continue as active members with the society.

I have been a member of the Entomological Society of Alberta since 1994 when I started my Ph.D. at the University of Alberta. I am honoured to be able to contribute to the Society and its operation by being a member of the Executive Committee. It has been a great opportunity to gain a better understanding of Entomology in Alberta.

Thank you to the ESA Executive members, especially Maya Evenden and Heather Proctor, for their help, comments and timely reminders during the year. It has been a pleasure being President and I look forward to my third position as Past-President with the Executive for 2008.

Jeff Battigelli
President, Entomological Society of Alberta

PROGRAM OF THE 55th ANNUAL MEETING OF THE ENTOMOLOGICAL SOCIETY OF ALBERTA

Thursday, October 25:

- 17:00-19:00** Executive meeting (Land Sciences Building, Rm. 1023)
- 19:00-21:00** Registration (Land Sciences Building Atrium)
- 19:30-23:00** Wine and Cheese Reception, Land Sciences Building Atrium

Friday, October 26:

- 08:00-10:00** Registration (Land Sciences Building Atrium)
- 08:00-18:00** Poster Display (Land Sciences Building, Room 1024)
- 08:15-09:30** Welcome and Keynote Lecture (Land Sciences Building, Rm. 1027)
- 08:15-08:30 Welcoming Remarks and Announcements
- 08:30-09:30 **Keynote Lecture: Dr. Diana Six, University of Montana**
“The Mountain Pine Beetle in a changing world”
- 09:30-10:00 Refreshment Break
- 10:00-12:00** **Symposium: Alberta Research on Mountain Pine Beetles**
- 10:00-10:30 **The effect of winter temperatures on Mountain Pine Beetle survival across Alberta**
Barry Cooke, J. Régnière, B. Bentz, S. Bourassa
- 10:30-11:00 **Predicting Mountain Pine Beetle outbreaks**
Tomas de Camino-Beck
- 11:00-11:30 **Mountain Pine Beetle Management Outcomes in Banff National Park**
Mary Reid, K. Trzcinski, T. Reid
- 11:30-11:45 **Mountain Pine Beetle invasion of boreal forests: status and outlook**
David Langor, A. Rice, D. Williams
- 11:45-12:00 **Mountain Pine Beetle-associated blue stain fungi in Alberta: relationship to the MPB invasion of the boreal forest**
Adrianne Rice, C. Myrholm, D. Langor

12:00-13:30 Lunch break

13:30-14:45 Oral Presentations 1: Pest Management

13:30-13:45 **Root maggots (*Delia* spp.) (Diptera: Anthomyiidae) in canola-wheat intercrops**

Jeremy D. Hummel, L.M. Dosdall, G.W. Clayton, K.N. Harker & J.T. O'Donovan

13:45-14:00 **The influence of spectral reflectance the Cabbage Seedpod Weevil and its potential role in resistance**

James A. Tansey, L.M. Dosdall & B.A. Keddie

14:00-14:15 **Development of a semiochemical-based monitoring system for Diamondback Moth, *Plutella xylostella* (L.) (Lepidoptera – Plutellidae) on canola**

Chris E. Miluch, M.L. Evenden & L.M. Dosdall

14:15-14:30 **Mountain Pine Beetle survival in wood chips**

Anina E. Hundsdoerfer & S. Ranasinghe

14:30-14:45 **Spatial and temporal distribution dynamics of *Plutella xylostella* and its associated parasitoids in commercial canola fields**

Rana M. Sarfraz, Lloyd M. Dosdall & B. Andrew Keddie

14:45-15:15 Refreshment Break

15:15-16:45 Oral Presentations 2: Ecology & Evolution

15:15-15:30 **Impacts of forestry on the bumble bee community**

Chris Pengelly & Ralph V. Cartar

15:30-15:45 **Consequences of larval competition on mating strategies of female bruchids (Coleoptera: Bruchidae)**

Daynika Schade & Steve Vamosi

15:45-16:00 **Mountain Pine Beetles on the edge: distribution across thinned and clear-cut**

Josee Méthot & Mary L. Reid

16:00-16:15 **Wing-wear in bumble bees (*Bombus* spp.)**

Danusha Foster & Ralph V. Cartar

16:15-16:30 **Abiotic and biotic factors influencing abundance and distribution of the Arctic Tadpole Shrimp, *Lepidurus arcticus* (Pallas)**

Leanna E. Lachowsky, M. Forbes & P.A. Smith

- 16:30-16:45 **Testing the species validity of *Nicrophorus benguetensis* Arnett 1946**
Tonya Mousseau & D.S. Sikes
- 18:00-22:00 Evening Social Program (Land Sciences Building Atrium)**
- 18:00-18:30 Cocktails
- 18:30-20:00 Banquet
- 20:00-20:15 Awards Presentations
- 20:15-21:15 **After Dinner Speaker: Buck Godwin**
“55 years of pests and pest management practices in Mountain View County”

Saturday, October 27:

- 08:30-12:00 Poster Display (Land Sciences Building, Room 1024)**
- 08:30-10:00 Oral Presentations 3: Ecology (Land Sciences Building, Rm. 1027)**
- 08:30-08:45 **An overview of research on the Pea Leaf Weevil in Alberta**
Héctor A. Cárcamo & S. Meers
- 08:45-09:00 **Biology of a little-known weevil, *Ceutorhynchus subpubescens***
Lloyd M. Dosdall, B.J. Ulmer, & Patrice Bouchard
- 09:00-09:15 **The how and why of weed biocontrol agent release; increasing our prediction of success**
Rose A. De Clerck-Floate
- 09:15-09:30 **Spiders of an Alberta wetland - the Wagner Natural Area (Arachnida: Araneae) - including discovery of new species**
Robin Leech & Don J. Buckle
- 09:30-09:45 **Population density and male polymorphism in the feather mite *Falculifer rostratus* (Buchholz) (Acari: Falculiferidae)**
Heather C. Proctor, G. Williams & D.H. Clayton
- 09:45-10:00 **Resource tracking by bumble bees: Timing of revisitation to plants of different quality**
Ralph V. Cartar
- 10:15-12:00 Society Annual General Meeting (Land Sciences Building, Rm. 1027)**

Presentation Abstracts

1. An overview of research on the Pea Leaf Weevil in Alberta

H.A. Cárcamo¹ & S. Meers²

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The Pea Leaf Weevil (*Sitona lineatus* L.) is a common pest of peas (*Pisum sativum* L.) and faba beans (*Vicia faba* L.) in its native Europe and North Africa. In Alberta, it was first collected by Dr. R.J. Byers (Agriculture & Agri-Food Canada) in 1997 and localized damage was noticed sporadically in the early 2000's in the counties of Lethbridge and Taber. Outbreak levels throughout southern Alberta were experienced in 2006 when several thousands of acres of field peas were sprayed. In 2007 the Alberta and Saskatchewan Pulse Growers Commissions and the Alberta Crop Development Industry Fund funded a network of research collaborators from Agriculture and Agri-Food Canada, Alberta Agriculture and the Southern Applied Research Association to address a number of management, and basic and applied ecology questions on this insect. The presentation will provide a brief review of the history and biology of *S. lineatus*, current research on management strategies, insect-plant interactions to validate local economic thresholds and preliminary findings on the seasonal activity of the weevil in the Lethbridge region.

2. Resource tracking by bumble bees: Timing of revisitation to plants of different quality

R.V. Cartar

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

Repeated use of a foraging area involves decisions about timing of return visitation to patches. How do foraging bumble bees pattern their return times to plants? This paper tests for the impact of plant quality and pollinator familiarity on the mean and predictability (CV) of return times to plants. Plant quality (nectar production rate) was manipulated using defoliation, and studied in 5 different plant species (and their associated pollinators) in SW Alberta. Pollinators were worker bumble bees, either residents (marked) or transients (unmarked). Return times of residents were more systematic than transients, at least in 3 of the 5 plant species. With lots of visitation by residents, low quality plants were visited more regularly. With little visitation by residents, high and low quality plants were revisited equally. For residents visiting plants, the likelihood of interlopers between successive visits to a plant (regardless of quality) was surprisingly low (generally only on 1/3 to 2/3 of revisits, depending on plant species). The timing of revisitation to plants therefore reflects an intriguing interplay of local familiarity of pollinators, plant quality, and size of the resident community.

3. The effect of winter temperatures on Mountain Pine Beetle survival across Alberta

B.J. Cooke¹, J. Régnière², B. Bentz³, & S. Bourassa¹

¹Canadian Forest Service, Northern Forestry Centre, Edmonton, AB.

²CFS, Laurentian Forestry Centre, Sainte Foy, QC.

³USDA Forest Service, Logan, Utah, USA.

Mountain Pine Beetle populations sampled across the province of Alberta in the winter of 2006-07 exhibited a high level of overwintering mortality that appeared to be a product of freezing due to cold exposure. The province-wide overwintering survival rate was observed to be 0.19 ± 0.02 , in very close agreement with the survival rate of 0.21 ± 0.01 predicted by the process-based cold-tolerance model of Régnière & Bentz (2007). The model's daily output suggested that almost all of this mortality happened during an anomalously early cold snap November 26-28, when daily minimum temperatures across the province dropped suddenly from $\sim 0^{\circ}\text{C}$ to a winter low between -32 and -38°C . The spatial pattern of freezing mortality across the province matched that predicted by the model, with heavy mortality ($>90\%$) predicted and observed in the northern region and light mortality ($<50\%$) predicted and observed in the southern region. The model thus appears to be valid, suggesting it could be used as a daily real-time forecasting tool. Interestingly, although the November cold snap was the most lethal of the winter of 2006-07, the model output suggests that a cold snap in early January would have caused almost as much mortality were it not for the earlier cold snap selecting out the least cold-tolerant individuals. The Mountain Pine Beetle thus seems to be poorly adapted to Alberta's harsh and variable continental winter climate, although it remains to be seen just how serious a barrier this is to further invasion into the boreal forest. Climate warming and the evolution of cold tolerance are two uncertain, stochastic processes that could heavily influence the eastward rate of spread.

4. Predicting Mountain Pine Beetle outbreaks

T. de Camino-Beck

Department of Mathematical & Statistical Sciences, University of Alberta, Edmonton, AB.

When the Mountain Pine Beetle population reaches epidemic levels, large areas of old growth forests are decimated. In British Columbia alone, the Mountain Pine Beetle have affected more than 10 million ha of land. As a consequence there is an urgent need to predict potential outbreaks, for strategic control. In this paper, we use a Markov process logistic regression model to incorporate spatio-temporal climatic, ecological and topographic information, to determine mountain beetle outbreak probability in the province of British Columbia, Canada. We use 40 years of outbreak data to fit the MP logistic regression model. We use a new method for the selection of the sub-model that has the highest predictive power. Based on the area under the receiver operator curve (called ROC curve), we were able to generate probability maps with high outbreak/no-outbreak discrimination capability. The resulting logistic regression model is simple and requires minimal climatic and spatial information to calculate outbreak probability. This method can be used to determine high outbreak risk regions for control and management.

5. The how and why of weed biocontrol agent release; increasing our prediction of success

R.A. De Clerck-Floate

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

A more strategic approach to weed biocontrol implementation is emerging with recent efforts to predict biocontrol outcomes based on methods of biocontrol agent release. Whereas the majority of effort has been on predicting establishment and persistence of insect agent populations dependent on the number initially released, there has been little formal investigation of whether release strategy can also predict agent efficacy. The current study used the houndstongue root-boring weevil, *Mogulones cruciger*, to test the effect of release method on agent establishment, population increase, dispersal and impact. Numbers of 0, 100, 200, 300 or 400 weevils were field released within discrete, isolated houndstongue patches (5 replicates/ treatment), and weevil and houndstongue populations were monitored for change. The weevil established in all treatment patches, and successfully controlled houndstongue patches within 3 years, regardless of release size. Release size was positively correlated with weevil numbers and damage to host plants a year after release; however, the different release sizes reduced houndstongue populations by the same amount and at the same rate relative to control patches. Thus, all release sizes tested could predictably achieve patch-level control of houndstongue despite differences in the level of feeding. The weevils from the founding populations dispersed 1.42 km in 3 years to colonize surrounding houndstongue patches within a treed landscape. Both distance from release patch and the number of weevils originally released were significant predictors of further weevil establishment within the landscape. These data suggest that strategies for *M. cruciger* release can be developed for predictable houndstongue control.

6. Biology of a little-known weevil, *Ceutorhynchus subpubescens*

L.M. Dosdall¹, B.J. Ulmer², & P. Bouchard³

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³Eastern Cereal and Oilseed Research Centre, Agriculture and Agri-Food Canada, 960 Carling Avenue, Ottawa, ON K1A 0C6.

Since the description of *Ceutorhynchus subpubescens* more than 125 years ago, very little information has been determined on its biology, taxonomy, or distribution. We conducted studies in southern Alberta to investigate aspects of the life history and host plant feeding preferences of *C. subpubescens*. Pre-imaginal life stages were described, and data were compiled on its North American distribution. Adults emerged from overwintering sites in shelterbelts in late April to early May, and first occurred on host plants in May. Eggs were laid into apical stem regions of flaxweed (Brassicaceae), and hatched to larvae that mined the stems, feeding primarily on pith tissue. Three larval instars developed within *D. sophia*. When mature, the final-instar larva bored an exit hole in the primary stem, just below the juncture

of a lateral shoot. Developmental time from eggs to final instars required only 35 to 45 d, an adaptation that accommodated the rapid development of *D. sophia* hosts. New distribution records for the species include Alberta, Arizona, Montana, Nebraska, New Mexico, Oregon, Saskatchewan, South Dakota, and Washington. *Ceutorhynchus subpubescens* has adapted to exploit a resource-rich habitat, where larvae are free from interference from predators and parasitoids; however, its relatively rare occurrence in western North America is surprising given the abundance of its host plants.

7. Wing-wear in bumble bees (*Bombus* spp.)

D.J. Foster & R.V. Cartar

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

Bumble bees (*Bombus* spp.) rely heavily upon their wings to forage to obtain food for their colony. Over time, a bee's wings accumulate irreparable damage but the exact causes of this damage have yet to be documented. This wear may be a result of bee foraging behaviours such as time-in-flight in patch, frequency of accelerations while foraging on flowers, or frequency of wing collisions with external objects. I investigated these hypotheses by conducting an observational study whereby I took video footage of tagged bumble bees foraging on different plant species along with digital photographs of their wings among days to link foraging behaviour to wing wear.

8. Examination of load selection in correspondence to ant mass in three colonies of leafcutter ants found in different habitats at the CURDTS site, Guanacaste Province, Costa Rica [poster]

M. Gaberel & R. Drozdiak

Environmental Studies, Science Department, Augustana Faculty, University of Alberta, Camrose, AB.

At the CURDTS site in the Guanacaste region of Costa Rica, two different species of leaf cutting ants are commonly found, *Acromyrmex echinator* and *Atta cephalotes*. Forager mass and head capsule size in comparison to load mass and area were analyzed for three different colonies in different habitats. The findings demonstrate that the different vegetative structures of the habitats affect the ant mass/ load mass, ant mass/ load area, and head capsule width/ load mass relationships.

9. Root maggots (*Delia* spp.) (Diptera: Anthomyiidae) in canola-wheat intercrops

J.D. Hummel¹, L.M. Dosdall¹, G.W. Clayton², K.N. Harker³, & J.T. O'Donovan³

¹Dept. Agricultural, Food, and Nutritional Science, Univ. Alberta, Edmonton, AB.

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

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

The infestation of canola crops by *Delia* spp. can be reduced when non-host plants are grown

with the canola due to the disruption of the pre-oviposition behaviour of the flies in the presence of non-host plants. To test if wheat, as a non-host, could reduce *Delia* infestations to canola while also producing a second marketable product, intercrops of the two plant species were established at Lacombe, Ellerslie, and Ft. Vermilion, Alberta in 2005 and 2006. Adult *Delia* spp. activity densities and larval feeding damage to canola taproots in response to varying proportions of canola and wheat in the intercrops and monocultures will be discussed.

10. Mountain Pine Beetle survival in wood chips

A.E. Hundsdoerfer & S. Ranasinghe

Alberta Sustainable Resource Development, Forest Health Section, Edmonton, AB.

Chippers, mulchers and debarkers are an emerging mechanical treatment for trees infested with Mountain Pine Beetles (*Dendroctonus ponderosae*). To determine how effective the treatment is for killing the beetles, we cut the bark of three heavily infested trees into circular chips ranging from 2.9 - 10.2cm in diameter and monitored emergence in emergence traps. The number of beetles emerging from chips no bigger than 5cm in diameter was significantly lower than the number of beetles emerging from intact control bolts. By comparing the emergence rate to the threshold required for successful mass attack of one healthy tree we conclude that mulching an infested tree into chips that are no larger than 5cm in either width or length is an effective method of controlling infested trees. As an example of a mulcher that achieves this goal we present the chip size distribution produced with a mulching head of novel design.

11. Abiotic and biotic factors influencing abundance and distribution of the Arctic Tadpole Shrimp, *Lepidurus arcticus* (Pallas)

L.E. Lachowsky^{1,2}, M. Forbes¹, & P.A. Smith³

¹Dept. Biology, Carleton University, Ottawa, ON.

²Dept. Biological Sciences, University of Calgary, Calgary, AB.

³National Wildlife Research Centre, Carleton University, Ottawa, ON.

A key component of arctic ecosystems, arctic tadpole shrimp, *Lepidurus arcticus*, are an important food source for migrating birds. We investigated the effects of abiotic and biotic factors on the distribution and abundance of *L. arcticus* in coastal fishless ponds on Southampton Island, Nunavut. We found that as pH and total dissolved solids increased, the proportion of juveniles decreased. Abundance and juvenile proportion both decreased in ponds closer to the high tide line. Breeding shorebirds and other birds were observed feeding upon aquatic invertebrates, especially in ponds closer to the coast. We also found proportionally fewer juveniles in areas of high bird abundance, which could be due to size selective feeding.

12. Mountain Pine Beetle invasion of boreal forests: status and outlook

D. Langor, A. Rice, & D. Williams

Canadian Forest Service, Northern Forestry Centre, Edmonton, AB.

The Mountain Pine Beetle (MPB) has recently spread from northern BC eastward to the boreal pine forests of northwestern Alberta where lodgepole pine (Pl)-jack pine (Pj) hybrids have been infested in large numbers. Current MPB infestations are now in close proximity to pure Pj stands in eastern Alberta, and this species is likely a suitable host for MPB. The possible spread of MPB to Pj has serious economic, social, and environmental implications for Canada. There is a dearth of basic biological information about MPB in boreal forests, yet such information is important to predict the success of MPB in boreal pines and subsequent eastward spread of this beetle. Our team's research addresses some basic biological questions about MPB.

In laboratory rearing experiments where phloem thickness of logs was controlled at 1.3-1.6 mm, we observed a general trend that MPB made longer egg galleries, used a higher proportion of egg galleries for egg deposition, produced more larvae and adults, and experienced lower mortality in Pj than in hybrids or Pl of similar phloem thickness. Reared F1 beetles reared from Pj and hybrids are ca. 10% smaller than the parent beetles, likely a response to the thin phloem. Small size may have negative implications for MPB.

Comparison of naturally occurring MPB populations in hybrid pines in AB to those in Pl in northeastern BC showed no significant difference in attack density, egg gallery density, brood density, development and mortality. Development preceding winter was far more rapid than expected based on data from southern Alberta. In boreal Alberta, MPB phenology may be substantially different than that through much of BC and southern AB. There is no obvious biological barrier to prevent further spread of the MPB in boreal forests.

13. Spiders of an Alberta wetland - the Wagner Natural Area (Arachnida: Araneae) including discovery of new species

R. Leech^{1,2} & D.J. Buckle³

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Representatives of 17 families of spiders were collected during 1985 at the Wagner Natural Area 6 km west of Edmonton, Alberta, and 668.4 m altitude. It contains a boreal spring fen estimated to be 4700 years old. In 1985, the Area was 129.5 ha (320 acres) in size, but it is now 248 ha (613 acres). The Wagner Natural Area is a water-logged ground of bogs and fens, forested, with marl ponds. The marl is formed from the groundwaters which are rich in calcium carbonate. The site has not been cleared or farmed. Almost 200 species have been identified of an estimated 300 or more species collected. These spiders represent a unique assemblage of faunal elements of Arctic and peatland, and perhaps relict communities of pre-Wisconsinan origin. At least 14 new species of 3 families were discovered.

14. Mountain Pine Beetles on the edge: distribution across thinned and clear-cut boundaries.

J. Méthot & M. Reid

University of Calgary, Calgary, AB.

This study was designed to examine the effects of habitat edges on the abundance of Mountain Pine Beetles (*Dendroctonus ponderosae*) in forests dominated by lodgepole pine (*Pinus contorta*) in southwest British Columbia. The use of clear cutting and forest thinning as measures to manage the spread of beetles can create habitat edges that in turn may alter beetle movement across a landscape. We investigated the influence of these habitat edges on beetle abundance using pheromone traps placed at different distances (20 and 90m) perpendicular to an edge and extending into adjacent habitats.

15. Development of a semiochemical-based monitoring system for Diamondback Moth *Plutella xylostella* (L.) (Lepidoptera – Plutellidae) on canola

C.E. Miluch¹, M.L. Evenden², & L.M. Dosdall¹

¹Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB.

²Department of Biological Sciences, University of Alberta, Edmonton, AB.

Monitoring of agriculture insect pest species is an important tool for predicting outbreaks and aids in decision-making for pest managers. Diamondback moth *Plutella xylostella* (L.) (Lepidoptera – Plutellidae) are an outbreak species on canola in the Canadian prairies, which can lead to substantial economic loss to producers. Utilizing semiochemicals (including sex pheromone and green leaf volatiles) to improve the monitoring of Diamondback Moth has been investigated.

16. Testing the species validity of *Nicrophorus benguetensis* Arnett 1946

T. Mousseau & D.S. Sikes

Dept. of Biological Sciences, University of Calgary, AB.

In 1946, Arnett described a population of *Nicrophorus nepalensis* from Luzon Island, Philippines as a new species, based on elytral punctuation, shininess, and elytral epipleural hair colouration. In 2002, Sikes et al. synonymized Arnett's *N. benguetensis* with *N. nepalensis*. The objective of this study is to test the validity of *N. benguetensis* using four mitochondrial gene fragments (COI, COII, NADH4, and NADH5). Phylogenetic analyses were conducted in a maximum likelihood (PAUP and Garli) and Bayesian (MrBayes and BayesPhylogenies) framework. The results are inconsistent depending on if the genes are combined or analyzed separately. The COI results support synonymy and the COII results have little resolution; however, combining all genes together supports the validity of *N. benguetensis*.

17. Impacts of forestry on the bumble bee community

C. Pengelly & R.V. Cartar

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

Bumble bees are an ecologically important and widespread pollinator in boreal forest ecosystems. Bumble bees were censused at the EMEND (Ecosystem Management Emulating Natural Disasters) research site in Northern Alberta during July and August, summer 2007. Our results will demonstrate the long term impacts (i.e. over 8 bee generations) of varying levels of a logging disturbance (0,10,20,50,75 and 100% tree retention) on the distribution, density and species assemblage of the bumble bee community.

18. Population density and male polymorphism in the feather mite *Falculifer rostratus* (Buchholz) (Acari: Falculiferidae)

H.C. Proctor¹, G. Williams¹, and D.H. Clayton²

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²Biology Department, University of Utah, Salt Lake City, Utah, USA. 84112-0840.

Male polymorphism, in which two or more male morphologies occur within a species, is a widespread phenomenon in astigmatan mites. In the free-living species *Sancassania berlesei*, male nymphs develop into relatively unmodified homeomorphs at high population densities, and into highly modified, aggressive heteromorphs at low densities. We tested whether population density correlated with male morph ratio in the dimorphic feather mite *Falculifer rostratus* (Falculiferidae). Twenty-one pigeons (*Columba livia*) from Illinois, USA, were thoroughly washed and all *F. rostratus* extracted were identified to stage, sex and male morph. Excluding four birds that had no *F. rostratus*, total densities per host ranged from 1-1155. Numbers of heteromorph males correlated positively with population density, but homeomorph numbers had no obvious relationship with density. Ratios of homeomorph to heteromorph were frequently higher at low population densities than at high densities; the opposite of the pattern observed for *S. berlesei*. An alternative hypothesis that quality of diet may determine morph ratio is tested and receives little support. It is possible that male morph is determined by density in *F. rostratus*, but that it is controlled at a finer physical scale (e.g., per feather) than could be measured in this study. Other possibilities are that morphs are determined genetically or by host variables we did not account for (e.g., moulting status).

19. Mountain Pine Beetle Management Outcomes in Banff National Park

M.L. Reid¹, K. Trzcinski², & T.G. Reid¹

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

²Department of Fisheries and Oceans, Halifax, NS.

Few quantitative assessments of Mountain Pine Beetle (MPB) management outcomes have been done. In 2001, when MPB were becoming evident, Banff National Park implemented a two-zone management strategy. In the eastern, “management” zone, adjacent to Alberta

provincial lands, trees were baited and then, if they or neighbouring trees were attacked by MPB, they were felled and burned prior to beetle emergence. There was also a large prescribed fire. In the western “monitoring” zone, only limited prescribed burns occurred. This provided an opportunity to compare the zones for management effectiveness. MPB impact was quantified by aerial surveys of red attacked trees and the removed green attack trees, and we expressed it as 1) area impacted, 2) the proportion of 500 x 500 m cells that were affected, and 3) the proportion of cells with habitat that were affected. We found little impact of management on the area affected, but the number of cells affected was greatly reduced in the management zone. To explain this discrepancy, we examined the number and quality of beetles caught in the two zones. We found that beetles caught in the management zone were fewer in number and in poorer body condition than those in the monitoring zone. These two factors lead to reduced success in pioneering, which may favour shorter dispersal distances in the management zone than in the monitoring zone, reducing the spread to new cells. These analyses suggest that direct control of MPB may be possible if their spread across the landscape is contained.

20. Effect of marking techniques on survivorship and body condition of Mountain Pine Beetles (*Dendroctonus ponderosae*) [poster]

T.G. Reid & M.L. Reid

Department of Biology, University of Calgary, Calgary, AB.

Mark-release-recapture experiments are a useful tool in dispersal studies of insects. It is important however, that the marking agent does not negatively affect survival of the study organism. Fluorescent marking dust is a common marking agent that is reliable and effective for marking large numbers of organisms. This laboratory study compares daily survivorship and body condition of Mountain Pine Beetles marked with one of four separate fluorescent marking dust colours with condition and survivorship of unmarked individuals. These results are then compared to survivorship results obtained in field mark-release-recapture trials.

21. Mountain Pine Beetle-associated blue stain fungi in Alberta: relationship to the Mountain Pine Beetle invasion of the boreal forest

A. Rice, C. Myrholm, & D. Langor

Canadian Forest Service, Northern Forestry Centre, Edmonton, AB.

The Mountain Pine Beetle (MPB) vectors blue-stain fungi (BSF) that appear to be critical to its success. Fungal success will be an important factor determining beetle success in the boreal region but little was known about the distribution of these fungi in Alberta or their biology in boreal climates and host trees.

Three species of BSF, *Grosmannia clavigera*, *Ophiostoma montium*, and *Leptographium longiclavatum*, are common MPB associates in Alberta (AB). The three species are recovered in similar proportions from northern AB MPB populations but *L. longiclavatum* is rare in southern AB.

All three fungi grow and produce lesions on jack pine and lodgepole x jack pine hybrids. In fact, all three species grow better in jack pine and hybrids than they do on lodgepole pine.

These differences may alter the beetle-tree-fungal dynamics that have co-evolved in lodgepole pine and, thus, the effects on beetle success are unknown.

The three BSF differ in cold tolerance with *G. clavigera* and *L. longiclavatum* being more cold tolerant than *O. montium*. However, some intraspecific variation is apparent and the cold winter of 2006/07 has selected for cold tolerant strains of *O. montium*. All three fungi survived the winter near Grande Prairie, while most of the beetles did not.

To date, neither fungal development in jack pine nor fungal overwintering mortality presents an obvious barrier to further spread of the MPB into boreal jack pine forests.

22. Host plant nutritional quality affects the performance of the biocontrol agent *Diadegma insulare* as mediated through the herbivore *Plutella xylostella* [poster]

R.M. Sarfraz¹, L.M. Dosdall², and B.A. Keddie¹

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

²Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB T6G 2P5.

In this study, we manipulated soil fertility regime to investigate bottom-up effects on *Brassica napus* plants, and in turn on the herbivore Diamondback Moth, *Plutella xylostella*, and its parasitoid *Diadegma insulare*. Different fertilizer applications significantly affected the nutrient contents of *B. napus* foliage, and this in turn affected host preferences and performance of *P. xylostella* as well as *D. insulare*. Female *P. xylostella* discriminated among host plants subjected to different levels of soil fertility for oviposition, and tended to select plants on which survival and development of their offspring was optimal, and on which new generation adults had highest longevity when their food was limited. Host plant fertility levels on which parasitized *P. xylostella* host larvae were reared affected several fitness correlates of *D. insulare*; increased fertility to an extent enhanced the overall performance of the parasitoid. In addition, plants subjected to herbivory by *P. xylostella* responded by producing elevated levels of some nutrients (e.g., sulfur), but other nutrient levels declined in infested leaves (e.g., nitrogen). Regardless of fertility rate, plants compensated for herbivory by increasing root mass relative to their non-infested counterparts; plants grown under optimum fertility developed the most robust root systems when infested. In integrated crop management systems, selecting optimal fertility levels should consider not only impact on yield in the absence of pests, but also effects on compensatory abilities of plants when under attack, and downstream effects on the developmental biology of herbivores and their parasitoids.

23. Spatial and temporal distribution dynamics of *Plutella xylostella* and its associated parasitoids in commercial canola fields

R.M. Sarfraz¹, L.M. Dosdall², and B.A. Keddie¹

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

²Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB T6G 2P5.

Seasonal distribution patterns of the Diamondback Moth, *Plutella xylostella* (L.) (Lepidoptera:

Plutellidae), and its principal parasitoids *Diadegma insulare* (Cresson) (Hymenoptera: Ichneumonidae) and *Microplitis plutellae* (Muesebeck) (Hymenoptera: Braconidae) were investigated in two commercial fields of canola in southern Alberta. The sampling of *P. xylostella*, *D. insulare* and *M. plutellae* from points arranged in grid patterns, together with the mapping and analysis of their spatial distributions over time, generated a detailed picture of the pattern of crop colonization by the herbivore and its parasitoids. *Plutella xylostella* invaded the crop on multiple fronts, exhibited significant aggregations on different scales, and experienced a simultaneous decline of infestations at most sampling points as the season progressed. *Diadegma insulare* exhibited significantly aggregated distributions during early flowering, but distributions then became more uniform as the wasps moved into the crop later in the season; however *M. plutellae* distributions were relatively uniform during the entire sampling period. Spatial distributions of nutrient contents in leaf tissue and their potential impact on the distribution patterns of *P. xylostella* and parasitoids were also determined in both fields.

24. Consequences of larval competition on mating strategies of female bruchids (Coleoptera: Bruchidae)

D. Schade & S. Vamosi

Department of Biological Sciences, University of Calgary, 2500 University Drive N.W., Calgary, AB, T2N 1N4.

Bruchid larvae develop inside of dried beans, often experiencing intraspecific competition for resources and emerging smaller and less fecund. As adults, females may mate with multiple males. Longevity, fecundity, body fat content and remating strategy were compared for females from two larval competition levels. Preliminary results suggest that only under intense larval competition will adult body mass and number of matings correlate with fecundity.

25. The Mountain Pine Beetle in a changing world

D.L. Six

Department of Ecosystem and Conservation Sciences, College of Forestry and Conservation, University of Montana, Missoula, MT USA.

The Mountain Pine Beetle is one of the most ecologically and economically important insects in western North American forests. An increased focus of research on this insect, especially over the last decade, has greatly enhanced our knowledge of its interactions with symbiotic fungi and the environment. This knowledge has supported a variety of new approaches that promise to move our understanding of this system forward even more rapidly. In addition to substantial changes in the “environment of scientific inquiry” surrounding this insect, the physical and abiotic environment of the beetle has also undergone considerable change. Changes include those due to climate change, current and past management practices, and exotic organisms. In this talk, I will address the Mountain Pine Beetle in the context of changes in the environment of scientific inquiry and in the abiotic and biotic environment using examples from Mountain Pine Beetle-fungus symbioses and high elevation ecosystems, respectively.

26. The influence of spectral reflectance the Cabbage Seedpod Weevil and its potential role in resistance

J.A. Tansey¹, L.M. Dosdall¹ & B.A. Keddie²

¹Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB.

²Department of Biological Sciences, University of Alberta, Edmonton, AB.

The Cabbage Seedpod Weevil (CSPW), *Ceutorhynchus obstrictus* (Marsham) (Coleoptera: Curculionidae) is an increasingly important pest of canola (*Brassica napus* L. and *B. rapa* L.) in western Canada. Recently, introgression of *Sinapis alba* L. to *B. napus* has produced genotypes resistant to CSPW. Variability in spectral reflectance among canola varieties has been demonstrated to be important for host selection in other insects. Here, we present the results of our investigation of the importance of visual cues and spectral reflectance for CSPW host selection and potential variability in these cues among introgressed genotypes.

Author Index of Abstracts (bold numbers indicate first authors)

Bentz, B.	3
Bouchard, P.	6
Bourassa, S.	3
Buckle, D.J.	13
Cárcamo, H.A.	1
Cartar, R.V.	2, 7, 17
Clayton, D.H.	18
Clayton, G.W.	9
Cooke, B.J.	3
de Camino-Beck, T.	4
De Clerck-Floate, R.A.	5
Dosdall, L.M.	6, 9, 15, 22, 23, 26
Drozdiak, R.	8
Evenden, M.L.	15
Forbes, M.	11
Foster, D.J.	7
Gaberel, M.	8
Harker, K.N.	9
Hummel, J.D.	9
Hundsdoerfer, A.E.	10
Keddie, B.A.	22, 23, 26
Lachowsky, L.E.	11
Langor, D.	12, 21
Leech, R.	13
Meers, S.	1
Méthot, J.	14
Miluch, C.E.	15
Mousseau, T.	16
Myrholm, C.	21
O'Donovan, J.T.	9
Pengelly, C.	17
Proctor, H.C.	18
Ranasinghe, S.	10
Régnière, J.	3
Reid, M.L.	14, 19, 20
Reid, T.G.	19, 20
Rice, A.	12, 21
Sarfraz, R.M.	22, 23
Schade, D.	24
Sikes, D.S.	16
Six, D.L.	25
Smith, P.A.	11

Tansey, J.A.....	26
Trzcinski, K.	19
Ulmer, B.J.....	6
Vamosi, S.....	24
Williams, D.....	12
Williams, G.....	18

Minutes of the Entomological Society of Alberta Executive/Board of Directors Meeting

Olds College, Olds, October 25, 2007

Minutes prepared by Heather Proctor, ESA Secretary

Present: Jeff Battigelli, Héctor Cárcamo, Troy Danyk, Rose De Clerck-Floate, Maya Evenden, Gerald Hilchie, Derrick Kanashiro, Rob Longair, Lisa Lumley, Heather Proctor

Meeting called to order at 5:15 pm

1. Additions to agenda and approval.
 - discussion about 2008 added to Additional Business
 - acceptance moved by Maya Evenden, seconded by Héctor Cárcamo
2. Approval of spring 2007 Executive/Board of Directors Meeting Minutes.
 - acceptance moved by Derrick Kanashiro, seconded by Rob Longair
3. Report from Northern Director (Gerry Hilchie)
 - see report at end of minutes
 - acceptance moved by Héctor Cárcamo, seconded by Maya Evenden
4. Report from Central Director (Rob Longair)
 - see report at end of minutes
 - acceptance moved by Rose De Clerck-Floate, seconded by Derrick Kanashiro
5. Report from Southern Director (Derrick Kanashiro)
 - see report at end of minutes
 - there was some discussion about poster. Troy offered to send a Corel-Draw hires version of ESA logo. Derrick will send rough draft to Exec to encourage submission of additional urban and educational entomology photos
 - acceptance moved by Maya Evenden, seconded by Lisa Lumley
6. Webmaster's Report (Troy Danyk)
 - see report at end of minutes
 - acceptance moved by Héctor Cárcamo, seconded by Rob Longair
7. Secretary's Report (Heather Proctor)
 - see report at end of minutes. Materials described therein were circulated.
 - acceptance moved by Rob Longair, seconded by Troy Danyk
8. Report from Regional Director to Entomological Society of Canada (Héctor Cárcamo)
 - see report at end of minutes
 - acceptance moved by Derrick Kanashiro, seconded by Maya Evenden
9. Treasurer's Report (Lisa Lumley)
 - see attached report
 - acceptance moved by Héctor Cárcamo, seconded by Derrick Kanashiro
10. Nominations (Rose DeClerck-Floate): see nominations below and attached report
 - a. Vice President – Brian van Hezewijk
 - b. Southern Director – Fran Leggett

- c. Regional Director – Lloyd Dosdall
- d. Secretary - Ken Fry
- e. Proceedings editor – Greg Pohl
- f. Webmaster - Jason Dombroskie

11. Awards (Maya Evenden)

- a. Carr Award Nomination for Charlie Bird submitted by Greg Pohl
- b. Student Travel Award Applications (1): awarded to Tonya Mousseau
- c. Undergraduate Student Award (0): there were no submissions

Business arising from previous Meetings

12. Donation to the John Carr Memorial fund

- discussion about making a one-time donation to CANACOLL from the ESA. Decided to suggest to membership at AGM the ballpark figure of \$500-\$1000.

New Business

13. Ask An Entomologist (Troy)

- Troy requested responses from ESA members to get opinion of whether posting a list of experts on the ESA website was a good idea. David Shorthouse replied with a suggestion that a listserv might be a better idea. There was general agreement among the Exec and Directors that there are enough resources on the web already to allow media and public to track down appropriate entomological expertise. Heather Proctor will contact Tyler Cobb at the Royal Alberta Museum to ask if the Museum intends to maintain/upgrade their invertebrate identification fact sheets.

14. Desk-top editor program to aid with publication of annual proceedings (Rose)

- Rose will pass on this information to the new Proceedings Editor

15. Scanning of Entomologists of Alberta for website (Maya)

- the Entomological Society of Canada requested permission to scan in an old booklet that had been published jointly by the ESC and ESA. All voted in favour of allowing this.

16. Footing bill for Carr Award winners (Maya)

- Maya Evenden moved that the ESA cover the costs of accommodation and registration for each year's Carr award winner. Seconded by Héctor Cárcamo. There was some discussion about whether spouses should also be supported, but it was decided to restrict the motion to the winners themselves

- all voted in favour of the motion

17. Response to letter from Grassland Naturalists to FAN

- the ESA will submit response to FAN within a week of this meeting, and so there must be a strict time limit on ESA membership response.

18. Finalize Business meeting agenda

19. Additional Business

- it is the turn of the Central Region to host the next ESA meeting. It was generally agreed that the 2008 meeting should be held at the University of Alberta or the Royal Alberta Museum.

- Heather Proctor pointed out the current cluster of entomological meetings in the fall (ESA, ESC, and Ent Soc America), and suggested that the ESA meeting be moved to the spring to avoid entomological overload. This should be put on the agenda for the 2008 Spring Exec

meeting.

20. Adjournment

- motion to adjourn from Rose De Clerck-Floate, seconded by Héctor Cárcamo.
[Heather Proctor was a bad secretary and failed to note time of adjournment.]

2007 Interim Financial Report
Entomological Society of Alberta - Fall Executive Meeting
Lisa Lumley, Treasurer
October 25, 2007

Balances January 2007:

Term Deposits	\$15,000.00
Chequing	\$ 7,739.62
Common Shares	\$ 467.10

New Memberships

Student – 6

Regular – 4

Credits (as of Oct. 25):

Registration	\$2,170.00
Membership	\$ 310.00
Donations	\$ 10.00
Investment Interest	\$ 387.50

Debits (as of Oct. 25):

Bank Charges	\$ 4.75
ESA Spring Exec Meeting	\$ 214.98
Proceedings Mailout 2006	\$ 70.53
Proceedings Printing 2007	\$ 307.19
Awards	\$ 22.90
Registration Materials for 2007	\$ 92.02

Current Balance (October 25, 2007):

Term Deposit	\$15,000.00
Chequing	\$10,233.66
Common Shares	\$ 467.10
Investment Interest	\$ 262.38

Report of the Nomination Committee
Rose De Clerck-Floate, Vice President

The following roster of candidates are nominated for election to the positions that will become vacant in 2008. Each candidate has agreed to let their name stand for the respective position after the role, duties and length of term of the position (as outlined in our By-laws) was explained via e-mail. If there are no suggested changes, or if no further nominations are received from the floor at our General meeting on October 27, the full roster will be presented as is for membership vote.

Vice President: Brian van Hezewijk

Secretary: Ken Fry

Webmaster: Jason Dombroski

Proceedings Editor: Greg Pohl

Regional Director to the Entomological Society of Canada: Lloyd Dosdall

Southern Director: Fran Leggett

Minutes of the Entomological Society of Alberta

55th Annual General Meeting

Olds College, Olds, October 27, 2007

Minutes prepared by Heather Proctor, ESA Secretary

Attendees:

Nils Anderson, George E. Ball, Kay Ball, Jeff Battigelli, Charles Bird, Héctor Cárcamo, Michael Crowe, Troy Danyk, Rose De Clerck-Floate, Lloyd Dosdall, Ryan Drozdiak, Maya Evenden, Ken Fry, Michelle Gaberel, Gerald Hilchie, Derrick Kanashiro, David G. Larson, Robin Leech, Fran Leggett, Rob Longair, Lisa Lumley, Alec McClay, Scott Meers, Chris Miluch, Tonya Mousseau, Jeffrey Newton, Greg Pohl, Heather Proctor, Rana Sarfraz, Joe Shemanchuk, Jim Tansey, Peter Walsh.

Meeting called to order at 10:15 am

1. Additions to agenda and approval
 - moved to accept, Robin Leech; seconded, Dave Larson
2. Approval of minutes from the Fall 2006 AGM
 - moved to accept, Robin Leech; seconded, Maya Evenden
3. Webmaster's Report (Troy Danyk)
 - see attached report
 - moved to accept, Maya Evenden; seconded, Robin Leech
4. Secretary's Report (Heather Proctor)
 - see attached report
 - moved to accept, Maya Evenden; seconded, Rose De Clerck-Floate
5. Report from Regional Director to Entomological Society of Canada (Héctor Cárcamo)
 - see attached report
 - moved to accept, Rob Longair; seconded, Alec McClay
6. Treasurer's Report (Lisa Lumley)
 - see attached report
 - moved to accept, Peter Walsh; seconded, Derrick Kanashiro
7. Nominations (Rose De Clerck-Floate): nominations were presented as follows:
 - a. Vice President – Brian van Hezewijk
 - b. Southern Director – Fran Leggett
 - c. Regional Director – Lloyd Dosdall
 - d. Secretary - Ken Fry
 - e. Proceedings editor – Greg Pohl
 - f. Webmaster - Jason Dombroskie

There were no additional nominations from the floor. Robin Leech moved that nominations cease; seconded by George Ball.

8. Internal auditors for 2007: two members were nominated, Ron Gooding and Alec McClay.

There were no additional nominations from the floor. Robin Leech moved that nominations cease; seconded by Héctor Cárcamo.

8a. Resolutions: the following resolution was read by Jim Tansy and Chris Miluck:

Whereas the 2007 Annual Meeting of the Entomological Society of Alberta was both successful and memorable, and whereby the success of the meeting can be attributed to:

- a) the hard work and organization of the ESA
- b) the local arrangement committee comprised of Ken Fry and Krista Shannahan
- c) the scientific program committee of Mary Reid, Ralph Cartar, Rob Longair and Tonya Mousseau
- d) registration and budget committee, Lisa Lumley
- e) Diana Six for her captivating keynote address
- f) Buck Godwin for his after-dinner entertainment
- g) the staff of Olds College for their hospitality

8b. 2008 meeting of the ESA: the members present were informed that the 2008 meeting will take place in Edmonton, with the exact location as yet undetermined. Peter Walsh suggested that a future meeting be held at Lakeland College in Vermilion.

Business arising from previous meetings

9. Donation to John Carr Memorial Fund: Maya Evenden explained that a donation from the ESA would go to the CANACALL foundation, and suggested a donation between \$500 and \$1000. Lloyd Dosdall proposed that \$1000 was an appropriate amount. A motion that the ESA would donate \$1000 to CANACOLL in John Carr's name was proposed by Maya Evenden. This was seconded by George Ball. All members present voted in favour of the motion.

New business

10. Response to letter from Grasslands Naturalists to FAN (Federation of Alberta Naturalists) newsletter "Nature Alberta": this topic resulted in much discussion. All ESA members had been previously sent the GN letter by email and had been asked to provide comments. Jeff Battigelli read the letter to the present members as a reminder. Heather Proctor stated that she would send the extensive and erudite response to the GN letter by the president of the Alberta Lepidopterists' Guild, Greg Pohl, to all ESA members. Hard copies of this letter had been made available to the members present immediately prior to the AGM. Given the broad coverage of topics in the ALG response, Jeff Battigelli suggested that the ESA response could be brief. Robin Leech agreed that a short letter from ESA to FAN would be appropriate. Alec McClay wondered how many GN members were actually concerned by insect collecting. Ken Fry suggested that it would be very useful to have a statement about insect collecting from the ESA that he could point to when his students make collections. Rose De Clerck-Floate agreed that it would be good to have an 'official code of collecting'. Others argued that a 'code' would be too formal, and 'guidelines' or a 'position statement' would be better.

Charles Bird mentioned his butterfly count at Dry Island and noted that many of those who attend the count are not well educated with regard to the difference between identifying birds with binoculars and dealing with the enormous and unknown diversity of insects, even in Alberta. He uses a catch-and-release method in his butterfly count, but every once in a while they find a new species for Dry Island, in which case he explains the need and value of collecting a voucher. He suggested that ESA clearly endorse Greg Pohl's letter, and to add a few other brief comments. However, Greg Pohl stated that he would prefer that the ESA letter not be too obviously just an endorsement of his letter. Peter Walsh felt that position statement on collecting from other societies must surely exist. Alec McClay thought it would be diplomatic to say that if any excessive collecting of rare species had occurred, that the ESA could be informed. Both Charles Bird and Greg Pohl disagreed, as this might imply greater authority than ESA possesses.

It was decided that Jeff Battigelli, as president of the ESA, will draft a letter supporting the value of insect collecting and pass it on to those on the executive. After incorporating their comments, the revised version of this will be sent to the ESA membership and to FAN.

11. Additional Business

Peter Walsh had been informed that "Insect Pests of the Prairies" was out of print and wished to find out how to encourage production of a new edition. Ken Fry informed members that the book was not actually out of print, and will let Peter know how to order copies. Scott Meers stated that there was indeed a revised/new version in the pipeline.

11.5. President's Address

Jeff Battigelli read his presidential address as outgoing ESA President (see page 3 of proceedings).

12. Adjournment

- move to adjourn by Robin Leech; seconded, Greg Pohl
- meeting adjourned before 12 noon

2007 Northern Director's Report Gerald Hichie

All supervisors are at the University of Alberta

Department of Biological Sciences

Maya Evenden: 4 new students, 2 graduated

Andreas Wins-Purdy: completed MSc 2007

Brad Jones: completed MSc 2007, Now working on Mountain Pine Beetle genome project with Janice Cooke

Tyler Wist: 1st year, PhD., Working on tritrophic interactions in ash-*C. fraxinella*-*Apanteles* system

Artem Abdukakharov: 1st year PhD., Working on factors influencing pheromone production and response of diamondback moth

Joelle Lemmen: 1st year MSc., Working on regulation of male reproductive diapause in *C. fraxinella*.

Caroline Whitehouse: 1st year MSc., working on mating behaviour of *Dioryctria abietivorella*.

Jens Roland: 1 new, 1 continuing, 1 graduated

Kim Rondeau: MSc., Graduated fall 2007, Factors influencing *Cyphocleonus achates* (Coleoptera: Curculionidae) dispersal and implication for biocontrol of diffuse knapweed (*Centaurea diffusa*) (Asteraceae).

Kurt Illerbrun: 2nd year of MSc., Effect of herbivory by alpine *Parnassius* butterfly larvae on the spatial dynamics of its hostplant, *Sedum lanceolatum* the lance-leaved stonecrop.

Jennifer Waller: 1st year MSc., Dynamics of the parasitoid community of the forest tent caterpillar at the front of a host population 'traveling wave'.

Heather Proctor (includes only entomologically oriented students): 1 new, 1 graduated

Wayne Knee: graduated MSc., August 2007, Rhinonyssidae (Acari: Mesostigmata) and other nasal mites of Alberta and Manitoba, now at Carleton University doing his Ph.D.

Jeffrey Newton: 1st year PhD., Effects of climate change and grazing intensity on

diversity and food-web structure of rangeland microarthropods.

Felix Sperling: 2 new, 4 continuing, 2 graduated

Sean Bromilow: MSc., graduated, Conservation and population genetics of the butterflies of the Peace River grasslands.

Chris Schmidt, graduated PhD., Systematics of *Grammia* arctiid moths.

Lisa Lumley: 4th year, PhD., Systematics of the *Choristoneura fumiferana* (Lepidoptera: Tortricidae) species complex.

Marie Djernaes: PhD., Morphology and behaviour of primitive Lepidoptera and Trichoptera.

Jason J. Dombroskie: 2nd year MSc., Studying the systematics and phylogeography of tortricids.

Marla Schwarzfeld: MSc., Diversity and taxonomy of parasitic Hymenoptera in Alberta.

Benjamin Proshek: 1st year MSc., Systematics of *Papilio machaon* in Alberta (probably).

Wesley Hunting: 1st year MSc., Phylogenetic analyses, of morphological characters and DNA sequences to understand lineage diversification, geographic variation, species boundaries, and evolutionary pathways of a group of carabid beetles.

Andy Keddie: 3 new, 1 continuing, 1 graduating, 1 graduated

Sunil Rajput: MSc., graduated. In vivo and in vitro evaluation of *Beauveria bassiana* for western flower thrips.

Rana Sarfraz: soon to be defending PhD., Aspects of diamondback biology including the impacts of diet (plant host range) and tritrophic interactions with one of its parasitoids, *Diadegma*.

Lesley Brennan: 3rd year PhD., Investigating the expression of proteins in a mosquito cell line naturally infected with *Wolbachia*.

Philip Batista: 1st year MSc., Investigating the association of *Wolbachia* with diamondback moth and one of its parasitoids, *Diadegma*.

Adam Blake: 1st year MSc., Landscape study of the spatial and temporal aspects of a

pest species, seedpod weevil, and its parasitoids.

Amanda Van Haga: 1st year MSc., Investigating chalkbrood in honeybees, determining impacts on bee populations, honey production and a method to reduce the incidence of this disease.

Department of Agriculture, Forestry & Nutritional Sciences

Lloyd Dosdall: 2 students

James Tansey: 2nd year, PhD., Mechanism of resistance to selected Brassicaceae in the cabbage seedpod weevil, *Ceutorhynchus obstrictus* (Marsham).

Jim Broatch: PhD., Manipulation of herbicide application rates in canola.

Department of Renewable Resources

John Spence: 9 students

Colin Bergeron: PhD., Boreal Forest Ecology, Biodiversity (Carabidae, trees).

Esther Kamunya: PhD., Insect Ecology, Biological diversity and conservation (Lepidoptera).

Chris MacQuarrie: PhD., Insect Ecology, Biological Control, Forest Entomology (Leafminer, parasitoids).

Enrique Montes de Oca Torres: PhD., Forest Entomology/ Ecology (Carabidae, Scarabaeidae).

Jaime Pinzon: PhD., Ecology/Diversity of Spiders and Butterflies (Spiders).

David Shorthouse: PhD., Forest Entomology, Arachnology (Spiders).

Suzanne Abele: MSc., Forest Ecology, Conservation Biology, Malacology (Gastropods, Bryophytes).

Matthew Pyper: MSc., Boreal Forest Ecology, Biodiversity, Sustainable Forest Management (Carabidae).

Charlene Wood: MSc., Forest Community Ecology (Saproxylous insects).

2007 Central Director's Report

Rob Longair

University of Calgary

Chandra Venables successfully defended her M.Sc. thesis

Tanya Latty will be defending her Ph.D. thesis on 2 November

Steve (and Jana) Vamosi have a new daughter

Tonya Mousseau is continuing her Ph.D program despite the fact her supervisor Derek Sikes has moved to Alaska.

Mary Reid's students:

Latty, Tanya, Ph.D., Pioneer strategies in mountain pine beetles
Reid, Tyler, M.Sc., Dispersal of the mountain pine beetle (*Dendroctonus ponderosae*)
in host and non-host habitats
Randal, Leah, M.Sc.
Young, Hilary, Ph.D., Effects of habitat edges on wildlife
Lachowski, Leanna. new student

Ralf Cartar's students:

Foster, Danusha – Determinants of wing wear in bumble bees
Pengelly, Chris – Impacts of logging on the bumble bee-dominated pollination
community

Lawrence Harder's students:

Gallwey, Janice, M.Sc.
Hobbhahn, Nina, Ph.D., Rewardlessness as an outcrossing mechanism in animal-
pollinated plants

Steve Vamosi's students:

Greenway, Carly, M.Sc., Disturbance and the ecology of temporary ponds
Schade, Daynika, M.Sc., Sexual conflict and competition in bruchid weevils
Wohlfahrt, Bianca, Ph.D., community structure in predaceous diving beetles (just
completed her candidacy exams)

D. Bender's student:

Robertson, S., M.Sc. (defended) Spatial patterns and effects of bot fly (*Cuterebra
polita*) parasitism in Ord's kangaroo rat (*Dipodomys ordii*)

John Addicott officially retired.

Donation of a small collection (15 Schmidt-type boxes) with insects from Saskatchewan, Alberta, Florida and Idaho

Pinned collection consolidated to one room
Ghana collections – 2006-2007

City of Calgary

Simon Wilkins, Andrew Gaffney, Jim Watts

Two recent tree pests: 1) elm scale – usually just secondary pest, problem due to drought; 2) cottony ash psyllid – knocked out ¼ of black and Manchurian ash in last couple of years

Research on efficacy of various materials to control pests

Calgary is north of West Nile Virus zone of risk

Other

Ben Luyendyk –prepares insect dioramas, interested in setting up an Insect Museum/Zoo in Calgary

2007 Southern Director's Report

Derrick Kanashiro

Hector and I are working on the ESA poster but need some more photos. We have an outline of what the poster will look like. Need photos that show education (Royal Alberta Museum bug Room) and management, like some “urban entomology”, West Nile control, Dutch elm disease, emerald ash borer, etc.

I gave a presentation on earthworms and soil mites at the Helen Schuler Coulee Centre as part of their Grasslands series. Dan Johnson also did a presentation on grasslands and climate change.

2007 Webmaster's Report

Troy Danyk

The usual information which includes the names of incoming Board members and Committee Chairs, due dates for awards, and meeting dates and program information was updated during the year, albeit in not as timely a manner as I would have preferred.

The major improvement to the website this year was the scanning or otherwise conversion into pdf files of all issues of the Proceedings, which are now accessible on the website and searchable. The scanning and conversion process was not perfect and spelling errors are present in the pdf files. Programs to which I have access cannot easily examine the searchable hidden text, so I regret that the typos remain. It appears that early issues of the pdf Proceedings, in particular, contain a fair number of errors. Hopefully, the typos can be corrected so as to make searching the pdfs more productive.

In February 2007, Microsoft ceased operation of a counter we used to track website visits. A replacement counter was not obtained because data collected since May 2000 (when the counter was added to the website) was deemed sufficient to demonstrate a long-term trend of website use. The results indicate that website use increased consistently until the year 2004, after which time the number of visits per week plateaued.

The Department of Biological Sciences at the University of Alberta continues to offer us excellent service, and a generous amount of storage space on their server free of charge. However, lately, technical problems with their server appears to have impeded my ability to update the website. I hope to resolve this issue in the near future.

In 1998, I saw a need for the ESA to have some sort of presence on the internet, so I volunteered to develop a website which I launched in September of that year. It has been a pleasure to serve as Webmaster, however, it is time for change. I have been in contact with, and encouraged, someone who has expressed an interest in serving as the next Webmaster. I hope that the incoming Webmaster finds the job as rewarding as have I. I look forward to my frequent future visits to our website to observe its evolution. Who knows what the future will bring.

Floreat entomologia!

Dr. Troy Danyk
ESA Webmaster
October 25, 2007

2007 Secretary's Report

Heather Proctor

I received three items in my capacity as ESA Secretary (all provided for examination to the Exec at this meeting) :

(1) [hard copy via Maya Evenden]: Environment Canada's "**Consultation on Amending the List of Species under the Species at Risk Act: Terrestrial Species**" December 2006. This booklet was accompanied by a letter from the SARA director requesting comments from interested parties on 12 of the new terrestrial species that were proposed as additions to the SARA list. Of these 12, four were Lepidoptera. Given that Gary Anweiler and Greg Pohl were on the SARA board at the time, and they are both ESA members, we felt that there was no need for additional commentary from Albertan entomologists on these lepidopteran species.

(2) [email directly to me] **Donald Davis** from the Federation of Ontario Naturalists requested that a representative of the Entomological Society of Alberta participate in the development of a **Canadian conservation plan for the Monarch Butterfly** under the Species at Risk Act (attached). My response was to let Davis know of the existence of the Alberta Lepidopterists' Guild and that Felix Sperling had already forwarded the request to all of the ALG members (attached). After some further correspondence from Davis, Felix agreed to sit on the advisory board. Davis was added to the ALG mailing list, and I hope that he was gratified by the number of reports of Monarchs in Alberta this summer.

(3) [email directly to me] **Greg Pohl**, as president of the Alberta Lepidopterist's Guild, sent me a copy of his **response to a letter from the Grasslands Naturalists** group in southern Alberta that has recently been (or will be) published in the Federation of Alberta Naturalists newsletter. The letter from GN expressed strong disapproval of insect collecting, and requested support from other naturalist groups in halting collecting activity. Greg provided a strong and well-reasoned response (attached). At the time that the GN letter came out, Felix Sperling requested that the ESA also provide a response for publication in the FAN newsletter. Maya Evenden sent a short response to Glen Semenchuk (executive director of FAN), to wit, that the ESA would request input from membership and the subject would be brought up at the Olds meeting. Jeff Battigelli sent the GN letter to the ESA membership by email and requested that comments be sent directly to him.

In the process of sending emails to the ESA membership, I have accumulated a number of addresses that appear to be dysfunctional, either because the mailbox of the recipient is full, or because the address no longer exists. Bounced back emails from test email sent 22 Oct 2007:

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2007 Report of the Regional Director to ESC

Héctor Cárcamo

1. **Greetings...** Terry Shore, current president of the ESC sends his greetings and regrets for not joining us.
2. **Current Membership of the ESC** – overall membership remains steady around 500 and slightly higher than 2005 but regular membership continues to decline. 2006 numbers are inaccurate due to problems with the database. The problem was corrected in 2007.

Year	Regular	Student	Emeritus	Total
1997	404	79	70	553
1998	396	76	76	548
1999	382	72	72	526
2000	400	114	77	591
2001	386	98	82	566
2002	364	90	65	519
2003	357	87	74	518
2004	330	68	77	475
2005	338	86	75	499
2006	378*	89	80	547*
2007 (September 19)	334	90	80	504

* inaccurate figures caused by problems with Filemaker database.

2. **Finances.** The society continues to be in sound financial shape. However, for the 2008 fiscal year the treasurer is forecasting a deficit of \$25,300. This deficit results from a higher rate of increase of expenses relative to revenues. For example publication costs and maintenance of our building headquarters, exceeded receipts. Previous investments allow the society to function in the short term. However, steps need to be taken to increase revenues and this is the task of the Finance Committee headed by Gary Gibson. The committee is open to your suggestions.

3. Canadian Entomologist

- Rob Bennett (BC Ministry of Forests) succeeded Richard Ring as Editor-in-Chief on 1 January 2007.
- A new division has been created: Biodiversity, Evolution and Related Topics (Chris Buddle as Division Editor). As of 1 Jan 2007 several Division Editors have changed and a number of new Associate Editors have been appointed.
- Michel Cusson and David Shorthouse made considerable effort and progress towards adoption of the Web-based OJS system; however the new editor felt that previous problems with publication delays have been resolved and until other larger issues are resolved (see next) this idea should be abandoned or replaced with a more professional web-based system such as that of the NRC Press' Osprey.
- The long term economic viability of The Canadian Entomologist was discussed in the Special Feature article in the Bulletin (September 2007), authored by Paul Fields. In essence, costs exceed revenues and alternatives are being sought to make the journal sustainable. One option being discussed is the sale of the journal to the current publisher (assuming they are interested in the purchase). Pass your comment of Paul Fields or Kenna MacKenzie, head of the Publications Committee.

3. **Nominations:** Congratulations to Maya Evenden who was elected Second Vice-President and to Gaétan Moreau who was elected Director-at-large.
4. **New Secretary and Webmaster needed...**Rick West has resigned from his position of Secretary which he has done superbly for many many years. Barry Lions will stay till the new web page is designed and plans to resign at the end of 2008.
5. **Congratulations to Gold medal and C. Gordon Hewitt 2007 award winners:** Drs Cedric Gillott and Maya Evenden, respectively.
6. **The Science Policy and Education Committee** reminds us that the ESA has access to \$200 per year or \$600 every 3 years (our case now) for projects related to public education to promote entomology. If the funds continue to remain unused the committee may spend the funds as they see fit.
7. **2008 Annual Meeting** of the ESC-ESO will held in Ottawa, Crowne Plaza Hotel, October 18-22. John Huber and Fiona Hunter are the contacts.

2007 Interim Financial Report
Entomological Society of Alberta - Annual General Meeting
Lisa Lumley, Treasurer
October 27, 2007

Balances January 2007:

Term Deposit	\$15,000.00
Chequing	\$ 7,739.62
Common Shares	\$467.10

Total Memberships

Regular	92
Student	49
Honourary	7
Free Library	20
Subscription Library	4

New Members in 2007 (included in above totals)

Regular	5
Student	7

Credits:

Registration Total		\$3570.00
Total Registrations	64	
Students	22	
Retired	4	
Regular Members	29	
Extra banquet tickets	9	

Other Credits (up to Oct. 26):

Investment Interest	\$387.50
Membership renewals	\$465.00
Donations	\$ 10.00

Debits:

Registration Packages	\$ 96.02
Awards	\$122.90
Carr Framing	\$ 41.02
Printing Costs (Proceedings/Program, etc)	\$377.72

Other Major Debits (up to Oct. 26):

ESA Spring Exec Meeting	\$214.98
Bank Charges	\$ 4.75

Current Balance (October 25, 2007):

Term Deposit	\$15,000.00
Chequing	\$10,233.66
Common Shares	\$ 467.10
Investment Interest	\$ 262.38



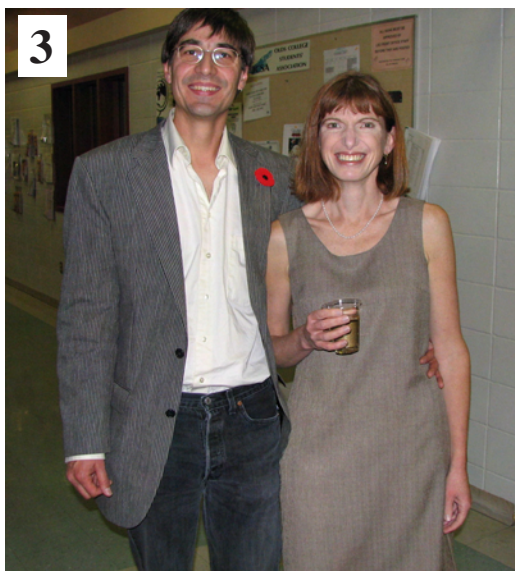
1. Keynote speaker Diana Six.
2. Jeffrey Newton & Barb Deneka.
3. Past and present Olds College instructors Buck Godwin and Ken Fry.
4. Sunil Ranasinghe checks in at the registration desk with Lisa Lumley and Marla Schwarzfeld.
5. Rob Longair contemplates the six-legged world.



1. Nadir Erbilgin enjoys the coffee break.
2. Buck Godwin views a Lepidoptera collection prepared by fellow Olds College emeritus instructor Ernest Mengersen.
3. Charley Bird & Buck Godwin give Greg Pohl some sage advice.
4. Ron Gooding catches up with Joe and Clara Shemanchuk.
5. Ken Fry (2nd from Left) shows off the critters in the teaching lab, to Hector Carcamo, Marla Schwarzfeld, and Rob Longair.



1. Robin Leech, Mike Dolinski, & George Ball get into the grape juice.
2. Kay Ball & Clara Shemanchuk.
3. Mite researchers stick together: Heather Proctor & Jeff Battigelli.
4. Past and present ESAB presidents Jeff Battigelli, Derrick Kanashiro, and Maya Evenden.
5. The Student Wing: Chris Pengelly, Tyler Reid, ??, Tonya Mousseau, Daynika Schade, & ??.
6. Local (flower) arrangements coordinator Ken Fry.



1. Maya Evendon and Jeff Battigelli present Tonya Mousseau with the Student Travel Award.
2. Buck Godwin & Joe Shemanchuk share an old entomological joke.
3. Grag Pohl & Barb Deneka.
4. Leanna Lachowsky.
5. David Langor: "I told you those Mountain Pine Beetles were trouble!".
6. Ron & Sheila Gooding and Carol Hilchie inspect the official ESAB parchments.
7. Rana Sarfraz thinks he sees a Diamondback Moth.
8. Michael Crowe ponders six-legged life.



THIS PAGE:

1. Charley Bird is presented with the Carr Award, in recognition of his contributions as an amateur entomologist, by Greg Pohl.
2. Jeff Battigelli, our ESAB president, speaks to his subjects.
3. Our hard-working registration crew of Lisa Lumley and Marla Schwarzfeld finally get to take a break.

FACING PAGE:

4. Daynika Schade, Nora Bryan, and Diana Six.
5. Olds College emeritus instructor (and after dinner speaker) Buck Godwin.
6. Maya Evenden shows the students how to party!
7. Future ESAB member Colin Deneka checks out the nibbles.
8. Chris Pengelly and Hideji Ono.



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1	AAFC Beaverlodge Research Farm	P.O. Box 3000, Lethbridge, AB T1J 4B1
2	AAFC, Lethbridge Research Centre	107 Science Place, Saskatoon, SK S7N 0X2
3	AAFC, Saskatoon Research Centre	Highway 16A - 75 St., Vegreville, AB T9C 1T4
4	Alberta Research Council, Life Sciences Division	8th Floor GW1 Building, 9920 108 St., Edmonton, AB T5K 2M4
5	Alberta Sustainable Resource Development	Bag 900-04, Peace River, AB T8S 1T4
6	Alberta Sustainable Resource Development	4901-46 Ave, Camrose, AB T4V 2R3
7	Augustana University College	1 University Dr., Athabasca, AB T9S 3A3
8	Centre of Science, Athabasca University	5320 - 122 St., Edmonton, AB T6H 3S5
9	CFS, Northern Forestry Centre	Agriculture-Forestry Centre, Univ. of AB, Edmonton, AB T6G 2P5
10	Dept. Agricultural, Food, and Nutritional Science, U. of Alberta	CW405 Biosciences Bldg., Univ. of AB, Edmonton, AB, T6G 2E9
11	Dept. Biological Sciences, U. of Alberta	2500 University Dr. NW, Calgary, AB, T2N 1N4
12	Dept. Biological Sciences, U. of Calgary	442 Earth Sciences Bldg., University of AB, Edmonton, AB T6G 2E1
13	Dept. Renewable Resources, U. of Alberta	10726 - 106 Ave., Grande Prairie, AB T8V 4C4
14	Grande Prairie Regional College	Bag 6600, 2602 - 59 Ave., Lloydminster, AB T9V 1Z3
15	Lakeland College	5707 - 47 Ave. West, Vermilion, AB T9X 1K5
16	Lakeland College	4500 - 50 St., Olds, AB T4H 1R6
17	Olds College	#330 - 350 Third Avenue North, Saskatoon, SK S7K 2H
18	Saskatchewan Watershed Authority	

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Medicine Hat College Library
NAIT Library
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Royal Alberta Museum
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University of Alberta, Strickland Library
University of Calgary Library
University of Lethbridge Library
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P.O. Box 3000, Lethbridge, AB T1J 4B1
1 University Drive, Athabasca, AB T9S 3A3
4901 - 46 Ave., Camrose, AB T4V 2R3
5320 - 122 St., Edmonton, AB T6H 3S5
7128 - Ada Blvd., Edmonton, AB T5B 4E4
130 - 9th Ave. SE, Calgary, AB T2G 0P3
10726 - 106 Ave., Grande Prairie, AB T8V 4C4
5707 - 47 Ave. West, Vermilion, AB T9X 1K5
299 College Dr. SE, Medicine Hat, AB T1A 3Y6
11762 - 106 St., Edmonton, AB T5G 2R1
395 Wellington St., Ottawa, ON K1A 0N4
4500 - 50 St., Olds, AB T4H 1R6
Box 5005, Red Deer, AB T4N 5H5
12845 102 Ave., Edmonton, AB T5N 0M6
1301 - 16 Ave. NW, Calgary, AB T2M 0L4
5th floor, Periodicals, University of Alberta, Edmonton, AB T5G 2E3
Earth Sciences Bldg., University of Alberta, Edmonton, AB T5G 2E3
Library, Calgary, AB T2N 1N4
Library, 4401 University Drive, Lethbridge, AB T1K 3M4
Serials Unit, Acquisitions Division, Ithaca, NY, USA 14853-4301

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Serials Department, Fort Collins, CO, USA 80523-1019
Bockenheimer Landstr. 134 - 138, Frankfurt am Main, GERMANY D-60325

If you are a member of the ESAB, and you would like to update your contact information,
please contact the secretary of the ESAB, Ken Fry, at kfry@oldscollge.ca.

THE ENTOMOLOGICAL SOCIETY OF ALBERTA

The Entomological Society of Alberta was organised 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 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 object 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 \$10.00 (\$5.00 for students). Contact the Treasurer via the society website:
<http://www.biology.ualberta.ca/courses.hp/esa/esa.htm>

