

PROCEEDINGS OF THE 54th ANNUAL MEETING OF THE



Entomological Society of Alberta

October 26-28, 2006
Lethbridge, Alberta

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THE ENTOMOLOGICAL SOCIETY OF ALBERTA

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

The membership of about 70 paid-up members at that time consisted mainly of Dominion (Federal) entomologists at the Science Service Laboratories in Lethbridge (now an Agriculture Canada Research Station), 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 (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 \$10.00 (\$5.00 for students). Contact the Treasurer: <http://www.biology.ualberta.ca/courses.hp/esa/esa.htm>

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President's Address

Hello All,

Thank you for staying and participating in the Society through your attendance at the Annual Business Meeting. We will try and make this smooth and brief so that we can all get home before the snow starts.

Lethbridge is an entomological powerhouse in Alberta, and we were fortunate to hold our meeting here and have many keen entomologists to assist in running this year's meeting. The hard work of many people has made this, the 54th Annual General Meeting of the Entomological Society of Alberta, a real success. I would especially like to thank: Kevin Floate and Rosemarie DeClerk-Floate who organized the scientific program. I think you'll agree that their hard work paid off with an excellent symposium and many interesting submitted papers and posters. The local arrangements committee consisted of Derrick Kanashiro, Brian Vanhezewijk, Kim Rondeau, and Stephanie Erb who organized our accommodations, meeting venues and most importantly food and spirits! Registration duties and the meeting budget were handled by our treasurer, Kim Rondeau. This is the second year that Kim has been heavily involved in the finance of our meeting. Many other members contributed to the success of this meeting and I would particularly like to thank our student members for participating in the meeting and encourage them to continue to do so in the future.

I became involved in the Entomological Society of Alberta in 2004, just shortly after I joined the faculty of the Department of Biological Sciences at the University of Alberta. Not surprisingly, Heather Proctor, dragged me into it! I first participated as Proceedings Editor in 2004 and then as Vice-President in 2005 and currently as President. As a new faculty member I wasn't looking for additional work, however, I found serving the ESA to be an enriching and eye-opening experience. This involvement in our Society has allowed me to learn a lot about entomology in Alberta. As a newcomer to Alberta in 2003, it was a great opportunity for me to learn about the current entomological activities and the traditions of entomology in the province. It also allowed me to meet and interact with many entomologists across the province. Soon, I think that I will actually feel like an Albertan entomologist! Although Heather Proctor initially twisted my arm to become involved in the ESA executive, I have to thank her and our past-president John Acorn for their assistance during my time as president.

Finally, I'd like to close by thanking the other ESA Executive members for their hard work and congenial approach to running the Society, especially during my maternity leave. A lot of work is conducted behind the scenes to make sure that our society functions properly. It has been fun working with you all and I look forward to my position as past-president of the ESA in 2007.

Maya Evenden
ESA President
October, 2006

**Annual Meeting of the Entomological Society of Alberta
Ramada Inn
Lethbridge AB
October 26-28, 2006**

Program of events

Thursday, October 26

- 05:00-07:00 Executive Business Meeting (McGrath Room)
07:00-09:00 Registration & Poster Set-up
07:00-12:00 Wine & Cheese (Ballroom)

Friday, October 27

- 07:30-08:00 Registration
08:15-08:30 Opening Remarks: Maya Evenden, ESA President

Session I *Moderator* - Kevin Floate
 Projectionist – Tracy Larson

- 08:30-09:30 ***Keynote Address: Sexual conflict in bugs***
 Locke Rowe

- 09:30-09:45 **Asymmetry and sexual selection in male feather mites (Acari: Astigmata)**
 Wayne Knee & Heather Proctor

- 09:45-10:00 **Mutual mate choice in mountain pine beetles**
 O. Baruch & Mary Reid

- 10:00-10:30 Coffee Break & Registration

Session II *Moderator* - Rosemarie De Clerck-Floate
 Projectionist – Tracy Larson

- 10:30-10:45 **Potential for dual control of aphids and cucumber powdery mildew with an entomopathogenic fungus**
 Jeong Jun Kim, Mark Goettel & David Gillespie

- 10:45-11:00 **Impacts of harvesting treatments on polyporous fungi**
 Nicolas Debaive & John Spence

- 11:00-11:15 **Exon-Intron Structure, Paralogy and Sequenced Regions of Elongation Factor-1 alpha in Hexapoda**
 Marie Djernæs & J. Damgaard

- 11:15-11:30 **The composite scale-brushes in male Dioryctria (Pyrilidae). Comparative morphology, phylogenetic implications and possible functional aspects**
 Thomas Simonsen & Amanda Roe

- 11:30-11:45 **Does juvenile hormone have a role in diapause termination in male**

***Caloptilia fraxinella* (Lepidoptera: Gracillariidae)?**

Joelle Lemmen & Maya Evenden

11:45-12:00 **Resource-tracking by bumble bees: Responses to local density of bergamot (*Monarda fistulosa*)**
Ralph Cartar

12:00-01:30 Lunch

Session III *Moderator* - Brian van Hezewijk
Projectionist – Carolyn Herle

01:30-01:45 **Effects of retention patches on the community of ground-dwelling spiders in the boreal forest**
Jaime Pinzon & John Spence

01:45-02:00 **Short-term effects of fire and harvest on saproxylic beetle communities in the boreal mixedwood forest**
Joshua Jacobs, Tyler Cobb, Matti Coivula & John Spence

02:00-02:15 **The effect of tree thinning on the dispersal of mountain pine beetles (*Dendroctonus ponderosae*).**
Tyler Reid & Mary Reid

02:15-02:30 **Understanding edge effects: using carabid and staphylinid communities as indicators of biodiversity responses to forest fragmentation**
Matthew Pyper, Dave Langor & John Spence

02:30-02:45 **Comparing carabid assemblages in sustainable and conventional farming**
Stéphane Bourassa, Héctor Cárcamo, John Spence & Frank Larney

02:45-03:00 **Effects of urbanization on ground beetle assemblages (Coleoptera, Carabidae) of graveyard and grassland habitats in Western Canada**
Dustin Hartley, Matti Koivula & John Spence

03:00-03:30 Coffee Break

Session IV *Moderator* - Stéphane Bourassa
Projectionist – Carolyn Herle

03:30-03:45 ***How do the movement behaviours of stream insects function as components of dispersal strategies?***
Trent Hoover & John Richardson

03:45-04:00 **The effect of age, size and mating status on the flight capability of *Choristoneura conflictana* (Lepidoptera: Tortricidae)**
Christina Elliott & Maya Evenden

04:00-04:15 **Does wheat host affect overwintering survivorship of the wheat stem sawfly?**
Brian Beres & Héctor Cárcamo

04:15-04:30 **A fresh look at an old pest: can we enhance biocontrol of *Cephus cinctus*?**
Cassidy Klima, Héctor Cárcamo, Brian Beres & John Spence

04:30-05:00 Poster Session

Using soil arthropods to evaluate LFH placement for enhancing reclaimed landscapes in boreal forests of northern Alberta

Jeff Battigelli, J. Brown & L. Leskiw

Examining soil ecological properties in disturbed peach orchards near Niagara-on-the-Lake, ON

Jeff Battigelli, J. Brown, L. Leskiw & S. Quideau

***Wolbachia* in wasps parasitic on filth flies (Diptera: Muscidae) with emphasis on *Spalangia cameroni* (Hymenoptera: Pteromalidae)**

George Kyei-Poku, Moshe Giladi, Paul Coghlin, Ofer Mokady, Einat Zchori-Fein & Kevin Floate

Disruptive selection on worker ovary development in the honey bee: Genotype and rearing environment affect nursing and foraging behaviour

Shelley Hoover & Mark Winston

Linking undergraduate training and conservation outcomes using rapid biodiversity assessments methods

Doris Audet & David Larson

Spiders associated to tree trunks in a boreal mixedwood forest: Effectiveness of two arboreal pitfall trap designs

Jaime Pinzon & John Spence

Condition-dependent toxicity of host defenses to Mountain Pine Beetle (*Dendroctonus ponderosae*)

Joseph Purcell & Mary Reid

Acacia ants: Effective defenders of their host trees?

Hilary Young & Linda Fedigan

Banquet and Entertainment

06:30-11:00 Open bar

07:00-08:00 Dinner

08:00-09:00 ***After-dinner presentation: Rocks and Trees and Grass and Critters: Exploring Alberta's Treasures***

Lorne Fitch

Saturday, October 28

Session V *Moderator* – Kim Rondeau
Projectionist – Paul Coghlin

08:15-08:30 **Canola root damage by *Delia* spp. (Diptera: Anthomyiidae) in diverse cropping systems**

Jeremy Hummel, Lloyd Dossdall, George Clayton, Neil Harker & John O'Donovan

- 08:30-08:45 **Resistance to cabbage seedpod weevil among selected Brassicaceae germplasm**
Héctor Cárcamo, Owen Olfert, Lloyd Dosedall, Carolyn Herle, Brian Beres & Julie Soroka
- 08:45-09:00 **Mountain pine beetle *Mania*, or are jack pine good hosts for MPB, *Dendroctonus ponderosae* Kirby**
Daryl Williams & Dave Langor
- 09:00-09:15 **An exploratory survey for natural enemies of the invasive plant *Miconia calvescens* in southern Mexico.**
Alec McClay
- 09:15-09:30 Method for mass rearing insects from dry plant material
Scott Meers
- 09:30-09:45 **Some die that others live: death by ichneumonid**
Joanne Bovee & Robin Leech
- 09:45-10:00 **Variable responses of *Phyllotreta* spp. flea beetles to some neonicotinoid insecticides: Are we promoting a shift in the dominant species?**
James Tansey, Andrew Keddie, Lloyd Dosedall & Rana Sarfraz
- 10:00-10:30 Coffee Break
- 10:30-12:00 Annual Business Meeting

Oral Presentation Abstracts

1. Does wheat host affect overwintering survivorship of the wheat stem sawfly?

Brian Beres and Héctor Cárcamo; Agriculture & Agri-Food Canada, Lethbridge Research Centre, Lethbridge, AB

Wheat genotypes with solid stems significantly reduce larval survivorship and fitness of the wheat stem sawfly (WSS), *Cephus cinctus*, currently the most important wheat pest in the southern prairies. From 2004-2006 we sampled ten genotypes to quantify field overwintering mortality of WSS and supplemented the field study with laboratory assays. Larvae sustained slightly higher overwintering mortality in solid stems than hollow-stems. However, because of its cold-hardiness (WSS supercools near -24°C) and sheltered microhabitat, biotic factors such as fungal pathogens and parasitoid attack are more important mortality factors influencing sawfly populations than low winter temperatures.

2. Comparing carabid assemblages in sustainable and conventional farming.

Stéphane Bourassa^{1,2}, H.A. Cárcamo², J.R. Spence² and F.J. Larney²; ¹University of Alberta, Edmonton, AB; ²Agriculture and Agri-Food Canada, Lethbridge Research Centre, Lethbridge, AB.

Carabids (Coleoptera: Carabidae) are known to prey on many agricultural pests; hence, they can play an important role in pest management. For three years, carabid assemblages has been collected in a three year rotation of potato, beans and wheat under sustainable and conventional farming. Each phase of each rotation was present in each year. Overall, more carabid were collected in plots under sustainable treatments but diversity and species composition was inconsistent between treatments. However, crop played an important role in species composition. Additionally, some species showed strong interaction between treatments and crop types.

3. Resistance to cabbage seedpod weevil among selected Brassicaceae germplasm

Héctor Cárcamo¹, Owen Olfert², Lloyd Dosdall³, Carolyn Herle¹, Brian Beres¹ and Julie Soroka²; ¹Agriculture & Agri-Food Canada, Lethbridge Research Centre, Lethbridge, AB; ²AAFC, Saskatoon Research Centre, Saskatoon, SK; Dept. Agricultural, Food & Nutritional Science, University of Alberta, Edmonton, AB

Brassicacea genotypes with variable levels of glucosinolates, erucic acid, oil content, and plant height were evaluated for resistance to cabbage seedpod weevil (*Ceutorhynchus obstrictus*). None of these factors appeared to influence cabbage seedpod weevil damage. *Brassica rapa*, had the highest level of damage and *Sinapis alba*, were virtually immune to weevil attack. *Brassica juncea* and *B. carinata*, had intermediate levels of damage. Synchrony of crop development with weevil activity in the field explains the high levels of damage observed in *B. rapa* and illustrates the need to combine field and green house studies.

4. Resource-tracking by bumble bees: Responses to local density of bergamot (*Monarda fistulosa*)

Ralph V. Cartar. Department of Biological Sciences, University of Calgary, Calgary, AB.

Habitat selection theory predicts that consumers should distribute themselves across resources in a fitness-maximizing manner, such that at equilibrium, consumer density matches local resource density. We observed the visitation of bumble bees (*Bombus spp*) across experimental manipulations of inflorescence density of bergamot (*Monarda fistulosa*) in SW Alberta. Bees "undermatched" resources: relative to resources, too many foragers visited low-density treatments, and too few visited high-density treatments. Flight is a costly activity, and bees flew more in low-density patches, which makes their undermatching doubly puzzling. Neither wing use nor habitat selection theory can adequately explain bees' use of these floral resources.

5. Impacts of harvesting treatments on polyporous fungi

Nicolas Debaive^{1,2} and John R. Spence²; ¹ Institut Supérieur d'Agriculture, Lille, France; ² Department of Renewable Resources, University of Alberta, Edmonton, Alberta, Canada

Forest harvesting is a major disturbance to the boreal forests of Canada, as a result, its effects on biodiversity is of major concern. Polypores (tree-associated fungi) play important roles in forest processes and are one of the most vulnerable groups to harvesting. Polypores were sampled at the EMEND site in mixedwood stands subjected to 2 levels of harvesting (50 and 10% retention), prescribed burning and undisturbed controls. The objectives were to: 1) compare species composition among harvest intensities; 2) determine the role of fires in the ecology of polypores; 3) establish the role of protected areas for the conservation of vulnerable species, and 4) examine the association between insect and fungus species.

6. Exon-Intron Structure, Paralogy and Sequenced Regions of Elongation Factor-1 alpha in Hexapoda

M. Djernæs^{1,2} and J. Damgaard¹; ¹ Biological Institute and Zoological Museum, University of Copenhagen, Denmark, ² Department of Biology, University of Alberta, Canada

Elongation factor-1 alpha (EF-1 α) is already widely used and shows even more promise for phylogenetic studies of Hexapoda. However, paralogous copies and the presence of introns pose problems. We surveyed exon-intron structure, presence of paralogous copies and the number and extent of sequenced regions in all hexapod orders. We assessed the phylogenetic utility of the exon-intron structure of EF-1 α , which is unexpectedly dynamic with widespread losses and several instances of intron gain. Paralogous copies of EF-1 α are present in Hemiptera, Thysanoptera, Neuropterida, Coleoptera, Hymenoptera and Diptera. We recommend a suitable focus region of 500 bp for future studies of EF-1 α in Hexapoda.

7. The effect of age, size and mating status on the flight capability of *Choristoneura conflictana* (Lepidoptera: Tortricidae)

Christina G. Elliott and Maya L. Evenden, CW 405 Biological Sciences Centre, Department of Biological Sciences, University of Alberta, Edmonton, Alberta T6G 2E9

For moths, dispersal is essential for males to mate, and often for females to oviposit. Size, age, mating status, and disease all have the potential to affect moth flight capabilities for both sexes. Tethering and flying moths on computer-linked rotary flight mills gives a relative measure of flight capability so that the impact of such factors can be assessed. Large aspen tortrix (*Choristoneura conflictana*), is being flown in

the laboratory to increase understanding about the population dynamics of this outbreaking forest pest. Females of different ages show significant differences in flight distance, and a positive relationship exists between wing area and distance flown.

8. Effects of urbanization on ground beetle assemblages (Coleoptera, Carabidae) of graveyard and grassland habitats in Western Canada

Dustin J. Hartley, Matti Koivula and John R. Spence; Department of Renewable Resources, 4-42 ESB, University of Alberta, CANADA T6G 2E3

To study the effects of habitat type, and large-scale geographical variation on carabid beetles, we pitfall-trapped carabids in grassland and graveyard sites across an urban-rural gradient in central Alberta. We tested the contributions of these factors to carabid groups and assemblage variation. Grasslands and graveyards hosted distinctive carabid assemblages, the latter exhibiting lower species richness and beta-diversity. Urbanization had no effect on beta-diversity, and a negative effect on richness. Graveyard fauna appeared to be comprised of species from adjacent habitats responding to frequent disturbances. Our study demonstrated that management and urbanization are important factors for carabids, and should be incorporated into the management of grassland areas cities.

9. How do the movement behaviours of stream insects function as components of dispersal strategies?

Trent M. Hoover^{1,2} and John S. Richardson¹; ¹ Department of Forest Sciences, University of British Columbia; ² Department of Civil Engineering, University of British Columbia

Streams are a uniquely linear type of habitat. In order for stream insects to successfully disperse between patches of suitable habitat by drifting downstream, they must have behavioural mechanisms that control not only entry into the water column, but also downstream transport and settlement. However, syndromes of behaviour should be functionally different for insects that prefer areas of high flow (riffles) and areas of low flow (pools). A series of experiments were conducted using two riffle and two pool mayflies to examine the extent to which drift-related behaviours are (a) a function of local water velocity and (b) taxa-specific.

10. Canola root damage by *Delia* spp. (Diptera: Anthomyiidae) in diverse cropping systems.

J.D. Hummel¹, L.M. Dossall¹, G.W. Clayton², K.N. Harker², J.T. O'Donovan², ¹Dept. Agricultural, Food & Nutritional Science, University of Alberta, Edmonton, AB, T6G 2P5, ²Agriculture and Agri-Food Canada, Lacombe, AB.

When the diversity of the plant stand is increased, root maggot damage to canola crops can be reduced, due to the disruption of *Delia* oviposition behaviour by the presence of non-host plants. Intercrops of canola and wheat were established to test the hypothesis that wheat, as a non-host to *Delia*, could benefit the canola crop by reducing root maggot pressure while also providing a second marketable product for agricultural producers. The responses of *Delia* to varying vegetational regimes in canola:wheat intercrops in comparison with monocultures will be discussed.

11. Short-term effects of fire and harvest on saproxylic beetle communities in the boreal mixedwood forest

Joshua Jacobs, Tyler Cobb, Matti Koivula and John Spence; Department of Renewable Resources, University of Alberta, Edmonton, AB

Saproxylic (deadwood dependant) organisms have been identified as being vulnerable to industrial forest harvest. Although the idea to emulate natural disturbances in forest harvest practices has been explored as a management option, the resulting habitats are drastically different, particularly in volume of coarse woody debris left on the landscape. Here we examine the response of saproxylic beetle communities to forest harvest, and natural and prescribed burning for 2 years following disturbance. Generally all disturbances increased the abundance and diversity of beetles, however, the magnitude of the increase, and composition of the assemblage differed between the disturbances.

12. Potential for dual control of aphids and cucumber powdery mildew with an entomopathogenic fungus

Jeong Jun Kim^{1,2}, Mark S. Goettel¹ and David R. Gillespie³; ¹Lethbridge Research Centre, Agriculture and Agri-Food Canada, P.O. 3000, Lethbridge, AB T1J 4B1, Canada; ²Applied Entomology Division, National Institute of Agricultural Science and Technology, Suwon, 441-707, Korea; ³Pacific Agri-Food Research Centre, Agriculture and Agri-Food Canada, P.O. Box 1000, Agassiz, BC, V0M 1A0, Canada

In vitro leaf disc and potted plant bioassays were conducted to investigate the potential for dual control of aphids and powdery mildew in a greenhouse crop with a single microbial pathogen. For the *in vitro* leaf disc bioassays, conidia and blastospores of three isolates of *Lecanicillium* (formerly *Verticillium*): *L. longisporum*, *L. attenuatum*, and an unidentified isolate, were tested against four species of aphid and cucumber powdery mildew (*Sphaerotheca fuliginea*). We found that all three *Lecanicillium* isolates had high virulence against the aphids *Aphis gossypii*, *Aulacorthum solani*, *Macrosiphum euphorbiae* and *Myzus persicae*. Powdery mildew did not develop when applications of conidia and blastospores of the *Lecanicillium* species were made one and seven days after powdery mildew inoculations. When *Lecanicillium* was applied to highly infected leaf discs on days 10 and 14, the application significantly suppressed subsequent production of powdery mildew spores as compared to the controls. In potted cucumber plant bioassays with the commercialized formulation of *L. longisporum* (Vertalec[®]), total control of adult cotton aphids was achieved 11 days after fungus application. A control treatment consisting of Vertalec containing irradiation inactivated blastospores had no effect on cotton aphid mortality. In contrast, spore production of powdery mildew was significantly suppressed after application of either active Vertalec or Vertalec containing irradiation-inactivated blastospores onto potted cucumber plants one and 15 days after *Sphaerotheca fuliginea* inoculation. This leads us to speculate that either the formulation ingredients or mycotoxins may be responsible for the anti-powdery mildew effect of Vertalec. For dual control assays, Vertalec was applied one day after aphid and *S. fuliginea* inoculation on potted cucumbers. Fifteen days after the Vertalec treatment, the numbers of surviving aphids and the production of powdery mildew spores were significantly reduced compared with the controls. Our results suggest the potential of a dual role for *Lecanicillium spp.* as a microbial control agent of aphids and powdery mildew in cucumber.

13. A fresh look at an old pest: can we enhance biocontrol of *Cephus cinctus* ?

Cassidy Klima¹, Héctor Cárcamo¹, Brian Beres¹ and John Spence²; ¹Agriculture & Agri-Food Canada, Lethbridge Research Centre, Lethbridge, AB; ² Department of Renewable Resources, University of Alberta, Edmonton, AB

The wheat stem sawfly continues to cause economic losses to wheat growers. We are examining the effects of preseed and harvest residue management, wheat cultivar and cultivar blends, and host plant density on sawfly population dynamics and rates of parasitism. Furthermore, field harvested sawfly eggs and larvae were transferred into plants of varying host quality to test effects on fitness and sex ratio. Phenological studies of *Bracon cephi* and its potential preference for larger sawfly larva (putative females) will further clarify its impact on sex ratio. An update from the 2006 field season will be presented.

14. Asymmetry and sexual selection in male feather mites (Acari: Astigmata)

W. Knee and H. Proctor; Department of Biological Sciences, University of Alberta, Canada

In many species of feather mites, adult males are strikingly asymmetrical while females and juveniles are symmetrical. To date there has been no attempt to determine relative frequencies of right- and left-handedness within a species, nor has handedness been correlated with habitat choice within a host (e.g., leeward or windward of rachis). We found that males of a new species of *Michaelia* from the double-crested cormorant (*Phalacrocorax auritus*) show a 1:1 ratio of left- and right-handed individuals. Handedness was significantly correlated with whether a male was found on the host's left or right wing. Why are only adult males asymmetrical? Unlike other sexes and stages, they have to hold onto females with their hind legs during precopula, leaving only legs I and II to hold onto the feather. Asymmetry may allow males to brace themselves between feather barbs despite strong hydrodynamic stress experienced during host diving.

15. Some die that others live: death by ichneumonid

Joanne Bovee¹ and Robin Leech²; ¹15305 – 106 Avenue, Edmonton AB T5P 4H8, ²10534 – 139 Street, Edmonton AB T5N 2K7

The larvae of ichneumonid parasitoids are infrequently found attached to the upper, anterior parts of *Araneus* (Araneae: Araneidae) and other immature spiders. Very rarely are these parasitoids reared and photographed through to the adult stage. *Araneus gemmoides* Chamberlin & Ivie immatures with an ichneumonid parasitoid larva attached were photographed at extreme close-up distances. The spiders are about 3 mm long or less. Normally, a spider hatched the previous June would be at least 6-9 mm in body length. A series of photos shows the larva growing larger, killing and abandoning the spider's body, the parasitoid pupa and the adult of *Polysphincta koebelei* Howard. *Araneus gemmoides* is a new host record for this parasitoid.

16. Does juvenile hormone have a role in diapause termination in male *Caloptilia fraxinella* (Lepidoptera: Gracillariidae)?

J. Lemmen and M. Evenden; CW 405 Biological Sciences Centre, Department of Biological Sciences, University of Alberta, Edmonton, Alberta T6G 2E9

The ash leaf cone roller *Caloptilia fraxinella* is a horticultural pest of ash in Alberta. Adults overwinter in reproductive diapause. It has previously been shown that juvenile hormone (JH) and adult nutrition regulate diapause termination in female *C. fraxinella*. Here we test whether JH is important in the termination of male reproductive diapause. We applied methoprene, a JH analogue, to males at two stages of diapause development and compared their response with solvent-treated males to a sex pheromone source in a wind bioassay.

17. An exploratory survey for natural enemies of the invasive plant *Miconia calvescens* in southern Mexico.

Alec McClay, McClay Ecoscience, 15 Greenbriar Crescent, Sherwood Park, AB.

Miconia calvescens DC (Melastomataceae) is a small tree native to Central and South America that was introduced as an ornamental into Tahiti and Hawaii, where it has become a major invasive species and a threat to biodiversity. A two-week survey was conducted in southern Mexico, at the northern end of its native range, to locate populations of *M. calvescens* and identify associated insects and other natural enemies of possible interest as biological control agents.

18. Method for mass rearing insects from dry plant material

Scott Meers, Alberta Agriculture, Food and Rural Development, Brooks, AB.

Some insects overwinter and/or go through diapause in dry plant material. They emerge after diapause to continue with their life cycle. Collection of material from a standard area and counting of the number emerging will give an estimate of population levels. Wheat residue from various heights (from harvest operations) was collected the spring after harvest and the emergence of the wheat stem sawfly parasitoid numbers were evaluated. Emergence barrels were made of 170 litre plastic barrel liners supported by high tensile wire mesh. Lids were made of poster board and holes cut for emergence cages made from 500 ml screw top jars. After some minor adjustments, excellent emergence of the parasitoid wasps resulted.

19. Effects of retention patches on the community of ground-dwelling spiders in the boreal forest

Jaime Pinzon and John Spence; Department of Renewable Resources, University of Alberta, Edmonton, AB

Green-tree retention is a common forest management recommendation in Alberta as an approach to maintain biodiversity. Little is known about the effect of these “life-boats” on the community of ground-dwelling spiders. The present study explores the potential for species reservoirs of two retention patch sizes embedded in stands harvested to 2%, 10% and 75% residual, in conifer and deciduous dominated forests.

Spider diversity and composition was compared between retention patches, harvested areas and uncut controls.

20. Understanding edge effects: using carabid and staphylinid communities as indicators of biodiversity responses to forest fragmentation.

M. Pyper^{1*}, D.W. Langor², J.R. Spence¹. ¹Dept. of Renewable Resources, University of Alberta, ²Natural Resources Canada, Canadian Forest Service, Northern Forestry Centre.

As forest harvesting continues in the boreal forest of Alberta developing an understanding of the extent of edge effect, and its persistence over time, is critical for maintaining biodiversity. We sampled ground dwelling beetle communities along transects extending from clear-cut edges into the mature forest. Deciduous dominant stands of 2, 8, and 15 years post-harvest were studied.

21. The effect of tree thinning on the dispersal of mountain pine beetles (*Dendroctonus ponderosae*).

T.G. Reid, M.L. Reid, Dept. of Biology, University of Calgary, Calgary, AB.

Dispersal is an integral component of reproductive success in the mountain pine beetle. Individuals must locate a living host tree, and attack in sufficient numbers to overcome tree defenses to successfully reproduce. A mark recapture experiment involving both non-thinned and mechanically thinned lodgepole pine (*Pinus contorta*) forest stands in Parson B.C. was used to determine the effect of tree thinning on mean dispersal distance in the mountain pine beetle.

22. Mutual mate choice in mountain pine beetles

O. Baruch¹, M. Reid²; ¹Department of Entomology, Rehovot, The Hebrew University of Jerusalem, Israel, ²Department of Biological Sciences, University of Calgary, Calgary, AB

Mate choice is expected when a significant fraction of an individual's reproduction is committed to a single mate. We examined female and male mate choice in mountain pine beetles, *Dendroctonus ponderosae*, by experimentally introducing males to female breeding sites. Larger males in better condition were less likely to enter a female's gallery, and males were less likely to enter when tree defences were higher, both suggesting male choice. For males that entered, the time to enter depended on both male and female condition, indicating mutual mate choice.

23. Sexually Antagonistic Selection and its Consequences

Locke Rowe, Department of Ecology and Evolutionary Biology, University of Toronto, Toronto, ON

Sexual conflict, although an idea with considerable history, has recently become a very active area of research. I will begin by defining sexual conflict, sexually antagonistic selection and sexually antagonistic coevolution. Sexually antagonistic selection and the resulting coevolution of interacting traits in the sexes, may lead to similar patterns as those expected from more commonly studied mechanisms of sexual selection. I will illustrate these points with some theory and some experimental and comparative data in water striders. New theory suggests that the patterns resulting from sexually antagonistic coevolution,

including the exaggeration of traits, the correlation of trait expression with condition, and intersexual genetic correlations are shared with most other models of sexual selection. These results suggest that “pattern” studies will not be able to distinguish sexually antagonistic coevolution from other mechanisms of sexual selection. Instead, sexually antagonistic selection needs to be studied mechanistically. These approaches can include functional, economic and particularly selection studies. I illustrate these approaches in studies of water striders. These studies suggest that sexual conflict over mating rate and duration leads to the evolution of sexually antagonistic traits in both sexes. Comparative analyses in two general suggest two different coevolutionary outcomes. In one genus, *Gerris*, there has been bidirectional coevolution (escalation and retreat) of antagonistic traits in both sexes. In the other genus, *Rheumatobates*, a unidirectional arms race is suggested.

24. The composite scale-brushes in male *Dioryctria* (Pyralidae), Comparative morphology, phylogenetic implications and possible functional aspects.

Thomas J. Simonsen¹ and Amanda Roe^{1,2}; ¹Department of Biological Sciences, University of Alberta, Edmonton, Alberta, Canada; ²Current address: Department of Entomology, University Of Minnesota, St. Paul, Minnesota, USA

It has long been known that the males of the pyralid genus *Dioryctria* (cone worms) and some related genera have a set of highly modified and bizarre appendages ventrally on the abdominal segment 8. The common names assigned to these structures, composite scale brushes or composite hair brushes, suggest that these structures are somehow derived from body scales or hairs. Here we examine the structural diversity in *Dioryctria* and compare the results to two closely related genera. We also examine the histological and structural modifications of the Abdomen 8 and describe unique musculature arrangements associated with the brushes.

25. Variable Responses of *Phyllotreta* spp. Flea Beetles to Some Neonicotinoid Insecticides: Are we promoting a shift in the dominant species?

James Tansey, Andrew Keddie, Lloyd Dossdall and Rana Sarfraz; University of Alberta, Edmonton, AB

Differences in susceptibility to insecticidal compounds can lead to shifts in prevalence of herbivorous species. These compounds include relatively recently developed neonicotinoids. Here we present evidence that the canola pests, the crucifer flea beetle *Phyllotreta cruciferae* Goeze and the striped flea beetle *P. striolata* F. respond differently to the neonicotinoid seed treatments Helix® (thiamethoxam: 200g AI/100kg), Helix Xtra® (thiamethoxam: 400g AI/100kg), Prosper 400® (clothianidin: 400g AI/100kg), and an experimental unknown compound in greenhouse experiments. Crucifer flea beetles suffered higher mortality and fed less when exposed to these compounds and interactions of competition and seed treatments were more pronounced. Given that competitive release of *P. striolata* occurs when *P. cruciferae* are excluded, these seed treatments are likely contributing to a shift in the dominant pestiferous flea beetle species towards *P. striolata*.

Poster Presentation Abstracts

26. Using soil arthropods to evaluate LFH placement for enhancing reclaimed landscapes in boreal forests of northern Alberta.

J. Battigelli, J. Brown and L. Leskiw; Paragon Soil & Environmental Consulting Inc., Edmonton, AB.

Soil formation is crucial for successful reclamation of land affected by industry. Soil arthropods are actively involved in decomposition, nutrient cycling and soil formation. They respond quickly to changes in the soil habitat, thus making soil fauna useful indicators of habitat disturbance, soil quality. An understanding of their density, diversity and distribution is important, especially in light of the reclamation efforts undertaken in the Oil Sands Region of northern Alberta. In 1999, Syncrude Canada established a study to evaluate the specialized salvage and placement of forest floor and near-surface mineral soil (LFH) on the re-establishment of native plant species and ecosite composition in reclaimed landscapes. Our objective was to examine the soil mesofauna community response to these treatments. Our findings indicate that LFH results in greater oribatid mite and collembolan species diversity than peat mixture applications.

27. Examining soil ecological properties in disturbed peach orchards near Niagara-on-the-Lake, ON.

J. Battigelli¹, J. Brown¹, L. Leskiw¹ and S. Quideau²; ¹Paragon Soil & Environmental Consulting Inc., Edmonton, AB; ²Department of Renewable Resources, University of Alberta.

We investigated soils on five orchards near Niagara-on-the-Lake, Ontario transversed by a pipe line right of way. Growth of peaches and grapes continue to be poor on the right-of-way traversing these orchards even after a 2003 reclamation effort. The objectives of the investigation was to assess soil conditions including physical, chemical and biological properties and provide recommendations for improvement. We present here results of the biological component of the soils investigation. Soil arthropods were extracted from soil samples and Phospholipid Fatty Acid (PLFA) analysis was used to examine the soil microbe community. Our results showed a high density of soil arthropods and greater microbial biomass in the control sites than in the pipe line right of way.

28. *Wolbachia* in wasps parasitic on filth flies (Diptera: Muscidae) with emphasis on *Spalangia cameroni* (Hymenoptera: Pteromalidae)

G.K. Kyei-Poku¹, M. Giladi², P. Coghlin³, O. Mokady², E. Zchori-Fein⁴ and K.D. Floate³; ¹Canadian Forest Service, Great Lakes Forest Centre, Sault Ste. Marie, Canada, ²Department of Zoology, Tel Aviv University, Tel Aviv, Israel, ³Agriculture & Agri-Food Canada, Lethbridge Research Centre, Lethbridge, AB, Canada, ⁴Agricultural Research Organization, Neve Ya'ar Research Center, Ramat Yishay, Israel

Wolbachia bacteria were detected in 15 of 21 species of wasps and in three of nine species of flies parasitized by these wasps. Infections in the wasp, *Spalangia cameroni*, caused an incomplete form of female-mortality (FM) type cytoplasmic incompatibility (CI). Crosses between infected males and uninfected females (%^w x &) produced fewer progeny with a strong male bias relative to other mate combinations. Progeny were slower to develop if the paternal parent was infected, regardless of whether

the maternal parent was infected or whether offspring developed from fertilized eggs. This observation previously has not been reported for *Wolbachia*.

29. Disruptive selection on worker ovary development in the honey bee: Genotype and rearing environment affect nursing and foraging behaviour

Shelley E.R. Hoover, Mark L. Winston; Department of Biological Studies, Simon Fraser University, Burnaby, BC, Canada

Reproductive division of labour is a defining characteristic of eusocial insects. In honey bees, there is normally a single, highly fecund queen, responsible for producing all the brood in the colony. Workers are functionally sterile, developing their latent ovaries only upon queen loss. Disruptive selection resulted in lines of bees with high or low levels of worker ovary development when queenless. Cross-fostering experiments demonstrated that genotype and rearing environment affected nursing and foraging behaviours of workers in the selected lines in queenright colonies.

30. Linking undergraduate training and conservation outcomes using rapid biodiversity assessments methods

Doris Audet and David G Larson; Department of Science, Augustana Faculty, University of Alberta, Canada

Rapid Assessment Programs (RAPs) have been an effective framework by which to engage undergraduate students in field research in dry tropical forest patches in Guanacaste, Costa Rica. A total of 47 student reports pertaining to the biodiversity and habitat use by 14 types of organisms [22 on insects] have been generated by the undergraduate students involved in four field trips to date with six of the papers producing checklists for insects in the study area. Very positive student outcomes result from this type of educational experience.

31. Spiders associated to tree trunks in a boreal mixedwood forest: Effectiveness of two arboreal pitfall trap designs

Jaime Pinzon and John Spence; Department of Renewable Resources, University of Alberta, Edmonton, AB

Information on arboreal spiders is scarce in the boreal forest. The reason for this is mainly due to sampling difficulties. Two different arboreal pitfall trap designs were tested in order to determine their effectiveness as sampling devices for cursorial spiders associated with mixedwood forest tree trunks. Spiders were collected during the 2006 summer season using 12 traps of each design on Aspen (*Populus tremuloides*) and White Spruce (*Picea glauca*) trees. Effectiveness of each trap design was compared in terms of trap efficacy and composition of catch.

32. Condition-dependent toxicity of host defenses to Mountain Pine Beetle (*Dendroctonus ponderosae*)

J. Purcell and M. Reid, Undergraduate research project, BSc Environmental Science Program, University of Calgary, Calgary, AB

Aggressive mountain pine beetle (MPB, *Dendroctonus ponderosae*) attack living trees with active defenses via mass attacks that if successful result in tree death. Toxic monoterpenes are a host defense whose concentration increases upon attack in healthy trees. This study aimed to determine whether the state of MPB influenced mortality due to host monoterpene vapour exposure. Results indicate that larger size was generally beneficial and better condition increased probability of beetle survival. Beetles in good condition did not experience higher mortality at high monoterpene concentration while poor and average condition beetles did. Condition may provide valuable insight on bark beetle-monoterpene dynamics.

33. Acacia ants: effective defenders of their host trees?

Hilary Young and Linda Fedigan; Department of Biological Sciences, University of Calgary, Calgary, AB

Acacia trees in Costa Rica have an obligate mutualism with three species of *Pseudomyrmex* ants, which vigorously defend their host tree against herbivory. However, depending on the size and species of ant colony, individual acacia trees may be differentially protected. The aim of this study was to examine the foraging selectivity of capuchin monkeys on acacia trees in Costa Rica. We determined the ant species present on trees used by capuchins (n = 303) and trees not used (n = 333). For each tree, we also measured ant colony activity before and after a disturbance. We found that the three species of mutualistic ants differ in their baseline activity levels and that mutualistic ants are more active than non-mutualistic ant species found in acacia trees. We also found that capuchins foraged more frequently in trees colonized by non-mutualist ants, but the explanatory value (r^2) of this model was low. Furthermore, monkeys did not discriminate between acacia trees on the basis of ant activity. We conclude that these monkeys select acacia trees in which to forage based on characteristics of the trees rather than the ants. In addition, our study suggests that white-faced capuchins act as predators on the acacia ants but they are probable benefactors to the dispersal and reproductive success of acacia trees. Capuchins may in fact function as an additional mutualistic partner for acacia trees via seed dispersal, but they must overcome the ants' defense of the trees to do so. For animals able to discern between weakly and highly aggressive ant colonies, costs of occasional ant stings from less active colonies might be offset by nutritional value acquired from feeding on the acacias' fruit or ant larvae in swollen thorns

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**Fall meeting of the Executive of the Entomological Society of Alberta
Ramada Inn, Lethbridge, October 26th, 2006**

Minute Notes taken by acting secretary Hector Carcamo

Meeting called to order at 5:10 by President Maya Evenden

Present: Maya, Hector, Derrick, Stephanie, Kim, Troy

Regrets: Jennifer Otani, Rob Longair, Mike, Jeff Battigelli.

- 1) Motion to approve agenda by Derrick, seconded by Hector
- 2) Motion to approve minutes of spring executive meeting held in Calgary on 28 March 2006, moved by Stephanie Erb, seconded by Derrick.
- 3) Northern Director Report. Read by Maya on behalf of J. Otani

(see all directors reports and webmaster report following annual general meeting minutes)

Motion to accept report: Moved by Derrick, seconded by Troy.

- 4) Central Director Report. News passed along by Rob Longair, read by Maya

Motion to accept report: moved by Hector, seconded by Kim.

- 5) Southern Director Report, presented by Derrick verbally. Ralph Carter has been replaced at the University of Lethbridge by an ornithologist. No news about replacing Dan Johnson at the Lethbridge Research Centre. On another topic, there is a need to develop a poster promoting the ESA at community events and also insect display material that could be available for our members willing to staff promotion booths.

Acceptance of this report moved by Kim, seconded by Troy.

- 6) Webmaster report. Presented by Troy (no copy provided).

Acceptance moved by Derrick, seconded by Kim.

- 7) Secretary's report. Read by Maya on behalf of Mike, and reproduced here:

My apologies to all for missing the 2006 AGM.

Things have been fairly quiet on the secretary front since our spring executive meeting. I have sent out a few emails to the membership as requested by some of you, and received a few pieces of mail which I have passed on to Maya for the membership to view if requested.

As of October 24, the only award application/nomination received was the Carr Award nomination of Gary Anweiler. John also has that nomination which was submitted by Greg Pohl. I have received no student travel grant applications or any other award related information.

Since 2001, I have enjoyed my involvement as secretary of the ESA, and would like to thank you all for making the past years a pleasure. But it is time to pass the torch. Please contact me with the name of the new secretary so I am able to make arrangements to pass along the hard copies of some documents as well as some other digital information.

Enjoy the meeting, and see you next year!

Acceptance moved by Stephanie and seconded by Derrick.

- 8) Director to ESC report: Read by Hector and reproduced below:
(see report at end of meeting minutes)
- 9) Treasurer Report. Kim presented an interim status report of the society's finances reproduced below:

Interim Financial Report
Entomological Society of Alberta
Fall Executive Meeting
October 26, 2006

Balances January 2006:

Term Deposit	\$15,000.00
Chequing	\$11,253.18
Common Shares	\$416.51

New Members

Student - 9
Regular - 6

Credits (as of Oct. 26):

Registration	\$2700.00
Membership	\$295.00
Banquet	\$60.00
Fundraising 2005 JAM	\$4311.54
Investments	\$327.50

Debits (as of Oct. 26):

Bank Charges	\$ 15.71
ESA Spring Exec Meeting	\$188.41
Proceedings Mailout 2005	\$98.25
Proceedings Printing 2006	\$824.89
Returned Loan – ESC Jam	\$4000.00
2005 meeting - volunteer cheque	\$245.00
Registration Materials for 2006	\$76.61

Current Balance (October. 24, 2006):

Term Deposit	\$15,000.00
Chequing	\$14,139.85
Investment	\$416.51

The Board also made the decision to give members the option to receive the proceedings of the annual meeting in paper or electronic format. Motion to accept report by Derrick and seconded by Troy.

- 10) Nominations Committee. Presented by Maya on behalf of Jeff. Candidates were found for all available vacancies as follows:
 - a) Vice President: Rose De Clerck-Floate
 - b) Northern Director: Gerald Hilchie

- c) Secretary: Heather Proctor
 - d) Treasurer: Lisa Humley
 - e) Webmaster: Troy Danyk
- Other positions have one or more years in their term.

11) Awards committee. Only two travel student award applications were received and we can give up to 5. Supervisors are encouraged to spread the word to the students. Four applications were received for the Undergraduate Award. Making the decision was very difficult because of the high caliber of some of the candidates but the winner in the end was Joseph Purcell of the University of Calgary working with Dr. Mary Reid. Gary Anweiler was the only nomination received for the Carr Award. The board unanimously endorsed his nomination.

12) Old business:

- a. Proceedings template: Maya will write a general outline to help future editors maintain consistency. There will be a new section on “members in the news”.
- b. International Congress of Entomology 2012. Maya sent a letter to Murray Isman expressing our society’s support to the San Diego bid to host this meeting; this was done after sufficient email discussion with the executive.

*Office of the President
Entomological Society of Alberta
Dr. M.L. Evenden*

Re: International Congress of Entomology (ICE) 2012

September 5, 2006

To Whom It May Concern:

With this letter, I am confirming the intentions of the Entomological Society of Alberta to be a supporting society to the International Congress of Entomology in 2012 to be held in San Diego, California.

We understand that supporting societies:

- 1. Receive promotions for the society in the form of a booth or logo display.*
- 2. Receive a discount for early registration for attending members.*
- 3. Can hold their Annual General Meeting at the Congress and receive \$3000 USD from the ICE in lieu of revenue from a stand alone AGM.*

The Entomological Society of Alberta’s Executive at the time of the ICE will decide whether or not to hold the AGM in conjunction with the Congress.

Thank you for the opportunity to be involved in this important meeting. If you have any further questions or requests from the Entomological Society of Alberta, please do not hesitate to contact me.

*Yours truly,
Dr. Maya Evenden, President
Entomological Society of Alberta*

- c. American Institute for Biological Sciences. The board discussed a proposal made at the Canmore meeting that we join this society for \$125 annual fee. The executive decided against it since there are not sufficient benefits to the general membership.

- d. Protocols to run ESA meeting. Robin Leech has written a guide based on Roberts Rule of conduct to help members of the executive with the formal running of the meeting. **Troy will place the document on our web page.**
- e. Guide on how to organize ESA meeting. There was discussion on the need to prepare such a guide and format it similar to the ESC guide. Next meeting. The central members, especially Ken Fry in Olds and the U of C members, will be lobbied to organize the meeting in Olds, as they have not hosted one since 2001.
- f. Entomological kits. There was discussion on the need to prepare entomological display kits to be exhibited at community events where we are invited to staff a promotion booth. **Derrick Kanashiro will work on preparing such kits.**
- g. AGM agenda. There were no additions needed to the agenda prepared by Maya.
- h. Donation. The board approved in principle subject to future email discussion the plan to make a donation on behalf of our society in honour of John Carr who passed away on 4 September 2006. **Maya will provide details of the donation via email at a later date.**

Meeting was adjourned at 6:51, moved by Derrick Kanashiro and seconded by Stephanie Erb.

54th Annual General Business Meeting of the Entomological Society of Alberta
28th October 2006
Ramada Inn, Lethbridge

Members present:

Maya Evenden, Rose DeClerck-Floate, Kevin Floate, Kimberly Rondeau, Peter Walsh, Scott Meers, Marie Djernas, Thomas F. Simonson, Evan Gushul, Robin Leech, Joe Shemanchuk, Stephanie Erb, Derrick Kanashiro, Allan Schaaf, George Ball, Kay Ball, Gerald Hilchie, Troy Danyk, Hector Carcamo, Jeff Battigelli

Meeting was called to order by president Maya Evenden at 10:25 am

- 1) Agenda presented. No amendments were suggested. The motion to accept agenda was moved by Derrick Kanashiro and seconded by Kevin Floate; carried unanimously.
- 2) The minutes from the Annual Business Meeting held in Canmore, November 2005 were reviewed. Troy Danyk noted that the plus or minus sign was missing from a number (20?) in his webmaster report. The motion to accept the webmaster's report was moved by Kanashiro and seconded by Thomas Simonson; carried unanimously.
- 3) The presidential address was eloquently presented by Maya Evenden, and reproduced below:

Hello All,

Thank you for staying and participating in the Society through your attendance at the Annual Business Meeting. We will try and make this smooth and brief so that we can all get home before the snow starts.

Lethbridge is an entomological powerhouse in Alberta, and we were fortunate to hold our meeting here and have many keen entomologists to assist in running this year's meeting. The hard work of many people have made this, the 54th Annual General Meeting of the Entomological Society of Alberta, a real success. I would especially like to thank: Kevin Floate and Rosemarie DeClerk-Floate who organized the scientific program. I think you'll agree that their hard work paid off with an excellent symposium and many interesting submitted papers and posters. The local arrangements committee consisted of Derrick Kanashiro, Brian Vanheezwijk, Kim Rondeau, and Stephanie Erb who organized our accommodations, meeting venues and most importantly food and spirits! Registration duties and the meeting budget were handled by our treasurer, Kim Rondeau. This is the second year that Kim has been heavily involved in the finance of our meeting. Many other members contributed to the success of this meeting and I would particularly like to thank our student members for participating in the meeting and encourage them to continue to do so in the future.

I became involved in the Entomological Society of Alberta in 2004, just shortly after I joined the faculty of the Department of Biological Sciences at the University of Alberta. Not surprisingly, Heather Proctor, dragged me into it! I first participated as Proceedings Editor in 2004 and then as Vice-President in 2005 and currently as President. As a new faculty member I wasn't looking for additional work, however, I found serving the ESA to be an enriching and eye-opening experience. This involvement in our Society has allowed me to learn a lot about entomology in Alberta. As a newcomer to Alberta in 2003, it was a great opportunity for me to learn about the current entomological activities and the traditions of entomology in the province. It also allowed me to meet and interact with many entomologists across the province. Soon, I think that I will actually feel like an Albertan entomologist! Although Heather Proctor initially twisted my arm to become involved in the ESA executive, I have to thank her and our past-president John Acorn for their assistance during my time as president.

Finally, I'd like to close by thanking the other ESA Executive members for their hard work and congenial approach to running the Society, especially during my maternity leave. A lot of work is conducted behind the scenes to make sure that our society functions properly. It has been fun working with you all and I look forward to my position as past-president of the ESA in 2007.

Robin Leech moved for acceptance and Marie Djernas seconded. Motion Carried.

- 4) Vice President Jeff Battigelli, chair of the Nominations Committee presented the candidates for the following executive positions open for 2007:
 - a) President: Dr. Jeff Battigelli
 - b) Vice President: Dr. Rose De Clerck-Floate
 - c) Secretary: Dr. Heather Proctor
 - d) Treasurer: Lisa Lumley
 - e) Northern Director: Gerald Hilchie

No other candidates were nominated and Dr. Ball moved for nominations to cease; seconded by R. Leech and carried unanimously.

- 5) Two internal auditors were elected by popular acclamation: Robin Leech and Kevin Floate.

Rose De Clerck-Floate moved for acceptance of the auditors and the motion was seconded by Stephanie Erb and the motion was carried unanimously.

- 6) Treasurer, Kim Rondeau, presented an interim report of the financial status of the society.
(see report separately at end of minutes)

Acceptance of the report was moved by R. Leech and seconded by J. Battigelli. Motion carried.

- 7) Webmaster, Troy Danyk presented his report (no hard copy)

Acceptance of the report was moved by R. Leech and seconded by H. Carcamo. Motion carried.

- 8) Regional Director to the ESC, Héctor Cárcamo presented his report, reproduced below:
(see report presented separately at end of minutes)

Motion to accept report by G. Ball, seconded by D. Kanashiro. Carried.

- 9) Old business:

- a) AIBS. The ESA executive board decided against joining the American Institute for Biological Sciences. The benefits of having access to their journal are not extended to all the members unless they subscribe individually and other access to information on grants and education is already available free.

- 10) New business:

- a) PROCEEDINGS. To reduce printings costs, ESA members now have the option to have the proceedings in electronic format. There will be a new section on “members in the news” to keep tabs on what is happening with our members. The deadline for submissions will be 1 September.
- b) ICE. Maya Evenden received an email from Murray Isman of UBC asking our society to express support for a bid to organize the International Congress of Entomology being spearheaded by John Trumble in San Diego (Pacific branch of the Entomological Society of America). After debating the issue by email, the board wrote a letter expressing support for the bid to Murray which is reproduced below:

*Office of the President
Entomological Society of Alberta*

Dr. M.L. Evenden

Re: International Congress of Entomology (ICE) 2012

September 5, 2006

To Whom It May Concern:

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We understand that supporting societies:

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The Entomological Society of Alberta's Executive at the time of the ICE will decide whether or not to hold the AGM in conjunction with the Congress.

Thank you for the opportunity to be involved in this important meeting. If you have any further questions or requests from the Entomological Society of Alberta, please do not hesitate to contact me.

*Yours truly,
Dr. Maya Evenden, President
Entomological Society of Alberta*

The discussion by the membership led to the conclusion that our society, the Entomological Society of Alberta will also express support to the Entomological Society of Quebec if they so request it if they go ahead with their bid for the ICE.

- c) MAIL. The president presented an envelope containing 3 letters from The Senior Entomologists in case anyone wanted to view our correspondence.
- d) RESOLUTIONS. Jeff Battigelli read the following resolution regarding the 54th meeting:

Whereas the 2006 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 executive with Maya Evenden as meeting chair
 - b) the local arrangements committee comprised of Derrick Kanashiro, Brian Vanhezewijk, Kim Rondeau and Stephanie Erb
 - c) the scientific program committee of Kevin Floate and Rose DeClerck-Floate
 - d) registration and budget committee: Kim Rondeau
 - e) Locke Rowe for his captivating keynote address
 - f) Lorne Fitch for after dinner entertainment; and
 - g) The staff of the Ramada Hotel and Suites for their hospitality
- e) The 55th AGM and scientific meeting will be held in Olds and organized by our central membership.

11) Additional business:

- a) MEDIA. There was discussion around the topic of how to deal with media questions about insects, especially interesting phenomena that could also be used to raise the public profile of our society. It was agreed the **Troy Danyk will generate a list of regional experts** willing to field media calls. He will work with the regional directors to determine primary contacts and alternates when these are not available. This information will be posted in a visible area of our home web page. Also, press releases and information fact sheets on “hot topics” (e.g. the *Pieris rapae* flight in 2006) will be made available as needed and posted in the web page or linked. Robin Leech provided extensive advice on exercising caution when making recommendations about potentially litigious topics such as medical referrals.
- b) PROCEEDINGS. Kaye Ball informed that there are several extra proceedings from recent years available and will be discarded soon. Dr. Ball asked about binding collections of proceedings as done in the past. The membership agreed that this will be an excellent way to spend some of our money and **Maya will look into binding some copies.**
- c) Robin Leech had difficulty finding the hotel reminded the organizers of the importance to provide complete addresses of hotels and venues and directions on how to get there. Al Schaaf expressed surprise that someone could get lost in Lethbridge.
- d) POSTER. Derrick **Kanashiro and Hector Carcamo will produce a poster** (during the board meeting the idea to prepare an insect display using pinned material was discussed as well and could be part of this exercise) to advertise our society at science fairs or meetings where we are invited to staff a promotion booth.

The AGM adjourned at 11:17 a.m. moved by Robin Leech and seconded by Jeff Battigelli.

ESC REGIONAL DIRECTOR REPORT
For presentation to ESA Executive and AGM, 26 & 28 October 2006

1. **Current Membership of the ESC** has actually increased by about 10 %. As of October 24, 2006, we had 547 members; however the number of emeritus members has declined by 40 %. We now have a positive trend of increasing membership for two years in a row- let's keep it up!

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 (24 October)	413	89	45	547

2. **Finances.** The society is in good financial shape: it opened 2005 with a balance of \$803, 884 and closed the year with \$825, 764 in the bank. The scholarship fund reached around \$189,000 at the end of 2005. The ESC hopes to increase this fund to about \$200, 000 to increase the size of scholarships and awards funded from the interest generated by this fund.
3. **Nominations:** Paul Fields and Gary Gibson have been nominated for the position of Second Vice-President; Chris Buddle and Yvan Pelletier for Director-at-large
4. **Other**
- Dorni Lisi is our new office manager
 - The new Editor of Can Ent will be Rob Bennett (BC Ministry of Forests) starting in 2007. The instructions to authors have been revised; they are more concise and now require electronic submission of manuscripts
 - Michel Cusson, who is chairing the information technology committee, hopes that his committee will have open-source software from Simon Fraser installed and running early in 2007 that will permit web-based submission and reviewing of manuscripts for the Canadian Entomologist
 - Kevin Floate (AAFC, Lethbridge) will take over as Editor of the Bulletin in 2007
 - The Entomological Society of Quebec has expressed interest in hosting the 2012 International Entomology Congress in Montreal

Respectfully submitted,
October 24th, 2006
Héctor Cárcamo
ESA Director to the ESC

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**Fall Northern Director Report
Entomological Society of Alberta
26 October 2006**

Director's Activities

No requests for Society participation in local events or activities.

Graduate Students - Thanks to those who provided information: Lloyd Dosedall, Maya Evenden, Heather Proctor, Kimberly Rondeau, Felix Sperling

The degree being sought, a working title for their research project, their supervisor's name(s) and the student's contact information (optional) is listed below.

Attending the University of Alberta

- Barkway, M.. M.Sc. (Year 3 of 3). Effects of logging on benthic macroinvertebrates in low gradient boreal streams. Department of Renewable Resources. Supervised by Dr. John Spence. Contact information: medgar@ualberta.ca.
- Bergeron, C. Ph.D. (Year 5 of 5). Fire history and historical effects on arthropods. Department of Renewable Resources. Co-supervised by Drs. John Spence and Jan Volney. Contact information: cb1@ualberta.ca.
- Broatch, Jim. Ph.D. (Year 4 of 5). Manipulating herbicide application rates in canola for improved integrated crop management. Department Agricultural, Food and Nutritional Science. Supervised by Dr. Lloyd Dosedall. Contact information: jim.broatch@gov.ab.ca.
- Bromilow, Sean. M.Sc. (Year 3 of 3). Genetic divergences of Peace River grassland butterflies. Department of Biological Sciences. Supervised by Dr. Felix Sperling. Contact information: bromilow@ualberta.ca.
- Cobb, Tyler. Ph. D. (Year 5 of 5). Impacts of salvage logging on insect communities. Department of Renewable Resources. Co-supervised by Drs. John Spence and David Langor. Contact information: tcobb@ualberta.ca.
- Crosina, Wendy. M.Sc. (Year 2 of 3). Title not available. Department of Renewable Resources. Co-supervised by Drs. John Spence and Luigi Morgantini. Contact information: wendy.crosina@ualberta.ca.
- Djernaes, Marie. Ph.D. (Year 2 of 5). Morphology and behaviour of primitive Lepidoptera and Trichoptera. Department of Biological Sciences. Supervised by Dr. Felix Sperling. Contact information: djernaes@ualberta.ca.
- Dombroskie, Jason. M.Sc. (Year 1 of 3). Taxonomy and diversity of Tortricidae (Lepidoptera). Department of Biological Sciences. Supervised by Dr. Felix Sperling. Contact information: dombrosk@ualberta.ca.
- Dyszy, Katarzyna. M.Sc. (Year 2 of 3). Title not available. Department of Renewable Resources. Co-supervised by Dr. John Spence and Dale Wrubleksi. Contact information: kdyszy@ualberta.ca.
- Hummel, Jeremy, M.Sc. (Year 3 of 3). Response of insect pests and their natural enemies to intercrops versus monocultures of wheat and canola. Department of Agricultural, Food and Nutritional Science. Supervised by Dr. Lloyd Dosedall. Contact information: hummelj@ualberta.ca.
- Illerbrun, Kurt. M.Sc. (Year ? of 3). Title not available. Department of Biological Sciences. Supervised by Dr. Jens Roland. Contact information: illerbru@ualberta.ca.
- Jones, B. M.Sc. (Year 2 of 2.33). Development of a combined pheromone-based monitoring system for the forest tent caterpillar and the large aspen tortrix. Department of Biological Sciences. Supervised by Dr. Maya Evenden. Contact information: bcjones@ualberta.ca.

- Kamunya, Esther. Ph.D. (Year ? of ?). Title not available. Department of Renewable Resources. Supervised by Dr. John Spence. Contact information: Ekamunya@ualberta.ca.
- Korinus, Luisiana. Ph.D. (Year 5 of 5?). Agroforestry and spider biodiversity in Indonesia. Department of Biological Sciences. Supervised by Dr. John Spence. Contact information: lkorinus@ualberta.ca.
- Knee, Wayne. M.Sc. (Year 2 of 2). Nasal mites of birds of Alberta and Manitoba. Department of Biological Sciences. Supervised by Dr. Heather Proctor. Contact information: wknee@ualberta.ca.
- Lumley, Lisa. Ph.D. (Year 3 of 5). Genetic architecture of species differences between *Choristoneura spruce* budworm moths. Department of Biological Sciences. Supervised by Dr. Felix Sperling. Contact information: llumley@ualberta.ca.
- MacQuarrie, Chris. Ph.D. (Year 4 of 4). Biological control of birch leaf-mining sawflies. Department of Renewable Resources. Co-supervised by Drs. John Spence and David Langor. Contact information: Chris.MacQuarrie@ualberta.ca.
- Miluch, Christine. M.Sc. (Year 1 of 3). Attractiveness of different pheromone blends to laboratory and field populations of the diamondback moth, *Plutella xylostella* (L.) (Lepidoptera: Curculionidae). Co-supervised by Dr. Lloyd Dossdall and Dr. Maya Evenden. Contact information: miluch@ualberta.ca.
- Nazari, Vazrick. M.Sc. (Completed). Phylogeography and systematics of swallowtail butterflies in the subfamily Parnassiinae. Department of Biological Sciences. Supervised by Dr. Felix Sperling. Contact information: Currently in a Ph.D. program at University of Guelph (vnazari@uguelph.ca).
- Pinzon, Jaime. M.Sc. (Year 1 of 3). Title not available. Department of Renewable Resources. Supervised by Dr. John Spence. Contact information: jpinzon@ualberta.ca.
- Pyper, Matthew. M.Sc. (Year 1 of 3). Title not available. Department of Renewable Resources. Supervised by Dr. John Spence. Contact information: mpyper@ualberta.ca.
- Rajput, Sunil. M.Sc. (Year ? of 3). Title not available. Department of Biological Sciences. Supervised by Dr. Andrew Keddie. Contact information: sraput@ualberta.ca.
- Roe, Amanda. Ph.D. (completed). Identification and evolution of *Dioryctria* cone borer moths. Department of Biological Sciences. Supervised by Dr. Felix Sperling. Contact information: currently in a postdoctoral fellowship at University of Minnesota (roexx068@umn.edu).
- Rondeau, Kimberly. M.Sc. (Year 3 of 3). Factors influencing *Cyphocleonus achates* (Coleoptera: Curculionidae) dispersal and implications for biocontrol of diffuse knapweed (*Centaurea diffusa*) (Asteraceae). Department of Biological Sciences. Co-supervised by Drs. Jens Roland and Rob Bourchier. Contact information: kimberly.rondeau@ualberta.ca.
- Sarfraz, Rana. Ph.D. (Year 4 of 5). Aspects of the developmental biology, spatio-temporal distribution patterns, and adult behaviour of diamondback moth, *Plutella xylostella* (L.) (Lepidoptera: Plutellidae) in relation to host plant quality and genotype. Co-supervised by Dr. Lloyd Dossdall and Dr. Andy Keddie. Contact information: rsarfraz@ualberta.ca.
- Schmidt, Chris. Ph. D. (Year 4 of 5). Systematics of *Grammia* arctiid moths. Department of Biological Sciences. Supervised by Dr. Felix Sperling. Contact information: bjorn@ualberta.ca.
- Schwarzfeld, Marla. M.Sc. (Year 1 of 3). Diversity and taxonomy of parasitic Hymenoptera in Alberta. Department of Biological Sciences. Supervised by Dr. Felix Sperling. Contact information: marla.schwarzfeld@ualberta.ca.
- Simonsen, Thomas. Post Doc (Year 2). Phylogeny of cactus-feeding phycitine Pyrlidae (Lepidoptera). Department of Biological Sciences. Supervised by Dr. Felix Sperling. Contact information: thomas.simonsen@ualberta.ca.
- Tansey, James. Ph.D. (Year 1 of 5). The mechanism of resistance to selected Brassicaceae in the cabbage seedpod weevil, *Ceutorhynchus obstrictus* (Marsham) (Coleoptera: Curculionidae). Co-supervised by Dr. Lloyd Dossdall and Dr. Andy Keddie. Contact information: jtansey@ualberta.ca.
- Williams, Bronwyn. Ph.D. (Year 1 of 5). Phylogeography of the crayfish *Orconectes virilis*: why and how is it expanding its range in Alberta. Department of Biological Sciences. Supervised by Drs. David Coltman & Heather Proctor. Contact information: bwillia@ualberta.ca

Changes in Professional Staff - New positions, study leave, sabbatical, etc.

- **Dr. Bruce Heming** retired from his position at the University of Alberta in July 2006.
- Congratulations to **Dr. Maya Evenden** on the arrival of her daughter, Nyssa Paige Dokken, who arrived in August and is now two months old. Maya will be on maternity leave until January 2007.
- **Danica Belter** received her M.Sc. Degree in January 2006 for her thesis on root-associated invertebrates. She is now employed as a Project Biologist at Spencer Environmental Management Services Ltd. in Edmonton. She can be reached at:
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e-mail: dbelter@spencerenvironmental.ab.ca

Job Postings

- None to report.

Events

- None to report.

News & Awards

- Belated best wishes to **Dr. George Ball** who celebrated his 80th birthday on September 25th.
- Alberta Lepidopterists' Guild - Thanks to Greg Pohl for submitting.
 - This is a group of about 50 enthusiastic amateurs and professionals who continue to seek out and explore Albertan moths and butterflies.
 - The Guild will have their Annual General Meeting on November 4th and interested persons should contact Greg Pohl, president, for more details (gpohl@nrcan.gc.ca).
 - This past year the Guild awarded two small research bursaries to local amateurs; congratulations to **Gary Anweiler** who received a grant to do survey work in sandy habitats in southern Alberta and to **Bruce Christensen** who received a grant to continue surveying at Moose Lake in eastern Alberta.
 - Small grants (up to \$2000) are available to Guild members pursuing Lepidoptera research in Alberta.
 - For more information on the Alberta Lepidopterists' Guild, interested individuals can contact the president, Greg Pohl (gpohl@nrcan.gc.ca).
- **Robin Leech** reports that it's been 35 years since he took a course at the University of Alberta.
- A brief update on the **Canadian Forest Service** which continues biodiversity work at the Northern Forestry Centre in Edmonton..... The staff there are:
David Langor - Research Scientist
Greg Pohl – Biologist

Daryl Williams – Technician
Jim Hammond – Technician
Lara DeHaas - Term Technician
Brock Sheen – Intern

Submitted by Jennifer Otani

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**Report of the Central Director
Entomological Society of Alberta
26 October 2006**

The local community notes, with sadness, the passing of John Carr. John contributed a great deal to many of us in the Calgary area with an interest in insects, and he was particularly generous with the many students who spent time with him and Bert. If you haven't already done so, you might want to visit the web site which records some of John's and Bert's entomological (and other) exploits.

Derek Sikes, who spent three years in the Department of Biological Sciences at University of Calgary raising awareness of burying beetles and things phylogenetic, has moved on to greener (whiter?) pastures at the University of Alaska, Fairbanks. Derek is now the Curator of Entomology at the University's "Museum of the North". He can be contacted at ffdss@uaf.edu. We wish Derek well. Unfortunately, it appears that there will not be another insect systematist hired to replace Derek.

A small and informal group of people with interests in insects met in Calgary on 11 September at the home of Nora Bryan with the intention of forming a Calgary "Bugsters" group. Among others present, Ken Fry and Rob Longair from the ESA Alberta were in attendance. Anyone interested in joining us on an irregular basis should contact Nora.

On 5 August, the Ellis Bird Farm near Blackfalds, northeast of Red Deer, held a "Bug Jamboree", welcoming local kids and their parents and all other interested parties to learn about insects. John Acorn, Charley Bird, Nora Bryan, Rob Longair, and Ted Pike participated with the help of various of their offspring. John and his son provided entertainment of the "Nature Nut" variety, waxing musical to the enjoyment of the assembled throng.

Respectfully submitted,
Rob Longair

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**Report of the Southern Director
Entomological Society of Alberta
26 October 2006**

- Ralph Cartar has been replaced at the University of Lethbridge by an ornithologist.
- No news about replacing Dan Johnson at the Lethbridge Research Centre.
- On another topic, there is a need to develop a poster promoting the ESA at community events and also insect display material that could be available for our members willing to staff promotion booths.

Submitted by:
Derrick Kanashiro

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Annual Report of the Webmaster

The ESA website appears to remain useful to the entomological community, but the frequency of visits (mean, SE hits per week) in 2006 (50.6, 2.7) was less than that observed during a similar period in 2005 (68.0, 5.5). A total of 15,736 visits to the website have been recorded to date since the addition of the counter in May 2000.

Information present on the website has remained about the same and has been updated as needed. Notable improvements to content include: on-line access to pdf versions of the Bibliography of Alberta Entomology, about half of the issues of the Proceedings of the ESA, and a pictured key; archive of cities and venues in which past meetings of the Society have occurred; and a page which provides users with an opportunity to search the ESA website using Google.

The task of converting paper copies of the Proceedings into pdf files was halted when personal matters required attention. In addition, the five-year-old version of Acrobat which I use suddenly became incapable of detecting the numerous spelling errors in pdf files created from scanned paper documents – the optical character recognition process is by no means error-free. I am attempting to obtain a current version of Acrobat, and anticipate a renewed effort to complete the project to create on-line pdf Proceedings. In plan also to examine all pdf documents created by scanning to correct spelling errors, and therefore make the pdfs more useful for searching.

The Department of Biological Sciences at the University of Alberta continues to offer us excellent computing service by way of provision of storage space on their server free of charge. In addition, they generously granted to us additional storage on which we are storing pdf publications.

I look forward to standing for election to the position of Webmaster at the 2006 General Meeting, and serving the Society for another year.

Dr. Troy Danyk
ESA Webmaster
October 25, 2006

**Interim Financial Report
Entomological Society of Alberta Annual General Meeting
October 28, 2006**

Balances January 2006:

Term Deposit	\$15,000.00
Chequing	\$11,253.18
Common Shares	\$416.51

Total Members	
Regular	84
Student	42
Library	20
Subscrip. Library	4
Honorary	6

New Members in 2006 (included in above totals)

Regular	6
Student	12

Credits:

Registration Total	\$3300.00
Total Registrations	51

Students	18
Retired	4
Regular Members	29
Extra banquet tickets	10

Other Major Credits (up to Oct. 26):

Fundraising 2005 JAM	\$4311.54
Investments	\$327.50
Membership renewals	\$295.00

Debits:

Registration Packages	\$76.61
Awards	\$700.00
Carr Framing	\$68.90
Printing Costs (Proceedings/Program, etc)	\$923.14
Bank Charges	\$15.71

Other Major Debits(up to Oct. 26):

2005 meeting – volunteer cheque	\$245.00
Returned Loan – ESC Jam	\$4000.00
ESA Spring Exec Meeting	\$188.41

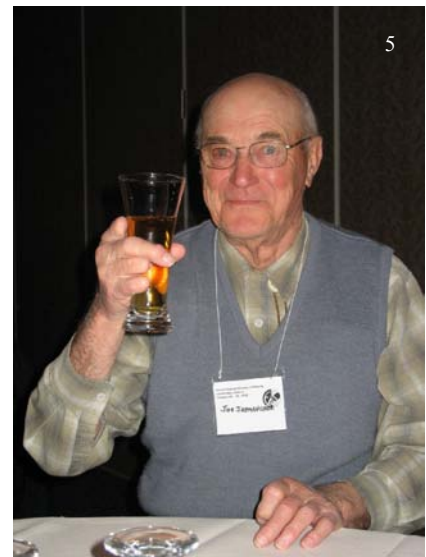
Current Balance (October. 24, 2006):

Term Deposit	\$15,000.00
Chequing	\$14,139.85
Investment	\$416.51

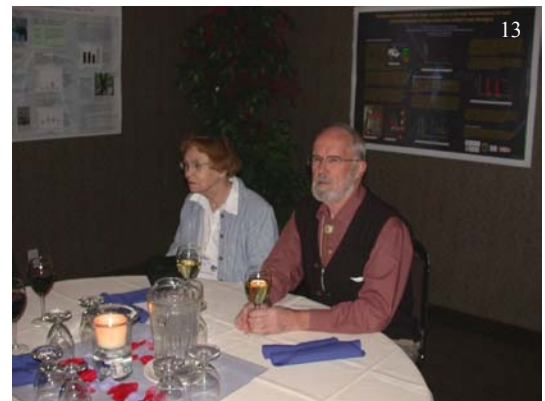
Submitted by:
Kim Rondeau, Treasurer

Contact Information:

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krondeau@agr.gc.ca



1-3 Awards: 1. Maya Evenden, ESA undergraduate student winner Joseph Purcell, Jeff Battigelli 2. Jeff Battigelli and Maya Evenden with the Frederick S. Carr award, presented to Gary Anweiler 3. Hilary Young (ESA student travel award winner), Maya Evenden, Jeremy Hummel (ESA student travel award winner), Jeff Battigelli, 4-5: Honorary members: 4. Evan Gushel 5. Joe Shemanchuk 6. *Cyphocleonus achates*, biocontrol agent of knapweed, marked for recapture studies



2006 attendees: 7. Kim Rondeau and Héctor Cárcamo handle the registrations 8. Tracy Larson, Carolyn Herle, Cassidy Klima enjoying cocktails 9. Dustin Hartley, Peter Walsh, Wayne Knee 10. Hungry entomologists! 11. Allan and Sandy Schaaf, Clara and Joe Shemanchuk, Brigitte Byers 12. Derrick Kanashiro 13. Sheila and Ron Gooding



Scientific Session: 14. Locke Rowe (Keynote speaker) 15. Brian Beres 16. Jeong Jun Kim 17. Carolyn Herle, projectionist extraordinaire! 18. Cassidy Klima 19. Ralph Cartar 20. Session attendees



2006 attendees: 21-23: Next generation of entomologists? 24. Stéphane Bourassa and Kim Rondeau 25. Brian Van Hezewijk talks to Lorne Fitch about “rocks and trees and grass and critters”. 26. Matthew Pyper, Josh Jacobs, Christina Elliot

Photo credits: Stephanie Erb (5, 9, 12, 23-24) , Kim Rondeau (6,13, 26), Derrick Kanashiro (remaining photos)

Entomological Society of Alberta Membership

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Kominek	Chrisitne	Sustainable Resource Development		
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N.A.I.T. Library		11762 - 106 St. Edmonton, AB		
National Library of Canada		National Library of Canada, Serials Records Section, 395 Wellington St., Ottawa, ON		
Northern Forestry Centre Library		Canadian Forest Service, 5320 122St, Edmonton AB		
Olds College Library		4500 - 50 St., Olds AB		
Provincial Museum and Archives		12845 102 Ave. Edmonton, AB		
Red Deer College Library		Box 5005, Red Deer, AB		
S.A.I.T. Library		1301 - 16 Ave. NW, Calgary AB		
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