

PROCEEDINGS OF THE 49TH ANNUAL MEETING OF THE

Entomological Society of Alberta

Calgary, Alberta
October 11 - 13, 2001

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ABSTRACT OF KEYNOTE SPEAKER

Murder and maggots – The use of insects in criminal investigations

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Forensic entomology is the study of the insects associated with a dead body, primarily to determine time since death. This talk will demonstrate how insects are used to determine time of death in a criminal investigation, illustrated by case histories. It will then show the many other uses for insects at a crime scene. The use of insects in death investigations goes back to 13th century China, and has been used in Europe since the 1850's. It first began to be used in North America in the 1970's and is now a common tool in police investigations. There are two main ways of using insects to determine elapsed time since death. The first method uses the developmental rates, with respect to temperature, of the first insects to colonize the remains and is most valuable in the first few weeks after death. The second method is based on the changes in the successional character of the insect community colonizing the remains over time, and is of most value from a few weeks up to a year or more after death. When more than a year has elapsed, insects, and the evidence that they have left behind, may still be of value in determining season of death.

Insects can also be valuable in other areas of the criminal investigation. They can be used to determine many factors including:

1. Whether the body has been moved after death, from the scene of the killing to a hiding place. Some of the insects on the body may be native to the first habitat and not the second. This will show that not only was the body moved, but it will also give an indication of the type of area where the murder actually took place.
2. Whether the body has been disturbed after death, for instance, by the killer returning to the scene of the crime. This may disturb the insects cycle, and the entomologist may be able to determine not only the date of death, but also the date of the return of the killer.
3. The position and presence of wound sites. Decomposition often obscures wounds. Insects colonize remains in a specific pattern, usually laying eggs first in the facial orifices, unless there are wounds, in which case they will colonize these first, then proceed down the body. If the maggot activity is centred away from the natural orifices, then it is likely that this is the site of a wound. For example, maggot activity on the palm of the hands indicates the probable presence of defense wounds.
4. Insects can be used to place a suspect at the scene of a crime. For instance, arthropod bites were used to connect a murderer and rapist to the crime site.
5. Child or senior abuse/neglect. Some insects will colonize wounds or unclean areas on a living person. This is called cutaneous myiasis. In these cases, the victim is still alive, but maggot infested. A forensic entomologist will be able to tell when the wound or abuse occurred. For instance, in the case of neglected children, the onset of maggot infestation will give a minimum time interval since the child last had a diaper change. Such cases occur particularly in young children and seniors.
6. Poaching cases – insects can be used to determine time of death, time of injury, whether a carcass was moved, *etc.*

Insects are evidence and can provide valuable evidence at a crime scene, when interpreted correctly.

ABSTRACTS OF SUBMITTED PAPERS

Note: These abstracts should not be considered as publications and may not be cited without the author's permission.

Beres, B.L., F.R. Clarke, J.R. Byers, R.M. DePauw, and H.A. Cárcamo. Sustainable management of the wheat stem sawfly.

The wheat stem sawfly *Cephus cinctus* Norton (Hymenoptera:Cepidae), has historically been a major pest of spring wheat in the southern prairies and the adjoining parts of the USA. The combined factors of conservation tillage practices, tight wheat rotations, and dry weather conditions have contributed to severe infestations the past three years. The resurgence of the wheat stem sawfly prompted studies to: 1) assess historical and current varietal resistance to wheat stem sawfly; 2) determine the effect of host resistance level on the population dynamics of the wheat stem sawfly; and 3) quantify the economic losses associated with sawfly infestation. Cutting data from 2000 and 2001 was compared to data compiled in the years 1987 - 1991. These comparisons indicate that wheat stem sawfly populations have been on the rise and producers in areas prone to attack should make cropping choices that will reduce the risk of infestation. The results of comparative tests also reveal that susceptibility to sawfly cutting was greater in 2001 (mean % cut = 55) than 2000 (mean % cut = 25) for all classes and most cultivars of wheat, including resistant cultivars. The use of solid-stemmed varieties over successive years should reduce sawfly populations as fecundity of the sawfly population is negatively correlated with the expression stem solidness. This hypothesis is supported by preliminary data showing significant host effects on sawfly fitness (ie. larval weight and eggs/female). For 2000 and 2001, yield losses attributed to sawfly ranged from 7.3 to 22.5 %, and the average yield loss attributed to wheat stem sawfly damage was valued at \$9.60/acre. The average yield value for the susceptible cultivars in 2000 and 2001 was calculated at \$41.50/acre. Swathing, if timed right, may reduce losses by recovering more toppled stems. However, the additional cost of \$7/acre might not be justified when economic returns are as low as they have been in 2000 and 2001.

Bergeron, C. Effects of fire behaviour on insect-plant associations: Carabidae (Coleoptera) in Jack Pine lichen woodland.

Fire behaviour induces heterogeneity in boreal ecosystems. Vegetation and insects are thus influenced by the heterogeneous conditions caused by fire. This study describes the association between Carabidae and vegetation of a Jack pine lichen woodland in northern Québec. At the landscape level, the Carabidae-vegetation association is mainly a function of the time since the last fire. This association is also typical of the upland sites of the northern boreal forest. At the stand level, the Carabidae-vegetation association is strongly linked to different intensities of burning; however, other factors influence this association at this level. For example, mating and foraging behaviour can influence the distribution of Carabidae without similar variations in plant species. At a finer scale (stand level), it is more difficult to characterize the insect-plant association because population dynamics induce incongruous variations between insect and plant.

Cárcamo, H.A., I. Jonsen and R. Dunn. Spatial distribution of the cabbage seedpod weevil in canola fields with trap strips.

Our objective is to develop a trap crop system to control the cabbage seedpod weevil (*Ceutorhynchus obstrictus* Marsham [Coleoptera: Curculionidae]) in canola (*Brassica napus* L.

[Brassicaceae]). The cabbage seedpod weevil is a recent pest introduction to Alberta that can potentially reduce seed yields of canola by up to 35 % if not controlled (based on U.S. data). The weevil has reached outbreak levels in 1999-2001 with densities in southern Alberta much higher than the suggested economic thresholds of 3-4 weevils per sweep. Farmers established potential trap crops by seeding a 50:50 mixture of Polish canola (*B. rapa* L.) and a herbicide tolerant Argentine variety along the inside perimeter of commercial fields (80 acre irrigated field near Coaldale in 2001 and 640 acre dryland field near Skiff in 2000 and 2001). The main crop was a monoculture of the Argentine variety that flowers about 1 week later than Polish canola.

As the trap crops reached the early flower stage, they accumulated large numbers of cabbage seedpod weevils that ranged from 4 to 10 times above the economic threshold of 3-4 weevils per sweep. Trap crops were sprayed with insecticides at the early flower stage before weevil densities reached economic thresholds in the main crop (late bud stage). In 2000, the main crop at Skiff did not require treatment after the trap crop was sprayed only once. In 2001, the farmer sprayed the trap crop 3 times and a portion of the field adjacent to the trap crop as a preventative measure. Despite spraying the trap crop at Coaldale, weevil densities reached the economic threshold in several spots of the main crop and required spraying. We also sampled weevils in fields with no trap strips and found a gradient of decreasing abundance away from the field edges and a possible interaction with planting date. We will continue investigating the distribution of weevils in fields with and without trap strips and we will attempt to manipulate seeding dates to increase the gap in growth stages between the trap and main crop.

Cobb, T.P. Differential responses of two boreal forest beetle assemblages to post-fire salvage logging.

Wildfire plays an important ecological role in boreal forests but also results in substantial economic losses to the forest industry. To recover some of the economic value of burned timber, post-fire salvage logging is now commonly employed. However, impacts of post-fire salvage logging on boreal ecosystems remain unexplored. We conducted a stand-level experiment to examine the effects of post-fire salvage logging on beetle assemblages in two boreal forest types of contrasting structural complexity, namely spruce-aspen mixedwood (MW) and jack pine (JP). Responses of boreal beetles to post-fire salvage logging were forest type-specific as there was a significant reduction in total beetle biomass and species richness in MW, but not in JP. However, ordination analysis showed that species composition of salvaged sites differed from that of unsalvaged sites in both forest types. Therefore, our results show that species-level effects of post-fire salvage logging last longer than community-level effects (i.e. > 2 yr) and that different forest types need to be considered separately in the development of management guidelines. Our findings also suggest that MW communities may require longer recovery times than JP communities and that adequate retention of burned timber of both forest types is required for biodiversity conservation and sustainable forest management.

CROWE, Michael L.^{1,2*} & R.S. BOURCHIER¹. ¹Agriculture & Agri-Food Canada Research Centre, Lethbridge, AB; ²Department of Biology, University of Lethbridge, Lethbridge, AB.

The role of interspecific competition in structuring the phytophagous insect community of a weed biocontrol system.

Knowledge of mortality factors acting upon biocontrol agents is fundamental for an effective biological control program. A gall-fly, *Urophora affinis*, and a seedhead weevil, *Larinus minutus*, are two introduced biocontrol agents released against spotted knapweed, *Centaurea maculosa*. The weevil was recently introduced and is the more desirable of the two agents as it destroys more seeds and, at high densities, will defoliate the plant. Short-term competitive interactions between the two species were assessed by releasing each species separately as well as in combination into enclosure cages. Attack and survivorship rates indicate that the two species

compete asymmetrically. The fly interfered with the weevil, resulting in lower weevil attack rates and reduced survivorship, particularly as fly densities increased. The long-term equilibrium of these two species is uncertain. Based on these studies, however, competition will likely be an important factor for the structure of the seedhead community.

Elkin, C. and M. Reid. Reproductive effort of mountain pine beetle following dispersal.

Mountain pine beetle is an aggressive bark beetle that must disperse each generation to locate a new host tree to reproduce within. Mountain pine beetles' reproductive investment may be altered by this obligatory dispersal through changes in their physiological state, or through behavioural shifts in their allocation of resources to individual offspring. Changes in host availability and dispersal distance, that are associated with changes in beetle population density, may shift optimal reproductive investment by altering the beetles' potential future reproductive success, and by altering the reproductive returns that they get from investment in individual offspring. We conducted a lab experiment to look at the effects of beetle size and dispersal on beetle reproduction. Dispersal was simulated by starving female beetles before implanting them in host logs. Female and male beetles were implanted in cut logs and allowed to create an egg gallery for 24 days. Reproductive effort was measured by recording gallery length, total egg number, distance to first egg, and the size of individual eggs. Large beetles produced a greater number of eggs but did not excavate longer galleries. Beetles that had undergone simulated dispersal produced longer egg galleries, but this effect was observed only in larger beetles. Distance to the first egg was not affected by either beetle size or dispersal. Egg size increased along the length of egg galleries. Small and starved beetles produced small eggs at the beginning of their galleries, but produced larger eggs at the ends of their galleries. These results suggest that reproduction is affected by both beetle size and energetic levels when they arrive at host trees, and that beetles may shift their reproductive investment in response to perceived host availability.

Fox, A.S. and L.M. Dosdall. Reproductive status of cabbage seedpod weevil (*Ceutorhynchus obstrictus*) on mustard (*Brassicaceae*) weeds and crops in southern Alberta.

The cabbage seedpod weevil (CSW) *Ceutorhynchus obstrictus* is a serious and relatively recent pest of canola (*Brassica* sp.) in southern Alberta. We investigated changes in the reproductive status of CSW feeding on hoary cress (*Cardaria* sp.), flaxweed (*Descurainia sophia*) and wild mustard (*Brassica kaber*). Hoary cress and flaxweed are food hosts and wild mustard and canola are true hosts of CSW. Seedpods of food hosts are unsuitable for CSW larval development. Dissection of CSW captured on food hosts revealed that only a small proportion of the CSW population developed eggs before the weeds matured. The advantage of egg development on food hosts for CSW is questionable given the rapid development of their ovaries in concert with canola. The critical role of food hosts is clearly CSW survival until a true host is located. The highest mean number of eggs that descended into the oviducts of female CSW captured at wild mustard sites assessed for exit holes (evidence of successful larval development) was $4.5 \pm \text{SD } 2.3$ per female (56.7% of females had eggs in the oviducts and 83.3% were mated; $n = 30$). The overall proportion of wild mustard pods at these sites with at least one exit hole was 2.9% ($n = 40$ plants; $n = 6,480$ pods). In general, these data suggest that wild mustard would likely maintain a CSW population in southern Alberta in the absence of canola, and that the suitability of the wild mustard pod as a larval habitat may be a limiting factor in the role wild mustard plays as a true host.

Fry, K.M. Thysanoptera associated with canola in Alberta.

The impact of Thysanoptera in canola production on the prairies is not well documented. Burgess and Weegar (1988 Can. Entomol. 120:815-819) surveyed thrips in 18 canola fields in

Saskatchewan at 4 developmental stages in 1980 and 1984 and found *Frankliniella tritici* (Fitch), *Thrips tabaci* Lindeman, and *T. vulgatissimus* Haliday to be most abundant. To obtain a better understanding of the potential for thrips to affect yield in canola a comprehensive survey of the thrips fauna in canola fields in Alberta and small plot experiments were conducted between 1997 and 2001.

Three hundred and twelve canola fields were sampled for thrips between 1997 and 2001. Nine species of thrips were recovered with *T. vulgatissimus* most abundant in central and northern fields, *T. tabaci* most abundant in southern fields and *F. tritici* equally distributed across the province but at substantially lower densities than either *Thrips* species. Additionally, 2 300m transects in each of 6 fields were conducted in 2001 to determine the within field distribution of thrips in *Brassica napus* fields.

Field experiments were conducted in 2000 and 2001 to test the effects of agronomic factors on thrips abundance and diversity in canola. Seeding date, seeding rate, plant species, and seed treatment were manipulated and thrips sampled at 3 (2000) or 4 (2001) plant developmental stages. Significantly more thrips were collected from *Brassica napus* than from *B. rapa*. Significantly more *Thrips vulgatissimus* were collected from the flower stage than bud and pod stages whereas significantly more *T. tabaci* were collected from the bud stage. *Thrips vulgatissimus* was significantly more abundant than any other thrips species. There were significant correlations between thrips species and yield; positive for *T. vulgatissimus* and negative for *T. tabaci*.

While thrips appear to be abundant in canola fields in Alberta, their impact on plant performance and yield remains unclear. Further work is needed to determine their impact on yield and possible interactions with other insect pests of canola.

Hartley, D.J. Carabid beetles in three habitats along an urban-rural gradient.

Carabid beetle assemblages were measured in aspen stands, grasslands, and in graveyards along an urban-rural gradient running from downtown Edmonton 60 km east past Elk Island National Park. Carabids were collected using passive pitfall traps. In the urban forests, there were 4 introduced species and only 1 in the rural areas. In grasslands and graveyards there was no difference. There were differences in the Shannon index and species number between habitats and location on the gradient. The diversity was highest in the forests, followed by the grasslands. Abundance was higher in urban areas with introduced species in the forest only. Abundance was higher in the rural end of the gradient in graveyards and grasslands. Abundance was highest in the forest followed by grasslands. When introduced species were not considered there was a difference in the Shannon index in all three of the habitats. Therefore it appears that urbanization has a negative effect on rare native species. Abundance, and the Simpson's index showed no difference between sites when introduced species are excluded. As well populations of the introduced species *Pterostichus melanarius* were less stable in rural areas in all three habitats than in urban areas as demonstrated by wing dimorphism.

Jacobs, J.M. Distribution of ground beetles (Coleoptera: Carabidae) in pyrogenic stands of northern Alberta.

The distribution of ground beetles in a prescribed conifer and aspen burn were studied at the EMEND (Ecosystem Management by Emulating Natural Disturbance) research site in the northern boreal forest of Alberta. Beetles were sampled in the summers of 2000 and 2001 using pitfall traps from areas that burnt at high, medium and low levels of intensity. The high intensity areas of the conifer burn attracted two pyrophilous beetles in the genus *Sericoda* (formerly *Agonum*) in high abundances the summer following the burn and lower abundances the following year. All areas of the aspen burn had similar assemblages of ground beetles, although the high intensity areas had much higher abundances.

Kyei-Poku, G., B. Benkel, M.S. Goettel, and K. Floate. Occurrence of *Wolbachia* in a host-parasitoid system: Analysis of two pteromalids (Hymenoptera: Pteromalidae) and one of their host insect species *Haematobia irritans* (Diptera: Muscidae).

Wolbachia are cytoplasmically inherited bacteria that induce a variety of effects with fitness consequences on host arthropods, including cytoplasmic incompatibility, parthenogenesis, male-killing and feminization. The presence of *Wolbachia* in laboratory colonies of southern Alberta *Urolepis rufipes*, *Trichomalopsis sarcophagae* and *Haematobia irritans* populations was determined using PCR assays. These wasps harbour the A-group of *Wolbachia*. *Wolbachia* infecting these two wasps were the same with respect to the nucleotide sequences of *Wolbachia* fts Z gene. Cytoplasmic incompatibility is expressed through a male-biased sex ratio and a low hatchability. It can be suppressed by removing *Wolbachia* from *U. rufipes* reared on a diet with antibiotics. We will report on the effect of antibiotic treatment and mating by standard crosses on sex ratios of *U. rufipes*. The prevalence of the *Wolbachia* infection within wild populations of these parasitoids and the host will also be discussed.

Laing, E. Beetles Behaving Badly; The behavioural effects of infection by *Hymenolepis diminuta* on the behavior of *Tribolium confusum*.

no abstract submitted

Longair, R.W. and P. Beier. Birds, wasps and thorns: Ghana 2001.

We describe the first University of Calgary Ghana field course with assorted insects from sites in tropical humid forest, dry forest and savannah in this West African country. In particular, we describe a wasp-bird association at the savannah site. Close associations between birds and wasps are known from several parts of the world, including some well-studied examples from the Neotropics. In Guinea savanna in northwestern Ghana, a project is underway to examine an association between red-cheeked cordon bleus, *Uraeginthus bengalus* (Passeriformes: Fringillidae) and a social vespid wasp (*Ropalidia cincta*) in two species of trees, *Acacia* sp. and *Balanites* sp.

Park, J. The effect of landscape heterogeneity due to forestry on the settlement patterns of *Polygraphus rufipennis* (Coleoptera: Scolytidae).

For herbivorous insects such as bark beetles, the distribution, abundance and quality of habitat are important determinants of patterns of dispersal and settlement. At a large scale, landscape heterogeneity can have consequences for detection and acceptance of suitable habitat as well as dispersal costs. Since bark beetles use olfactory cues to detect host trees, the composition of forest stands may affect the ability of searching individuals to detect hosts. Forests containing many suitable hosts may attract beetles, while non-host stands may emit volatiles that deter beetles. Furthermore, the physical structure of the landscape may also influence the distribution of beetles by funnelling individuals toward certain areas. At a local scale, actual habitat abundance may also affect the movement of beetles, such that they will be biased towards areas containing large quantities of suitable habitat (freshly dead conifer logs). However, despite the importance of these factors, few models of habitat selection have incorporated dispersal behaviour and landscape heterogeneity. Research conducted at the EMEND (Ecosystem Management by Emulating Natural Disturbance) project provides the basis for future work on a spatially explicit incidence function model that will use empirical data to predict patterns of distribution across the landscape. This model will allow forest managers to better predict where the risk of beetle infestation is the greatest based on behavioural and landscape attributes.

Pohl, G.R., A.D. Macaulay, A. Roe, and D. Lawrie. The Alberta Shield Survey 2001 - More Lepidoptera collecting in the Canadian Shield.

The Alberta Lepidopterists' Guild took part in a second year of biological surveys in the Boreal Shield region of northeastern Alberta, in La Butte Creek and Fidler-Greywillow Provincial Wildland Parks. The area consists of lakeshore, boreal forest, wetlands, river systems, and Canadian Shield outcrops. The parks were sampled via UV traps, MV lights, and net collecting in July of 2001. A total of 293 species in 31 families were collected. Most of the catch consisted of widespread boreal species. However, many northern range extensions and several new provincial records were found. Data and voucher specimens have been deposited at the CFS Northern Forestry Centre and University of Alberta Strickland Museum.

Roe, A., N. Rappaport, J. Stein, G. Grant, and F.A. Sperling. 2001 The taxonomy and identification of coneworms (Lepidoptera: *Dioryctria*) in western North America.

Roughly sixty species of coneworm occur throughout the Holarctic and most are important forest pests of coniferous trees. Most of these species are also taxonomically challenging, making identification difficult. We have begun two preliminary projects to sort out the taxonomy of *Dioryctria* species in western North America. First, we examined the five species of coneworms recorded from Alberta (*Dioryctria abietivorella*, *D. banksiella*, *D. cambiicola*, *D. contortella*, and *D. reniculelloides*) and a dichotomous key was developed using wing and genitalic characters for the identification of these species. Second, we are in the process of identifying *Dioryctria* species from five species groups (Aurenticella, Abitella, Baumhoferi, Zimmermani, and Schuetzeella groups) in a seed orchard in Chico, California. By comparing 470 bp segments of mitochondrial DNA in the COI gene for twenty five specimens, four different genetic lineages are found to be present in the orchard. Molecular differences are compared to morphological, host and pheromone information, and used to tentatively link each genetic lineage to species groups previously recorded in the orchard. These comparisons subsequently demonstrated that the majority of damage in the orchard was being caused by moths of only one mtDNA lineage in one species group and moths of three other lineages are not causing the damage. This knowledge will now be used to increase the accuracy of the pheromones used to monitor species and possibly to implement mating disruptions to control this forest pest.

Sauerwein, H. and D.L. Johnson. Variation in wing length and body size of the lesser migratory grasshopper.

We documented morphological variation in populations of the lesser migratory grasshopper, *Melanoplus sanguinipes*, at five sites in Alberta in 2001, by measuring wing length, body length, pronotum width, femur length and whole body dry weight (N=798 individuals). Average body weight of Fort Macleod grasshoppers was almost double that of grasshoppers west of Edmonton, but grasshoppers from the site near Edmonton had significantly longer wings than in other regions.

Simpson, C.M. The reproductive consequences of intensive forest management in bark beetles.

no abstract submitted

Wilkins, S. Riders on the Storm: 2001 update of pesticide issues in Canada.

no abstract submitted

Williams, D.J. and D.W. Langor. Diagnosis of species of the *Pissodes strobi*-complex (Coleoptera: Curculionidae) from adult morphology using Discriminant Function Analysis.

The four species of the *Pissodes strobi*-complex are considered to be pests, particularly *P. strobi* (Peck). Adults are frequently caught by passive trapping methods used to assess population levels and potential economic impacts. Unfortunately, adults of these species are cryptic and require identification by experts when they can be identified at all. We provide discriminant functions that may be used by anyone possessing the equipment to accurately measure morphological features, which enable them to identify species.

Entomological Society of Alberta Fall Executive Meeting

October 11, 2001
Calgary, Alberta

Present: G. Pohl, E. Mueller, R. Longair, S. Wilkins, D. Williams, T. Danyk, H. Carcamo, M. Undershultz

Regrets: F. Sperling, R. Bouchier

1. Agenda Additions Deletions

- 1.1 Four items added to the Agenda.

2. Honorary Memberships

- 2.1 Secretary produced letters nominating George Ball and Joseph Shemanchuk for honorary lifetime memberships.
- 2.2 To be voted on at the Annual General Meeting.

3. Undergraduate Awards

- 3.1 Packages containing information on each of the three applicants was handed out by R. Longair to the judges: D. Williams, S. Wilkins, H. Carcamo, E. Mueller and T. Danyk.
- 3.2 Judges will review information and meet at lunch on Friday to discuss and select winner.
- 3.3 A corporate sponsor has donated the \$500 cash prize.

4. Student Travel Grant

- 4.1 H. Sauerwein was the only applicant.
- 4.2 That the student travel grant be given to H. Sauerwein.

Wilkins/Mueller CARRIED

5. Joint Meeting – Canadian Phytopathological Society (CPS)

- 5.1 It was discussed whether the ESA should meet jointly with the CPS in Waterton during the last weekend in May 2002, or celebrate the 50th anniversary of the ESA when and where we want.
- 5.2 Benefits of holding a joint meeting are the opportunity for a symposium on insect-fungal interactions, and that a willing organizer has been identified and some preparations are already made for the meeting.

- 5.3 That the Executive recommend that the 2002 Annual Meeting be held jointly with the CPS.

Pohl/Danyk CARRIED

- 5.2 To be voted on at the Annual General Meeting.

6. ESA 50th Anniversary Meeting – Details

- 6.1 Need member's decisions if the meeting will be held jointly with the CPS.
- 6.2 That the organizers of the 2002 Annual Meeting plan a deficit meeting with the amount subject to approval of the Executive.

Pohl/Williams CARRIED

- 6.3 That the Executive forms a committee to revise "Entomologists of Alberta".

Pohl/Mueller CARRIED

- 6.4 R. Longair suggested that a logo change might work well in conjunction with the 50th anniversary. A logo contest could be held if the members are in favour of the change.

7. Executive Recruitment Requirements

- 7.1 Vice President H. Carcamo must recruit a Southern Director, Vice President, Treasurer and Editor of the Proceedings.
- 7.1 The director replacement schedule is the south in 2001, central in 2002, and the North in 2003.

8. Annual Report of the Southern Director

- 8.1 See attached Southern Director's Report.
- 8.2 Need was expressed for a committee separate from the student awards committee to deal with education grants.
- 8.3 T. Danyk volunteers himself as chair of the committee and will compile information for the Executive.

9. Webmaster Report

- 9.1 See attached Webmaster's Report.

10. Photographic Record

- 10.1 Need was expressed for an appointed or permanent event photographer.

10.2 The item will be discussed at the AGM.

11. Financial Report

11.1 See attached document.

12. International Tick Conference

12.1 The Tick Society is looking for seed money in the form of a loan for their 2002 Banff conference. The total cost of advertising for the conference is estimated to be \$3400.

12.2 That the ESA loan the organizers \$1000 if they are still in need of money.

Pohl/Wilkins CARRIED

13. Rules Governing the Organization Annual Meetings

13.1 The Executive agreed to discuss over email some of the guidelines that should be developed to assist organizers. Guidelines will be presented at the 2002 AGM.

14. ESA Fundraising

14.1 S. Wilkins pointed out that there is a lot of money that could be made available to the Society through various fundraisers such as bingos and casino nights. As well money could be raised through sponsorship.

14.2 This money could be used to increase the number, or value of awards and grants.

Entomological Society of Alberta Annual General Meeting

October 13, 2001
Calgary, Alberta

Executive Present: G. Pohl, E. Mueller, R. Longair, S. Wilkins, D. Williams, T. Danyk, H. Carcamo, M. Undershultz
Executive Regrets: F. Sperling, R. Bouchier

1. Approval of agenda

Wilkins/Fry CARRIED

2. Outgoing President's Message

2.1 Due to Simon's involvement in recent pesticide issues, he was unable to pick any relevant entomological issues to focus on and deal with. It was noted that it is important to understand the science of the issue before acting on emotion.

2.2 It is nice to see the young crowd.

3. Honorary Membership

3.1 That Dr. Ball be appointed as honorary member of the ESA.

Pohl/Spence CARRIED

3.2 That Joseph Shemanchuk be appointed as honorary member of the ESA

Mueller/Longair CARRIED

4. 50th Anniversary Meeting

4.1 That the 50th Annual Meeting be held in Lethbridge.

Spence/Carcamo CARRIED

4.2 That the Society is willing to have the Executive receive a request of funds, up to \$1000, to help support a symposium at the Canadian Phytopathological Society meeting in 2002, and encourages attendance by members of the Society.

Spence/Longair CARRIED

4.3 That the Executive strikes up a committee to ensure organization of the 50th anniversary takes place in grandiose way.

Carcamo/Spence CARRIED

- 4.4 Discussion of 50th anniversary events included: symposium on history of society, special issue of proceedings, special transportation, "Entomologists of Alberta" revision, logo competition, lapel pins, and an entomological video production.

5. Sponsorship and Funding

- 5.1 S. Wilkins mentioned that it wouldn't be a bad idea to pursue more sponsorship in the future to increase the budget for awards and projects. As a non-profit society we can apply and get on the list to run casinos that can earn up to \$25,000.

6. Organizing Committee

- 6.1 To be struck by the Executive
- 6.2 That the organizing committee of the 50th Annual Meeting have access to a \$6000 project fund, and is charged with the distribution of this money.

Ono/Longair CARRIED

7. Logo Change

- 7.1 Need to check into any significance of the old logo before making any changes, but it is thought that there is no particular significance.
- 7.2 The logo sub-committee of the 50th anniversary committee will address issues related to the details of a logo change.

8. Executive Committee Recruitment

- 8.1 No other nominations were made for the vacant positions.
- 8.2 The proposed candidates for the Executive are as follows:

President – Hector Carcamo
Vice President – Derek Kanashiro
Past President – Simon Wilkins
Secretary – Mike Undershultz
Treasurer – Trevor Hindmarch
Editor – Cara Kirkpatrick
Southern Director – Stephanie Erb
Central Director – Rob Longair
Northern Director – Felix Sperling

- 8.3 That the members accept the candidates.

Carcamo/Mueller CARRIED

9. 2000 AGM Minutes Amendment

- 9.1 The motion to amend the "rules and regs" proposed by Pohl was carried at the 2000 AGM. In the 2000 proceedings, the following amendment was included in the financial report rather than the 2000 AGM minutes:

List of financial accounting required of ESA meeting organizing committee chair:

Organizers must be prepared to process incoming registration payments and issue receipts, both in advance, and at the meeting itself. The following items must be submitted to the ESA treasurer by the end of the calendar year. This information will be submitted to the membership by the treasurer at the following AGM:

- a list of all attendees, including organizations, addresses and E-mails
- a breakdown of registration fees collected from each attendee, and copies of receipts issued to them
- a breakdown of facility fees detailing amounts paid for food, liquor, audio/visual equipment, rooms, etc.
- a detailed list of invited speaker expenses
- details and receipts for all items and services purchased for the meeting
- copies of all bank statements associated with the meeting bank account
- an accurate financial statement detailing all transactions related to the meeting
- a cheque for the profits (or request to cover losses) to the ESA

- 9.2 That the 2000 AGM minutes be so amended.

Pohl/Longair CARRIED

10. AGM Photographer

- 10.1 It was agreed that there shouldn't be a photographer position in the Executive. It is the job of the organizer to appoint a photographer.

11. Treasurers Report

- 11.1 That the financial report be accepted.

Pohl/Spence CARRIED

- 11.2 See attached financial report.

12. Webmaster Report

- 12.1 See attached webmaster report.

- 12.2 Having a searchable list of titles and abstracts of past meetings on the web was discussed. It was suggested to start with just titles to limit the workload, and to then determine the use it is getting before expanding.

13. Other Items

- 13.1 Electronic copies of the proceedings should be archived in Lethbridge with Tim Lysyk.
- 13.2 Special thanks were given to Erica and Greg for all of their contributions to the ESA.
- 13.3 That the meeting be adjourned

Wilkins/Ono CARRIED

Annual Report of the Webmaster

I am pleased to report that ESA homepage is being well used. During the 39-week period starting January 1 and ending September 30, 2001, the homepage received a total of 965 visits, an average of 24.7 hits/week (SE = 1.9). In February 2001, there was a disruption of service caused when the University of Alberta computing staff moved the location of our files on their server, but service was restored within days.

The overall appearance of the ESA homepage remained largely unchanged since the 2000 AGM. A number of revisions were made, and included:

- updated names and e-mail addresses of ESA Executive;
- updated Information About Members page;
- updated due dates for Undergraduate Award and Student Travel Grant;
- added new page, New Members;
- added new page, News and Views;
- added copyright info to each page;
- added info about, and photo of, Frederick Carr to the page that concerns the Carr Award;
- added link to the ESC-based e-document, Directory of Entomological Education in Canada;
- applications for membership and info/applications for student awards changed to pdf format.

A member of 2000 Executive suggested that the homepage could benefit from the addition of a "News and Views" section that could give members and homepage visitors the opportunity to post information that may be of interest to ESA members and other homepage visitors. I evaluated a number of utilities and selected a free guestbook utility (packaged with advertisements) supplied by BraveNet for presentation to the Executive. The adverts were not too bad, and a disclaimer statement was included on the relevant page. The Executive were positive about the utility, but some had negative feelings about the adverts. One alternative to the free utility is to pay U of A programmers to custom build a utility for use on their server, the cost of which is likely to be at least several hundred dollars. Since the activation of the "News and Views" section in March 2001, the utility has performed well and been used to post 3 messages. Because of the minimal use of this small section of the homepage, I cannot advocate that the ESA spend money to obtain an advert-free utility and recommend the status quo.

One major improvement that I hope to undertake in the coming months will be a new section that grade-school teachers can use to obtain information about, and application forms for, the as-yet-to-be-named ESA grants program to grade schools that the Executive would like to implement to increase the entomological content in grade school classrooms.

Another major activity that may improve the homepage is a searchable database of abstracts from all past ESA meetings. However, developing the database (i.e., retyping, scanning and editing hard copies from the Proceedings and transferring them into electronic format) would be a lot of work, and may not be worthwhile because use of the database likely would be restricted to satisfying curiosity or to retrieve non-peer reviewed results.

Comments and suggestions about the homepage are always welcome.

Troy Danyk
ESA Webmaster

ESA 2001 Financial Statement

OPENING BALANCE (Jan. 1, 2001):

chequing account	1,007.05
term deposit #2 - 4 yrs. at 5.4% (matures Aug. 16, 2004)	5,000.00
term deposit #5 - 30 day autorenewing, floating %	1,141.39
term deposit #7 - 1yr autorenewing, 3.95%	16,376.36
credit union shares	213.70
total opening bank balance	23,738.50
opening cash on hand	56.94
total opening assets	23,795.44

CREDITS

membership dues	790.50
2001 meeting revenues	5,030.00
term deposit interest	1,106.08
bank dividends	40.97
total credits	6,967.55

DEBITS

bank service charges	16.20
student travel grants	50.00
undergrad award	500.00
2001 meeting expenses	4,124.59
postage and courier	27.40
loan to U of A for TTP4	1,000.00
exec meeting travel	220.02
total debits	5,938.21

CLOSING BALANCE (Dec. 31, 2001):

chequing account	2,955.40
term deposit #2 - 4 yrs. at 5.4% (matures Aug. 16, 2004)	5,000.00
term deposit #7 - 1 yr at 3.2% (matures 25 June 2002)	17,195.17
credit union shares	254.67
total closing bank balance	25,405.24
closing cash on hand	19.54
total closing assets	25,424.78

BALANCE SHEET:

total opening assets	23,795.44
total credits	6,967.55
total debits	5,938.21
closing balance	24,824.78

outstanding payables (see below) 600.00

outstanding loan to TTP4

1,000.00

NOTES:

1. A \$100 dinner speaker honorarium was not cashed until 2002.
2. The undergrad award to A. Row remains not cashed as of March 31, 2002.

ESA Member list Updated May 2002

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Paid Library Subscriptions

Albert R. Mann Library Cornell University, Serials Unit, Acquisitions Division, Ithaca, NY, USA 14853-4301

British Museum (Natural History) Department of Library Services, Aquisitions Section, Cromwell Road LONDON, U.K., SW7 5BD

Colorado State University Library Serials Section, Fort Collins, CO, USA 80523

Senckenbergische Bibliothek Bockenheimer Landstr. 134 – 138, 6000 FRANKFURT AM MAIN 1, GERMANY

Free Library Subscriptions

Athabasca University College Library 1 University Drive, Athabasca, AB, T9S 3A3

Augustana University College Library 4901 - 46 Ave., Camrose, AB, T4V 2R3

Cameron Library 5th floor, Periodicals, University of Alberta, Edmonton, AB, T5G 2E3

Concordia University College Library 7128 - Ada Blvd., Edmonton, AB, T5B 4E4

Glenbow Alberta Institute 130 - 9th Ave. SE, Calgary, AB, T2G 0P3

Grande Prairie Regional College Library 10726 - 106 Ave., Grande Prairie, AB, T8V 4C4

Lakeland College Library 5707 - 47 Ave. West, Vermilion, AB, T9X 1K5

Agriculture and Agri-Food Canada, Lethbridge Research Centre P.O. Box 3000, Lethbridge, AB, T1J 4B1, (403) 327-4561

Medicine Hat College Library 299 College Dr. SE, Medicine Hat, AB, T1A 3Y6

N.A.I.T. Library 11762 - 106 St., Edmonton, AB, T5G 2R1

National Library of Canada Canadian Acquisition Division and Legal Deposit Office, 392 Wellington St., Ottawa, ON, K1A 0N4

Northern Forestry Centre Library Canadian Forest Service, Northern Forestry Centre, 5320 - 122 St., Edmonton, AB, T6H 3S5

Olds College Library 4500 - 50 St., Olds, AB, T4H 1R6

Provincial Museum and Archives 12845-102 Ave., Edmonton, AB, T5N 0M6

Red Deer College Library Box 5005, Red Deer, AB, T4N 5H5

S.A.I.T. Library 1301 - 16 Ave. NW, Calgary, AB, T2M 0L4

Strickland Library University of Alberta, Strickland Library, Edmonton, AB, T5G 2E3
University of Calgary Library Calgary, AB, T2N 1N4
University of Lethbridge Library 4401 University Drive, Lethbridge, AB, T1K 3M4,
(403) 329-2263

ENTOMOLOGICAL SOCIETY OF ALBERTA BY-LAWS

Article I

Title

This society shall be known as the Entomological Society of Alberta in affiliation with the Entomological Society of Canada.

Article II

Object

The object of the Society 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, and for its own sake, among the people of the Province of Alberta.

Article III

Memberships, Dues, and Expenditures

- a. Any persons interested in entomology may become a Full Member by submitting a completed membership application form and membership fee payment to the Secretary of the Society.
- b. A member may withdraw from the Society upon giving notice to the Secretary.
- c. An annual fee necessary for the operation of the Society shall be levied for each member as provided for in Section 1 of the Rules and Regulations.
- d. The Executive shall have power to meet expenses required in the normal operation of Society business. Such expenditures shall be subject to subsequent ratification at the Annual Meeting by the majority of the members present.
- e. A member who neglects to pay the annual fee for two consecutive years shall automatically cease to be a member.

Honourary Life Membership may be conferred on anyone who has performed long and distinguished service in the field of entomology. The total of Honourary Life Members shall not exceed five percent of the total membership at the time of election. An Honourary Life Member will enjoy all the rights and privileges of Full Members but will be exempt from payment of dues. All Full Members are entitled to propose the name of prospective Honourary Life Members provided each such proposal is supported by two other Full Members and documentation is submitted in writing to the Secretary at least one month prior to the Annual Meeting. Such Honourary Life Members will be elected at an Annual Meeting.

Article IV

Meetings

Meetings may be called each year by the President at times and places suitable to the majority of the members. The fall meeting shall be considered the Annual Meeting and shall be held in the locality decided upon the preceding Annual Meeting. One-quarter of the total paid-up membership shall constitute a quorum.

Article V

Officers

These officers shall constitute the Executive of the Society with full power to act on behalf of the Society within the bounds of the Rules and Regulations, and to appoint committees as necessary.

Article VI

Council

The Council shall consist of the five Officers, the immediate Past-President, a Regional Director to the Entomological Society of Canada, and three Ordinary Directors. The Ordinary Directors shall represent the various fields of entomology and the geographical areas of Alberta as widely as possible.

Article VII

Elections

Elections shall be held once a year at the Annual Meeting, and Officers so elected shall take office at the beginning of the following calendar year and remain in office for a term of one year.

The office of President shall not normally be held by the same person for two consecutive years. The Vice-President shall normally follow his/her term for office with a term as President. The Secretary, Treasurer, and Editor shall be eligible for immediate re-election.

The Directors shall also take office at the beginning of the calendar year following their election. The Regional Director shall be elected for a period of three years, with his/her term of office beginning at the end of an Annual Meeting of the Entomological Society of Canada. A Regional Director is not immediately eligible for re-election.

The term of office of each Ordinary Director shall be three years, with one Director replaced in each year. Ordinary Directors are not immediately eligible for re-election.

Article VIII

Vacancies

Vacancies in any office (except that of President) on the Council between elections shall be filled by appointment by the President, with the concurrence of Council, the tenure of such co-opted members to terminate at the end of the calendar year during which the appointment is made. A vacancy in the office of President shall be filled by the Vice-President who will then serve his/her normal term as President.

Members elected at the Annual Meeting to fill vacancies on Council shall complete the period of service of the Council members whose places they have taken. On completion of this term they shall be eligible for re-election only if their period of service (co-opted and/or elected) has not exceeded 18 months.

Article IX

Duties of Officers

The President shall preside at all meetings and act ex-officio on all committees. The Vice-President shall, in the temporary absence or disability of the President, perform the duties and exercise the powers of the President, shall chair the Science Fair Liaison Committee and the Membership Committee, and shall perform such other duties as shall from time to time be imposed upon the Vice-President by the Council.

The Secretary shall maintain a record of all meetings and act as custodian of minute books and current correspondence, and shall forward appropriate material to the Agriculture Canada Station in Lethbridge for storage in the Society's archives.

The Treasurer shall receive and disperse all funds, handle all correspondence relating to membership in the Society, and prepare the annual financial statement.

The Editor shall receive and record reports and publications on behalf of the Society and act as editor of the Proceedings.

Article X

Signing Officers

The signing officers of the Society shall be the Treasurer and either the President or Secretary.

Article XI

Alteration of the By-Laws

The By-Laws may be altered or amended at any Annual Meeting of the Society with the approving vote of three-fourths of the members present and in good standing. Such alterations must be made by Notice in Motion, which shall have been sent to the Secretary and a copy of such forwarded to all members at least two weeks before the Annual Meeting.

ENTOMOLOGICAL SOCIETY OF ALBERTA

RULES AND REGULATIONS

(July 1998, amended October 2000)

1. a. The annual fee for full membership shall be \$10.00.
- b. The annual subscription fee for the Proceedings is \$10.00 for institutions outside the Province of Alberta. Free subscriptions are available to institutions within Alberta and to the National Library of Canada.
- c. The fiscal year of the Society shall coincide with the calendar year; fees are payable in advance, at the time of the Annual Meeting.
2. a. The interim financial statement shall be presented by the Treasurer at the Annual Meeting and the final, year-end statement at the first general meeting following the end of the fiscal year.
- b. Two Auditors shall be elected at each Annual Meeting to examine the accounts of the current year and the annual financial statement.
- c. The following is a list of financial accounting required of the ESA meeting (AGM) organizing committee chair:
Organizers must be prepared to process incoming registration payments and issue receipts, both in advance, and at the meeting itself. The following items must be submitted to the ESA treasurer by the end of the calendar year. This information will be submitted to the membership by the treasurer at the following AGM:
 - a list of all attendees, including organizations, addresses and E-mails
 - a breakdown of registration fees collected from each attendee, and copies of receipts issued to them
 - a breakdown of facility fees detailing amounts paid for food, liquor, audio/visual equipment, rooms, etc.
 - a detailed list of invited speaker expenses
 - details and receipts for all items and services purchased for the meeting
 - copies of all bank statements associated with the meeting bank account
 - an accurate financial statement detailing all transactions related to the meeting
 - a cheque for the profits (or request to cover losses) to the ESA
3. a. Registration fees for student members of the Entomological Society of Canada attending the Entomological Society of Canada meetings shall be reduced when these meetings are held in Alberta with the Entomological Society of Alberta as host.
4. The following standing committees shall exist to assist the ESA Council achieve the objectives of the Society:
 - a. Awards Committee - members: Past President, Regional Director to ESC, and the Regional Directors of the ESA. Duties: to solicit and generate nominations of the Entomological Society of Alberta members for Entomological Society of Canada awards (e.g., Gold Medal, Gordon Hewitt, Norman Criddle) and Entomological Society of Alberta awards (e.g., Honourary Membership, Undergraduate Award, Student Travel Grant, Amateur Award).

- b. Environment Council of Alberta - one ESA member shall be elected to represent the Society.
 - c. ESA-ESC Joint Meeting Committee - to be established a year preceding any joint meeting of the Entomological Society of Canada and the Society; members to be selected from Society membership.
 - d. Nomination Committee - members: the Past President, Vice-President, and one member in good standing shall prepare a nomination slate prior to each Annual Meeting and the Vice-President shall present the slate of nominated Executive Council members at the Annual Meeting.
 - e. Resolutions Committee - members: two Society members shall be appointed by the Nomination Committee immediately preceding each Annual Meeting.
 - f. Science Fair Liaison Committee - members: Vice-President (as chair) and three Ordinary Directors. Other members to be appointed as necessary by the Committee. Duties: to maintain contact with the principal Science Fairs in AB.
 - g. Membership Committee - members: Vice-President (as chair), and three Ordinary Directors. Duties: to publicize the objectives and activities of the Society in such a way as to recruit new members to the Society.
 - h. All elections and appointments are not to exceed one year unless otherwise approved by the Society.
5. a. The Rules and Regulations may be changed by a motion approved by the majority of members present at any general meeting.