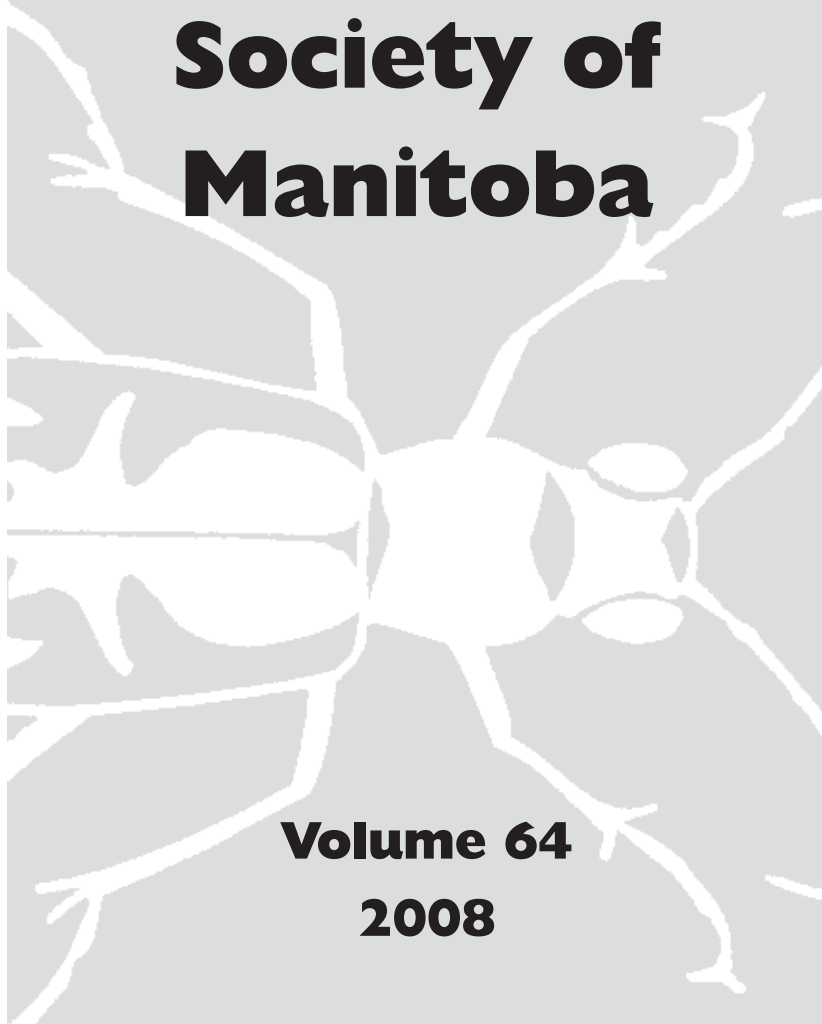


Proceedings
of the
Entomological
Society of
Manitoba

Volume 64
2008



Proceedings of the
Entomological Society
of Manitoba

VOLUME 64

2008

T.D. Galloway
Editor

Winnipeg, Manitoba

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On the occurrence of *Pelecinus polyturator* (Hymenoptera: Pelecinidae) in Manitoba, Canada

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Pelecinus polyturator (Drury) is a striking, jet black wasp that is endoparasitic in June beetle larvae, *Phyllophaga* spp. in North, Central and South America (Hammond 1944, Lim *et al.* 1980, Johnson and Musetti 1999). The behaviour of this wasp is poorly known, with limited observations on host location by Davis (1919) and Bennett (2003) and on mating behaviour (Aguiar 1997). Hammond (1944) reported that 1-3% of *Phyllophaga* larvae were parasitized in Ontario and Québec. In 1999, Johnson and Musetti revised the genus *Pelecinus* Latreille, and provided extensive information on the distribution and biology of *P. polyturator*, the most widely distributed species in the genus. They obtained specimens for their study from a number of museums in Canada and the United States, and on that basis, plotted the distribution of the specimens they obtained, mostly from the eastern United States and southern Ontario, with scattered records from Central America, the central United States and Atlantic provinces (Fig. 7B, Johnson and Musetti 1999). They also provided a map to describe a climatic model with potential distribution for *P. polyturator* in North America (Fig. 7A, Johnson and Musetti 1999). Johnson and Musetti (1999) did not obtain any specimens of *P. polyturator* from Manitoba from any of the museums they contacted, nor did their climatic model include Manitoba even within the range of marginal climate for this species. There are many specimens of *P. polyturator* in the J.B. Wallis Museum, Department of Entomology, University of Manitoba, and the objective of this paper is to document these specimens and note the extension of the range of this species from what information is available in the literature. Records are cited below, in chronological order of collection date. *Pelecinus polyturator* is such a remarkable-looking wasp; it is habitually collected by entomologists, especially students who are preparing a collection for their courses. Many of the specimens reported here are the results of these students' efforts, and their contribution is gratefully acknowledged.

Specimens examined: CANADA: Manitoba: Lockport, 26.viii.1976, J.S. Lee, 1♀; Winnipeg, 10.viii.1978, 3♀♀, 20.viii.1978, P. Kok, 2♀♀; near Birds Hill Park, 13.viii.1980,

1♀, 15.viii.1980, 1♀, 16.viii.1980, 1♂, 4♀♀, 20.viii.1980, 2♀♀, T.R. Reichardt; Winnipeg, 24.viii.1980, W. Turnock, 1♀; Winnipeg, 29.viii.1980, I.R. Toal, 1♀; Birds Hill, 20.vi.1983, D. Pollock, 1♀; Birds Hill Provincial Park, 26.viii.1983, T.W. Suzanski, 1♀; Morden, 15.viii.1985, J. Leferink, 1♀; Winnipeg, 5.viii.1988, P. Wardle, 1♀; Winnipeg, 11.viii.1989, S. Pernal, 1♀; Winnipeg, 8.ix.1990, R.W. Turnock, 1♀; Winnipeg, 6.ix.1990, R.W. Turnock, 1♀; Winnipeg, 16.ix.1991, B.G. Elliot, 1♀; 7 mi. E. Rouseau River, 14.viii.1994, H. White and K.C. Roughley, 1♀; Tolstoi, 12.viii.1995, D.G. Delf, 1♀; Winnipeg, 20.viii.1995, T. McKay, 1♀; Winnipeg, 24.viii.1995, T. McKay, 1♀; 2km E. Brunkild, 8.viii.1996, F.L. Dewar, 1♀; near Gardenton Tallgrass Prairie site, 26.viii.1996, H. White, 1♀; 2km SW. Gardenton 3.ix.1998, C. Borkowsky, 1♀; 6km. S., 11km. W. Elma, Lewis Road, 29.viii.1999, R.E. Wrigley, 1♀; Winnipeg, 10.ix.2001, R.M. Underwood, 1♀; Winnipeg, 16.ix.2001, T.J. Underwood, 1♀; Winnipeg, 31.viii.2002, T. Mousseau, 1♀; Winnipeg, 24.viii.2003, D. Dykes, 1♀; 3 mi. W., Winnipeg, 18.ix.2004, R.E. Wrigley, 1♀; 3 mi. N. Winkler on High #3, Burnwalde Woods, 12.viii.2006, K. Froese, 1♀; Winnipeg, 28.viii.2008, T.D. Galloway, 1♀.

Among these specimens, abdominal segment 2 (segment 1 of the metasoma – the apparent abdomen) in nearly all females is split open dorsally through the centre of the tergum. Mason (1984) described this segment as having the thinnest integument of any of the abdominal segments, but he did not mention its propensity to split open. This segment contains most of the gut, ovaries and Malpighian tubules, as well as large levator muscles (Mason 1984), which may also contribute to the split in the tergum as the specimen dries.

There are five species of *Phyllophaga* reported for Manitoba: *P. anxia* (LeConte), *P. drakeii* (Kirby), *P. lanceolata* (Say), *P. nitida* (LeConte) and *P. rugosa* (Melsheimer) (McNamara 1991), some of which are widely distributed in the southern part of the province. It is possible that any or all of these species may serve as hosts for *P. polyturator*, and it is clear that *P. polyturator* is well established in Manitoba, despite the predictions of the model by Johnson and Musetti (1999). The question remains whether the range of *P. polyturator* has recently expanded into Manitoba, or whether it has been in the province for a much longer time. The earliest specimen deposited in the J.B. Wallis Museum was collected in 1976 by Jack Lee. There are no specimens in the collection of representative insects of Manitoba compiled by J.B. Wallis in the 1950's and 1960's. Given the unusual appearance and conspicuous nature of *P. polyturator*, which in combination make it attractive for entomologists to collect, it is surprising that there are no earlier records available, unless it was rare or absent prior to that time. Although we will probably never know the answer to this question, intensive collecting in the future may help to determine the limits to the range of *P. polyturator* in Manitoba, and perhaps even whether its range is expanding.

Pelecinus polyturator is most frequently collected in late summer in Manitoba. The majority of specimens were collected in August and early September, consistent with collecting dates for this species presented by Johnson and Musetti (1999). One specimen collected by Darren Pollock in June is anomalous, or perhaps there is an error in the date recorded. Todd Reichardt collected many specimens from his field study site near Birds Hill Provincial Park in 1980, and he noted its abundance there beyond the nine specimens he collected. However, of particular interest in his collections is

the one male specimen he found. The skewed sex ratio is typical for *P. polyturator*, which is predominantly thelytokous at northern latitudes, and bisexual in southern parts of its range (Johnson and Musetti 1998). Johnson and Musetti (1999) found that about 4% of specimens from northern latitudes in museums were males, but they believed this prevalence to be biased because entomologists would be more inclined to collect males if they encountered them. That is consistent with Reichardt's collections, because he collected only a small number of females relative to the number present in the field at the time, but was enormously excited by encountering that one male specimen.

Pelecinus polyturator is a very interesting wasp for which there are many important gaps in our knowledge. Hopefully people will continue to collect this species at the northern limits of its range.

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64th Annual Meeting

Entomological Society of Manitoba

Friday November 13, 2008
Freshwater Institute
501 University Crescent
and
Saturday November 14, 2008
Room 219 Animal Science/Entomology Building
University of Manitoba

ABSTRACTS

Symposium: Insect Outbreaks

TWO FOR THE PRICE OF ONE: ECOLOGY AND MANAGEMENT OF LYGUS BUGS AND CABBAGE SEEDPOD WEEVILS IN CANOLA. H. Cárcamo and L. Dossdall, Agriculture and Agri-Food Canada, Lethbridge, AB, Canada T1J 4B1.

Lygus bugs and cabbage seedpod weevils feed on reproductive canola structures, potentially compounding yield losses. We provide a brief historical overview of both pests and highlight recent research advances including overwintering biology, host plant resistance and cultural management with trap crops for cabbage seedpod weevil and conservation biocontrol of lygus bugs. Results from a cage study conducted near Lethbridge in 2000 and 2002 combining these two pests at various densities will be presented. There was no indication that the two pests interacted, but extreme and opposite weather conditions were experienced each year. Dry conditions in 2000 favoured lygus bugs which likely reduced yield at the higher densities; very few weevils reached the adult stage. In 2002, a year with an extremely wet, late spring, both insects were collected in high numbers in the cages at harvest time. Abortion of reproductive structures was not affected by any insect density or combination treatment any year. Weevils seemed to be a more serious pest than lygus in the wet year, but the opposite would be expected in a dry year. Ongoing work will aim to develop management recommendations to reduce yield losses from combined attack by these two pests.

THE ASTER LEAFHOPPER (HOMOPTERA: CICADELLIDAE) IN MANITOBA 2007-08: TO OUTBREAK OR NOT TO OUTBREAK? B. Elliott, Manitoba Agriculture, Food and Rural Initiatives, Box 1149, 65-3rd Ave. NE, Carman, MB, Canada R0G 0J0.

The Aster or six-spotted leafhopper, *Macrostelus quadrilineatus* Forbes, is a regular migratory pest that affects various crops in Manitoba to varying degrees each summer. In 2007, the aster leafhopper achieved the status of outbreak pest in a number of crops where it is traditionally of minimal concern from a crop management standpoint.

Damage ranged from mild to severe depending on the crop in question. The following year provided an ideal year to observe the pest under different circumstances. Data from 2001 to 2008 will be presented to elucidate the status of this pest in Manitoba and its severity as a general crop pest.

WHEAT MIDGE OUTBREAKS PAST AND PRESENT: CAN WE CHANGE THE FUTURE? R.J. Lamb, Cereal Research Centre, Agriculture and Agri-Food Canada, 195 Dafoe Road, Winnipeg, MB, Canada R3T 2M9.

The wheat midge, *Sitodiplosis mosellana* Géhin, invaded eastern North America in the early 1800's and was a serious pest of wheat there until the early 1900's. It all but disappeared from view until it was detected at non-pest levels at Glenlea, Manitoba in the 1950's. The first severe outbreak occurred on both sides of the Manitoba-Saskatchewan border in the 1980's. Since then, widespread outbreaks have occurred throughout Manitoba, Saskatchewan, North Dakota, and most recently in Alberta, Montana and Idaho. The pattern of outbreaks initially suggested an introduction into southeastern Manitoba and a gradual spread west, but detection of wheat midge in the Brandon area by Criddle around 1900, occurrence of wheat midge in the Peace River in the 1990's, and early abundance of a parasitoid indicates a widespread distribution in the west long before outbreaks occurred. The lag in the occurrence of outbreaks may reflect the gradual adaptation of the pest to spring wheat from winter wheat and the introduction of early-maturing spring wheat cultivars in the early 1980's, but changes in the pattern of precipitation may also be important. Introduction of the resistance gene, *Sml1*, into adapted cultivars should prevent future outbreaks, as long as precautions are taken to use refuges of susceptible wheat to delay adaptation to the resistance by the wheat midge.

BED BUGS: WHAT YOU MAY OR MAY NOT WANT TO KNOW... Taz Stuart, Insect Control Branch, City of Winnipeg, Winnipeg, MB, Canada R3T 4V7.

A review of bed bugs (*Cimex lectularius*) history, biology, facts, reasons for the resurgence, current control processes, prevention, some statistics and potential future prospects for reducing bed bugs was discussed.

SUBMITTED PAPERS

MOUNTAIN PINE BEETLE BIOLOGY AND RISK ASSESSMENT. B. Riel, Canadian Forest Service, Victoria, BC, Canada.

The mountain pine beetle (MPB) (*Dendroctonus ponderosae* Hopk.) is an eruptive native species and is the most destructive biotic agent of mature pine forests in western North America. The historic range of MPB extends from northern Mexico (latitude 31° N) to northern British Columbia (latitude 56 °N), and from the Pacific Coast to

the Black Hills of South Dakota in the United States, and from Vancouver Island to the east slopes of the Rocky Mountains in southern Alberta. It is estimated that the current outbreak in British Columbia covers an area greater than 13 million hectares, and that the insect is spreading and establishing further east into Alberta than previously observed. Given the profound economic and social impact MPB can impart, an understanding of its basic biology and behaviour are essential to both assessing and reducing landscape scale risk.

MANAGEMENT OF THE DUTCH ELM DISEASE VECTOR *HYLURGOPINUS RUFIPES* IN MANITOBA THROUGH RAPID REMOVAL OF NEWLY-SYMPTOMATIC ELM TREES. S. Oghiakhe and N.J. Holliday, Department of Entomology, University of Manitoba, Winnipeg, MB, Canada R3T 2N2.

In Manitoba, the native elm bark beetle, *Hylurgopinus rufipes* is the primary vector of Dutch elm disease fungal pathogens, *Ophiostoma ulmi* and *O. novo ulmi*, and prevention of pathogen transmission from infected to healthy trees is an important component of the management program. Elm trees are surveyed in June and July, and some municipalities remove infected trees soon after symptoms are detected, but others delay removal to the following winter. In 2006 and 2007, newly-symptomatic American elm trees (*Ulmus americana*) were felled and debarked at intervals from June-December to determine whether *H. rufipes* can complete development in newly-symptomatic trees and whether emerging beetles carry spores. In both years, beetles completed development and emerged from newly-symptomatic trees before winter; most newly-emerged beetles carried spores.

BENEFITS OF RAPID REMOVAL OF ELM TREES INFECTED WITH DUTCH ELM DISEASE. J. Veilleux^{1,2}, J. Leferink³, and N.J. Holliday². ¹Agroecology Program, University of Manitoba, Winnipeg, MB, Canada R3T 2N2; ²Department of Entomology, University of Manitoba, Winnipeg, MB, Canada R3T 2N2; ³Forestry Branch, Forest Health and Renewal Section, Manitoba Conservation, Winnipeg, MB, Canada R3J 3W3.

Dutch elm disease has affected American elms since 1975 in Manitoba. The pathogen is mostly transmitted by the native elm bark beetle, *Hylurgopinus rufipes*, in the province. Infected trees are either removed in the winter or as soon as possible. The objective of this study was to test whether rapid removal is better at controlling the disease than the conventionally used winter removal. American elms from 14 paired communities were counted and infection rates were estimated for the years 2004 to 2007. Rapid removal communities usually had lower infection rates than winter removal communities. Statistical tests showed that for the years 2005 to 2007, the difference between mean infection rates was significant. These results show that rapid removal is better at controlling Dutch elm disease.

PREDATION OF *DELIA RADICUM* (DIPTERA: ANTHOMYIIDAE) EGGS BY THREE BEETLE SPECIES. L. Andreassen¹, N. Holliday¹, P. Mason², and U. Kuhlmann³. ¹Department of Entomology, University of Manitoba, Winnipeg, MB,

Canada R3T 2N2; ²Agriculture and Agri-Food Canada, Ottawa, ON, Canada K1A 0C6; ³CABI-Europe-Switzerland, 2800 Delémont, Switzerland.

Larvae of *Delia radicum* (L.) (Diptera: Anthomyiidae) injure roots of *Brassica* species (Brassicaceae), including many crops, after hatching from eggs which are laid mostly just below the soil surface. Several epigeic Coleoptera species will consume *D. radicum* eggs; whether predation of eggs is an important mortality factor in crops depends in part on whether beetles find the eggs in their natural location. Two sorts of experiment were performed to determine whether adult *Aleochara bilineata* Gyllenhal, *A. bipustulata* (L.) (Staphylinidae), and *Bembidion quadrimaculatum* L. (Carabidae) are as likely to consume *D. radicum* eggs when these are slightly buried as when eggs are exposed on the soil surface. In Petri dish experiments, all three species consumed fewer buried than exposed eggs. Similar results were obtained in functional response experiments with individual beetles and potted cabbage plants. Loss of eggs to predation may therefore be less important as a mortality factor than others have suggested.

PARASITOIDS OF VEGETABLE LEAF MINER IN THE MID COUNTRY AREAS OF SRI LANKA. T. Nagalingam¹, H.N.P. Wijayagunasekara² and K.S. Hemachandra². ¹ Postgraduate Institute of Agriculture, University of Peradeniya, Sri Lanka; ²Department of Agricultural Biology, University of Peradeniya, Sri Lanka.

Parasitoids attacking the leaf miner, *Liriomyza sativae* Blanchard (Diptera: Agromyzidae), were investigated from August 2006 to November 2007 in the mid country areas of Sri Lanka. Seven parasitoid species were collected from selected vegetable crops and identified as *Neochrysocharis* sp. (Hymenoptera: Eulophidae), *Diglyphus isaea* Walker (Hymenoptera: Eulophidae), *Hemitarsoenus varicornis* Girault (Hymenoptera: Eulophidae), *Closterocerus trifaciatus* Westwood (Hymenoptera: Eulophidae), *Pnigalio* sp. (Hymenoptera: Eulophidae), *Opius* sp. (Hymenoptera: Braconidae), and *Gronotoma* sp. (Hymenoptera: Eucolidae). *Neochrysocharis* sp. with the parasitism of 18.3% was recorded as the dominant parasitoid species in all the sampling sites followed by *D. isaea*, *H. varicornis* and *Opius* sp. with 3.3, 1.3 and 0.4 per cent parasitism, respectively. The records of *C. trifaciatus*, *Gronotoma* sp. and *Neochrysocharis* sp. are the first records for these species in the mid country, Sri Lanka. The intensity of parasitism varied from crop to crop and per cent parasitism was higher in organically grown crops than in conventionally managed crops. This indicated the negative impact of broad spectrum insecticides used to control vegetable pests in mid country, Sri Lanka on parasitoids of leaf miners and highlighted the need for conservation of natural enemies.

INCREASING THE ECONOMIC THRESHOLD FOR FALL TREATMENT OF VARROA MITE (*VARROA DESTRUCTOR* A.&T.) IN HONEY BEES (*APIS MELLIFERA* L.) BY USING MITE-RESISTANT STOCKS IN THE PRAIRIE REGION OF CANADA. R. Bahreini and R.W. Currie, Department of Entomology, University of Manitoba, Winnipeg, MB, Canada R3T 2N2.

Colonies of varroa mite-resistant and mite-susceptible stock were established with mite levels above the fall economic threshold and were either exposed to a late fall acaricide treatment or left untreated. Colony survival of mite-resistant stock over winter was greater than in mite-susceptible stock. Interactions between acaricide treatment, season and genetic source of bees were not significant, indicating that the application of oxalic acid in fall did not significantly improve colony population size in surviving colonies. When late fall mite levels were above the fall economic threshold, resistant stock could be used by producers to help minimize colony loss.

PRELIMINARY INVESTIGATION ON HONEY BEE VIRUSES IN MANITOBA. S. Desai and R.W. Currie, Department of Entomology, University of Manitoba, Winnipeg, MB, Canada R3T 2N2.

Honey bees help in crop pollination and thus play a critical role contributing to the agricultural sector on crops with a market value that exceeds \$217 billion dollars worldwide (Science Daily, 2008) and approximately 1 billion in Canada. Honey bees are currently under threat because they are attacked by various pathogens including viruses, bacteria, microsporidia and mites causing serious problems in beekeeping industry. Viruses are the least understood of these pathogens as there is not sufficient information about the dynamics of underlying disease outbreaks. A preliminary study of seven bee viruses in Manitoba was undertaken using bee colonies by employing the reverse transcription-PCR technique. Samples of adult bees were collected from the University of Manitoba apiary. The most prevalent virus was Black Queen Cell Virus (BQCV), present in 90% of samples, followed by Deformed Wing Virus (DWV), Chronic Bee Paralysis Virus (CBPV) and Israeli Acute Paralysis Virus (IAPV) (60%, 40%, and 40%, respectively). Sac Brood Virus (SBV) and Acute Bee Paralysis Virus (ABPV) were detected in 20% of colonies, while Kashmir Bee Virus (KBV) was not present in any sample.

BIOTECHNOLOGY APPROACHES TO CONTROLLING MOSQUITOES AND THE SPREAD OF WEST NILE VIRUS. S. Whyard, S. Read, H. Collins, and R. Beattie, Department of Biological Sciences, University of Manitoba, Winnipeg, MB, Canada R3T 2N2.

Mosquitoes are our most serious insect disease vectors. With growing concerns about the safety and effectiveness of our current pesticides, we are developing alternative approaches to control mosquitoes without adversely affecting non-target species. The sterile insect technique (SIT) is a method of controlling pests by releasing large numbers of sterile males, which out-compete the wild males for female mates. We are isolating genes involved in sex determination and reproduction in mosquitoes, and will provide details on our progress to develop SIT technologies for mosquitoes. We have also been comparing how West Nile virus (WNV) interacts with mosquito and human hosts, with the expectation that we can identify common pathways as well as species-specific differences in how WNV infects its different hosts. Using RNA interference techniques, we hope to develop novel therapies to suppress WNV replication within humans, and to understand how the virus adapts to different host mosquito species.

ANTHROPOPHILY AND SEASONAL ACTIVITIES OF MALARIA VECTORS IN SOUTHERN IRAN. H. Basseri¹, M. Ranjbar², and A. Raeisi². ¹Department of Medical Entomology and Vector Control, Tehran University of Medical Sciences, Tehran, Iran; ²Centre for Disease Control, Ministry of Health and Medical Education, Tehran, Iran.

Following changes in environmental conditions and quality of life for people in southern Iran, the behaviour of malaria vectors, including their blood-feeding habits, have changed. Therefore, this study was undertaken in 2007-2008 to establish the biology and dynamics of potential malaria vectors and to evaluate the risk of emergence of malaria in this part of the country. The study was conducted in twelve indicator villages in an endemic area for malaria in southern Iran. The vectors were collected from indoor and outdoor shelters using an insecticidal spray over a sheet and by hand using an aspirator. In total, 7159 female *Anopheles* spp. were captured, including five species. The ratio of human blood index (HBI) was significantly different between samples collected indoor and outdoor. Some species, such as *Anopheles stephensi* and *An. fluviatilis*, fed on humans during the entire year. In contrast, some other species collected, including *An. culicifacies*, did not contain human blood during winter.

UPDATE ON BLACKLEGGED TICKS, *Ixodes scapularis*, AND ITS ASSOCIATED PATHOGENS IN CANADA. L.R. Lindsay, Public Health Agency of Canada, Canadian Science Centre for Human and Animal Health, Winnipeg, MB, Canada.

Blacklegged ticks, *Ixodes scapularis*, are the most important tick vectors of human pathogens in Canada. *Borrelia burgdorferi*, the agent of Lyme disease, is the most prevalent pathogen detected in blacklegged ticks (BLTs) in Canada; however, the risk of human infections has been relatively low because the geographic range of this tick has been limited to a small number of localities in central and eastern Canada. The occurrence and distribution of BLTs from Alberta to Newfoundland has been monitored by passive surveillance since the early 1990s. Ticks have been submitted for identification and diagnostic testing by members of the public, veterinarians and medical professionals. In geographic localities where spatial and temporal clustering of BLTs were detected by passive surveillance, drag sampling and/or small mammals surveys were undertaken to define the extent of establishment of vector ticks and enzootic cycles of *B. burgdorferi* transmission. Previously undescribed populations of BLTs were detected using this approach in 2008 at localities in Nova Scotia, New Brunswick, Quebec and Ontario. The relevance of this apparent range expansion of BLTs with respect to potential risk to human health and the response from the Public Health Agency and its collaborators will be discussed.

DESIGN OF SPECIES-LIMITED PESTICIDES USING RNA INTERFERENCE. A. Singh and S. Whyard, Department of Biological Sciences, University of Manitoba, Winnipeg, MB, Canada R3T 2N2.

When double-stranded RNA (dsRNA) is delivered into the cell of a eukaryote, it induces gene-specific gene silencing known as RNA interference (RNAi). By delivering dsRNAs that are specific for genes involved in insect growth or development,

we have been able to arrest larval growth and kill the developing insects. Because every organism's genetic material has sequences that are unique to that species, it is possible to design dsRNAs that induce RNAi in just one species. Alternatively, certain gene sequences are moderately well-conserved among related species, making it also possible to design dsRNAs that affect a group of related taxa. We will present evidence of how species-limited RNAi can be used to selectively kill a range of different insect species, and discuss the future of this technology in developing a new generation of environmentally-friendly pesticides.

SOCIAL VESPID WASPS (HYMENOPTERA: VESPIDAE: VESPINAE AND POLISTINAE) IN MANITOBA, WITH THE FIRST RECORD OF THE EUROPEAN PAPER WASP, *POLISTES DOMINULA*, FOR THE PROVINCE.

Terry D. Galloway, Department of Entomology, University of Manitoba, Winnipeg, MB, Canada R3T 2N2.

Hornets and yellowjackets can be a serious hazard for people in Manitoba, especially in late summer and fall when colony sizes reach their seasonal maximum, and where some species scavenge for food and become more aggressive. Their aerial and subterranean nests offer interesting ways in which people accidentally encounter them. In particular, people who suffer from acute sensitivity to wasp venom are at risk. In Manitoba, there are records for 14 species of vespine and two species of polistine wasps. *Vespula germanica* is an introduced vespine from Europe and is a particular nuisance because of its propensity to nest in and around people's homes. The European paper wasp, *Polistes dominula*, was recently introduced into North America, and has spread steadily west and north from its original portal of entry. A colony of *P. dominula* was discovered in south Winnipeg (Lord Roberts) on 11 September, 2008, and represents the first record for this exotic species in Manitoba. An overview of the biology of the species of social vespids in Manitoba is provided, with a discussion on the potential for range expansion for three additional species into Manitoba.

ASSESSMENT OF INSECT DIVERSITY IN VARIOUS URBAN LANDSCAPES. C. Grant and R. Westwood, Department of Biology, University of Winnipeg, 515 Portage Ave., Winnipeg, MB, Canada R3B 2E9.

Urban development is steadily growing across Canada. As landscapes are converted from naturalized areas into suburban enclaves, specific habitats of arthropod groups are being altered or lost. The resulting homogenized environment may favour adaptable native species, unwanted invasive/exotic generalist species or reduced populations of endemic insects. The objectives of this study were to determine the level of insect diversity present in three different land-use areas within the City of Winnipeg and to study the relationship between insect diversity and the degree of urban forest development. It is predicted that increased mature urban forest canopy and increased shrub and tree diversity lead to an increase in insect abundance and diversity of herbivorous insect taxa. Conversely, the abundance of insect families not dependent on diverse plant populations will be unaffected by urban forest development. Nocturnal flying insects were trapped in specific land-use areas with varying degrees of urban forest development. Inventories were completed for tree and shrub vegetation in trapping

areas. Preliminary results show that Trichoptera (caddisflies) abundance was not linked to tree or shrub diversity or structure for 2005 and 2006, whereas the plant dependent insect taxa Lepidoptera (moths) showed a numerical response to increased urban forest structure, but not a significant species response in 2005.

CONSERVATION AND ENHANCEMENT OF POWESHIEK SKIPPERLING (*OARISMA POWESHIEK*) IN MANITOBA. J. Dupont and R. Westwood, Department of Biology, University of Winnipeg, 515 Portage Ave., Winnipeg, MB, Canada R3B 2E9.

The Poweshiek skipperling (Lepidoptera: HesperIIDae) is an endemic, Tall Grass Prairie species currently listed as threatened under SARA. Poweshiek skipperlings are found in scattered pockets within the tall Grass Prairie Preserve in the Southeastern Manitoba. We expected to find that skipperlings exhibit preferential habitat selection based on vegetative and physical site characteristics as well as minimal movement between preferred sites. Time since burn and impacts of grazing were investigated. Preliminary results indicated skipperlings preferred intermediate age burns and certain grazed sites and were absent from recent and older burn sites in the Preserve.

MEASURING TEMPORAL VARIABILITY IN POPULATIONS OF A NATIVE APHID – QUESTIONS AND SOME ANSWERS. R.J. Lamb and P.A. MacKay, Department of Entomology, University of Manitoba, Winnipeg, MB, Canada R3T 2N2.

To measure temporal variability of animal populations, the appropriateness of the temporal interval, the census point in the temporal interval, the measure of population size, the spatial scale considered, and the statistic used to estimate variability have all been questioned. We measured annual changes in the population size of *Uroleucon rudbeckiae* (Fitch) for 8 to 13 years in five populations and four patches within one population. The data are used to address these questions, and measure the temporal variability of this multivoltine, seasonally parthenogenetic aphid. We conclude that an appropriate measure is: an annual assessment, at the same point in the season, of the proportion of plant stems infested, with temporal variability estimated as a coefficient of variation. This measure of variability differs among populations, but is similar at three spatial scales: sub-population, population, and regional population.

SUITABILITY OF INVASIVE SWALLOW-WORTS FOR DEVELOPMENT OF A EUROPEAN FRUIT FLY, *EUPHRANTA CONNEXA* (DIPTERA: TEPHRITIDAE). A. Leroux^{1,3}, A. Weed², A. Gassmann³, and S. Smith⁴. ¹Department of Entomology, University of Manitoba, Winnipeg, MB, Canada R3T 2N2; ²University of Rhode Island, Kingston, RI, USA; ³CABI Europe-Switzerland, 2800 Delémont, Switzerland; ⁴University of Toronto, Toronto, ON, Canada M5S 1A1.

The European swallow-wort species, *Vincetoxicum nigrum* and *V. rossicum*, are considered invasive weeds in North America. *Euphranta connexa* (Diptera: Tephritidae) is a known seed predator of *V. hirundinaria* in Eurasia. No-choice tests with *E. con-*

nexa confirmed successful oviposition and larval development on the target weeds, *V. nigrum* and *V. rossicum*. Adult preference for pod size, larval developmental time and pupal weight were assessed to compare weed species for *E. connexa* development.

LOW TEMPERATURE, AN ALTERNATIVE TO FUMIGATION OF THE DRUGSTORE BEETLE, *STEGOBIUM PANICEUM* (COLEOPTERA: ANOBIIDAE). A.Y. Abdelghany^{1,2}, S.S. Awadalla², N.F. Abdel-Baky², H.A. EL-Syrafy², and P.G. Fields¹. ¹Cereal Research Centre, Agriculture & Agri-Food Canada, 195 Dafoe Road, Winnipeg, MB, Canada, R3T 2M9; ²Economic Entomology Department, Faculty of Agriculture, Mansoura University, Mansoura, Egypt, 35516.

The drugstore beetle, *Stegobium paniceum*, is a pest of stored medicinal and aromatic plants. The cold tolerance of different stages from highest to lowest was; adult, old larva, young larva, pupa and egg. Lethal time for 90% (LT90) of the population at 0°C was 299, 154, 151, 90 and 53 h, respectively. The LT90 (Confidence Limits) for adults at 5, -5, -10 and -15°C was 792 (665-1015), 58 (50-71), 2 (1-3) and 0.8 (0.6-1) h, respectively. The supercooling point of adults was -16.4°C.

EFFECT OF NITROGEN AND INSECTICIDE SEED TREATMENT ON PEA LEAF WEEVIL IMPACT ON FIELD PEAS. H.A. Cárcamo¹, S. Meers², M. Vankosky^{1,3}, R. McKenzie⁴, C. Herle¹, O. Olfert⁵, T. Labun⁶. ¹Agriculture and Agri-Food Canada, Lethbridge Research Centre, Lethbridge, AB, Canada T1J 4B1; ²Alberta Agriculture and Rural Development, Research Division, AB, Canada T1R 1E6; ³Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, Canada T6G 2P5; ⁴Alberta Agriculture and Rural Development, Bio-Industrial Crops, Agricultural Centre, Lethbridge, AB, Canada T1J 4B1; ⁵Agriculture and Agri-Food Canada, Saskatoon Research Centre, Saskatoon, SK, Canada S7N 0X2; ⁶Syngenta Crop Protection Canada Inc., Calgary, AB, Canada T2H 0L3.

The pea leaf weevil (*Sitona lineatus* L.) is a common pest of field peas and fava beans that was first collected in southern Alberta in 1997 and has now spread into Saskatchewan. The objectives of our research are to determine the impact of weevil feeding on root nodule damage and plant yield in relation to soil nitrogen and seed treatments. In the greenhouse, we are quantifying the effects of seed treatment inoculations with *Rhizobium* and insecticide (Thiamethoxam) combinations on pea foliage damage and nodulation. In a cage study from 2008 at two sites, weevil density and plant yield were negatively correlated but only in the nitrogen deficient plots. Our preliminary results suggested that coating seed with Thiamethoxam reduced seedling foliar damage during early growth stages. In the field studies, there was a trend towards increased overall number of nodules expressing leghaemoglobin in plants with the insecticide seed coat. Additional research is required before recommendations can be made.

A SURVEY OF INSECTS ON STORED MEDICINAL AND AROMATIC PLANTS IN EGYPT. A. Y. Abdelghany^{1,2}, S.S. Awadalla², N.F. Abdel-Baky², H.A. EL-Syrafy², and P.G. Field¹. ¹Cereal Research Centre, Agriculture & Agri-Food Canada,

195 Dafoe Road, Winnipeg, MB, Canada R3T 2M9; ²Department of Economic Entomology, Faculty of Agriculture, Mansoura University, Mansoura, Egypt 35516.

Stored-product insect pests were collected from six stored medicinal and aromatic plants in two Egyptian warehouses. The beetles, *Lasioderma serricorne* and *Stegobium paniceum*, were the most serious insect pests. *Tribolium castaneum*, *Tribolium confusum*, *Trogoderma granarium*, and *Cryptolestes ferrugineus* were less common. Two moths, *Plodia interpunctella* and *Sitotroga cerealella*, were found regularly at low levels. The older warehouse, with wooden floors and open windows, had higher infestation than the warehouse with metal floors and closed windows. Roselle and marjoram were the most attacked plants. Infestation peaked in September.

A RESISTANT MANAGEMENT STRATEGY FOR THE WHEAT MIDGE, *SITODIPLOSI MOSELLANA* (GÉHIN), IN SPRING WHEAT CULTIVARS WITH SM1 R-GENE. M. Smith, I. Wise, R. Lamb, and S. Fox, Cereal Research Centre, Agriculture and AgriFood Canada, Winnipeg, MB, Canada R3T 2M9.

The wheat midge is the most serious insect pest of spring wheat in Canada. An R-gene, Sm1, was discovered at the Cereal Research Centre that confers resistance to the midge by antibiosis. Spring wheat cultivars with the *Sm1* gene have been registered, and sufficient seed for commercial use will be available in 2009. *Sm1* is the only gene known to provide resistance against the wheat midge in wheat. To prevent the potential selection of a virulent midge biotype, spring wheat with *Sm1* will be sold as a 90:10 varietal blend, with a closely related cultivar as the 10% susceptible component. The seed mixture will result in an interspersed refuge in the field, which by reducing the likelihood of assortative mating by the midge will prolong the usefulness of this gene.

INSECTS ON FIELD CROPS IN MANITOBA IN 2008 – AN EXTENSION UPDATE. J. Gavloski, Crops Branch, Manitoba Agriculture, Food and Rural Initiatives. Box 1149, Carman, MB, Canada R0G 0J0.

In cereal crops, wheat midge (*Sitodiplosis mosellana*) populations were high in some areas in the western part of the province, resulting in some spraying of insecticides. Cutworms and grasshoppers were also concerns in some areas. In canola, flea beetles (*Phyllotreta* spp.), grasshoppers and lygus bugs (**Lygus** spp.) were the biggest concerns. Cutworm populations were also high in some areas. There were some concerns over root maggots (*Delia* spp.) in the Manitou area. Cutworms were at damaging levels in many sunflower fields, particularly in the Central and Eastern regions. Levels of lygus bug and banded sunflower moth (*Cochylis hospes*) were at levels of concern in some fields of confection sunflowers, resulting in controls being applied. Soybean aphids (*Aphis glycines*) reached economic levels in many fields in the soybean growing areas of the province. There were some pea fields in the southwest region that had insecticides applied to control pea aphids (*Acyrtosiphon pisum*) in mid-July. Alfalfa weevil (*Hypera postica*) was a concern in many alfalfa hay and seed fields. Annual summaries of insect pests in crops are posted at: <http://www.gov.mb.ca/agriculture/crops/insects/index.html>

***The Entomological Society of Manitoba
gratefully acknowledges the following organizations
which provided financial support for the
64th Annual Meeting***

*Abel Pest Control
Bayer Cropscience Canada Co.
Canadian Centre for Mosquito Management
Canadian Grain Commission
Canola Council of Canada
City of Winnipeg Insect Control
Dow Agro Sciences Canada Inc.
Louisiana-Pacific Canada Ltd.
Metro Pest Control
Monarch Pest Control
North South Consultants
Orkin PCO Services
Poulin's Pest Control
Province of Manitoba-Conservation
Viceroy Distributors*

The Entomological Society of Manitoba 64rd Annual Business Meeting

14 November 2008

Freshwater Institute, University of Manitoba

Attendance

President	Désirée Vanderwel
Secretary	David Ostermann
President-Elect	Richard Westwood
Treasurer	Ian Wise
Regional Director to ESC	Pat MacKay
Rob Currie	
Rob Roughley	
Lars Andreassen	
Marj Smith	
Hamid R. Basseri	
Sheila Wolfe	
Noel White	
Paul Fields	
Bob Lamb	
Brent Elliott	
Taz Stuart	
Terry Galloway	
Neil Holliday	

- 1. Acceptance of Agenda.**
Motion: Galloway/Wise – to accept the Agenda (Appendix A).....Carried
- 2. Acceptance of the Minutes**
Motion: Lamb/Holliday – to accept previous Minutes of the 63rd Business Meeting (3 November 2007)Carried
- 3. Business Arising from the Minutes - None**
- 4. Reports - Executive**
Motion: Holliday/Galloway - to receive reports.....Carried

Appendix B - President

Appendix C – Treasurer

Term deposits approaching \$40,000. Miscellaneous item includes money from joint North Central Branch meeting.

Holliday noted that at least some costs incurred by the Youth Encouragement Committee are actually incurred by the U of M Entomology Department.

Appendix D - Regional Director to the ESC

MacKay noted that it was her last year as Regional Director and Vanderwel thanked her for her service to the Society. MacKay asked if the ESM would be interested in allowing membership to be paid through the ESC website. It was noted that some members attend the annual meeting to pay their membership. Also such payment may complicate things for the treasurer and it is believed that there may be fees involved in online payments. MacKay also asked if the duty of Past President should be changed to include Scientific Program Chair duties. It was mentioned that reducing the number of positions puts more duties on the same smaller group of people, and that adding duties to positions may deter from those positions.

Appendix E – Editor of the Proceedings

Paper submissions for the meeting are to be encouraged.

Appendix F – Endowment Fund Board

It was asked if the Endowment Fund maximum of \$40,000 (5 GICs) should be increased. It was noted that currently only one GIC does not mature in the fall period, but instead matures Feb. 10, 2009.

Motion: Smith/MacKay – to hold the principle of the GIC that is maturing Feb. 10, 2009, in Treasury bill account until the fall of 2009 and reinvest as a 5 year GIC at that time Carried

5. Reports - Committees**Appendix G - Finance**

It was suggested that Youth Encouragement could spend their \$200 on improving insect displays. There was comment that the President should formally communicate with the Youth Encouragement Chair regarding money available from the Society each year, as well as meeting attendance and membership. The Youth Encouragement committee was praised for their fund-raising, involvement and hard work with tours and presentations.

Appendix H - Publicity / Newsletter

There was a question about distributing the newsletter by email. It was noted that other regional groups are doing this. MacKay suggested that it may not get read if distributed by email, and that another media would require more time of the distributor. Currently a PDF version of the newsletter is put on the Society's website (<http://home.cc.umanitoba.ca/~fieldspg/>).

Appendix I – Social

The Social Committee has been largely inactive due to poor turnout to past events despite significant effort. It was suggested that an invitation to socialize on the 'last Friday of the month' could be extended to members of the Society outside of the U of M Entomology Department.

Appendix J - Youth Encouragement**Appendix K - Archives****Appendix L - Scholarships and Awards**

Appendix M – Fund-raising

Appendix N - Scientific Program

There were forty-two (42) registrations this year, which is believed to be down a bit from average.

Appendix O – Membership

Membership is at 97.

Appendix P - Web Page

Motion: Lamb/Elliott – to accept the reports as given.....Carried

6. Election results

President Elect..... Marj Smith
Regional Director to the ESC.....Terry Galloway
Member-at-Large.....Lars Andreassen

Appendix Q

Motion: Holliday/MacKay - to destroy the ballots.....Carried

7. New Business

There was a moment of silence for members that passed away in the past year, including Cam Jay and Bill Turnock.

8. Transfer of Presidential Office - Désirée Vanderwel to Richard Westwood

9. Reappointment of Auditor

Motion: Wise/Lamb – Nicholson Rawluk LLP as auditor to the ESM...Carried

10. Other Business

Elliott stated that the ESC meeting (2009) plans are moving forward.

11. Adjournment. 4:00 p.m.

Motion: Fields – to adjourn the meeting.....Carried

APPENDIX A

**The Entomological Society of Manitoba, Inc.
Agenda of the Entomological Society of Manitoba
64th Annual Business Meeting**

14 November 2008

1. Acceptance of Agenda
2. Acceptance of the Minutes of the last Annual Meeting (3 November 2007)
3. Business arising from the Minutes
4. Reports – Executive
 - President** – Désirée Vanderwel
 - Treasurer** – Ian Wise
 - Regional Director to the ESC** – Patricia MacKay
 - Editor of the Proceedings** – Terry Galloway
 - Endowment Fund Board** – Marjorie Smith
5. Reports – Committees
 - Finance** – Marjorie Smith
 - Publicity/Newsletter** – Mahmood Iranpour, Patricia MacKay
 - Social** – Brent Elliott, Sheila Wolfe
 - Youth Encouragement/Public Education** – Katrina Froese
 - Archives** – Rob Roughley
 - Scholarship and Awards** – Richard Westwood
 - Fund-raising** – Joel Gosselin
 - Scientific Program** – Mahmood Iranpour
 - Membership** – Désirée Vanderwel
 - Web Page** – Rob Currie
6. Election results – Scrutineer, Colin Demianyk
7. New business
8. Transfer of Office
9. Reappointment of Auditor
10. Other business
11. Adjournment

APPENDIX B

Entomological Society of Manitoba President's Report – Annual Business Meeting

During the last year, the Executive Committee met twice to consider the Society's business. The first Executive Committee meeting was held December 19, 2007, at the Cereal Research Centre (Winnipeg). One of the first items of business was to approve the budget for 2007/08. We also appointed a Chair for the Scientific Programme Committee: Mahmood Iranpour graciously stepped up to the task, and as we now know his committee did a superb job of planning the 64th Annual Meeting of the ESM. The Executive also received the good news that the ESM would be receiving a cheque for a fairly substantial amount of money from the North Central Branch (NCB) of the Entomological Society of America (ESA), as part of the profits from the joint ESM-NCB-ESA held last year. The ESM Executive decided to use the money to further the interactions between the two societies, by sending four graduate students to the NCB-ESA meeting to be held in Columbus, Ohio, March 27-28, 2008. The four winners of the ESM Travel Grant Competition were Suresh Desai, Karen Hawkin, Sunday Oghiakhe, and Anaïs Renaud. The students seemed to enjoy the meetings, and were excellent representatives of our society: Suresh was awarded 2nd place for his oral presentation, and Sunday won first place for his poster presentation. The four students also formed a team for the Linnean Games, and advanced to the semi-finals. At this meeting the Executive also voted in favour of allowing the Heritage Committee of the Entomological Society of Canada (ESC) to scan the late Paul Riegert's "Entomologists of Manitoba" (which was published jointly by the ESC and the ESM) for inclusion on the ESC web site.

The second Executive Meeting was held on July 24, 2008 at the Department of Entomology Library (U of Manitoba). This was a relatively short meeting, where we approved the budget for the ESM Scientific Programme Committee, and heard reports of the Regional Director to the ESC (Pat MacKay), the ESM Treasurer (Ian Wise), and the ESM Endowment Fund Chair (Marj Smith).

In closing, I would like to thank all the ESM Executive, Committee Chairs, Committee members and other volunteers for all their hard work on behalf of the Society during the past year. I would also like to thank the Society for the opportunity to serve as President.

Désirée Vanderwel
ESM President November 14, 2008

Appendix C
Entomological Society of Manitoba, Inc.
Financial Statements
August 31, 2008

NICHOLSON RAWLUK_{LLP}
CERTIFIED GENERAL ACCOUNTANTS

100 - 1780 WELLINGTON AVENUE, WINNIPEG, MB R3H 1B3
PHONE (204) 772-6338 FAX (204) 774-5436

REVIEW ENGAGEMENT REPORT

To the Members of:

Entomological Society of Manitoba Inc.

We have reviewed the balance sheet of **Entomological Society of Manitoba Inc.** as at **August 31, 2008** and the statement of revenues, expenditures, and surplus for the year then ended. Our review was made in accordance with Canadian generally accepted standards for review engagements and, accordingly, consisted primarily of enquiry, analytical procedures, and discussion related to information supplied to us by the Society.

A review does not constitute an audit and, consequently, we do not express an audit opinion on these financial statements.

These financial statements have been prepared using the cash basis of accounting as further described in Note 2. The effects of this departure from Canadian generally accepted accounting principles on the unaudited financial statements has not been determined.

Our review indicates that, because these financial statements are prepared using the cash basis of accounting as described in the preceding paragraph, these financial statements are not in accordance with Canadian generally accepted accounting principles.

Winnipeg, Manitoba
October 16, 2008


Nicholson Rawluk LLP
Certified General Accountants

Entomological Society of Manitoba Inc.
Statement of Financial Position
(Unaudited - See Review Engagement Report)
August 31, 2008

ASSETS		2008	2007
CURRENT			
Cash		\$ 2,653	\$ 2,268
Canadian T-Bill fund (Note 3)		8,523	13,149
Term deposits (Note 4)		14,000	3,135
		25,176	18,552
LONG TERM			
Term deposits (Note 4)		24,000	30,000
		\$ 49,176	\$ 48,552

LIABILITIES		nil	nil
CURRENT			

NET ASSETS		38,000	33,135
Internally restricted (Note 5)		11,176	15,417
Unrestricted		49,176	48,552
		\$ 49,176	\$ 48,552

APPROVED BY THE BOARD:

_____ Director

_____ Director

The accompanying notes form an integral part of these financial statements

NICHOLSON RAWLUK LLP
CERTIFIED GENERAL ACCOUNTANTS

**The accompanying notes form an integral
part of these financial statements**

Entomological Society of Manitoba Inc.
Statement of Financial Position
(Unaudited - See Review Engagement Report)
August 31, 2008

	<u>2008</u>	<u>2007</u>
REVENUE		
Annual meeting	\$ 885	\$ 615
Donations	1,600	1,650
Interest income	1,372	1,464
Members fees	1,453	1,549
Miscellaneous	5,984	2,670
Proceedings	197	277
Youth encouragement and public education	<u>641</u>	<u>766</u>
	12,132	8,991
 EXPENDITURES		
Awards and scholarships	1,500	1,500
General	2,541	725
Meetings	6,134	1,504
Newsletter	416	313
Proceedings	886	1,068
Youth encouragement and public education	<u>31</u>	<u>160</u>
	<u>11,508</u>	<u>5,270</u>
 EXCESS OF REVENUES OVER EXPENDITURES	624	3,721
Add: Surplus, beginning of the year	<u>48,552</u>	<u>44,831</u>
 SURPLUS, END OF THE YEAR	<u><u>\$ 49,176</u></u>	<u><u>\$ 48,552</u></u>

The accompanying notes form an integral part of these financial statements

NICHOLSON RAWLUK LLP
— CERTIFIED GENERAL ACCOUNTANTS —

**The accompanying notes form an integral
part of these financial statements**

Entomological Society of Manitoba Inc.
Statement of Financial Position
(Unaudited - See Review Engagement Report)
August 31, 2008

NOTE 1 PURPOSE OF THE ORGANIZATION

The Entomological Society of Manitoba Inc. ("The Society") was formed to foster the advancement, exchange, and dissemination of entomological knowledge. The Society was incorporated on July 21st, 1976 under the laws of the Province of Manitoba as a non-profit organization and a registered charity under the Income Tax Act.

NOTE 2 SIGNIFICANT ACCOUNTING POLICIES

Income and expenses are recorded on the cash basis of accounting. There are no accruals of receivables or payables at the year-end. Inventory is expensed when it is purchased. Interest from investment certificates is paid out annually and no interest is accrued. Capital assets are expensed when acquired and, therefore, there is no annual amortization allowances.

NOTE 3 CANADIAN T-BILL FUND

The Canadian T-Bill fund was opened February 28th, 1997 with a principal balance of \$4,000. Additional purchases and redemptions have been made during the years. The Canadian T-Bill fund is shown at market value at year-end.

NOTE 4 TERM DEPOSITS

<u>Certificate Number</u>	<u>Interest Rate (%)</u>	<u>Maturity Date</u>	<u>Par Value (\$)</u>
960006276-0008	3.300	Sep 16, 2008	\$ 4,000
960006276-0004	3.000	Dec 11, 2008	3,000
960006276-0009	2.750	Feb 10, 2009	7,000
Total current term deposits			<u>\$ 14,000</u>
900055611-0009	3.200	Nov 16, 2010	\$ 8,000
900055611-0010	4.000	Nov 16, 2011	8,000
900055611-0011	3.850	Nov 9, 2012	8,000
Total long term term deposits			<u>\$ 24,000</u>

NOTE 5 INTERNALLY RESTRICTED NET ASSETS

The Society's board of directors has internally restricted \$38,000 (August 31, 2007 - \$33,135) to be held for endowment purposes. These internally restricted amounts are not available for unrestricted purposes without approval of the board of directors.

NICHOLSON RAWLUK LLP
— CERTIFIED GENERAL ACCOUNTANTS —

**The accompanying notes form an integral
part of these financial statements**

Entomological Society of Manitoba Inc.
Statement of Financial Position
(Unaudited - See Review Engagement Report)
August 31, 2008

NOTE 6 STATEMENT OF CASH FLOWS

A statement of cash flows is not included with these financial statements as the Society uses the cash basis of accounting and it would not provide any useful information that cannot be attained by the balance sheet and the statement of revenues, expenditures, and surplus.

NOTE 7 FINANCIAL INSTRUMENTS

The Society's financial instruments consist of cash, Canadian T-Bill fund, and term deposits. Unless otherwise noted, it is our opinion that the Society is not exposed to significant interest rate, currency, or credit risk arising from these financial instruments. The fair value of the instruments approximates their carrying values.

APPENDIX D

Entomological Society of Manitoba Report of the ESC Regional Director

This has been my last year of my second term as Regional Director for the Entomological Society of Manitoba on the Governing Board of the Entomological Society of Canada. Since the last ESM Annual Business Meeting on 03 November 2007, I have carried out several duties. As Regional Director I have served on the ESC Membership Committee and the ESC Science Policy and Education Committee. In addition I reported on ESM activities at the 2008 Joint Annual Meeting of the Entomological Societies of Canada and Ontario in Ottawa from 18-22 October 2008. At this meeting I attended the two scheduled Board Meetings and the Annual Business Meeting of ESC. I also submitted a report on ESM activities to the Interim Meeting of the ESC Executive Council in Ottawa in April 2008. These reports are available as attachments to the minutes of the next ESM Executive Meeting following the report.

At the Ottawa ESC meeting, Past President, Peggy Dixon, AAFC Newfoundland, filled in for President Terry Shore, CFS Victoria B.C., who was ill and recovering from surgery, and unable to travel. At the end of the meeting, ESM member Paul Fields became President, and Maya Evenden from Biological Sciences at U of Alberta became 1st Vice-President. Peter Mason, AAFC Ottawa and Adjunct Professor in the Department of Entomology at the University of Manitoba, became 2nd Vice-President. The next ESC Annual Meeting is a joint meeting with the Entomological Society of Manitoba in Winnipeg, 17-21 October 2009. Following the 2009 meeting in Winnipeg, the ESC meeting moves to Vancouver for 2010 and Halifax for 2011.

Until recently, membership in the ESC had been in decline for some years, down to a low of 475 in 2004. However over the last two to three years, the number of members has increased and seems to have stabilized near 500, currently standing at 497. On behalf of ESC, I encourage all ESM members who are not already ESC members to seriously consider joining ESC. Without a strong national society, the ESM will become a much weaker organization. ESC plays a critical role in Entomology in Canada which benefits all entomologists in the country. The health and strength of ESC is critical to all of us.

Recent noteworthy events in the ESC include ongoing efforts to deal with issues around its publications. The trend towards electronic publication and the need to increase accessibility of information has presented challenges. The scanning of the past issues of the *Canadian Entomologist* and all issues of the *Memoirs of the Entomological Society of Canada* should help to deal with some of these problems. The scanning should be completed and electronic copies made available to libraries in the near future. Although increased electronic availability is expected to deal with some of the journal's problems, currently the journal seems to be experiencing a reduction in submission of manuscripts, and ESM and/or ESC members should consider submitting their work to the *Canadian Entomologist* in order to maintain the reputation and viability of one of Canada's oldest scientific journals.

An issue that regional directors have been asked to take back to their societies relates to the payment of member dues. The ESC is considering making it possible to pay for ESC membership on the ESC website and is wondering if the regional societies would be interested in making it possible for people to pay for their membership in their regional society at the same time on the ESC website. I would like the ESM to discuss the issue at the business meeting, and the Executive to consider the issue further and respond to ESC via the new Regional Director.

A second issue I would like to bring forward for discussion relates to information I became aware of at the Governing Board Meeting, which might be of interest and use to our Society. The Ontario Entomological Society manages their presidency much as the ESM does, with a three year commitment by individuals as President-Elect, President, and Past-President. However they add an additional duty to the responsibilities of the Past-President who is automatically the Chair of the Program Committee for the next annual meeting. This might make it harder to recruit candidates for the presidency, but it would mean one less committee chair for the president to have to find.

Finally, my second three year term as Regional Director ends this fall, and the new Regional Director will take over from me at the end of this year's ESM business meeting. I thank the membership for giving me the opportunity to serve on the Executive of ESM and the Board of ESC. I have enjoyed the past six years greatly.

Patricia A. MacKay
Regional Director for ESM on the ESC Board
November 2008

APPENDIX E

Entomological Society of Manitoba Report of the *Proceedings* Editor

Volume 63 (2007) of the *Proceedings* of the Entomological Society of Manitoba was distributed to members who attended the annual meeting of the Entomological Society of Manitoba on 13 and 14 November, 2008. I thank the editors of the ESM Newsletter, Pat MacKay and Mahmood Iranpour for waiting to distribute their newsletter along with the *Proceedings* to save mailing costs. The *Proceedings* was printed by Warren Schuetz and his staff in The University of Winnipeg printshop. Volume 63 contains 60 pages, with three submitted manuscripts, the abstracts from the Annual Meeting held at the Freshwater Institute and Animal Science/Entomology Building on 3-4 November, 2007 and the Minutes of the 63rd Annual Business Meeting of the Entomological Society of Manitoba held on 4 November in Room 219, Animal Science/Entomology Building. Cost of production will be presented to the ESM Executive at its next meeting.

I thank David Ostermann and Robbin Lindsay who provided electronic copies of the components of the *Proceedings*. This greatly makes my job much easier. Rob Currie has been very prompt in getting the *Proceedings* up on the ESM website.

It was great to have three manuscripts submitted over the past year. I encourage those of you who have manuscripts that are specifically of relevance to entomology in Manitoba to consider submitting them to the *Proceedings*. I also encourage amateur entomologists who have new information on distribution, occurrence or taxonomy of insects in Manitoba, to consider publishing their results in the *Proceedings*. All manuscripts are peer-reviewed; all published papers are available as PDF's on the web and are fully accessible using on-line search engines. Manuscripts published in the *Proceedings* are now accessible to more people than ever before.

Proceedings Editor, Terry Galloway
14 November, 2008

APPENDIX F

Entomological Society of Manitoba Report of the Endowment Fund Board for 2007-2008

Interest generated by the Endowment Fund provides a basis for funding the publication of the *Proceedings* and other Society activities. The Endowment Fund principle is currently \$38,000 but a cap of \$40,000 was approved at the Annual Business Meeting in 1998, and in 2005 a plan to increase the Endowment Fund to this cap was approved. The cap will be reached in 2009.

Summaries of investments and projected interest income for the current fiscal year and the 2009-10 fiscal year are attached (Tables 1 and 2). This past September GIC no. 960006276-0008 matured, and the principal amount of \$4,000 is being held in the Treasury Bill account. On 11 December 2008 GIC no. 960006276-0004 with a principle amount of \$3,000 matures. At this time it will be combined with the \$4,000 being held in the Treasury Bill account, plus an additional \$1,000 and the total principal of \$8,000 will be reinvested for five years.

On 10 February 2009 GIC no. 960006276-0009 with a principle of \$7,000 matures. Prior to this date, the Endowment Fund will seek approval to reinvest the principle with an addition amount of \$1,000 to bring the total principle to \$8,000. This will bring the total investments in five GICs up the approved cap of \$40,000. The Endowment Fund Committee is proposing that the reinvestment of this amount be delayed until autumn 2009. This will simplify the management of the Endowment Fund because all activity will occur in the autumn, and GICs will mature at approximately one-year intervals.

Marjorie Smith, Chair
Ian Wise
Pat MacKay

Endowment Fund Guaranteed Investment Certificates

Table 1: Account information as of August 31, 2008. Interest generated during the 2008-2009 fiscal year.

Certificate No.	Principle	Interest Rate (%)	Maturity Date	Annual Interest
960006276-0008	\$4,000.00	3.30	Sept 16, 2008	\$132.00
960006276-0004	\$3,000.00	3.00	Dec 11, 2008	\$90.00
960006276-0009	7,000.00	2.75	Feb 10, 2009	\$192.50
900055611-0010	\$8,000.00	3.20	Nov.16, 2010	\$256.00
900055611-0009	\$8,000.00	4.00	Nov 16, 2011	\$320.00
900055611-0011	\$8,000.00	3.85	Nov 9, 2012	\$308.00
Total	\$38,000.00			\$1,298.50

Table 2: Projected account information as of August 31, 2009. Interest generated during the 2009-2010 fiscal year.

Certificate No.	Principle	Interest Rate (%)	Maturity Date	Annual Interest
960006276-0009	7,000.00	2.75	Feb 10, 2009	\$192.50
900055611-0010	\$8,000.00	3.20	Nov.16, 2010	\$256.00
900055611-0009	\$8,000.00	4.00	Nov 16, 2011	\$320.00
900055611-0011	\$8,000.00	3.85	Nov 9, 2012	\$308.00
960006276-	\$8,000.00	3.20	Dec 11, 2013	\$256.00
Total	\$39,000.00			\$1,332.50

APPENDIX G

Entomological Society of Manitoba Report of the Finance Committee for 2007-2008

The Finance Committee met on 6 November 2008, to review the 2007-2008 financial statement and the budget for the current fiscal year. The Society continues to be in very good financial shape, as reflected in our available cash at the end of the fiscal year (31 August 2008) of \$11,176 in the Treasury Bill account and chequing account.

For the 2007-08 fiscal year, revenue and expenses were both substantially greater than usual because of the return of some of the surplus from the NCB-ESA-ESM 2007 joint meeting. We appreciate the generosity of the NCB in their decision to share the large surplus from the meeting. The ESM Executive made the decision to use the surplus to send four student members to the 2008 NCB-ESA meeting which was held in Columbus, Ohio (see the spring/summer 2008 issue of the ESM Newsletter).

There is an additional revenue and expense item, which is for the ESC-ESM 2009 joint meeting being held in Winnipeg. The ESM paid the deposit for hotel space for the meeting (\$1,000 for each of the past and current fiscal years). This will be reimbursed in 2009 from the ESC-ESM 2009 account.

Marjorie Smith, Chair
Ian Wise

ENTOMOLOGICAL SOCIETY OF MANITOBA

BUDGET ITEMS	2007-08	2008-09	2009-10
REVISED 6 November 2008	Actual	Actual and Projected	Projected
ASSETS			
T-Bill Account/Chequing	11,176	---	---
Endowment Fund	38,000	39,000	40,000
REVENUE			
Membership Dues	1,453	1,500	1,500
Proceedings	207	200	200
Social Committee	0	0	0
Youth/Education Committee	200	200	200
Donations: from YEC activities	241	250	250
fundraising for AGM	1,600	1,800	0
student awards	200	200	200
Fundraising Committee	0	0	0
Meetings: ESM/AGM	885	900	---
NCB – ESA – ESM JAM	4,973 ^a	---	---
ESC-ESM 2009 JAM	---	---	2,000 ^d
Interest: G.I.C. income	1,133	1,299	1,333
T-Bill Account/Chequing	239	200	200
Miscellaneous – GST rebate	976	115	115
TOTALS	12,107	6,664	5,998
EXPENSES			
General Society Expenses	1,541	800	800
Proceedings	886	1,000	1,000
Newsletter	416	500	500
Social Committee	0	100	100
Youth/Education Committee	31	350 ^c	200
Fundraising Committee	0	0	0
Student Awards and Scholarships	1,500	1,500	1,500
Meetings: ESM/AGM	1,813	2,500	---
NCB – ESA – Students	4,299	---	---
ESC-ESM 2009 JAM	1,000 ^b	1,000	---
Donations	0	0	0
Representation at ESC	0	400	400
TOTALS	11,486	8,150	4,500
Net gain (loss), year ending Aug. 31	621	(1,486)	1,418

^aIncludes surplus returned to ESM, plus \$500 to cover the additional cost of financial review of our accounts.

^bDeposit on hotel rooms for ESC-ESM 2009 joint meeting.

^cYEC budget increased because ESC grant of \$200 not all spent in the previous year.

^dRefund from ESC-ESM 2009 to cover deposit on hotel rooms.

Pat MacKay

APPENDIX H

Entomological Society of Manitoba Report of the Newsletter Committee

Last year, with Volume 34, the production dates of the three issues of the ESM Newsletter were modified to fit more easily with the schedule of one of the co-editors. Those target dates are now April/May, August/September and December/January. Nevertheless we continue to have problems complying with these self-imposed deadlines. In 2008, we have so far produced the last issue of Volume 34 and the first issue of Volume 35 of the ESM Newsletter. The fall issue of Volume 34, Volume 34.3, should have been out in December/January but was not distributed until March 04 2008. The spring/summer issue, Volume 35.1 was distributed on July 25 2008. At the time of writing of this report, the fall issue, Volume 35.2, is in the final stages of production and is to be distributed with the Proceedings of the ESM. The winter issue, 35.3, is planned for late December 2008 or early January 2009. Issues 34.3, 35.1, and 35.2, respectively, contained 12, 14 and 11 pages of text, photographs and notices. The membership list was distributed with 35.1. The costs of these three issues of the Newsletter, respectively, were \$77.00, \$152.69, and \$72.52; the budgeted amount for each was \$150. Volumes 34.1 and 35.2 were unusually inexpensive because they were distributed with the Proceedings and paid for under that budget line. Envelopes were purchased at a cost of \$46.90; for supplies, \$50.00 had been budgeted. The costs of printing and postage continue to push the budgeted limit and steps may need to be taken to reduce costs. As long as the size of the Newsletter is maintained at 9 or fewer sheets, or 18 pages and postage does not rise significantly, current costs can probably be maintained. If we restrict the size of a Newsletter to no more than 5 sheets, or 10 pages, this would reduce costs significantly by dropping Canadian postage from \$.96 to \$.52. This could be accomplished by publishing fewer or shorter articles, or by reducing the font size of some or all of the items.

Patricia MacKay

Mahmood Iranpour

Co-editors, ESM Newsletter, November 2008

APPENDIX I

Entomological Society of Manitoba 2007 Social Committee Report

The Social Committee has been largely inactive due to poor turnout to past events despite significant effort. It was suggested that an invitation to socialize on the 'last Friday of the month' could be extended to members of the Society outside of the U of M Entomology Department.

APPENDIX J

Entomological Society of Manitoba 64th Annual Meeting November 13-14, 2008

Youth Encouragement Committee Report

The Youth Encouragement program continues to give the public, with a focus on children, the opportunity to learn more about the insects of our world. Presentations normally consist of a short slideshow introducing the group to the idea of insects, followed by viewing and discussion of a variety of pinned insects, and then the possibility of holding a live stick insect or Madagascar hissing cockroach. A modification to the general presentation for Mini University children this summer included “critter-dipping”, where pond insects were provided in an aquarium so kids could capture them and identify them. Special thanks to Leanne Peixoto for coming up with and carrying out this idea!

The program has provided 18 department tours and 14 outgoing presentations over the past year. These presentations reached around 634 people, most of whom were daycare or elementary school age children. Three presentations in the last few months were for groups of senior citizens, who were found to be a very responsive and appreciative audience with lots of questions. Please refer to Table 1 for a summary.

Youth Encouragement volunteers took part in a number of special events this year, apart from regular presentations. We spent a day at the Assiniboine Park Conservatory in June to display pinned and live insects to the public; two presentations were also given by Dr. Pat Mackay. Marj Smith was again at the helm of the Amazing Agriculture apiculture station in September. She and other volunteers performed ten minute presentations over three days to successive groups of elementary school students, in the end exposing over 1000 children to the concepts of bees and beekeeping. Dr. John Gavloski had a table set up with his own presentation materials at the Roland Country Fair in October, and around 300 people came by to see him.

This program’s success is completely dependent on the time and effort of volunteers. The people listed below have contributed to the program in the last year, by taking the time to do presentations and/or by cutting up food for the culture room bugs once or twice a week.

VOLUNTEERS:

Leanne Peixoto, Kristin Hynes, Marj Smith, Lars Andreassen, Alicia Leroux, Christie Borkowsky, Kate Bergen, Andrea Patenaude, Dr. John Gavloski, Dr. Pat MacKay, Dr. Bob Lamb, Dr. Terry Galloway.

Katrina Froese
Chair, Youth Encouragement Committee

TABLE 1: Summary of Youth Encouragement Activities by Month, with Donation Records: November 2007 – November 2008*

Month	# Department Tours/Presentations	# of Outgoing Presentations	# of People	Donations Received
November, 2007	0	0	0	
December, 2007	1	0	26	\$21.10
January, 2008	0	1	20	\$15
February, 2008	1	0	45	
March, 2008	0	1	25	\$15
April, 2008	1	2	120	
May, 2008	0	0	0	
June, 2008	4	0	47	
July, 2008	7	3	85	\$40
August, 2008	3	2	86	\$50
September, 2008	1	2	88	\$10
October, 2008	0	2	60	
November, 2008	0	1	32	\$30
TOTALS	18	14	634	\$181.10

* Activities coordinated independently by Drs. Pat Mackay, Bob Lamb and John Gavloski are included in the table, activities of Dr. Terry Galloway not included.

APPENDIX K

Entomological Society of Manitoba Report of the Archivist

Archives of the Entomological Society of Manitoba are held in the laboratory of Dr. R.E. Roughley in Room 213 Animal Science Building. Presently they are contained in one filing cabinet within that lab. As always, any item which members of the ESM feel is of historical, archival importance can be submitted to Dr. R.E. Roughley for inclusion in the archives.

Rob Roughley, Chair

APPENDIX L

Entomological Society of Manitoba Report of the ESM Student Awards and ESM Scholarship Committee

Student Achievement Award:

Awarded to a student who is in a Bachelor’s degree program or recently completed a program. This award recognizes students who have shown exceptional interest in entomology as evidenced by their insect collections, insect photography, published articles of entomological interest, insect experiments and/or outstanding contributions during summer employment.

This year’s winner is Mr. Jonathan Veilleux. Jonathan completed a degree in fine arts at the University of Quebec and then enrolled at the University of Manitoba in the B.Sc. Agroecology program. Jonathan has completed a range of entomology

courses and has been awarded several undergraduate USRA NSERC student summer student grants to work in the Entomology department at the University of Manitoba. Jonathan plans to start an M.Sc. in entomology in spring 2009. Jonathan impressed the scholarship selection committee with his interest in entomology in the classroom and the field, a keen work ethic and excellent academic proficiency.

Orkin/Swat Student Award:

This award is designed to foster and encourage student interest in general Entomology including natural methods of insect pest control and the proper use of insecticides. Candidates must have a demonstrated interest in entomology, superior scholastic ability, high research potential, originality and industriousness in their university courses and/or summer work.

This year's winner is Ms. Leanne Peixoto. Leanne is in the final year of a BSc with a major in zoology and a minor in entomology. Leanne has demonstrated a strong desire to get diverse research experience during her undergraduate degree and has an excellent record of academic achievement. Leanne has taken a number of entomology courses and shown a strong interest in insect management. Leanne was employed in the Department of Entomology at the University of Manitoba during the summer of 2008 including working with the public on the "bug line" to answer enquiries about insect control.

The ESM Graduate Scholarship:

This scholarship is awarded to a student in a M.Sc. or Ph.D. program in entomology at the University of Manitoba. Students must be enrolled in their graduate program for at least 12 months prior to Oct 1 of the award year. This award recognizes superior scholastic ability, high research potential as evidenced by industriousness, good judgment, originality, a conscientious attitude and organizational ability, and excellent communication skills.

This year's winner is Mr. Rassol Bahreini Nobandegani. Rassol is enrolled as a Ph.D. candidate in the Dept. of Entomology at the University of Manitoba working under the supervision of Dr. R.W. Currie. Rassol received his B.Sc. in 1991 from Tabriz University, Iran and his M.Sc. in 1993 from Ahvaz Shadid Chamran University, Iran. Rassol has received several awards since joining the department including an International Graduate Fellowship and a student merit award from the Canadian Association of Professional Apiculturists. Rassol's PhD project examines the costs and benefits of honey bee defense against Varroa mites.

Desiree Vanderwel

Joel Gosselin

Richard Westwood

November 14, 2008

APPENDIX M

Entomological Society of Manitoba 2008 Fundraising Committee Report

The Fundraising Committee raised a total of \$1,600.00 from 13 donors to assist in covering the costs of bringing in the speakers from out of town for the AGM. That is an increase of \$200.00 over the previous year.

The Committee acknowledges the continued support of the sponsors in making the AGM successful in providing quality speakers for this educational event.

Joel Gosselin,
Chair, Fundraising Committee.

APPENDIX N

Final Report for the 64th Annual Meeting of the Entomological Society of Manitoba 13 & 14 November, 2008

Prepared by Mahmood Iranpour

The 64th annual meeting of the Entomological Society of Manitoba was held on the 13th and 14th of November at the Freshwater Institute. The theme for this year's meeting was "Insect Outbreaks". The invited speakers included: Bill Riel, with Canadian Forest Service who spoke on mountain pine beetle biology and risk assessment; Hector Carcámo with Agriculture and Agri-Food Canada whose title was "Two for the price of one: ecology and management of lygus bugs and cabbage seedpod weevils in canola"; Brent Elliott with Manitoba Agriculture who talked about "Aster Leafhopper; Robert Lamb with Agriculture and Agri-Food Canada who spoke on "Wheat midge outbreaks past and present: can we change the future?"; Taz Stuart with City of Winnipeg who presented "Bed Bugs: What you may or may not want to know..". Overall the meeting was well attended with approximately 42 attendees registering for the meeting. As in previous years, sponsors were very generous providing \$1800 in donations and revenue was also provided through the meeting registration process. The total expenses for the meeting were \$2371.58 against the revenues of \$2560 so there was a net profit of \$188.42 from the 2008 meeting. The organizing committee did not plan a social event or banquet this year which in previous years was a considerable expense to the society. Based on all of the above, this year's meeting was a great success.

Mahmood Iranpour
Scientific Organizing Committee, Chair

APPENDIX O

Entomological Society of Manitoba Report of the ESM Membership Committee

There are currently 97 members in the ESM, compared to 106 in November of last year. I would like to thank Ian Wise (Treasurer) for his careful record keeping of the membership.

Désirée Vanderwel, Chair.

APPENDIX P

Entomological Society of Manitoba Web Site Report Rob Currie

The Entomological Society of Manitoba operates a website that is hosted through the University of Manitoba through the courtesy of Paul Fields who allows us to use the public access portion of his account. The website contains information about the Society and its committees, dates of meetings, programs for meetings, and provides links to other sources of entomological resources on the web.

Copies of the newsletter and proceedings are typically posted shortly after they are released through the traditional mail routes once they are supplied to the web master. Electronic copies of the Proceedings up to 2006 are posted and papers that are published in the proceedings are also available on the site in the form of PDF-reprints. These papers are picked up by many search engines and thus provide a wide exposure for the published research. Some difficulty has been experienced by users in trying to access pdf files, however, computer services does not seem to have a resolution for this problem. Downloading the files onto a local computer can be more effective than accessing them "on line".

For the upcoming joint meeting with the Entomological Society of Canada a page has been added that will be linked to other materials for the meeting as they become available. The web page(s) for the ESC portion are being coordinated by Taz Stuart. Any suggestions for additions or changes to the website should be forwarded to Rob Currie, Department of Entomology, University of Manitoba.

APPENDIX Q

Entomological Society of Manitoba Election Report 2008/09

Elections closed October 31, 2008 for the Entomological Society of Manitoba offices of President-Elect, Regional Director to the ESC and Member-at-Large. The successful candidate for President-Elect is Marjorie Smith; for Regional Director to the ESC is Terry Galloway; and for Member-at-Large is Lars Andreassen. We thank all candidates for their willingness to participate in the election. Formal announcement and commencement of terms will be at and after the ESM Annual Business Meeting, respectively. The time, date and location of the meeting will be announced at a later date.

Sincerely,

Colin Demianyk

Chairperson, Scrutineer Committee

N.D.G. White

Witness October 31, 2008



ISBN 0315-2146