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PARASITOID SURVEY OF *Anisota virginiensis* (Lepidoptera: Saturniidae) AT BELAIR, MANITOBA FROM 1989-1999.

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Several species of *Anisota* (Lepidoptera: Saturniidae), collectively known as oakworms, occasionally achieve pest status in the United States and Canada, and infestations sometimes exceed 1,000 ha. For example, the orange-striped oakworm, *A. senatoria* (J.E. Smith), is a common pest of oaks in the northeastern United States (Hitchcock 1961b, Coffelt and Schultz 1990)), and an outbreak of yellow-striped oakworm, *A. peigleri* Riotte, occurred in Gainesville, Florida from 1996 to 2000 (Serrano and Foltz 2003). The Manitoba oakworm, *A. manitobensis* McD., was described as a sporadic pest of bur oak, *Quercus macrocarpa* Michaux (Fagaceae), in southern Manitoba (McGugan 1958). Criddle (1932) reported that three acres of *Q. macrocarpa* south of Carman was severely defoliated by *A. manitobensis* in 1931. *Anisota manitobensis* seems to maintain a low level of abundance, and was only recently located after an extensive search lasting eight years (Henne 2002). The pink-striped oakworm, *A. virginiensis* (Drury) occurs throughout the eastern United States and adjacent southern Canada, west to southern Manitoba (Ferguson 1971, Tuskes et al. 1996). In much of its range, *A. virginiensis* does not normally become sufficiently abundant to be considered a pest (Ferguson 1971). Nevertheless, it has caused occasional severe defoliation of *Q. macrocarpa* in Manitoba (McGugan 1958, Ives and Wong 1988) as well as in Ontario and Quebec (Hall et al. 1998). Larvae of *Anisota* spp. are gregarious, particularly in the early instars (Riotte and Peigler 1981) when they skeletonize leaves of their host, *Quercus* spp. Later instars may consume the entire leaf, except for the midvein, and are easily seen on their defoliated hosts.

An outbreak of *A. virginiensis* occurred at Belair Resort, Manitoba (50°36'11" N, 96°33'7" W) and was studied from 1989-1991, with monitoring and larval collections continuing until 1999. Belair is located within the Belair Provincial Forest, along the southeastern shore of Lake Winnipeg. The vegetation is predominantly a sandy, oak-pine biotope. Defoliation of *Q. macrocarpa* around Belair was not evident prior to 1989; however, by early August 1989, *A. virginiensis* larvae were numerous on *Q. macrocarpa*. Approximately 95% of *Q. macrocarpa* around Belair were completely defoliated, with the remaining trees >50% defoliated. In addition to *Q. macrocarpa*, *A. virginiensis* larvae were observed feeding on hazelnut (*Corylus cornuta* Marsh. (Betulaceae)), and paper birch (*Betula papyrifera* Marsh. (Betulaceae)). McGugan (1958) also reported *A. virginiensis* larval collections from *B. papyrifera*, *C. cornuta* and *A. alnifolia* in southern Manitoba, and Ferguson (1971) suggested that *C. cornuta* is probably utilized naturally by *A. virginiensis*. Moderate to severe defoliation of paper birch by *A. virginiensis* was reported in Quebec (Hall et al. 1998), but no significant defoliation of *B. papyrifera* was ever observed at Belair during the entire survey period. The outbreak was extensive, as *A. virginiensis*-defoliated *Q. macrocarpa* were found from Belair to Hillside Beach, ten kilometers apart. In several areas, thousands of dead fifth-instar larvae were observed on the ground, having succumbed to a disease not unlike that caused by the entomopathogenic fungus *Beauveria bassiana*.

Parasitism of fifth-instar *A. virginiensis* larvae by an undetermined species of fly was indicated by the presence of small (~1mm), white, ovoid eggs attached to the integument. To determine the identity of this parasitic fly, evaluate per cent parasitism and count numbers of attached eggs, fifth-instar *A. virginiensis* larvae were collected in an approximately 50 ha stand of *Q. macrocarpa* during early August of 1989, 1990, 1991 and September 1992. Cool weather conditions that persisted in southern Manitoba during the summer of 1992 delayed larval development by several weeks. Larvae were collected from >20 *Q. macrocarpa* with at least 10m between sampled trees. Trees and larvae were arbitrarily selected, and sampled trees were <2 m in height and <10 larvae/tree were collected, examined closely for attached eggs and the number of eggs found was recorded. Sampling stopped when 200 larvae were collected (except during 1992 when only 100 larvae were collected). As larvae were collected and scored, they were placed in 5 L plastic pails (n=25 larvae/pail), transported to the laboratory and maintained on *Q. macrocarpa* foliage until maggot emergence or host pupation. From 1993 onwards, collections of *A. virginiensis* larvae were restricted to isolated clusters of larvae that could be located within the same stand of *Q. macrocarpa* that was sampled from 1989 to 1992. From 1993 to 1997 *A. virginiensis* larval densities at Belair had declined to low levels of abundance and <50 larvae were collected per year. By 1998, *A. virginiensis* larvae could no longer be collected using reasonable time and effort. The local *A. virginiensis* population was still in existence, however, since a single virgin female (reared from Tennessee *A. virginiensis* stock) attracted 27 males during the afternoon of 28 June 1999.

On 30 June 1990, 21 egg clusters (n=602 eggs) were collected from five small (<1.5 m in height) haphazardly selected *Q. macrocarpa* trees in an attempt to acquire ovarian parasitoids. Egg clusters were held at 22° C and 16:8 photoperiod for 14 days until eclosion of larvae or parasitoid emergence. Of these 602 eggs, larvae hatched from 575 (95.5%) and fertility was 100% in 11 out of 21 egg clusters collected. The number of

eggs in an egg cluster (mean \pm SE) was 28.7 ± 3.02 (range 5-63 eggs/cluster, $n=21$). No ovarian parasitoids emerged from the other 27 eggs. Hitchcock (1961a) reported mean numbers of *A. senatoria* eggs/cluster to be between 94 and 216, with rates of parasitism by *Trichogramma pretiosa* Riley and *Tetrastichus* sp. (Hymenoptera: Trichogrammatidae) between 22.9 and 74.4% respectively. *Anisota senatoria* egg parasitoids generally emerge within 7 days after eclosion of larvae (Coffelt and Schultz 1992). It is possible that the *A. virginiensis* egg clusters collected at Belair were not held for a sufficient duration. Larvae eclosed by 10 days but the eggs were not monitored beyond 14 days. The high rate of larval eclosion from the eggs sampled, however, suggests that little, if any, egg parasitism occurred. Alternatively, the absence of egg parasitoids may have been a brief phenomenon, confined to the year the survey was conducted, or the sample size taken was inadequate to detect ovarian parasitoids.

Five species of larval and pupal parasitoids were reared from *A. virginiensis* larvae at Belair, Manitoba, many of which have been reported from other species of *Anisota* (including *A. virginiensis*), and one of which is a new parasitoid host record. Small numbers (20-30) of larvae collected in 1994 and 1996 yielded no parasitoids.

Diptera: Tachinidae:

Houghia sternalis (Coquillett) – 1 male, 1 female: One pupa of *A. virginiensis* yielded two fly puparia in the laboratory, October 1993 (from a larva collected August 1993). This was one of two parasitoid species reared from 30 *A. virginiensis* larvae collected in 1993. Females of *H. sternalis* deposit their eggs either directly on host larvae or on foliage of hostplants so larvae ingest them (Riotte and Peigler 1981, Peigler 1994). The maggots emerge from their host to pupariate in the soil after the host has pupated (Riotte and Peigler 1981). Peigler (1994) lists this species (as *Eumasicera sternalis*) as a parasitoid of *Dryocampa rubicunda* (F.), *A. virginiensis*, *A. consularis* Dyar, and *A. senatoria*.

Lespesia anisotae (Webber) – 2 males: One *A. virginiensis* pupa yielded two fly puparia in the laboratory, October 1997 (from a larva collected in August 1997). This was the only parasitoid reared from 17 *A. virginiensis* larvae that were located in 1997. Females of *L. anisotae* deposit their eggs directly on host larvae, and emerge from their host to pupariate in the soil after the host has pupated (Riotte and Peigler 1981). Peigler (1994) describes this species as a common parasitoid of hosts in the eastern United States and, as the specific epithet suggests, is a specialist on *Anisota* spp.: *A. virginiensis*, *A. pellucida* (J.E. Smith), *A. peigleri*, *A. senatoria* and *D. rubicunda*.

Winthemia datanae (Townsend): Numerous adults (>50) were reared from fifth-instar larvae collected during August 1989, 1990 and 1991. Females were often observed ovipositing on host larvae at Belair. This is a new parasitoid host record for *W. datanae*. Information about the Belair outbreak and the identity of this parasitoid was communicated to R.S. Peigler and was listed as a parasitoid of *A. virginiensis* in Peigler (1994) based on that communication. Other host species include *A. senatoria*, *D. rubicunda*, *Hyalophora cecropia* (L.), as well as several species from the moth families Notodontidae, Arctiidae, Noctuidae, Sphingidae, Lasiocampidae, and Lymantriidae (Peigler 1994). From 1989 to 1991, prevalence of parasitism of *A. virginiensis* larvae by *W. datanae*

at Belair were very high: 76% (1989), 84% (1990), 78% (1991), (n=200 larvae/year, total n=600 larvae). During 1992, only 26 of 100 larvae sampled were parasitized by *W. datanae*. This parasitoid was not reared after 1992.

Superparasitism of *A. virginiensis* larvae by *W. datanae* was common (Figure 1), with one larva having 20 eggs attached to its integument. The mean number of eggs recorded per host larva from 1989 to 1991 was 3.9 ± 0.14 (n=476 larvae). Superparasitism appears to be common among tachinids that parasitize the genus *Anisota*. For example, Hitchcock (1961b) found 138 eggs of *W. datanae* attached to one larva of *A. senatoria* in Connecticut, with prevalence of parasitism ranging from 25 to 68%.

Hymenoptera: Ichneumonidae

Habronyx magniceps (Cresson). – 1 male, 2 females: One parasitoid emerged from an *A. virginiensis* pupa, October 1993, and two additional parasitoids emerged from separate *A. virginiensis* pupae, 5 March 1996 (from larvae collected August 1995 and pupae overwintered until February 1996). This was one of two parasitoid species reared from 30 *A. virginiensis* larvae collected in 1993. In 1996, a small cluster of <10 larvae yielded a second collection of *H. magniceps*. This parasitoid is a solitary koinobiont and occupies the entire host pupa. Upon eclosion, the adult emerges through the anterior end of the host pupa. Dasch (1984: 15-17) previously reported this widespread parasitoid from *A. virginiensis* in southern Manitoba (Thornhill and Pembina Valley), and lists this species as a parasitoid of *A. oslari* Rothschild, *A. stigma* (F.), *A. senatoria*, and *D. rubicunda*.

Hyposoter fugitivus (Say). Reared from third-instar *A. virginiensis* larvae, collected 2 August 1996: emerged 10-11 August 1996. After *W. datanae*, this parasitoid species appeared to be the second most common parasitoid of *A. virginiensis* encountered at Belair. Eleven specimens were obtained from one larval cluster consisting of 12 parasitized *A. virginiensis* larvae. Host larvae appeared to be in the intermolt period between the third and fourth instars. Larvae that are parasitized by *H. fugitivus* are found attached to the host plant by a cocoon that the parasitoid spun inside its host, using the host skin as a mummy (pers. obs., Peigler 1994). Carlson (1979) cited this parasitoid species from *A. virginiensis* and Peigler (1994) lists *H. fugitivus* as a commonly encountered parasitoid of numerous species of *Anisota* and other Saturniids, and attacks several species in the families Arctiidae, Lasiocampidae, and Notodontidae.

In Manitoba and other areas within the northern parts of its range, some *A. virginiensis* populations periodically become extremely abundant. At Belair, Manitoba, outbreak years of 1989 to 1991 were followed by a population decline from 1992 onwards. This is consistent with Ives and Wong (1988) who found that *A. virginiensis* outbreaks subsided naturally after two or three years. Similarly, Hitchcock (1961b) found that *A. senatoria* outbreaks in Connecticut were characterized by a sudden increase in oakworm populations, followed by up to two years of complete defoliation, and then a rapid decline over two years to low population levels. Predation, parasitism, competition, disease epizootics and other factors probably contribute to suppress population outbreaks such as these.

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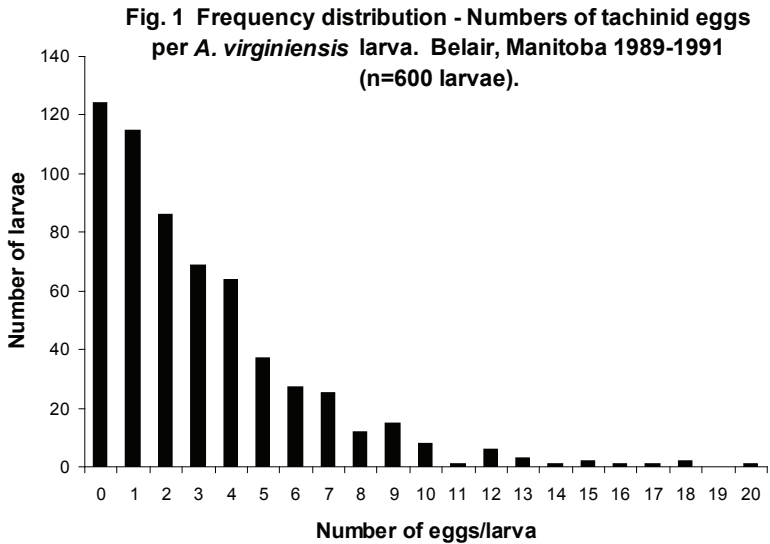
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**Scientific Programme Abstracts for the
2004 Annual Meeting of the
Entomological Society of Manitoba
60th Annual Meeting
5-6 November, 2004, Winnipeg, Manitoba**

Symposium

***Factors Affecting Insect Orientation:
Shaping Behavior From the Outside and Within***

MAKING THE RIGHT DECISION AT THE RIGHT TIME: NEUROBIOLOGICAL MECHANISMS UNDERLYING BEHAVIOURAL CHOICE IN INVERTEBRATES. Karen A. Mesce, Departments of Entomology and Neuroscience, University of Minnesota, 1980 Folwell Avenue, St. Paul, Minnesota, 55108, USA.

Animals at all levels of complexity make choices about the actions they will take, for example, whether to fly or walk; crawl or swim; fight or flee. What kinds of biological mechanisms bias or influence these 'decisions', so that one behaviour is expressed as opposed to another? During my talk, I will discuss how internal and external signals regulate the nervous systems of invertebrates to produce specific behavioural motor programmes that are adaptive and context specific.

The modulation of behaviour will be exemplified by three model systems: the hawk-moth, *Manduca sexta*, the honey bee, *Apis mellifera*, and the medicinal leech, *Hirudo medicinalis*. These insect and annelid systems were chosen for study because of their distinct experimental advantages. For example, the well-described endocrine system in *M. sexta* will illustrate how the sequential release of neuropeptides orchestrates the

display of an elaborate cascade of ecdysis-related motor patterns at the end of each moult cycle. In the honey bee, the focus of many ethological studies, the biogenic amine, octopamine, will be shown to lower olfactory response thresholds to odours of diseased brood, thus biasing expression of hygienic behaviour. In the leech, with its large neurons and well-defined neural circuits, I will show how the stimulation of a single brain neuron can elicit two different forms of locomotion depending on whether the animal is in an aquatic or terrestrial environment. Lastly, in all three systems, the biogenic amines will be shown to play powerful roles in determining how behavioural routines are selected for expression.

FINDING THEIR WAY: BEHAVIOURAL AND PHYSIOLOGICAL ASPECTS OF INSECT FLIGHT ORIENTATION. Jack Gray, Department of Biology, 112 Science Place, University of Saskatchewan, Saskatoon, SK. S7N 5E2.

Successful orientation for flying insects involves intricate coordination between many body systems. Multiple sensory cues, such as vision and olfaction, must be detected and integrated into ongoing flight behaviours by activating appropriate suites of wing muscles. Research in my lab focuses on identification of relevant environmental cues that produce appropriate flight manoeuvres and how the nervous system incorporates information about these cues into patterns of muscle activity that underlie production of aerodynamic forces via the wings. We use, as model systems, collision avoidance of flying locusts and pheromone-guided flight of the moth, *Manduca sexta*. Locust collision avoidance is mediated by subtle changes in forewing asymmetry during the downstroke that ultimately alter flight trajectories to move the insect away from an approaching object. Detection is mediated through a bilateral pair of visual neurons, the Descending Contralateral Movement Detectors (DCMDs), that connect visual areas of the brain to flight muscles in the thorax. The DCMDs are able to remain sensitive to multiple objects approaching along random trajectories (*i.e.*, a swarm) and to a new, larger, object approaching along a maintained trajectory (*i.e.*, a predator). Pheromone-guided flight of *M. sexta* involves a stereotyped zigzag flight pattern that optimizes a male's ability to find a calling female. Coordination of groups of neurons within the moth's nervous system that relate to this behaviour depends on the environmental context within which the insect is flying at any particular time. As will be discussed, each system permits a unique perspective on common features of insect flight orientation.

JACK PINE BUDWORM MONITORING IN MANITOBA WITH PHEROMONE BAITED TRAPS. Irene L. Pines, Forest Health and Renewal, Forestry Branch, Manitoba Conservation, 200 Saulteaux Crescent, Winnipeg, Manitoba, R3J 3W3.

Jack pine budworm, *Choristoneura pinus* (Freeman), is a major defoliator of jack pine in Manitoba. Outbreaks, although often short-lived for 2 to 4 years duration, can severely affect the growth and quality of vast areas of pine forest. Current survey sampling techniques have been unable to detect outbreaks accurately before severe defoliation

has occurred. During the last outbreak in 1985, Manitoba Conservation established pheromone-baited traps to monitor jack pine budworm moth levels at 12 locations throughout the range of jack pine in Manitoba. Two insect traps are being assessed for their ability in attracting jack pine budworm male moths during endemic population levels. A review of spruce budworm moth capture results will be included.

INNOVATIONS IN CHEMICAL ECOLOGY: TOOLS TO INTEGRATE INTO ADAPTIVE FOREST PEST MANAGEMENT. Rory McIntosh, Forest Insect and Disease Specialist, Forest Service Branch, Saskatchewan Environment. Box 3003 McIntosh Mall, 800 Central Avenue, Prince Albert, Saskatchewan, S6V 6G1.

Natural and human-caused disturbances in the forest result in significant and often unpredictable changes in forest ecosystems. Saskatchewan is committed to conducting forest management using an ecosystem based approach. Implicit in this holistic approach are the concepts of adaptation and the integration of new knowledge to guide management activities. In an adaptive forest pest management system, there is a framework which demands continual improvement through the integration of science-based tools. Advances in the knowledge and manipulation of the insect-host interaction have resulted in significant improvement in our ability to monitor, survey, detect and manage forest insects. Case studies were presented demonstrating innovations in the management of a broad range of phytophagous insect families recognized as significant urban and boreal forest pests. The first describes the development of an improved trap and trap bait system for detection and management of large woodborers (Cerambycidae, Buprestidae, and Siricidae); the second includes management systems currently under development and future consideration designed to manage significant defoliators (Tortricidae) in the Boreal Forest; and a summary of current research into the development of semiochemical-based monitoring systems to detect and manage known and potential vectors (Scolytidae) of Dutch elm disease. In summary, the author describes the use and future direction of semiochemical-based management systems in forest management.

Submitted Papers

MOLECULAR SYSTEMATICS OF OPHIOSTOMATOID FUNGI VECTORED BY THE INTRODUCED BARK BEETLE *TOMICUS PINIPERDA* (COLEOPTERA: SCOLYTIDAE) IN ONTARIO, CANADA. M. Iranpour¹, G. Hausner¹, C.N. Davis², E.A. Gibb¹, J. Reid¹, P.C. Loewen¹, and A.A. Hopkin². ¹Department of Microbiology, University of Manitoba, Winnipeg, Manitoba. R3T 2N2; ²Canadian Forest Service, Great Lakes Forestry Centre, 1219 Queen St., Sault Ste. Marie, Ontario, P6A 5M7.

Tomicus piniperda, European Pine Shoot Beetle (PSB), is known to vector blue stain

fungi to Scots Pine in Europe. *Tomicus piniperda* was first detected in Ontario in 1993. One of the concerns related to the spread of *T. piniperda* was the possibility that it might introduce exotic fungi that are capable of becoming serious pathogens of indigenous tree species. Fungi were isolated from insect galleries associated with *T. piniperda* infestation and directly from insects collected in Ontario. Isolated fungi were identified using morphological features and molecular data obtained from mitochondrial and nuclear DNA. Morphological and molecular data confirmed the presence of *Leptographium wingfieldii* Morelet in southern Ontario. This fungus is believed to be an introduced species, but on the basis of molecular data. There may be a potential connection between the asexual *L. wingfieldii* and the sexual *Ophiostoma aureum* (reported from British Columbia and the western United States). In phylogenetic analysis, the ex-type culture of *L. terebrantis* Barras & Perry grouped within the *L. wingfieldii* clade. These two species are morphologically very similar to each other.

SPECIES PACKING IN LICE (INSECTA: PHTHIRAPTERA: MALLOPHAGA) INFESTING THE SORA, *PORZANA CAROLINA* (AVES: RALLIDAE)? Terry D. Galloway, Department of Entomology, University of Manitoba, Winnipeg, Manitoba, R3T 2N2.

The Sora, *Porzana carolina*, is reported to be the host for five species of lice in North America: *Fulicoffula americana*, *Fulicoffula distincta* (Philopteridae), *Pseudomenopon scopulacorne* (Menoponidae), *Rallicola mystax*, and *Rallicola subporzanae* (Philopteridae). It is not particularly unusual that a bird would serve as host for more than one species of louse in the same genus, but it is unusual for there to be two species, in each of two genera, on the same host, as is reported for *P. carolina*. In a survey carried out to investigate the ectoparasite fauna of birds in Manitoba, 35 specimens of *P. carolina* have been examined from various locations in the province. All of the reported species of lice for this host have been found, with the exception of *R. subporzanae*. The overall prevalence of infestation in these birds with lice was 71.4% and the mean intensity of infestation was 28.4 lice per infested bird. The infestation parameters (prevalence; intensity; range in infested birds) for each species of louse was as follows: *P. scopulacorne* - 55.9%; 16.7; 1-53; *F. distincta* - 38.2%; 15.5; 1-30; *R. mystax* - 35.3%; 14.9; 1-130; *F. americana* - 2.9%; 1.0; 1. Seven of the infested birds carried three species of lice, and one bird carried all four species. Infestations with lice were strongly aggregated. For *P. scopulacorne*, the index of discrepancy (D) was 0.705, and the exponent of the negative binomial (k) was 0.246; for *F. distincta*, D=0.837, k=0.125; for *R. mystax*, D=0.891, k=0.104. Likelihood of occurrence and the ecological implications of species packing in chewing lice on the Sora are discussed.

INSECTS ON FIELD AND FORAGE CROPS IN MANITOBA IN 2004 – AN EXTENSION UPDATE. John Gavloski, Soils and Crops Branch, Manitoba Agriculture, Food and Rural Initiatives. Box 1149, Carman, Manitoba, R0G 0J0.

Insects on field and forage crops in Manitoba will be discussed by commodity.

Cereals: Cutworms were at levels capable of causing economic damage in a few fields of small grain cereals. What was unusual was how long into the summer the problem lasted this year. Control of cutworms began about mid-May, and there was a field of barley near Teulon (I) that was treated with insecticide to control cutworms as late as July 13th. Aphids were a concern in many small grain cereal fields. Insecticide applications to control them were mainly concentrated in the first three weeks of August. One of the aerial applicators who had sprayed a few oat fields for aphids noticed that there were more aphids in the oat fields that had earlier been sprayed with Tilt for disease control; these fields were staying greener longer. Most of the higher populations of wheat midge (*Sitodiplosis mosellana*) were reported from the Southwest.

Canola: For some of the early seeded canola, the insecticide portion of the seed treatments broke down to levels where they were no longer controlling flea beetles (*Phyllotreta spp.*) while the plants were still quite susceptible to flea beetle feeding. This happened even for seed treatments with higher rates of insecticide. Early season growth of canola was slow in many areas, so the canola took a long time to reach stages that are more tolerant to feeding by flea beetles. Foliar spraying to control flea beetles was common in many areas. Some reseeded of canola because of damage by flea beetles was reported. The high flea beetle populations persisted well into July in some areas. Populations of bertha armyworm (*Mamestra configurata*) and diamondback moth (*Plutella xylostella*) were at non-economical levels throughout the province this year. Blister Beetles (*Epicauta spp.*) were quite noticeable in many canola fields this year.

Sunflowers: Economically significant populations of sunflower beetle (*Zygogramma exclamationis*) were present in some fields in the eastern and central part of Manitoba. Insecticides were applied to control sunflower beetles during the last week in July and first week in August. A couple of sunflower fields in the Holland/Treherne (C) area had the edges sprayed to control banded sunflower moth (*Cochylis hospes*).

Pulse Crops: Populations of pea aphid (*Acyrtosiphon pisum*) on peas were generally quite high for the second straight year. Insecticide applications to control pea aphids began in late July (around 20 July) and continued through the first week in August. Last year aphid control in peas began in the first week in July, about two weeks earlier than in 2004. Grasshoppers had to be controlled in some soybean and dry bean fields early in the season.

THE ABILITY OF HIGH AND LOW GROOMING LINES OF HONEY BEES, *APIS MELLIFERA* L., TO REMOVE THE PARASITIC MITE, *VARROA DESTRUCTOR* ANDERSON AND TRUEMAN, IS AFFECTED BY ENVIRONMENTAL CONDITIONS. Robert W. Currie, Department of Entomology, University of Manitoba, R3T 2N2, and Golamhosein Tahmasbi, Honeybee Department, Animal Science Research Institute of Iran, Karaj, Iran, 31585-1483.

The objective of this study was to examine the effect of temperature and humidity on the ability of honey bee workers to groom varroa mites from their bodies. One hundred

worker bees from each of two lines of workers were placed in cages and were infested with 40 to 45 varroa mites per cage. Cages from each line of workers were randomly assigned to a combination of temperature and humidity treatments. Individual cages were held in incubators at 10, 25 or 34C under low, medium or high humidity. The entire experiment was replicated three times (18 cages per replicate). The proportion of mites falling into the base of the cage (grooming), or migrating within the closed system was monitored on days 2, 4 and 6 of the experiment. At the end of the experiment, the proportion of mites on live bees, dead bees and in the equipment was also quantified. There were significant differences in the ability of the two lines to groom mites off their bodies and the relative effectiveness of the grooming in the two lines of bees was dependent upon the combination of temperature and humidity to which they were exposed. Total mite mortality also differed between the two lines of bees, but was not affected by temperature. Total mite mortality may include a combination of mortality factors that include, grooming, natural mite fall and death of migrating mites that could not relocate their host. Programmes that are attempting to breed for increased worker grooming behaviour to enhance resistance to *Varroa destructor* will have to consider the environmental conditions under which experiments are carried out.

MORPHOLOGICAL STUDY OF SMALL HONEYBEE (*APIS FLOREA*) POPULATIONS IN SOUTH OF IRAN. Gholamhosein Tahmasbi¹, R. Ebadi², M. Akhondi¹ and N. Tajabadi¹, ¹Honeybee Department, Animal Science Research Institute of Iran, Karaj, Iran. ²Agriculture College, Isfahan University of Technology, 84154 Isfahan, Iran.

Morphological study is one of the methods for classification of species and especially subspecies of insects. Morphological study of the Iranian small honey bee was carried out in 1999 in the south of Iran. For this purpose, worker bee samples from 40 colonies were collected from 26 cities of nine provinces. Twelve morphological characters were measured on ten worker bees per colony. The data were analyzed using principal component analysis (PCA). The Iranian small honey bee colonies had bigger bees and were located in a separate group most closely related to colonies from Pakistan and Sudan. There are two distinct groups of small honey bee populations in different regions of Iran. Southwestern colonies had bigger bees and southeastern colonies had smaller bees as determined by principal component analysis.

THE USE OF HEAT IN FLOUR MILLS TO CONTROL STORED-PRODUCT INSECTS. Paul G. Fields, Cereal Research Centre, Agriculture and Agri-Food Canada, 195 Dafoe Road Winnipeg, Manitoba, Canada, R3T 2M9, pfields@agr.gc.ca.

The efficacy of heat or methyl bromide to control pest insects in flour mills was evaluated. Two heat treatments, one using propane-fired heaters (Temp-Air), and another using portable low-pressure steam heaters (Roo-Can Manufacturing Inc.), were examined. Methyl bromide treatments were included so that the alternatives could be compared to

the currently used control method. Insect populations within the mills were estimated by using traps and monitoring insect numbers from tailings from rebolt sifters. During the treatments, adults and larvae of the red flour beetle (*Tribolium castaneum* (Herbst)) were placed in cages throughout the mills to determine mortality.

The temperature highs ranged from 45 to 78C in the two mills treated with heat. Temperatures were generally higher in the mill that used propane-fired heaters and, all of the insects in the test cages were killed. In the steam-heated mill, there were four test cages out of 23 that had some survival at the end of the treatment. In the dome traps that monitored resident insect populations, the populations dropped to 5-27% of what they were before the propane-heat treatments. Both the methyl bromide treatments caused populations to drop to 0 to 6% of what they were before the treatments.

THE APPLICATION OF OXALIC ACID 3.5% IN VARROA MITE *VARROA DESTRUCTOR* A.&T. CONTROL IN IRAN. Rasoul Bahreini, Honey Bee & Silkworm Department, Animal Science Research Institute, 31858-1483, Karadj, Iran.

In this project, efficacy of oxalic acid (3.5%) was estimated and two application methods of oxalic acid were compared. Fifteen infested honey bee colonies infested with varroa mites *Varroa destructor* A. & T. were chosen. These colonies were divided to 3 treatments and 5 replications, which were treated with dehydrate oxalic acid 3.5 % per liter sugar syrup 1:1. The control group didn't receive any chemicals or drugs. Results showed that oxalic acid has a high potential for control of varroa mites in Iran, especially under low temperature. The average mite mortality was 98.59, 95.19 and 6.48% for oxalic acid spray, oxalic acid trickling and the control, respectively. Average mortality in the trickling and spray treatments was not significantly different, but both were greater than the control ($P < 0.05$). Mite mortality was 97% and 3% in spray method, and 55% and 54 % in trickling method during first and second time of application, respectively. The results showed that one treatment of oxalic acid (3.5%) in spray or two treatments with the trickling method would provide good control of varroa.

YIELD IMPLICATIONS AND MANAGEMENT OF *LYGUS* SPP. ON BUCKWHEAT IN MANITOBA. Ayman Mostafa and Neil J. Holliday, Department of Entomology, University of Manitoba, Winnipeg, Manitoba R3T 2N2.

In a three year project, *Lygus* bug numbers in buckwheat were manipulated in cages and with insecticides. *Lygus* bugs decreased buckwheat yield weight and increased percent of shriveled seeds. Control of developing nymphs in early August with cyhalothrin-lambda significantly and consistently increased yield, but applications in early September to control adult populations did not. In cage studies, buckwheat plants were most vulnerable to the *Lygus* nymph infestations during the flower stage.

A SURVEY OF WINNIPEG STREET CATCH BASINS FOR *CULEX* SPECIES (DIPTERA: CULICIDAE). Andrea L. Thomson¹, A.R. Westwood² and R.M. Gadawski³. ¹Department of Entomology, University of Manitoba, Winnipeg, Manitoba, R3T 2N2; ²Department of Biology, University of Winnipeg, Winnipeg, Manitoba, R3B 2E9; ³Black Duck Consultants, Winnipeg, Manitoba, R3M 2P8.

West Nile virus was first detected in North America in 1999. The primary vectors of the virus are mosquitoes, especially *Culex* spp. These species require semi-permanent or permanent water in order to lay their eggs, and are often found in artificial containers. Water may collect in natural or artificial sites including catch basins, a common component of urban drainage systems, with the potential to hold water to a depth of 60 cm for extended periods of time. Seventy catch basins in each of two neighborhoods in Winnipeg were surveyed in 2003 to determine their potential as sites for development of *Culex* spp. Numbers of mosquito larvae and pupae, water temperature, water depth, and amount of leaf litter in the catch basins were measured. South Tuxedo and Riverview had 10 and 66 catch basins, respectively, that contained immature mosquitoes. Three species of mosquitoes (n = 3893) were found: *Culex restuans* (93.2%), *Aedes vexans* (6.4%), and *Culiseta inornata* (0.4%). Significantly more larvae and pupae were found in catch basins in areas with high tree canopy cover than in catch basins on streets with reduced or no tree canopy cover. Water depth and water temperatures were positively correlated with increasing numbers of immature mosquitoes in catch basins.

EFFECT OF MATING ON PHEROMONE BIOSYNTHESIS IN FEMALE *TENEBRIO MOLITOR* (COLEOPTERA: TENEBRIONIDAE). J. Mangat¹ and D. Vanderwel². ¹Department of Biochemistry and Medical Genetics, 770 Bannatyne Avenue, University of Manitoba, Winnipeg, MB. R3E 0W3; ²Department of Chemistry, University of Winnipeg, Winnipeg, MB. R3B 2E9.

Several pheromones are known to be involved in mediating the mating behaviour of the yellow mealworm beetle, *Tenebrio molitor* (Coleoptera: Tenebrionidae). The only sex pheromone that has been identified to date in this species is the female-produced male attractant, 4-methylnonanol. The overall goal of this study was (i) to develop an *in vitro* assay for 4-methylnonanol biosynthesis and (ii) to determine if mating is involved in regulating 4-methylnonanol biosynthesis. The mechanism of pheromone production is known to be the result of modification of the normal fatty acid biosynthesis. *In vitro* assays were conducted by adding appropriate cofactors and radioactively labeled precursor. Radioactive pheromone product was separated from the radioactive precursor by column chromatography, and quantified through scintillation counting. The conversion of 4-methylnonanoic acid to 4-methylnonanol apparently proceeded through the coenzyme A intermediate, and required NADH as the reducing cofactor. The *in vitro* assay was used to quantify pheromone production after mating: a temporary inhibition of 4-methylnonanol biosynthesis occurred within two hours after mating. This is the first report that mating can inhibit sex pheromone biosynthesis in beetles, and so is important for furthering our understanding of this process.

CAN MUSTARD SEED MEAL INCREASE THE ABUNDANCE OF *ALEOCHARA* SPECIES IN CANOLA? K. Riley^{1,2}, U. Kuhlmann¹, J. Whistlecraft³ and N.J. Holliday².

¹ Cabi Bioscience Centre, 1 Rue Des Grillons, 2800 Delemont, Switzerland; ² Department of Entomology, University of Manitoba, Winnipeg, Manitoba R3T 2N2; ³ Agriculture and Agri-Food Canada, 1391 Sandford Street, London, Ontario N5V 4T3.

Aleochara bilineata, *A. bipustulata* and *A. verna* are natural enemies of *Delia radicum* in brassica crops. Earlier studies in Sweden demonstrated that mustard meal mulch can attract *Aleochara* species and suppress *D. radicum* in brassica vegetables. We compared populations of *D. radicum* and *Aleochara* species in summer canola plots with and without mustard seed meal. Higher numbers of adults and higher levels of *Delia* parasitism were observed for *A. bipustulata* in mulched plots.

EFFECT OF FOREST MANAGEMENT ON THE DIVERSITY OF CARABID BEETLES (COLEOPTERA: CARABIDAE) IN JACK PINE (*PINUS BANKSIANA*) FORESTS IN SOUTHEASTERN MANITOBA. K. Ryan¹, N. J. Holliday¹ and A. R. Westwood².

¹ Department of Entomology, University of Manitoba, Winnipeg, MB R3T 2N2; ² Department of Biology and Centre For Forest Interdisciplinary Research, University of Winnipeg, Winnipeg, MB R3B 2E9.

Pitfall trapping of carabid beetles was used to compare naturally regenerating jack pine stands with plantations of four matched age classes. Local carabid assemblages were affected by stand age but not by regeneration type. Number of individuals was greatest in older stands. Alpha diversity decreased with stand age. These patterns validate predictions from a parallel study conducted 10 years ago in the same sites, so showing that a static experimental design can predict successional change in forest arthropod assemblages.

THE STUDY ON AZADIRACHTIN EFFECTS ON VARROA MITE *VARROA DESTRUCTOR* AND WAX MOTH *GALLERIA MELLONELLA*. R. Bahreini¹,

M. Zarei², S.D. Javaheri¹, N. Tajabadi¹, and Gh. Nehzati³ ¹Honey Bee and Silkworm Department, Animal Science Research Institute, Karadj, 31585 1483, Iran; ²Pesticides Research Centre, Iran; ³Animal Science Department, Agriculture Faculty, Tehran University, Iran.

Varroa mite and wax moth are very destructive pests of honey bees *Apis* Spp. Beekeepers use various miticides and chemical fumigation to control them. But these can result in residues in honey and wax. So, in this survey the Azadirachtin (AZ) was used to reduce these effects. A 10 ml solution of 0, 5, 50, 500, 5000 or 10000 ppm of AZ was sprayed on dark wax. The treatment consisted of 20 g. wax + 20 wax moth larvae (3 – 4 stage larvae) that were incubated in 32±1 °C and 75±1 RH%. Dead larvae were counted daily. Results showed that AZ had insecticidal and anti-feedant effects on wax moth larvae. We also conducted experiments under field conditions to evaluate

the feasibility of using AZ to control varroa mites. Results showed that treatments of 0, 5, 10, 20, 40, 80 or 160 ppm of oral AZ fed to bees in syrup caused no mite mortality ($P < 0.05$).

IMPLICATIONS OF LATE SEASON POPULATIONS OF PLANT BUGS (HEMIPTERA: MIRIDAE) ON SEED ALFALFA CROP IN MANITOBA. Ayman Mostafa and Neil J. Holliday. Department of Entomology, University of Manitoba, Winnipeg, MB R3T 2N2.

The same action threshold is used for early and late season insecticide applications against *Lygus* spp. and *Adelphocoris* spp. in seed alfalfa in Manitoba, despite differences in plant growth stage and insect population structure at these times. Late season populations were manipulated by one or two applications of cyhalothrin-lambda in replicated blocks in three field seasons. Insecticides effectively changed plant bug populations but there was no resulting effect on seed yield quantity or quality.

FORMIC ACID IN BEE FEED: ITS IMPACT ON HONEY BEE QUEEN PHEROMONES AND ATTENDANCE BY WORKERS. R. Underwood¹, R. Currie¹, and D. Vanderwel². ¹Department of Entomology, University of Manitoba R3T 2N2; ²Department of Chemistry, University of Winnipeg, 515 Portage Avenue R3B 2E9.

Beekeepers strive to maintain healthy honey bee, *Apis mellifera* L., colonies that are disease and pest free. To do this, they often introduce foreign chemicals into the hives. For example, formic acid is used as a fumigant for the control of the ectoparasitic varroa mite, *Varroa destructor* Anderson and Trueman. During treatment, substantial queen loss can occur. This queen loss may be caused by the formic acid that is absorbed by the bees' food stores. This study was conducted to determine whether acid-laden sugar syrup increases queen mortality and whether there is an impact on the attractiveness of queens to attendant workers in a behavioural bioassay followed by quantification of queen pheromone components.

Workers were fed sugar syrup containing concentrations of 0, 100 or 1,000 ppm formic acid. The number of workers attending queens was counted daily for 37 days in either the summer or the winter. Following the bioassay, queens were subjected to a solvent wash and the queen mandibular glands were removed for pheromone extraction and quantification.

No queens died during either trial. During the summer trial, significantly fewer workers in the 100 ppm treatment attended queens than in the control or 1,000 ppm treatments. There were no differences during the winter trial. The quantity of each pheromone component did not change based on treatment in either the solvent wash or mandibular gland samples. Absorption of formic acid by sugar syrup does not appear to be the cause of queen mortality during formic acid fumigation for varroa mite control.

THE EFFECT OF STACKING METHODS ON MOSQUITO ABUNDANCE IN TIRE PILES IN SOUTHERN MANITOBA.

T. J. Scott McMahon¹, Robert A. Anderson², and Terry D. Galloway¹. ¹Department of Entomology, University of Manitoba, Winnipeg, Manitoba R3T 2N2; ²Department of Biology, University of Winnipeg, Winnipeg, Manitoba R3B 2E9.

Ten thousand and eight mosquito larvae were collected from 405 tires that were stacked in nine groups of 45. Three groups were randomly assigned to each of three stacking methods, vertical, (tire radius perpendicular to ground), horizontal (tire radius parallel to ground), or random. Tires were set up on 12 May, and sampled on 11 and 13 August, 2004. All tires from each pile were examined and all larvae observed were collected, retained and volume of water in each tire recorded. Larvae were identified to species and counted. The greatest prevalence of infestation was observed in random and vertically stacked tires: 53/136 and 66/135, respectively, whereas only 19 of 135 horizontally stacked tires contained mosquitoes. Intensity was similar across the three treatments, with an average of 73 mosquitoes per infested tire. Most mosquito larvae (97.5%) were *Culex restuans* (Theobald) in comparison to very few (45, 0.4%) of the larvae were *Culex tarsalis* Coquillett. Two hundred and eleven (2.1%) of the mosquito larvae were *Culiseta inornata* (Williston). Mosquitoes were consistently more abundant at the bottom of a horizontal stack and the outside of vertical rows. This has implications for the ease of application of control measures. These differences observed between stacking methods could influence the way tires are managed so as to reduce numbers of mosquitoes.

INTENTIONAL INTRODUCTIONS OF WILD RICE (*ZIZANIA PALUSTRIS*) IN WEST-CENTRAL MANITOBA; WHAT ARE THE IMPACTS?

Mark Lowdon¹ and Karen Kidd². ¹Department of Zoology, University of Manitoba, Winnipeg, Manitoba, R3T 2N2; ²Department of Fisheries and Oceans Canada, 501 University Crescent, Winnipeg, Manitoba, R3T 2N6.

With the intentional introductions of wild rice (*Zizania palustris*) to the west-central region of Manitoba in the early 1980's, there have been many concerns about the impacts this introduced species will have on the invertebrate and fish communities. To examine this alteration, we compared the invertebrate abundance, diversity, and community composition between bays with and without wild rice in three lakes near Flin Flon, Manitoba during June and August, 2003. Bottle traps, emergence traps, and a bucket volume sampler were used to capture the invertebrates within the different habitats. Using paired t-tests to examine the results for the bottle trap and emergence trap data, there were no statistical differences between means of abundance (p-values ≥ 0.16) or diversity (p-values ≥ 0.14) in invertebrate communities. There were also no significant differences between the invertebrate communities of the wild rice and native macrophyte bays in analysis of the bucket volume sampler results. When the results for the three individual lakes were analyzed using Principal Component Analysis, it appeared that invertebrate community composition was different. There were more haliplids in bays without wild rice, while there were greater numbers of amphipods in the wild rice bays. Overall, the diversity and abundance of the invertebrate communities

between bays introduced with wild rice and those still dominated by native plants were not significantly different; however, the composition of the invertebrate communities did differ between the two habitats.

The Entomological Society of Manitoba
gratefully acknowledges the following organizations
which provided financial support for
the 60th Annual Meeting

Canadian Grain Commission

Canola Council of Canada

City of Winnipeg – Insect Control Branch

Dow Agro Sciences Canada Inc. – Ag Research

Dow Agro Sciences Canada Inc. – Turf, Ornamentals & Horticulture

Louisiana-Pacific Canada Ltd.

Manitoba Agriculture and Food

Metro Pest Control

National Microbiology Laboratory,

Health Canada

North/South Consultants

Orkin/PCO/Swat Team

Poulin's Pest Control Services

Province of Manitoba-Conservation

Entomological Society Of Manitoba 60th Annual Business Meeting

**Department of Entomology, University of Manitoba
6 November, 2004**

Attendance of Members

President	John Gavloski
President-Elect	Brent Elliott
Member-at-Large	Lisa Baspaly
Past-President	N.J. Holliday
Secretary	Noel White
Treasurer	Ian Wise
Editor	Terry Galloway

Members

Pat MacKay	Lars Anderson	Desirée Vanderwel
Robyn Underwood	Paul Kozak	Rheal Lafreniere
Anita Stjernberg	Rob Roughley	Paul Fields
Kathleen Ryan	Marjorie Smith	Bob Lamb

1. **Acceptance of Agenda (Appendix A)**
Motion: Roughley/Lamb..... **Carried**

2. **Acceptance of the Minutes of the Last Annual General Meeting of November 13, 2003**
Motion: MacKay/Roughley..... **Carried**

3. **Reports**
Motion: Galloway/Elliott - That the reports of the Executive and Committees be received..... **Carried**

4. The entomology graduate students raised \$1000 during the year and donated \$500 to the Criddle Heritage site.

5. **Executive Reports**

Appendix B – President’s Report and updated on the Criddle/Vane Homestead

Appendix C – Treasurer’s Report/Financial Statement - Charitable receipts should be given only to organizations that require them, not schools, etc.

Appendix D – Regional Director to the Entomological Society of Canada’s Report

Appendix E – Proceedings of the Entomological Society of Manitoba, Editor’s Report

Appendix F – Report of the Endowment Fund and Finance Committee - We are in good financial shape. Do not forget upcoming joint meeting liabilities.

6. **Committee Reports**

Appendix G – Scholarship and Award Committee - Prior to the Annual Meeting the Committee Chair will inform the President of the Committee’s decisions. The President will then contact the winners before the banquet (for which they will receive a free ticket). The President will announce the winners at the beginning of the Annual Meeting. These actions will be placed on the web page.

Appendix H - Publicity/Newsletter

Appendix I - Social Committee

Appendix J - Youth Encouragement and Public Education Committee

Appendix K - Archives

Appendix L - Scientific Program

Appendix M - Fund Raising Committee

Appendix N - Membership Committee

Appendix O - Internet Site Committee

Appendix P - Election Report 2004/05

7. Election Results

President-Elect - Rheal Lafrenière

Member-at-Large - Lisa Baspaly

Motion: Holliday/MacKay - Destroy Ballots **Carried**

8. Transfer of Office

John Gavloski stepped down, B. Elliott assumed the office of President.

9. Discussion

R. Underwood requested suggestions for this year’s fund raising activities. She will be resigning as Chair but will assist the incoming Chair.

Newsletters and Proceedings are now on the web page. P. Fields will resign as web maintenance Chair.

10. Appointment of Auditors

Motion: MacKay/Holliday - That Doug Nicholson and Co. review financial statements only, except when we hold joint meetings, when a full audit is required. **Carried**

A moment of silence was held in remembrance of recently deceased members: Dave Pengelly and Gordon Hamilton.

11. 2009 Joint Annual Meeting of ESM and ESC

Motion: Holliday/MacKay - That an invitation be sent by B. Elliott, the President officially offering to host the meeting for the ESC..... **Carried**

12. Motion: Roughley/Gavloski - That the ESM donate \$500 to the Criddle Homestead. **Carried**

General applause was raised for Desirée Vanderwel and her efforts as Chair of the Scientific Program Committee.

Appendices

Appendix A: Agenda of the Entomological Society of Manitoba, 60th Annual Business Meeting, 6 November, 2004

1. Acceptance of Agenda.
2. Acceptance of the Minutes of the last Annual Meeting (November 2003).
3. Business arising from the Minutes.
4. Reports - Executive

President	J. Gavloski
Treasurer	I. Wise
Regional Director to the ESC	P. MacKay
Editor of the Proceedings	T. Galloway
Endowment Fund Board	M. Smith
5. Reports - Committees

Scholarship & Awards	R. Westwood
Finance	M. Smith
Publicity / Newsletter	P. MacKay/M. Iranpour
Social	R. Lafrenière/S. Wolfe
Youth Encouragement / Public Ed.	K. Ryan
Archives	R. Roughley
Scientific Programme	D. Vanderwel
Fund Raising	J. Gosselin
Membership	B. Elliott
Web Page	P. Fields
6. Elections Results - scrutineer
Destruction of ballots
7. New Business
8. Transfer of Office
9. Other Business — Appointment of Auditor
10. Adjournment

Appendix B: Report of the President - 2003 / 2004

One of the first jobs I had upon assuming the role of President was to try to find members to fill some positions that had become vacant. Rhéal Lafrenière accepted the position of Chair of the Social Committee. Sheila Wolfe kindly offered assistance in helping to plan Social Committee events. Rhéal and Sheila both have a lot of experience in events planning, and their willingness to do this is most appreciated. The ESM New Members Social was held on 26 March 2004 at the Wildwood Curling Club in Winnipeg. The event included curling, pizza, and a very impressive amount of donated merchandise which was raffled off. Désirée Vanderwel volunteered to be Chair of the 2004 Scientific Programme Committee.

During the last year, the Executive Committee has met twice to consider the Society's business. The first Executive Committee Meeting was held 23 March, 2004 at the Cereal Research Centre in Winnipeg. One of the issues that was discussed was providing feedback to students making presentations at the ESM annual scientific meetings. It was agreed that the average marks for the three grading forms for each student will be given to the student as feedback. A membership update was provided, and the total membership of the Society at the time of the meeting was 107 members. An item of correspondence regarding the status of the Criddle Homestead was presented. The Criddle Homestead has been made a Provincial Heritage Park. Norman Criddle was a significant individual in the history of entomology in Manitoba, and it is good to see some of this history being preserved.

The second Executive Meeting was held 16 September, 2004 at the Cereal Research Centre in Winnipeg. There was further discussion on providing feedback to students presenting at the ESM annual scientific meetings. It was agreed that standard judging forms will be used to provide the average of the three judges scores, and this will be given to the students within one week of the competition. A sample judging form has been placed on the ESM website, so students can see the criteria with which they are being evaluated. It was agreed that registration for regular members at the Annual Meeting of the ESM will increase from \$20 to \$25, starting at the 2004 meeting. An update was provided regarding the joint meeting between the ESM and the ESA North Central Branch. Paul Fields attended the ESA North Central Branch meeting in Kansas City in 2004, and Brent Elliott will be in charge of facilities for the 2007 meeting, and Paul Fields will lead the development of the scientific programme. The ESM Scientific Programme Committee for the 2004 meeting provided a report, and indicated although the Freshwater Institute is an excellent venue for the meetings, it is no longer available on Saturdays. It was decided that the meetings would be held at the Freshwater Institute on the Friday and in Room 219 of the Animal Science and Entomology Building on the Saturday.

I would like to thank all those who volunteer their time to make the Entomological Society of Manitoba work. I would also like to thank the Society for the opportunity to be President and serve the Society in this way.

John Gavloski
4 November, 2004

UPDATE ON THE CRIDDLE/VANE HOMESTEAD

Thank you for taking the time to provide the update on our restoration project to members of the Entomology Society. We think of this as a joint project with the entomology community.

As is often the case with volunteer groups, the restoration of Norman Criddle's first entomology lab on the Prairies, has been a series of starts and stops. After much preparation and research on restoration techniques we began to physically work on the little lab this summer. As you recall there was some urgency to get it done before the snow as we didn't think it could make another winter.

This summer our committee began the work. We dug out the floor of the building which had sunk - and found some interesting artifacts - ink bottles, a couple pair of strap-on skates, to name a few. We also began removing the cedar siding and numbering those pieces we could put back in place. We had to replace much of the rotten wood around the base of the lab which sits directly on the ground. It would probably be much quicker to rebuild the lab, but then it wouldn't be Norman's lab but a replica.

The carpenters from CFB Shilo were to help us with the carpentry - our Committee members doing the grunt work and the Shilo crew the skilled labour. Unfortunately there have been a number of delays there but the plan is to have the Shilo crew do the work in January or February. Apparently soldiers-carpenters don't mind the cold. In preparation for the soldiers, our committee had a work party at the end of October to finish up what we could and brace the building for the winter. We hope the lab will emerge in the spring restored.

There are two requests we would appreciate the members of the Society considering. The first is to assist us in finding photographs of the two laboratories at the homestead. We would be particularly interested in finding photos of the inside of the first lab. It is difficult to restore the inside when we have no photos to show us what it looked like. If any members have photos they would like to share of the lab or entomologists at the homestead they would be much appreciated.

In our search for interior photos we have met with Cedric Gillott of the Entomological Society of Saskatchewan who has 14 boxes of material from Norman's office in Ottawa. A member has gone through one box with Cedric and they found photos of some entomologists playing tennis at the homestead in 1929 - they were there for an entomology conference held at the homestead. We are thrilled to find these.

Our second request from the members of the Society is to consider making a donation to the restoration project - which is tax deductible. Our fund raising goal is \$5000 for the project. To date we have raised on \$705. The province has promised another \$2500 for a total of \$3205. We are short \$1795 for the restoration. If people would like to make a donation they can contact me at the address below or speak to Bill Galloway.

Your members might also be interested to know that our interpretive train and the homestead has won an Award of Excellence from the National Association for Interpretation in the US. If you haven't been out to the homestead lately you might want

to have a visit next summer to take a walk along the trail and see the restored lab. Perhaps it is time to hold another entomology conference at the homestead.

Thanks again for taking the time to bring this update to the Society. As always we appreciate your support.

Sincerely,
Sherry Dangerfield,
3 - 733 McMillan Avenue,
Winnipeg, Manitoba, R3M 0S8
(204) 452-2949
sherryd@mts.net

Appendix C: Report of the Treasurer

Entomological Society of Manitoba, Inc., Financial Statements

2004 Treasurer Report Supplement

The accountant at Doug Nicholson and Co., who audited the finances of the Society this year, brought up two items that need to be addressed by ESM members at the Annual Business Meeting. These items were as follows:

1. The first item is outlined in the covering letter. The auditing of the finances of the Society include a financial review, which is summarized in the report provided to the members, and the completion of an extensive evaluation of the financial security of the Society. The accountant recommends the Society discontinue with the latter component of the audit since no financial irregularities or misdeeds have been identified during the 10 years Doug Nicholson and Co. have audited the finances of the Society. Instead of the audit the accountant recommends the Society approve to have Doug Nicholson and Co. undertake a review of the financial statements only. This would save the Society approximately \$400 each year. The Society would have to approve this change at the ABM each year. An audit is only recommended during years when the Society hosts national or international meetings when extensive transactions occur.
2. A legal requirement for every charitable organization is 80% of its donations have to be disbursed outside of the organization each year. In the 2003-04 fiscal year, the ESM received \$2210 in donations and disbursed only 65% of that total (\$1450) outside the Society in the form of awards and scholarships. This was the first year the Society did not meet this requirement as a charitable organization. No action was considered against the Society this year because of the difficulties in predicting the amount of donations. If this was repeated in future years, however, the Society's status as a charitable organization could be called into question. Hence, the Society needs to implement a policy to guarantee that disbursements outside of the Society each year will not fall below 80% of donations. While the majority of donations occur at the AGM, others are obtained by the Youth Encouragement Committee later in the fiscal year. Thus, it may be prudent to make a decision on the amount and timing of the final disbursement, if necessary, later in the fiscal year such as at the first Executive Meeting. The amount of the disbursement if implemented in 2003-04 would have been about \$300.

As Treasurer of the ESM, I recommend members of the Society approve the request by Doug Nicholson and Co. and to implement a policy that safeguards the charitable status of the Society.

Ian Wise
ESM Treasurer
November 2004

Appendix C
Entomological Society Of Manitoba, Inc.
Financial Statements
August 31, 2004

DOUG NICHOLSON* & CO.,
Certified General Accountant
AUDITOR'S REPORT

To the Members of the Entomological Society of Manitoba Inc.

I have examined the statement of financial position of the **Entomological Society of Manitoba Inc.** as at **August 31, 2004** and the statement of revenues, expenditures and surplus for the year then ended. My examination was made in accordance with Canadian generally accepted auditing standards, and accordingly included such tests and other procedures, as I consider necessary in the circumstances.

In common with many non-profit organizations, the organization derives some cash revenue, the completeness of which is not susceptible to conclusive audit verification. Accordingly, my verification of these revenues was limited to the amounts recorded in the records of the organization and I was not able to determine whether any adjustments for unrecorded receipts from these sources might be necessary to income or surplus balances.

In my opinion, except for the effect of any adjustments, if any, which I might have determined to be necessary had I been able to satisfy myself concerning the completeness of the cash revenues referred to the above, these financial statements present fairly the financial position of the society as at August 31, 2004 and the results of its operations and the changes in its financial position for the year then ended in accordance with Canadian generally accepted accounting principles.

Winnipeg, Canada
October 7, 2004

original signed by Doug Nicholson & Co.
Doug Nicholson & Co.,
Certified General Accountant

**PROFESSIONAL CORPORATION*

**ENTOMOLOGICAL SOCIETY OF MANITOBA, INC.
BALANCE SHEET
AUGUST 31, 2004**

ASSETS

CURRENT	<u>2004</u>	<u>2003</u>
Cash in bank	\$ 3,491	\$ 3,092
Canadian T-Bill fund (note 3)	4,811	4,737
Investment Certificates (note 2, 4)	<u>37,550</u>	<u>36,892</u>
	\$45,852	\$44,721

LIABILITIES

LIABILITIES	<u>nil</u>	<u>nil</u>
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SURPLUS

SURPLUS	<u>\$45,852</u>	<u>\$44,721</u>
	\$45,852	\$44,721

APPROVED BY THE BOARD:

_____ President

_____ Treasurer

The accompanying notes form an integral
part of these financial statements

**ENTOMOLOGICAL SOCIETY OF MANITOBA, INC.
STATEMENT OF REVENUES, EXPENDITURES AND SURPLUS
FOR THE YEAR ENDED AUGUST 31, 2004**

REVENUE	2004	2003
Annual meeting (see Schedule A attached)	\$1,708	\$3,701
Donations	\$2,210	\$1,015
Fundraising committee	\$372	\$650
Interest income	\$1,597	\$1,890
Members fees	\$1,868	\$1,592
Miscellaneous	\$390	\$121
Proceedings	\$234	\$367
Social committee	\$217	\$73
Youth encouragement & public education	\$295	\$200
	<u>\$9,891</u>	<u>\$9,609</u>
 EXPENDITURES		
Awards and Scholarships	\$1,450	\$1,520
Donations	-	\$650
Fundraising	-	\$499
General	\$2,217	\$1,305
Meetings	\$4,527	\$1,353
Newsletter	\$200	\$203
Proceedings	-	\$1,678
Social Committee	\$234	\$82
Youth encouragement & public education	\$132	\$311
	<u>\$8,760</u>	<u>\$7,601</u>
 EXCESS OF REVENUES	 \$1,131	 \$2,008
OVER EXPENDITURES		
Add: Surplus, beginning of the year	\$44,721	\$42,723
SURPLUS, END OF YEAR	<u>\$45,852</u>	<u>\$44,721</u>

The accompanying notes form an integral
part of these financial statements

**ENTOMOLOGICAL SOCIETY OF MANITOBA, INC.
NOTES TO THE FINANCIAL STATEMENTS
AUGUST 31, 2004**

NOTE 1 PURPOSE OF THE ORGANIZATION

The Entomological Society of Manitoba Inc. was formed to foster the advancement exchange and dissemination of Entomological knowledge. The Entomological Society of Manitoba 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 are no annual amortization allowances.

NOTE 3 CANADIAN T-BILL FUND

The Canadian T-Bill fund was opened February 28, 1997 with a principal balance of \$4,000. The T-Bill is shown at market value at year-end.

NOTE 4 INVESTMENT CERTIFICATES

Certificate Number	Interest Rate	Maturity Date	Par Value
900055611-0001	1.3		\$3,000
900055611-0002	1.05		\$2,000
900055611-0004	6		\$11,615
960006276-0004	3		\$3,000
960006276-0005	4.55		\$3,135
960006276-0008	3.3		\$4,222
960006276-0009	2.75		\$7,000
960006276-0010	2.1		\$3,800
			<hr/>
			\$37,550

NOTE 5 STATEMENT OF CHANGES IN FINANCIAL POSITION

A Statement of Changes in Financial Position is not included with these financial statements as the Society uses the cash basis of accounting and would not provide any useful information that cannot be attained by the Balance Sheet and the Statement of Revenues, Expenditures, and Surplus.

Appendix D: Report of the ESC Regional Director

Over the past year, as Regional Director for the Entomological Society of Manitoba on the Governing Board of the Entomological Society of Canada, 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 to reporting at the Annual Meeting, I submitted a report on ESM activities to the Interim Meeting of the ESC Executive Council in Ottawa on April 24, 2004. From October 15-18, 2004, I attended the Joint Annual Meeting of the Entomological Society of Canada and Acadian Entomological Society in Charlottetown, PEI, including the two scheduled Board Meetings and the Annual Business Meeting of the ESC. At the latter, ESM member Bob Lamb took over from Charles Vincent, AAFC, St. Jean, Québec, as President; Dan Quiring, a forest ecologist from UNB moved from 2nd Vice-President to 1st Vice-President; and Peggy Dixon, AAFC, Newfoundland became 1st Vice-President.

The next ESC Annual Meeting is a joint meeting with the Entomological Society of Alberta at the Radisson Hotel and Conference Centre in Canmore, Alberta, from Thursday 3 November to Saturday, 5 November, 2005. According to the traditional pattern of annual meetings, ESM is scheduled to host the joint annual meeting again in 2009. The Board of ESC tries to maintain a five year schedule of meetings, meaning that an invitation to ESC to hold the meeting here in 2009 would be appropriate at this time.

As ESC members are no doubt aware, the ESC has been migrating rapidly to electronic format. Both the Canadian Entomologist and the Society's Bulletin, the latter edited by ESM member Paul Fields, are now available electronically. During the first year of electronic publication, members could choose to receive both the paper copy and the electronic copy at no extra charge. Starting in the 2004 membership year, there is now an additional charge of \$10.00 for receiving material in both formats. The National Society continues to explore how to best serve its memberships using the web site and other electronic instruments..

Membership in the ESC has been in decline for some time now and the Society is concerned about the implications of this for Entomology in Canada. Total membership is currently 475, down from 553 in 1997, with 330 regular members, down from 404 in 1997 and 68 student members, down from 79 in 1997. The Membership Committee has been distributing a survey to obtain data on why members have joined and why some entomologists have not joined. Last year the survey was sent to members of ESC, as well as to members of the regional societies ESO and AES. This year, probably later this fall, SEQ, ESA, ESS, ESBC, and ESM will be surveyed. ESC would appreciate feedback on what members want from their Society, and what might induce non-members to join. When you receive the questionnaire, please take the few minutes necessary to fill it out and help ESC serve you and others better.

The financial impact of declining membership is further complicated by the decline in institutional subscriptions to the Canadian Entomologist. The Society is instituting a strategic review process aimed at developing a strategy to ensure that the Society remains in a financially sustainable position. ESC plays a critical

role in Entomology in Canada which benefits all entomologists in the country, whether they are members of the national society or not. The health and strength of ESC is critical to all of us.

Patricia A. MacKay
Regional Director for ESM on the
ESC Board
November 2004

Appendix E: Report of the *Proceedings* Editor

Volume 59 (2003) of the *Proceedings of the Entomological Society of Manitoba* contains 56 pages, including two submitted papers, the abstracts from the Annual Meeting held in Winnipeg on 24-25 October, 2003, the minutes of the 59th business meeting of the Entomological Society of Manitoba and 16 Committee Reports. The *Proceedings* went to press in the first week of November, and was distributed at the Annual Meeting on 5-6 November, 2004. Volume 59 was printed by Warren Schuetz at the University of Winnipeg Print Shop, but the total cost for the 225 copies requested this year is not available at the time this report was prepared.

I thank Noel White, Secretary of the ESM, for his efforts in providing me with electronic copies of all files from the annual business meeting, and to Mahmood Iranpour, Chair of the Scientific Programme Committee, for electronic files containing meeting abstracts. Their diligence greatly facilitated compilation of the *Proceedings*. I also thank Pat MacKay and Rob Roughley who served as scientific editors for the submitted papers this year, and to the anonymous reviewers who provided their valuable comments. Paul Fields, ESM Webmaster, once again was responsible for posting the *Proceedings* on our website and making the *Proceedings* available to the entomologists of the world. His efforts are very much appreciated. I also thank Warren Schuetz, University of Winnipeg Print Shop. I cut the deadline for production of the *Proceedings* very close this year, and Warren did everything in his power to have it available for the Annual Meeting.

I encourage authors to consider the *Proceedings* as a place for submission of those manuscripts sitting around on their desks just waiting to be seen by the entomological community. Manuscripts in the *Proceedings* are fully reviewed and now are readily accessible using online search engines. Papers of local entomological interest are especially encouraged.

Proceedings Editor, Terry Galloway

Appendix F:**Report of the Endowment Fund Board and Finance Committee for 2003-2004**

The Endowment Fund provides a basis for funding the publication of the Proceedings and other Society activities. In the past the Fund provided full support for these commitments, but income generated has declined each year as maturing GIC's are reinvested at lower interest rates. The principle amount in the Fund is currently \$35,135, but the cap is \$40,000, which was approved in 1998. It may be time to consider increasing the Fund. This could be done either by increasing the amount invested as each certificate matures, or by investing a lump sum in an additional certificate.

The Endowment Fund Board met on 28 October 2004, to review the investments. Following the plan approved at the 2003 Annual Business Meeting, the Board has begun the redistribution of the current GIC's so that approximately \$7,000 of certificates matures each year, and combining the certificates that mature in a given year into one GIC. This will reduce paperwork, simplify the audit, and provide a hedge against year-to-year fluctuations in interest rates.

Tables 2 and 3 are projections to show the proposed redistribution of GIC principle amounts as approved by the Society in 2003. Interest generated during the fiscal year is based on current interest rates. Although a significant drop in interest income is expected from GIC's reinvested for short terms, interest is expected to increase as these are combined at maturity and reinvested for 5-year terms.

Marjorie Smith, Chair
Ian Wise
Pat MacKay

**APPENDIX F
ENTOMOLOGICAL SOCIETY OF MANITOBA, INC.**

Endowment Fund Guaranteed Investment Certificates

Table 1: Account information as of August 31, 2004. Interest generated during the 2004-2005 fiscal year.

Certificate No.	Principle	Interest Rate (%)	Maturity Date	Annual Interest
900055611-0001	\$3000.00	1.30	Feb 26, 2005	\$39.00
900055611-0002	\$2000.00	1.05	Apr 5, 2005	\$21.00
900055611-0004	\$11,614.79*	6.00	Nov 12, 2004	\$696.89
960006276-0004	\$3000.00	3.00	Dec 11, 2008	\$90.00
960006276-0005	\$3135.00	4.55	Oct 31, 2007	\$142.64
960006276-0008	\$4000.00	3.30	Sept 16, 2008	\$132.00
960006276-0009	7,000.00	2.75	Feb 10, 2009	\$192.50
960006276-0010	\$3800.00	2.10	Feb 10, 2007	\$79.80
Total	\$37,549.79			\$1,393.83

* Principle plus accumulated interest – compound interest certificate.

Table 2: Account information as of August 31, 2005. Interest generated during the 2005-2006 fiscal year.

Certificate No.	Principle	Interest Rate (%)	Maturity Date	Annual Interest
900055611-0001	\$3000.00	Held in Treasury Bill account until Nov. 12, 2005		
900055611-0002	\$2000.00	Held in Treasury Bill account until Nov. 12, 2005		
900055611-	\$7000.00	2.15	Nov 12, 2006	\$150.50
900055611-	\$2200.00	1.50	Nov 12, 2005	\$33.00
960006276-0004	\$3000.00	3.00	Dec 11, 2008	\$90.00
960006276-0005	\$3135.00	4.55	Oct 31, 2007	\$142.64
960006276-0008	\$4000.00	3.30	Sept 16, 2008	\$132.00
960006276-0009	7,000.00	2.75	Feb 10, 2009	\$192.50
960006276-0010	\$3800.00	2.10	Feb 10, 2007	\$79.80
Total	\$35135.00			\$820.44

Table 3: Account information as of August 31, 2006. Interest generated during the 2006-2007 fiscal year.

Certificate No.	Principle	Interest Rate (%)	Maturity Date	Annual Interest
900055611-	\$7000.00	2.15	Nov 12, 2006	\$150.50
900055611-	\$7200.00	3.15	Nov.12, 2010	\$226.80
960006276-0004	\$3000.00	3.00	Dec 11, 2008	\$90.00
960006276-0005	\$3135.00	4.55	Oct 31, 2007	\$142.64
960006276-0008	\$4000.00	3.30	Sept 16, 2008	\$132.00
960006276-0009	7,000.00	2.75	Feb 10, 2009	\$192.50
960006276-0010	\$3800.00	2.10	Feb 10, 2007	\$79.80
Total	\$35135.00			\$1014.24

Appendix F: Report of the Finance Committee for 2003-2004

The Finance Committee met on 28 October, 2004, to review the 2003-2004 financial statement and the budgets received for the current fiscal year. The Society continues to be in good financial shape, with yet another surplus. Estimated budgets for the next two years predict losses, but it may be of interest to put the predicted losses into the context of the past ten years.

Net gain (loss)		
Fiscal year end August 31	Predicted, beginning of fiscal year	Actual, end of fiscal year
2004	450	1,131
2003	200	2,008
2002	(1,150)	303
2001	(750)	(449)
2000	175	(323)
1999	(1,552)	1,722
1998	(227)	2,104
1997	(1,080)	4,002
1996	(2,413)	104
1995	(42)	3,324
Average	(536)	1,393

In 2003-04, the largest expenses were the Annual General Meeting and the cost of the audit, which included the Joint Annual Meeting accounts in addition to the ESM accounts. These costs were partially offset by higher than usual donations, and a large GST rebate from costs associated with the Joint Annual Meeting. An additional expense, both in the last and current fiscal years, is the reimbursement of expenses incurred in the past year or two by the Department of Entomology, University of Manitoba, on behalf of the ESM. These expenses, largely postage and photocopying, had previously been invoiced by the Department of Entomology and reimbursed by the ESM on a regular basis, and were attributed to the committee responsible for the expense. This practice will be put in place for the current fiscal year, but the past expenses were placed under General Expenses because the committee responsible was not recorded in most cases.

Marjorie Smith, Chair
Ian Wise
Pat MacKay

**APPENDIX F
ENTOMOLOGICAL SOCIETY OF MANITOBA, INC.**

BUDGET ITEMS REVISED 28 October, 2004	2003-04 Actual	2004-05 Actual and Projected	2005-06 Projected
Endowment Fund	\$37,550 ¹	\$35,135	\$35,135
REVENUE			
Membership Dues	1,825	1,850	1,850
Proceedings	250	220	220
Social Committee	0	0	0
Youth/Education Committee	200	200	200
Donations: from YEC activities fundraising for AGM	480 1,825	300 1,000	300 1,000
Fundraising Committee	384	0	0
Student Awards and Scholarship	200	200	200
Meetings: ESM/AGM	1,663	1,750	1,750
ESC – ESM JAM	---	---	---
Interest: GIC income	1,522 ²	1,394	820
T-Bill Account/Chequing	75	125	100
Miscellaneous – GST rebate	1,390	183	120
TOTALS	9,814	7,222	6,560
EXPENSES			
General Society Expenses	2,214 ³	1,500 ⁴	1,000
Proceedings	0	800	900
Newsletter	200	500	500
Social Committee	29	100	100
Youth/Education Committee	132	300	200
Fundraising Committee	0	500	0
Student Awards and Scholarships	1,450	1,450	1,450
Meetings: ESM/AGM	4,457	3,000	3,000
NCB – ESA – ESM JAM	0	0	0
Donations	0	0	0
Representation at ESC	0	400	400
TOTALS	8,484	8,050	7,550
Net Gain (Loss), year ending Aug. 31	1,332	(828)	(990)

¹ This amount includes a principle of \$35,135.00 and interest of \$2,415 which has been generated by a compound-interest GIC. This GIC will mature on November 12, 2004, with an accumulated total of \$3,112 in interest from the past five years to be transferred to the Treasury Bill account.

² Some of this investment income is being held in the Endowment Fund. See footnote 1 above.

³ \$1,605 of this amount was the cost of the annual audit, which includes the accounts of the ESM-ESC joint meeting held during 2002-03. It also includes \$532 reimbursed to the

Dept. of Entomology, Univ. of Manitoba, for ESM expenses of previous years that they had paid.

⁴Includes a final payment of approximately \$500 to reimburse remaining expenses paid by Dept. of Entomology, Univ. of Manitoba, for ESM expenses of previous years.

Appendix G: Report of the ESM Student Scholarships and Awards 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: Ms. Erica Smith. Erica recently completed an undergraduate degree at the University of Manitoba in Honour's Zoology and now is enrolled in a Master of Science program where she is studying aquatic insects under the guidance of Dr. Murray Colbo in the Biology Department at Memorial University of Newfoundland. Erica took several entomology courses and impressed the Entomology Department with her great interest in entomology in the classroom and the field, her keen work ethic, academic proficiency and love for collecting and identifying insects.

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. Candice Grant. Candice Grant is currently in her third year of a four year Biology degree at the University of Winnipeg where she is maintaining an A average. Candice has demonstrated a great interest in Entomology and her entomological interests stem back to early childhood. Candice is currently enrolled in the Entomology course at the University of Winnipeg and has completed several lower and higher invertebrate zoology courses where Department staff have recognized her academic ability and keen interest in Entomology. Candice plans to pursue a M.Sc. and Ph.D. in Entomology.

The ESM Graduate Scholarship

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

This year's winner is: Ms. Kathleen Ryan. Kathleen is currently in her second year of her M.Sc. project working under the supervision of Drs. N. Holliday and R. Westwood. Kathleen received her B.Sc. from the University of Winnipeg in 2003 and has received numerous scholarships and recognition for academic excellence, including currently holding an NSERC graduate scholarship. Kathleen chairs the ESM Youth Encouragement Committee and recently received the President's Prize for superior presentation of a scientific paper at the 2004 Entomological Society of Canada annual meeting. Kathleen's M.Sc. project is examining the effect of natural forest regeneration and forest harvest on the diversity of ground beetles and butterflies in jack pine.

Desirée Vanderwel
Joel Gosselin
Richard Westwood (Chair)

Appendix H: Report of the ESM Publicity/Newsletter Committee

In 2004, our first year as co-editors, we produced three issues of volume 31 of the ESM Newsletter. The winter issue was distributed on February 06, 2004; the spring issue on 11 June, 2004, and the fall issue on 27 October, 2004. These issues contained 12, 13 and 12 pages of text and photographs, respectively. The membership list was appended to the winter issue, and a sheet advertising the Annual Meeting was enclosed with the fall issue. The average cost of an issue of the Newsletter in 2004 was \$124.72; the budgeted amount was \$150.

No unsolicited items appeared in any of the issues, which means that when the editors run out of ideas, the Newsletter will run out of material. We strongly encourage the membership to submit to us either items or ideas for items, in order that the Newsletter continue to provide interesting material for the membership.

Patricia MacKay
Mahmood Iranpour

Co-editors, ESM Newsletter
November, 2004

Appendix I: Report of the Social Committee

On Friday, March 26, 2004, the ESM Social Committee hosted a "New Members Curling Night". The event took place at the Wildwood Curling Club with 19 people in attendance. Despite the small turn out, the event practically broke even. The contestants competed to win tickets which were then put into a draw for prizes. The prizes were provided by the following sponsors: Canada Safeway, Bee Maid Honey, PickSeeds Canada, Phil Barker, Dimo's Tool & Die, and Labtronics.

The Social Committee is planning its first luncheon in January, 2005 with John Gavloski as invited speaker. The Committee hopes to be able to revive the luncheon series and invites the membership to contact the Committee Chairs with suggestions and ideas for luncheon speakers and topics.

The ESM Banquet was held at the Kismat Banquet Hall and Conference Facilities on

November 6th. The Red Foot Tandoor House, which is part of the banquet centre catered the event. The menu featured a wide array of Indian dishes served buffet style.

Rhéal Lafrenière

Sheila Wolfe

ESM Social Committee Co-chairs

Appendix J:

Report of the Youth Encouragement and Public Education Committee

General programs

Core programming of the Youth Encouragement Committee (YE) includes insect and spider presentations, and Entomology Department tours. Participants in these programs are elementary schools, day cares, libraries and youth groups. From November 2003 through October 2004, YE provided 28 tours or presentations to these organizations. Over 1100 children had the opportunity to learn about insects through these programs. (These figures are higher than in previous years due to the inclusion of rural programs.)

Amazing Agriculture Adventure (AAA)

Formerly known as Amazing Grains, AAA continues to promote agriculture awareness to urban students in grades 4 to 6. The YE Committee operated the Amazing Insect Station at the Winnipeg event in September 2004. An estimated 1250 children attended this event. The YE Committee did not directly participate in the June event in Brandon this year due to the difficulty in finding enough volunteers at this busy time.

Specialty Programs

There were several specialized insect programmes delivered by, or organized under the auspices of the YE/public education program over the past year including those that follow. Approximately 230 children, youth and adults learned about insects through these events.

Manitoba Envirothon Test Station

“Agricultural pests”, Assiniboine Community College, Brandon

“Insect Day”, Fort Whyte Centre

“Insects in your yard”, Carmen Garden Club

“Insects of Manitoba”, Whitewater Lake Bird Festival

**The YE Committee did not co-ordinate programming from May through August this past year because it was found that programming during these months tended to conflict with research demands. Individual ESM members offered some programming during this time.

Fundraising

Over the past year this Committee, through donations, primarily from schools, raised \$195. As well, we applied for and received a \$200 Public Encouragement grant from the Entomological Society of Canada to support the program.

There was an appreciable increase in non-student YE volunteers last spring - thank you

to all who took the time to help out. There has been a decline in volunteerism this fall however, and once again programme requests have had to be declined or cancelled. Please consider helping out with even one presentation a year, your efforts could mean that 25 more kids learn about how interesting insects are.

Thank you to Lisa Babey, Christie Borkowsky, Lisa Capar, Colin Demianyuk, Scott Derham, Paul Fields, Bob Lamb, Mark Lowdon, Pat MacKay, Scott McMahon, Ayman Mostafa, Tonya Mousseau, Kim Riley, Dalila Seckar, Margaret Smith, Robyn Underwood, David Wade, Noel White and Ian Wise for assisting with YE programming over the past year. Special thanks to John Gavloski and Lori-Ann Kaminski for providing programming in the Carmen area, through their efforts alone almost 800 people had the opportunity to learn about insects!

Appendix K: 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 and additional cabinet space within that lab. As instructed at last year's AGM, I investigated options of purchasing a filing cabinet for holding these archives. A filing cabinet has been purchased but has not arrived yet.

As always, any item which members of 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: Report of the 2004 ESM Scientific Program Committee

The 60th Annual Meeting was held November 5-6, at the Freshwater Institute (Nov 5) and the Animal Sciences and Entomology Building of the University of Manitoba (Nov 6). The theme of the meeting was "Factors Affecting Insect Orientation: Shaping Behaviour from the Outside and Within". There were four guest speakers in the symposium, Jack Gray (University of Saskatchewan), Karen Mesce (University of Minnesota, Twin Cities Campus), Irene Pines (Forestry Branch, Manitoba Conservation), and Rory McIntosh (Forest Service Branch, Saskatchewan Environment). There were 17 submitted papers, and 50 people registered for the meeting.

I would like to thank the army of volunteers who helped to make the meeting a success, including those who served as program chairs (Richard Westwood, Robert Currie and Mahmood Iranpour), student competition judges (anonymous), and "door holders" (Rebekah Rooney and Jaswinder Mangat); as well as those who helped at the registration desk (Ian Wise, Sheila Campbell and Marjorie Smith), with the projectors (Jeff Shaddock, Paul Kozak, and Robyn Underwood), with thanking the symposium speakers (Rob Roughley), with providing transportation and "company" for the visitors (Rob Currie, Rob Roughley, Richard Westwood and John Gavloski), with "set-up" and "tear-down" (Paul Kozak, Lars Andreassen, and Mahmood Iranpour) and with administrative

assistance (Murielle Jennings). I am also extremely grateful to Dave Rosenburg and Neil Holliday, who helped with the arrangements at the Freshwater Institute and the Animal Science & Entomology Building, respectively. Richard Westwood graciously hosted one of the visitors in his home. Once again, Pat MacKay and Bob Lamb did a wonderful job of hosting the “Meet-the-Visitors Mixer”, an annual highlight of the conference. The financial contributions of the many sponsors were invaluable. I would especially like to thank the presenters themselves, who all contributed to the scientific success of the meeting. Finally, I would like to thank the Scientific Programme Committee members, who provided valuable support, advice, and concrete “action”.

Mahmood Iranpour

Dave Rosenburg

Richard Westwood

Rhéal Lafrenière (Chair, Social Committee)

Joel Gosselin (Chair, Fund Raising Committee)

Désirée Vanderwel (Chair)

**Actual Budget for ESM 2004 Scientific Program Meeting
February 3, 2005**

Expenses		Receipts	
Mixer	293.23	Sponsors	1600.00
Travel	1313.97	Banquet	
		20x\$30	600.00
		12x\$15	180.00
Accommodation	433.20	Registration	
		31 x 25 (regular)	775.00
		19 x 5 (student)	95.00
Office Expenses			
Postage	39.26		
Printing	25.16		
Meals (invited speakers)	257.79		
Coffee break refreshments	163.17		
Banquet (36 x 26.00 + taxes, etc)	945.90		
Student Paper Award	100.00		
Total Expenses	3571.68	Total Receipts	3250.00
Deficit	-321.68		

Appendix M: Report of the 2004 Fund-raising Committee

The Committee was able to find 13 companies to assist in covering some of the costs of the AGM, for expenses such as bringing in the speakers. Donations reached a total of \$1,825. The Committee, through the efforts of Robyn Underwood, raised an additional \$372 from the sale of pins, caps, hats and T-shirts.

The Fundraising Committee will gladly accept any leads that members may have of any companies they feel may be willing to assist in making a tax deductible donation to the ESM that would assist in covering the costs for next year's 61st AGM.

Joel Gosselin, Chair

Appendix N: Report of the ESM Membership Committee

The membership list of the ESM underwent a house cleaning in 2003-2004. With the assistance of Ian Wise, the membership was culled of non-paying members. In past, the Society has been quite lenient with non-paying membership so numerous individuals appeared on the membership list even though they had not paid dues for up to four years.

As a result of the clean up efforts mentioned above, the membership of the ESM now stands at 115 paying members (prior to any new members joining at the meeting itself). Seven new members have been added in the past two months alone. An approximate breakdown of the membership is as follows:

Student	30
Regular	73
Honorary	6
Lifetime	6

Upon review of the members, it is likely that several more names will disappear from the list as they were either members for only a single year due to being a visiting speaker, or some of the students have graduated and moved on. These are likely to be replaced with newly registered members following the meeting.

Appendix O: Report of the Internet Site Committee

There have not been major changes to the web site. Issues of the Newsletter and the Proceedings have been added as they have come available. The web site is a simple way for people to access our two publications, the Proceedings and the Newsletter and to tell members about other society activities. The one area that I feel needs greater attention is the Youth Encouragement and Public Education Committee section of the website.

The address of the web page is <http://home.cc.umanitoba.ca/esm/index.html>.

After serving as Chair of the Internet Site Committee and web master since 2000, I feel it is time to give someone else a chance to serve the society in this capacity, and I have

asked John Gavloski to find a replacement. I have enjoyed my four years working in this capacity, and I look forward to showing my replacement the ins and outs of web publishing.

Paul Fields
Chair of the Internet Site Committee
5 November, 2004

Appendix P: Election Report

Elections closed November 1, 2004 for the Entomological Society of Manitoba offices of President-Elect and Member-at-Large. Candidates for President-Elect were Mahmood Iranpour and Rhéal Lafrenière; Member-at-Large were Lisa Baspaly and David Ostermann. The successful candidate for President-Elect is Rhéal Lafrenière and for Member-at-Large is Lisa Baspaly. We thank all candidates for their willingness to participate in the election. Formal announcement and commencement of terms will be at the annual business meeting in November.

Colin Demianyk	Noel White
Chairperson, Scrutineer Committee	Secretary

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