

Bulletin

Entomological Society of Canada
Société d'entomologie du Canada

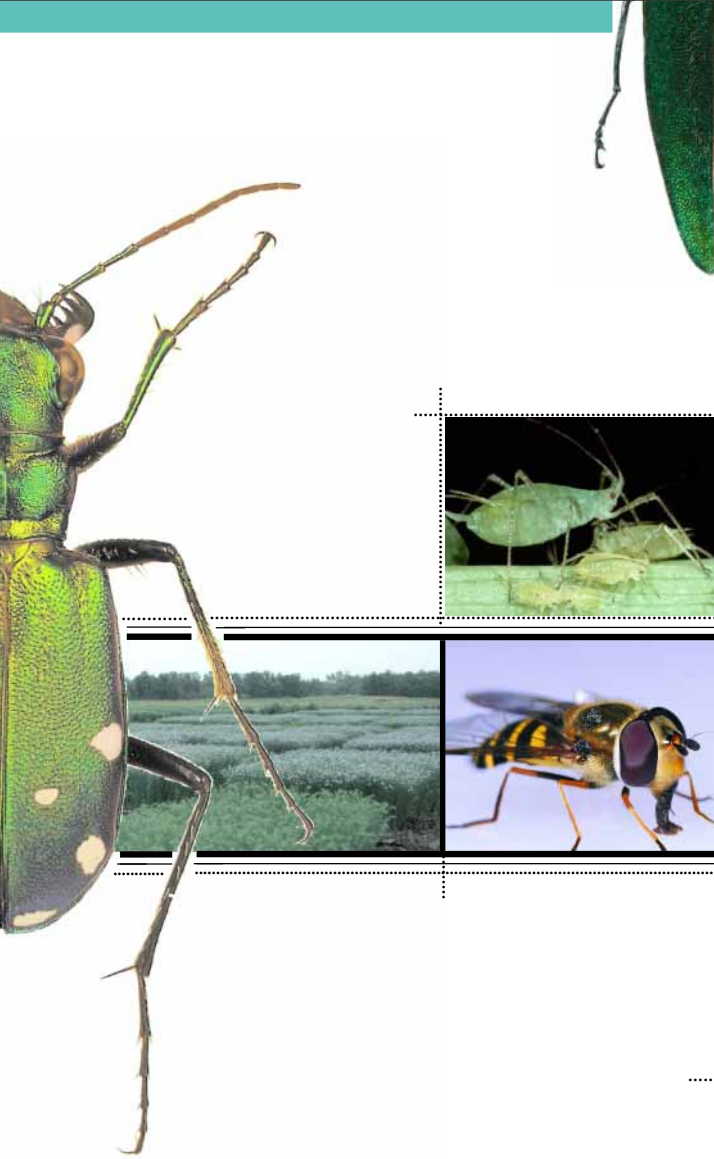
Volume 37
Number / numero 3



September / septembre 2005

Published quarterly by the
Entomological Society of Canada

Publication trimestrielle par la
Société d'entomologie du Canada



Up front / Avant-propos	133
The adventures of Ento-Man / Les aventures d'Ento-homme	138
Moth balls / Boules à Mites	139
Featured article / En vedette	140
Tricks of the trade / Trucs et astuces	144
Members in the news / Membres faisant la manchette.....	146
Entomologists at work / Entomologistes au travail	149
Lab profile / Profil de labo	150
The student wing / L'aile étudiante	154
Joint annual meeting / Congrès conjoint	160
Book reviews / Critiques de livres	168
Meeting announcements / Réunions futures	169
In memory / En souvenir de	170
Biological Survey of Canada / Commission biologique du Canada	174
Officers of affiliated societies / Dirigeants des sociétés associées	178
The Buzz / Bourdonnements	180
Governing board / Conseil d'administration	inside back cover

Images

Sur le dos : La cicindèle à six points, *Cicindela sexguttata* Fabricius (Cicindellidae), un coléoptère prédateur commun dans l'est de l'Amérique du Nord, photo : H. Goulet.

Sous le titre : L'agrile du frêne, *Agrilus planipennis* Fairmaire (Buprestidae), un coléoptère exotique originaire d'Asie qui menace les frênes d'Amérique du Nord, photo : K. Bolte.

Page titre :

1. *Acyrtosiphon pisum* (Harris) (Aphididae), une espèce utilisée dans les études sur la saisonnalité, photo : R. Lamb.

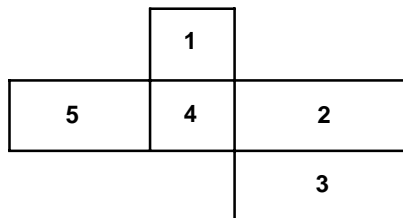
2. Pièges utilisés en verger de pommier pour déterminer les niveaux de population de l'hoplocampe des pommes, *Hoplocampa testudinea* (Klug) (Tenthredinidae), photo : C. Vincent.

3. Pins tordus tués par le dendroctone du pin ponderosa, *Dendroctonus ponderosae* Hopkins (Scolytidae), en Colombie-Britannique, photo : A. Carroll.

4. *Syrphus ribesii* Linnaeus (Syrphidae), une espèce de syrphé se nourrissant de nectar et communément trouvée dans les jardins, les haies et les boisés, photo : S. Marshall.

5. Parcelles de recherche utilisées pour étudier l'impact de *Macrosiphum euphorbiae* (Thomas) (Aphididae) sur le lin, photo : R. Lamb.

Verso : *Ixodes gregsoni* Lindquist, Wu and Redner (Ixodidae), une tique parasite des mustélidés, photo : K. Bolte.





P. MacKay

How to cram 600 pages onto a CD: Is a digital medium the future for entomological publishing?

Using well-honed dissecting skills, and a Lee Valley Tools scalpel, to carve the binding off a book was an unexpected Presidential duty. Some background is necessary. A decade ago The Entomological Society of Canada (ESC) and The Canadian Phytopathological Society (CPS) collaborated to create *The Diseases and Pests of Vegetable Crops in Canada (DPVCC)*, and the French edition, *Maladies et Ravageurs des Cultures Légumières au Canada (MRCLC)*. Both volumes ran to about 600 pages with 1030 colour photographs. Everything from asparagus to zucchini was covered. If you do not already have your copy, you should buy one now, except that *MRCLC* has sold out. These publications include contributions from entomologists and pathologists across Canada. CPS and ESC members, particularly the former, played important roles in creating the books, but since publication ESC stored and sold the books through our Ottawa office. We created the books primarily as a public service, an outlet for our members' knowledge, and to make a little money. About 100 copies of *DPVCC* are sold each year, and we have about 500 left. The size and quality of the books means we must ask \$65 to cover costs, and we probably will just about break even when the last book is sold.

Your executive has sometimes been more fo-

Comment incorporer 600 pages sur un CD - la publication entomologique empruntera-t-elle la voie électronique?

Je ne croyais pas que l'utilisation de mes capacités de dissection et d'un couteau Lee Valley ferait partie de mes tâches en tant que président de la société. Laissez-moi vous expliquer. Il y a 10 ans déjà, la Société d'entomologie du Canada (SEC) et la Société de Phytopathologie du Canada (SPC) ont collaboré à la création du livre *The Diseases and Pests of Vegetable Crops in Canada (DPVCC)* et de son édition française, *Maladies et Ravageurs des Cultures Légumières au Canada (MRCLC)*. Les deux volumes comptaient près de 600 pages et 1030 illustrations couleur. Tous les légumes furent décrits depuis l'asperge au zucchini. On peut toujours se procurer de l'édition anglaise, mais la version française est épuisée. Plusieurs entomologistes et phytopathologistes du Canada ont participé à ces œuvres et la SEC a maintenu l'inventaire et a distribué les livres à partir de son bureau d'Ottawa. Les livres ont été créés en premier lieu en tant que service à la communauté afin de diffuser l'expertise de nos membres et aussi pour faire un peu d'argent. Près de 100 copies du *DPVCC* sont vendus annuellement et il reste présentement environ 500 exemplaires. La taille et la qualité du livre exigent un prix de vente de \$65 afin de couvrir les frais de la publication, et nous souhaitons que lors de la vente du dernier volume, les coûts totaux de la publication seront payés.

L'exécutif de la SEC a souvent été préoccupé par le coût de l'inventaire plutôt que par la valeur didactique de l'œuvre. Je me souviens d'avoir considéré se débarrasser de cet inventaire afin de ne plus avoir à y penser. En parlant à Alexandra Devine, administratrice à la SEC, j'ai réalisé à quel point ce livre est utilisé par les conseillers agricoles (entomologistes et phytopathologistes), les producteurs et les jardiniers amateurs partout au Canada et dans le nord des États-Unis. Lor-

cussed on the costs to our budget of the inventory, than the tremendous value of the information contained in the books. I remember thinking out loud that perhaps we should "remainder" the books, just so we don't have to think about it any longer. Talking to Alexandra Devine, ESC office manager, I began to realize just how valuable a resource this book is to extension entomologists and pathologists, farmers and gardeners across Canada and the northern USA. When we ran out of *MRCLC*, the disappointment expressed by some Francophone purchasers was particularly evident. I think these books represent a clear example of the value of specialized, small-run publications that contain the accumulated knowledge of our members. Such publications are expensive to produce and market, even when we provide our knowledge gratis. They will never sell like *Harry Potter* and public subsidies that previously supported them seem to be a thing of the past. What's the problem, you might say, just print some more copies. Well the plates, and any electronic version of the text, are gone, along with the original printer. Producing a revised version is out of the question financially, even if we could find volunteers to update the text. That seemed to be the end of *MRCLC*.

Then Paul Fields suggested the possibility of scanning *MRCLC* to a CD, and selling the CD in place of the out-of-print paper. Scanning 600 pages individually and combining the resulting digital files into a single, user-friendly file of good quality seemed a bit daunting, but worth a try. A local print shop was willing to do the scanning for about \$1000, producing an image file for each page, but the quality was suspect and the file editing might have been onerous. Then we discovered that the flashy new photocopiers at the Cereal Research Centre will not only make copies of multiple sheets, but store the images as PDF files. So, after cutting apart one of the last copies of *MRCLC*, I spent a few afternoons standing by either the brand-new colour photocopier for the photographs or a similar black-and-white machine for the text. The quality of reproduction was surprisingly good. The file size was reasonable at about 1 megabyte for each colour page, and 300 kilobytes for a black and white page, so that the

que nous avons écoulé le *MRCLC*, plusieurs acheteurs potentiels francophones ont été très déçus. Je crois que ces livres représentent un exemple définitif de la valeur des publications d'expertise spécifique à un domaine et nécessairement à faible tirage qui mettent en valeur les connaissances accumulées de nos membres. Toutefois, ces publications sont certes chères à produire et à distribuer même lorsque l'expertise est offerte gratuitement. Elles n'atteindront jamais les ventes des *Harry Potter* et les subventions publiques, disponibles dans le passé, sont inexistantes. Il était donc difficile de considérer la réimpression du *MRCLC*. De plus, les plaques et les versions électroniques du texte et même l'imprimeur d'origine n'existent plus. La production d'une version révisée est impossible financièrement, même si nous pouvons dépendre sur des volontaires pour réviser le texte. À la lueur de ces faits, la fin du *MRCLC* semblait éminente.

Paul Fields a soulevé la possibilité de numériser le *MRCLC* sur un CD et vendre ainsi le CD pour remplacer la version papier. L'idée de numériser 600 pages individuellement et relier les divers fichiers en un seul fichier de bonne qualité semblait d'emblée une tâche insurmontable. Une imprimerie locale pouvait faire le travail de numérisation pour près de \$1000, produisant un fichier image pour chaque page mais la qualité était pauvre et le coût du travail d'édition aurait été onéreux. Un peu plus tard, nous avons constaté que les nouveaux photocopieurs du Centre de recherche sur les céréales pouvaient faire des copies de pages multiples et en même temps en faire des versions PDF. Donc j'ai fait recours à mes talents de dissection tel que mentionné ci-haut et entrepris de défaire une de nos derniers exemplaires du *MRCLC*. Après quelques après-midi auprès des photocopieurs du centre, soit les nouveaux photocopieurs couleur et 'noir et blanc' de dernier cri, j'ai pu copier les 600 pages et obtenir une bonne qualité de reproduction malgré tout.

La largeur du fichier était raisonnable soit un méga byte pour chacune des pages couleur et 300 kilo bytes pour les pages 'blanc et noir'; donc l'œuvre entière a pu être contenue sur un demi CD. Bref, le seul problème encouru était avec les pages épaisses et glacées des photos qui

whole file fits on about one-half of a regular CD. The main problem was that some of the pages, particularly the heavy, glossy, coloured pages, did not feed well, so that pages were often mis-aligned. Such pages had to be scanned a few at a time or singly. Paul Fields figured out how to build links between the table of contents and chapters and figures. I added the links, and then, with permission, put the software for Adobe Acrobat Reader on the CD with the book. Apart from designing covers for the CD case, the project was all but done. Thanks to Guy Boivin, one of the original editors, for translating the cover pages for me, and scanning pages from his copy of *MRCLC* that wouldn't scan properly from my copy. The interesting feature of presenting the book as a CD is the cost: a single copy and the covers can be produced commercially for \$5 each, allowing a \$20 sale price. A new paper version would probably cost ten times that amount.

Is this the future for publishing of specialized technical literature? Possibly, but the circumstances of reproducing *MRCLC* mean the process will have to be a little different. With an existing book, two critical issues don't apply: technical editing and archiving. The technical editing and formatting had already been done, and the paper version serves as the archival copy. Much of the technical editing and formatting of ESC publications, particularly *The Canadian Entomologist (TCE)*, are handled by professionals at NRC Research Press. ESC might take on this work, but probably not easily or effectively using volunteers. The cost of employing a technical editor might be higher than at NRC. Nevertheless, the future may bring changes. Some older members of ESC remember, perhaps longingly, the days when graphic artists produced figures and typists produced formatted and edited manuscripts. Today many of us do it all ourselves. It would not be such a big step to produce our manuscripts in *TCE* format for direct inclusion in the journal. I suspect that Editor-in-Chief Richard Ring and other *TCE* editors would scoff at the thought of authors serving as technical editors of their own manuscripts, after the usual review process is complete, but most of us did learn to type, use word processors and graphics software, and might learn desk-top pub-

s'alimentaient difficilement dans le photocopieur ce qui donnaient des pages incorrectement alignées. Elles ont dû alors être copiées quelques unes à la fois ou individuellement. Paul Fields a développé une méthode pour faire le lien entre la table des matières et les chapitres et figures. J'ai ajouté les liens et, une fois la permission obtenue, j'ai inséré le logiciel 'Adobe Acrobat Reader' sur le CD. Mis à part la mise en page et le travail de graphisme de la pochette du CD, le travail était pratiquement terminé. Un gros merci à Guy Boivin, l'un des auteurs de la version originale, pour la traduction des pages couvertures et pour la numérisation des pages de sa copie du *MRCLC* qui n'étaient pas de bonne qualité dans la mienne. La version CD offre un avantage certain par son coût : une seule copie incluant la pochette peut être reproduite pour moins de \$5, et à vendre pour \$20. Une version papier coûterait au moins dix fois plus cher.

Pouvons-nous considérer la publication de nos œuvres spécialisées d'une telle façon? Il faut dire que la production de nouveaux textes ou volumes exige un processus plus élaboré que la reproduction d'un volume existant tel que le *MRCLC*. Avec une publication existante, les étapes de révision et d'archivage ne s'appliquent pas. La révision technique et la mise en page du *MRCLC* avaient déjà été faites et la version papier sert de copie pour les archives. À l'heure actuelle, la révision technique et la mise en page des publications de la SEC et du *The Canadian Entomologist (TCE)* en particulier sont en grande partie prises en charge par les professionnels de la Presse du CNRC. La SEC pourrait continuer ce travail mais pas d'une façon efficace si elle doit dépendre sur la contribution de volontaires. Le coût d'un éditeur technique peut être plus élevé que le coût du CNRC. Toutefois, le futur peut apporter des changements. Les membres plus âgés de la SEC se rappellent de l'époque où les graphistes et les secrétaires étaient disponibles pour la production de figures et des manuscrits. Nous faisons présentement tous ce travail dans la préparation initiale de nos manuscrits et nous pourrions ensuite faire le travail d'édition de ces manuscrits une fois la révision complétée, sous les format du *TCE* pour insertion directe dans la revue. Je soupçonne que

lishing as well.

Another major cost for publishing *TCE* or other publications is printing and distributing. Electronic publishing, either on CD or online, would reduce costs substantially. Electronic publishing can also provide much greater flexibility in the use of colour, and speed the pace of publication. I suspect that most people don't want to read papers on their computer screens, but the ease of printing either black and white or colour on inexpensive printers means that a paper version is never far away, and of course an article would be printed on paper only if it was needed. Electronic publishing provides greatly enhanced abilities for searching text for key words, a sort of speedy index for every article. One big negative for electronic publishing is uncertainty about the reliability of archiving published articles. We know we cannot rely on a medium such as a CD to last forever, or perhaps even a decade. A more serious problem is the longevity of the software, or the certainty that any particular computer operating system will go on supporting the software that gives access to electronic files. Today's leading software makers may be bankrupt tomorrow. Security of archived versions could be increased by retaining a few copies of digital text in a format such as ASCII, so that text could be retrieved using whatever software is available. An analogous format would be required for images, perhaps RAW format. The ultimate archival medium is of course paper, since we gave up chiselling stone tablets. The digital printers available today assure that it is relatively inexpensive to print a few archival copies of each publication for deposition in key libraries.

The experience of creating a digital version of *MRCLC* convinces me that digital publishing will eventually, and perhaps sooner than we expect, become the standard method of publishing and preserving entomological knowledge. We hope to have *MRCLC* on CD for sale, along with *DPVCC*, at the 2005 Joint Annual Meeting. I trust that many of you are far along in making your plans to attend *Entomology: A celebration of life's little wonders* hosted by our ESA colleagues in Canmore, Alberta, 2-5 November 2005. I know it will be a great meeting, and you can then try out the digital version of *MRCLC*.

l'éditeur en chef, Richard Ring ainsi que les autres éditeurs du *TCE*, seraient réticents de permettre aux auteurs d'agir en tant qu'éditeurs de leurs propres manuscrits mais nous avons tous appris à dactylographier et à utiliser des traitements de texte, des logiciels de graphisme et pouvons également ajouter l'apprentissage de la publication électronique.

Un autre coût important relié à la publication du *TCE* ou autres publications est dû à l'impression et la distribution. La publication électronique, soit sur un CD ou 'online' réduirait ces coûts d'une façon significative. La publication électronique peut également offrir une plus grande flexibilité dans le choix de couleurs, et à accélérer le travail de la publication. La plupart des gens ne veut pas lire les articles à même leur écran d'ordinateur, mais il est facile d'imprimer soit en noir et blanc ou en couleur sur des imprimantes personnelles. Nous convenons qu'un article pourrait toujours être imprimé sur papier lorsque le besoin se fera sentir. La publication électronique offre également des méthodes de recherche améliorées au moyen de mots clés, un index rapide et unique à chaque article.

La publication électronique a certains désavantages surtout au niveau de l'archivage. Un CD ne dure pas éternellement et probablement même pas pour plus de 10 ans. Un problème plus important se trouve au niveau de la longévité des logiciels et des systèmes informatiques qui ne pourront plus utiliser le logiciel servant à accéder aux fichiers en question. Les fournisseurs de logiciels d'aujourd'hui peuvent être en faillite demain. Les versions archivées peuvent être sécurisées en gardant quelques copies de texte numérique sous un format tel qu'ASCII afin qu'on puisse accéder au texte en utilisant les logiciels disponibles. Un format analogue sera nécessaire pour les figures et photos, possiblement sous format RAW. Les imprimantes d'aujourd'hui nous permettent d'imprimer quelques copies pour les archives de chacune des publications et de les déposer dans certaines bibliothèques clés.

L'expérience que j'ai vécu en créant la version électronique du *MRCLC* m'a convaincu que la publication électronique va éventuellement et prob-

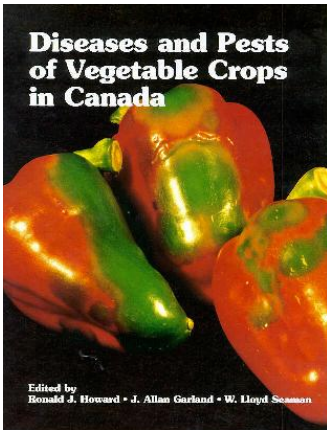
ablement plus tôt que tard, devenir la méthode standard de publication et de préservation des connaissances entomologiques.

Si tout va bien, la version CD du *MRCLC* sera en vente avec les volumes du *DPVCC*, à la réunion annuelle conjointe de 2005. J'imagine que plusieurs d'entre vous ont entrepris leurs préparations pour y assister. La réunion qui a pour thème

Entomologie : Une célébration des petites merveilles de la vie sera parrainée par nos collègues de la Société d'entomologie de l'Alberta à Canmore, les 2-5 novembre, 2005. Je suis certain que ça sera une très bonne réunion. Ça sera l'occasion d'essayer la version électronique du *MRCLC*!

For sale from ESC:

Diseases and Pests of Vegetable Crops in Canada, Editors: Ronald J. Howard, J. Allan Garland and W. Lloyd Seaman, published by The Canadian Phytopathological Society and the Entomological Society of Canada, July 1994, 8.5 x 11" soft cover; 554 pages; 1030 colour photo-



graphs.

A practical guide providing information on infectious and non-infectious diseases, insect, mite, nematode, mollusc and weed pests of vegetable crops including: asparagus, bean, beet, carrot, celery, corn, crucifers, cucurbits, eggplant, garlic, ginseng, greenhouse vegetables, herbs and spices, lettuce, mushrooms, onion, pea, potato, tomato and others.

Regular price: \$ 65.00 Cdn., 10% discount for members of the CPS and ESC, 10% discount for bulk purchase (five or more copies).

To order, contact Alexandra Devine, entsoc.can@bellnet.ca, (613) 725-2619 or download order form at <http://esc-sec.org/diseases.htm>

Nouveau CD-ROM

Le livre *Maladies et Ravageurs des Cultures Légumières au Canada (MRCLC)* est maintenant disponible en CD-ROM (seulement en français). Les stocks de livres sont épuisés. *MRCLC* compte près de 600 pages et 1030 illustrations couleur. Tous les légumes y sont décrits, depuis l'asperge au zucchini.

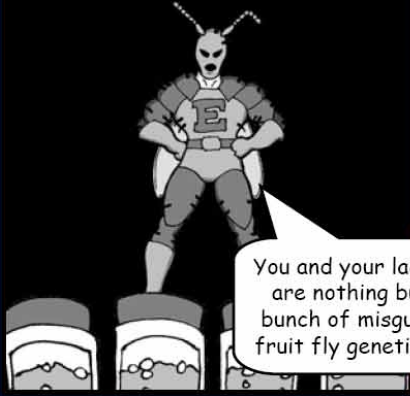


Vous pouvez commander le CD pour **20 \$ Can.** pour les adresses au Canada, et 20 \$ US pour les adresses à l'extérieur du Canada, livraison et maintenance comprises, escompté de 10% pour les membres de SPC et SEC, ou les commandes de cinq exemplaires ou plus.

Pour commander votre CD, contactez Alexandra Devine, entsoc.can@bellnet.ca, (613) 725-2619 ou téléchargez un formulaire de commande à <http://esc-sec.org/diseases.htm>.

The Adventures of *Ento-Man*

When last we joined Ento-man, the evil *Dr. melanogaster* had angered our hero by using the word "Entomologist" erroneously.



You and your lackeys are nothing but a bunch of misguided fruit fly geneticists!

Perhaps... But soon my Maggot-Men and Women will rule the Universe!



Not if I can help it! By all that is good and right in the study of insects, I invoke the true power of Entomology...
OMMATIDIUM!



Aaagggghhh! I'll get you for this, Ento-Man!



Text: Andrew Bennett
Drawings: Gaétan Moreau



Canada's tiny, little zoos

When I was little more than a first instar, my parents took me to a place called Bourton-on-the-Water, a charming, yet very tourist-oriented town in the Cotswolds of England. I say that they took me, but in truth, I am convinced that the main reason we visited Bourton-on-the-Water was to go to an attraction called Birdland in order to satisfy my older brother who was, at the time, a card-carrying member of BOTH the Y.O.C. (Young Ornithologists Club) AND the R.S.P.B. (Royal Society for the Protection of Birds). Now don't get me wrong, Birds are very nice... in their own way... But subjecting a young child to long, damp and extremely quiet outings in search of Kingfishers and other virtually mythical birds was to my impressionable mind, cruel and unusual punishment. That afternoon at Bourton-on-the-Water, I was again administered a dose of the incessant twitterings of little birds (at least I could see these birds in their iron cages, I suppose). But just before the end of the tour we entered an adjoining room, and there, as if included as an afterthought, was a butterfly room and next to that, a few terraria with live arthropods. Now here was an attraction worth visiting! Caterpillars, millipedes, beetles, tarantulas... Not animals that tweeted at you from branches 40 feet above, but creatures you could touch, nurture and (ultimately) stick pins in and place neatly in cigar

Andrew Bennett is a research scientist with Agriculture and Agri-Food Canada in Ottawa working on the taxonomy of Ichneumonidae. He received his PhD at the University of Toronto. Contact details: e-mail: bennetta@agr.gc.ca, telephone: (613) 759-1900.

boxes. I left the exhibit that day with three things: 1) a pinned Painted Lady butterfly from my grandfather, 2) a realization that invertebrates were far more accessible to me and therefore much more fun than vertebrates, and 3) a sense of smugness that I was bringing home the remains of a real organism, whereas my brother had nothing more than photos of his twittering feathered friends.

Now I won't claim that right after my trip to Bourton-on-the-Water, I declared that I would become an entomologist. But the fact I still remember it means it must have had some effect on me, which brings me (rambling) to the reason for this issue's column. Canada has a wonderful array of butterfly farms and bug zoos. These institutions should be encouraged and supported by the members of the ESC because they are, in my opinion, the best recruitment tool for inspiring young minds to appreciate the wonders of insects (and perhaps even consider careers in entomology). They also have great gift shops with cool insect souvenirs. From Coombs Butterfly World and Gardens (in the town on Vancouver Island with the goats on the roof of the general store) to the Newfoundland Insectarium and Butterfly Pavilion in Reidville, there are numerous institutions across the nation where visitors, both young and old, can marvel at the beauty of insects and their kin. Visit <http://butterflywebsite.com/gardens/index.cfm#can> to access contact information for many of the Canadian (and worldwide) insect attractions. They are no substitute for getting out into the field and witnessing insects in nature, but when it's -30°C, it's a little easier to admire butterflies in a greenhouse than to go digging under bark searching for overwintering larvae to rear.

Join Moth Balls next issue, when I will reveal another tiny glimpse of the fascinating world of insects.

Butterflies and helicopters

In the course of the development of animal species, flying had been "invented" several times: winged insects (dragon-flies and cockroaches) populated the forest of the Carboniferous period 280 to 300 million years ago, butterflies soared into the air about 210 million years ago (Dudley 2000), and birds have been proficient in flying for about 145 million years. Air space has remained closed to man until the most recent past. Full of envy, he had to look on cabbage butterflies and insects sailing ostensibly without effort in their element, and dragonflies as arrows chasing victims. He himself continued to be fettered down to the earth's surface. It is therefore only too understandable that, at least in his legends, the heroes were able to fly with the aid of sophisticated technical devices, such as those of Daedalus and his son Icarus in Greek mythology.

A history of helicopter development is usually begun with mention of the Chinese top and Leonardo da Vinci. The Chinese flying top (ca. 400 B.C.) was a stick with a propeller on top, which was spun by the hands and released. Among da Vinci's work (late 15th century) were sketches of a machine for vertical flight utilizing a screw-type propeller. Paul Corny (France, 1907) constructed

a machine that made the first flight with a pilot. This helicopter achieved an altitude of about 0.3 m for 20 sec. In the years 1910 to 1912, the Russian Yuryev devised the now generally common helicopter principle with a large horizontally mounted rotor and a small vertically placed after-propeller serving as torque compensation. In 1942, Igor Sicorsky (Sicorsky Aircraft Co. in the United States) built the R-4 (VS-316). Sicorsky's aircraft is generally considered the first practical, truly operational helicopter, although a possible exception is the work of the German Professor Focke (Focke - Achgelis Fa- 223, 1941). The invention of the helicopter may be considered complete by the early 1950's. Helicopter engineering is thus now involved more with research and with development than with invention.

The initial development of rotary-wing aircraft faced three major problems that had to be overcome to achieve a successful vehicle. The first problem was to develop a light and strong structure for rotor blades while maintaining good aerodynamic efficiency. The second problem was to design the quiet helicopter. Aircraft noise is an increasingly important factor in air transportation, as it is the primary form of interaction of the system with a large part of society (Johnson 1980). Moreover, the acoustic detectability of the helicopter is often determined by the rotor noise, unless some effort is made to quiet it. The final problem was to minimize the vibration of the helicopter. The rotor is a source of vibration; hence increase maintenance cost, passenger discomfort, and pilot fatigue. All these factors must be overcome to design a highly successful aircraft.

Bionics is a progressive orientation in engineering work. Its main objective is to create new kinds of highly effective machines that function like living organisms. For this, bionics prepares the ground by systematically investigating the variety of biological structures, forms and processes and ways these are functionally interrelated. Graphic examples of bionic research are given in the following paragraph.

Otto Lilienthal (Germany, 1893), together with his brother Gustav, were the first to investigate

Igor Kovalev was born in 1962 in Russia. He has graduated from Kharkov Aviation Institute. At the Zaporozhye Aviation Works during 7 years, Mr. Kovalev took part in the development of helicopters, and directed R&D study of aviation coatings having a butterfly scaling structure type, intended for the helicopters. He entered a post graduate course at St. - Petersburg State University (Department of Entomology) in 1995. Igor Kovalev immigrated to Israel in 1997. Since 1978, he has studied the effect of the insects' flight parameters and has developed the bionic coating for the aviation industry. He made five scientific discoveries, several inventions, and published 17 scientific papers.

scientifically the flight of birds and the airflow past a wing. He also came to appreciate the importance of the arched profile. Vasily Slesarev (Russia, 1914) experimented with insects in a diminutive wind-tunnel. It was discovered that the high aspect ratio of dragonfly wings provided a good aerodynamic efficiency of the light and strong planes of insects. He was the first to use the large propeller disk area of aircraft. After the Second World War, W.O. Kramer carried out extensive research in the USA with dolphin skins, and designed an artificial two-layer damping skin similar to that of the dolphins, using rubber and silicon preparation. By means of this skin the drag of test profiles could be reduced to about 40 percent (Kramer 1960). Experimental studies by NASA (United States, 1970's) showed that small grooves (riblets) aligned with the flow had the property of modifying the near-wall structure of the boundary layer. In flight tests, the film riblets demonstrated a drag reduction capability of about eight percent, when it was attached to the surface of an Airbus 340-300 airliner. Early in the game of riblets research these investigators found confirmation of the effectiveness of grooving in a clue from nature: it was learned that fast swimming sharks have riblet-like projections on their skins, called dermal denticles. These examples of bionic research had a substantial impact on the development of aircraft.

Butterflies and moths both belong to the insect order Lepidoptera. The word "Lepidoptera" is

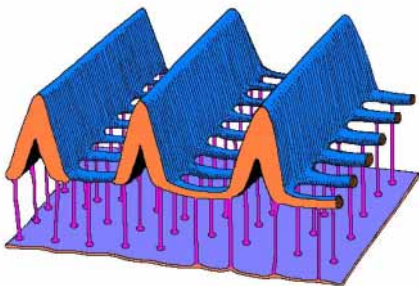


Figure 1: A vertical cross-section of *Pyrameis atalanta* butterfly scale.

derived from a Greek word meaning "scale wing". The surface of the wings of the adult insects is covered with thousand of tiny scales. The scales are arranged in highly ordered rows in the same fashion as slate tiles on a roof. When we handle butterflies and moths, the "dust" that comes off is composed of these very small scales.

Investigation of the structures, forms and functions of scales was begun in medieval times. Theodore de Mayerne, physician to Charles I (England, 1634) described colours and patterns on the wings of butterflies. The development of the microscope and of scientific knowledge had a substantial impact on the research of cuticular appendages of insect planes. It was shown that the scales created the wonderful colours and patterns observed in butterfly wings. The wing scales of the *Pyrameis* butterfly genus were among the first to be examined by H. Weber in the early 1930's in Austria (Weber 1933).

Each scale is a long and flattened extension of cuticle that originates from a single epidermal cell. Close examination of the cross-section of a single *Pyrameis atalanta* (L.) butterfly wing scale shows clear evidence of a two-layered structure (Figure 1). The scale is comprised of two layers of cuticle and separated by a hollow region filled with air. These layers are held apart by tiny vertical rods of cuticle. The upper layer has grooves and discrete openings. The bottom layer is a thin cuticle film.

Nachtigall W. (Germany, 1970's) examined the butterflies in a wind-tunnel. The studies showed that the presence of the scales acted as an aid to the aerodynamics of the fixed-wing (Nachtigall 1965). Wasserthal Lutz (Germany, 1975) examined the influence of butterfly wing scales on regulation of body temperature (Wasserthal 1975). These experiments showed that the scales were involved in the process of temperature control of the body. I (Russia & Israel, 1990's) examined the moths in a wind-tunnel, and discovered three major effects of the scale coverage. The first effect was to minimize the vibration (Kovalev 1996). The energy of the wing loads went into the scale coverage rather than into body motion. The second effect was to decrease the noise produced by the flying insect (Kovalev 2003). Low noise was

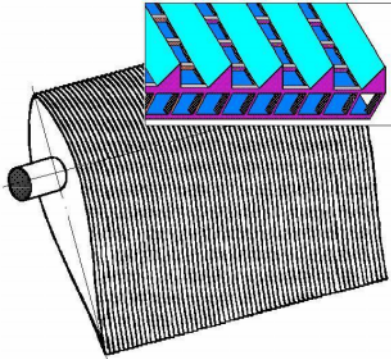


Figure 2: A model rotor with the butterfly skin

due to the absorption of a significant part of the sound energy as well as the reduction of turbulence of the wing surface by the scales. The final effect was to absorb the ultrasonic squeaks produced by bats (Kovalev 2004). In this way, the moths protect themselves against the echo-navigation system bats use to locate prey.

Moreover, studies in nature showed that insect scale coverage increased the aerodynamic forces of wings in flapping flight. The removal of scales limited the movement capability of the flying insect, showing that the scales are an important factor in insect manoeuvrability. This property of the scales allows butterflies to overcome predator attacks in flight. These observations led to the use of a scale-like skin on the rotor blade of a helicopter.

There is no doubt that nature is not a constructor in the sense that the engineer is. In the last resort she is inimitable. Even so, the engineer should venture a glance at biological structures of the butterfly scale. He will hardly find a ready-made solution of his own technical problems but he may expect a variety of interesting hints.

In order to eliminate the problems of rotor blades of helicopters, Igor Kovalev devised a metallic version of the butterfly scale coverage, called butterfly skin, or moth skin (Kovalev 1996). This skin is composed of two layers (Figure 2). The recess separates the upper wall and the lower wall.

The surface facing the flow of the external wall is covered with a large number of grooves aligned with the flow. The ridges are formed between grooves. The grooves are provided with lines of

perforations. The lower wall is similar to a thin sheet. Butterfly skin was attached to the smooth outer surface of model rotor, which was then tested alongside a non-coated model in a wind-tunnel. The performance of the two models was markedly different. The butterfly skin was found to increase the thrust force of the rotor, reduce the drag reduction, and decrease both the noise and the vibration. So the butterfly scale becomes a very effective means to improving performances of the wing. The higher performance of main blades with butterfly scale will ensure outstanding flying quality, safety, comfort and manoeuvrability of aircraft. In addition to the helicopter, the butterfly skin also could be used in transmission lines, on submarines, cars, sails, parachutes and in jet engines.

References

- Johnson W. 1980. Helicopter theory. Princeton University Press, Princeton.
- Kovalev I.S. 1996. Air flow coating. Russian Patent N 2061915.
- Kovalev I.S. 2003. Acoustic properties of wing scaling in Noctuid Moths. *Entomological Review*, **82**: 270-275.
- Kovalev I.S. 2004. Effect of scaling of the moth *Gastropacha populifolia* on the reflection of the bat echolocation signal. *Entomological Review*, **83**: 513-516.
- Kovalev I.S., and Brodsky A.K. 1996. Of the role that elasticity and scales coating of the wings play in the flight stability of insects. *Bulletin of the Saint Petersburg University*, **3**: 3-7.
- Dudley R. 2000. The biomechanics of insect flight. Princeton University Press, Princeton.
- Kramer W.O. 1960. Boundary layer stabilization by distributed damping. *Journal American Society of Naval Engineers*, 72-74.
- Nachtigall W. 1965. Die aerodynamische funktion der schmetterlingsschuppen. *Naturwissenschaften*, **52**: 216 - 217.
- Wasserthal L. 1975. The role of butterfly wings in regulation of body temperature. *Journal of Insect Physiology*, **21**: 1921-1930.
- Weber H., 1933. *Lehrbuch der entomologie*. Veslag Gustav Fischer, Jena.

New electronic resource

We would like to welcome you to an exciting new electronic resource on biological pest control: *Biocontrol Files: Canada's Bulletin on Ecological Pest Management*. This publication is a unique collaboration between an environmental NGO, World Wildlife Fund-Canada, a pan-Canadian network of academic and government researchers, Biocontrol Network and Agriculture and Agri-Food Canada.

The quarterly publication is an 8-page resource which reports on tools and developments in ecological pest management. It focuses on providing practical information on biological pest control products, raising public awareness of the principles and benefits of biological pest control, and delving into the policy, technical and social issues which impact the field of biological pest control.

Biocontrol Files is available in both English and French. Please visit *Biocontrol Files* at <http://www.biocontrol.ca>. Click on the "Biocontrol Files/Dossiers Biocontrôle" button to enter the home page of the Files, and then click on either the "English" button to view the first three issues in English or, alternatively, click on the "Français" button to access these issues in French.

After reading, please consider adding a link on your homepage or elsewhere on your website to the Biocontrol Files website. You might also want to inform colleagues and other interested persons about *Biocontrol Files*.

We would be pleased to receive your feedback on the publication.

Sincerely,

Vijay Cuddeford

Managing Editor

Biocontrol Files

Nouvelle ressource électronique

Bienvenue aux *Dossiers Biocontrôle* : le bulletin canadien de l'écogestion des insectes et maladies des plantes, une nouvelle ressource électronique dans le domaine de la lutte biologique. Cette publication est le fruit d'une collaboration unique entre un organisme non gouvernemental dans le domaine de l'environnement, le World Wildlife Fund Canada, un réseau pancanadien de chercheurs universitaires et gouvernementaux, le Réseau Biocontrôle et Agriculture et Agroalimentaire Canada.

Cette publication trimestrielle de huit pages traite des outils et des progrès en gestion écologique des ravageurs et des maladies. Les articles visent essentiellement à fournir de l'information pratique sur les nouveaux produits de lutte, à rendre le public plus conscient des principes et des avantages de la lutte biologique et à aborder les questions politiques, techniques et sociales qui influent sur le domaine de la lutte biologique contre les ravageurs et les maladies.

Les *Dossiers Biocontrôle* sont disponibles en français et en anglais. Vous pouvez les consulter sur le site <http://www.biocontrol.ca>. Cliquez sur le bouton "Biocontrol Files/Dossiers Biocontrôle" pour ouvrir la page d'accueil des Dossiers, puis cliquez sur le bouton "Français" pour afficher les trois premiers numéros en français, ou bien cliquez sur le bouton "English" pour en voir les versions en anglais.

Après avoir lu les Dossiers, vous pourriez ajouter à votre propre page d'accueil ou autre part dans votre site Web un lien vers celui des dossiers Biocontrôle. Vous êtes aussi invité à parler des *Dossiers Biocontrôle* à vos collègues et d'autres personnes qu'ils pourraient intéresser.

Votre opinion sur cette publication sera la bienvenue.

Meilleures salutations,

Vijay Cuddeford

Rédacteur en chef

Dossiers Biocontrôle

A new kind of gas chamber: An efficient way of collecting & killing insects as individual specimens

Most entomologists are familiar with the all important collecting tool, the killing bottle or killing jar or killing tube. These come in a wide variety of shapes and sizes, and use a number of different killing agents. Almost without exception the killing agent is placed directly into the main container. Potassium cyanide or ammonium carbonate are usually placed in the bottoms of containers, and then covered with a fibrous layer of sawdust overlain by plaster. That arrangement keeps the poison in place while allowing moisture to penetrate so that toxic fumes are liberated and can suffuse the chamber. Poisons such as volatile liquids (e.g. ethyl acetate) or insecticides can be applied into the killing chamber on absorbent paper. A killing bottle acts as a gas chamber.

The gas chambers described above are used for killing several insects collected more or less at the same time. For many ecological and behavioural studies it is important to collect insects as individuals. One may want to know what a particular insect was doing as it was collected, or if it is carrying something of interest, such as pollen, spores, mites, etc. Insects must be collected singly if that sort of information is important. Carrying dozens of killing jars that cannot be easily

Peter Kevan became interested in insects through the encouragement of his grandfather, D. K. Kevan, and amateur coleopterist in Scotland, and his father, well known in Canada and internationally for his interest in the Grasshoptera and soil ecology. Peter's main interests are in pollination from both zoological and botanical viewpoints, applied ecology, and conservation. He is presently Professor at the University of Guelph. E-mail: pkevan@uoguelph.ca, www.uoguelph.ca/~pkevan.

washed and cleaned is not practical.

The idea of the killer cork takes the poison gas generator from the base of the bottle to the lid. The killer cork is a small capacity shell vial inserted into a bored hole in the cork. Cotton batting is placed into the shell vial to receive the liquid poison.

Collectors then need to carry a few killer lids, perhaps some poisonous agent, and a number of containers which the killer lids fit.

For my work in pollination, I have found that scintillation vials with either screw caps or snap caps are about the right size for killing all but large insects. I have found that by carrying a dozen or so killer corks, and a small squeeze bottle of ethyl acetate, along with as many vials and lids as I think need, I am equipped for a collecting trip for individualized insects. Individual insects are collected and killed in vials equipped with killer corks. Once the insect is dead, the killer cork can be used on another vial, and its lid used to close the vial with the specimen. Figure 1 shows the equipment I have used on most of my collecting trips for pollinators.

I also carry with me individually numbered paper labels to place, or already placed in the vials. The data collected by notebook, tape-recorder, or other electronic means include the number of the vial and what the particular insect was doing. Back in the laboratory, the individual insects can be inspected for more detailed observations, pinned or pickled, and labelled to match the field notes for cross-reference and data basing. Also, the vials, lids, and killer corks can be cleaned.

Although the system described above works well with ethyl acetate or other liquid poisons, it can be readily adapted so that the killer corks' insert vials contain a charge of potassium cyanide or ammonium carbonate. (Use compressed air in a well ventilated place to clean off killer corks charged with potassium cyanide). I have used successfully larger killer corks with larger insert vials charged with potassium cyanide for collecting grasshoppers in larger killing tubes. In fact, it was my father, D. K. McE. Kevan, who introduced me to this system with a gift of a killer cork



H. Taki

Figure 1. Components of the killer cork system. From left to right: a cork with a hole bored into it to receive the shell vial (next) and killer cork assembled with cotton batting in the shell vial. Screw cap scintillation vial with killer cork in place, and screw cap to be used once the specimen is dead. Snap cap vials (far right) can be used as well. Note that the size of the killing chamber can be different in shape and size, depending on what the collector deems practical for the task at hand. The system allows for great flexibility in the type of killing agent to be used.

and some tubes and lids for collecting Orthoptera for him.

I have shown this system to entomological equipment suppliers, and I expect that killer corks and vials will become available for sale quite soon.



Pat MacKay

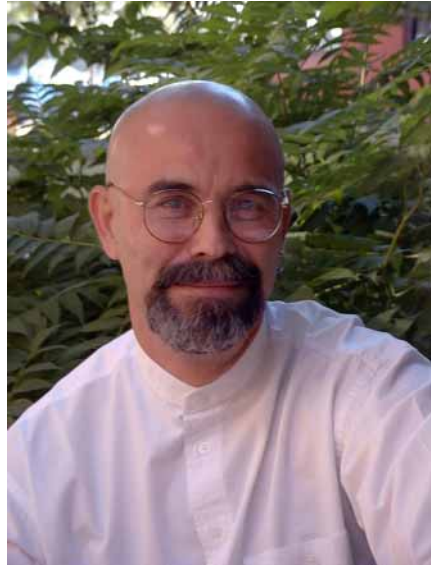
Short-horned grasshopper, family Acrididae, on sunflower, *Helianthus pauciflorus*, on Yellowquill Prairie, Nature Conservancy of Canada, in Manitoba, August 2005

Members in the news / Membres faisant la manchette

New Division Editor in ecology and behavior.

It is with pleasure that I announce the appointment of David Gray as the next Division Editor in Ecology and Behavior for *The Canadian Entomologist* (*TCE*). He replaces Jens Roland who is currently on Study Leave and has stepped down as Division Editor. David Gray brings a wealth of experience to this position. His graduate studies were in forest insect pests and population modeling at Simon Fraser University (MPM) and Virginia Polytech (PhD). This was followed by a two-year NSERC Post-Graduate Fellowship at Laurentian Forestry Centre, C.F.S., on spruce budworm research. David's professional life has taken him across Canada, from his early days as a Research Assistant in the MPM Program at S.F.U. to his current position as a Research Scientist at the Atlantic Forestry Centre in Fredericton. Along that winding road from West to East have been research appointments as a Regional Entomologist with the B.C. Ministry of Forests and Lands in the Nelson Forest Region, as a Research Scientist in the Department of Entomology at Virginia Polytech and as a Research Scientist at the Laurentian Forestry Centre. Not to mention his year as a volunteer in the Guatemalan earthquake relief program (1976-1977) sponsored by the Canadian International Development Agency!

David has over 21 publications in refereed journals as well as numerous non-refereed publications and published abstracts. Even if you don't know David personally, you have probably rubbed shoulders with him at scientific conferences since he has made a multitude of presentations at re-



gional, national and international meetings. In addition, he has been the recipient of many scientific scholarships and awards, has substantial teaching experience, and has been granted significant amounts of external funding for his research. Prior to his appointment to Division Editor, David served as Associate Editor for *TCE*, so he has editorial experience also. In summary, I believe that David Gray has all the personal and professional attributes necessary to do an outstanding job in this position. I welcome him to the Editorial Board of *TCE*.

Sincerely,
Richard A. Ring
Editor-in-Chief
The Canadian Entomologist

Thelma Finlayson appointed to Order of Canada

Thelma Finlayson, a former Professor in the Department of Biology, Simon Fraser University, has been appointed to the Order of Canada by the Governor General for her work in science and voluntary service.



Congratulations to Terry Shore who was elected Second Vice-President.

Terry Shore began his entomological career as a summer student in the Faculty of Forestry at the University of British Columbia working with John McLean. Following this he went on to do a PhD in forest entomology focusing on the biology and management of Scolytid beetles. In 1982, he joined the Canadian Forest Service in Victoria BC where he is a research scientist working primarily on the mountain pine beetle.

He has been very active in both the Entomological Society of British Columbia and the Entomological Society of Canada over the years. In the ESBC, he has held the positions of Director and President and was Regional Director to the ESC from 1994-2004. During his term with the ESC, he has participated on several committees including the Science, Policy and Education Committee, Membership Committee, Annual Meeting Committee (which he continues to Chair). He was Organizing Chair for two joint meetings: Victoria (1995) and Kelowna (2003), and he has produced a booklet for the society on joint meeting organization.

He believes the Entomological Society of Canada has a bright future due to the enthusiasm of its' members. As an organization, he believes we have to adapt to changing times such as transition to electronic publishing and dealing with a shrinking membership.

Terry Shore a débuté sa carrière d'entomologiste lors d'un emploi d'étudiant d'été à la Faculté de foresterie de l'Université de la Colombie-Britannique avec John McLean. Il s'est inscrit par la suite au doctorat en entomologie forestière pour étudier la biologie et la gestion des Scolytidés. En 1982, il a obtenu un emploi de chercheur scientifique avec le Service canadien des forêts à Victoria (C.-B.). Il travaille plus particulièrement avec le dendroctone du pin ponderosa.

Il a été très actif dans les Sociétés d'entomologie de la Colombie-Britannique et du Canada pendant plusieurs années. À la SECB, il a occupé les postes de Directeur et Président, et il a été Directeur régional pour la SEC de 1994 à 2004. Au cours de son mandat à la SEC, il a siégé sur plusieurs comités tels que le comité de la Politique scientifique et de l'éducation, le comité des membres, et le comité de l'assemblée annuelle (que il préside toujours). Il a été organisateur de deux assemblées annuelles, à Victoria en 1995 et à Kelowna en 2003, et il a rédigé un livret portant sur l'organisation de réunions conjointes.

Il croit que le futur de la Société d'entomologie du Canada sera intéressant dû à l'enthousiasme de ses membres. En tant qu'organisation, il croit que nous devons évoluer au rythme du jour, et prendre en compte les réalités du jour telles que les publications électroniques et la diminution du membership.



Ben Leung

Congratulations to Sheila Fitzpatrick who was elected as Director-at-Large.

Sheila Fitzpatrick is a research scientist with Agriculture and Agri-Food Canada (AAFC), beginning in 1989 at the Vancouver Research Station, then moving in 1996 to the Pacific Agri-Food Research Centre in Agassiz, BC. Her interest in insect behavior is the driving force behind her research program on behaviour, ecology and integrated pest management of berry pests. As a Master's student with W. G. Wellington at the UBC, she studied territorial behaviour of syrphid flies. At Laval University in Quebec, she received a PhD in biology for work on the composition and role of male pheromone in lepidopteran communication, studying with J. N. McNeil. In the year between finishing her doctorate and starting with AAFC, she was an Industrial Research Fellow with Integrated Crop Management, working on orchard pests in the Okanagan valley. The work of her research team at AAFC has focussed on mating disruption and parasitoids of blackheaded fireworm of cranberry; *Bacillus thuringiensis*-based insecticides for management of winter moth, spanworm and leafrollers in berries; parasitoids of leafrollers in berries; entomopathogenic nematodes for management of weevils in small fruits, flight behaviour, larval behaviour and cultural / physical control of cranberry girdler. She is an active member of the ESC, having served as Director-At-Large in 1995 - 1997 and Chair of the Publications Committee in 1996 - 1999. She has also held offices with the Entomological Society of BC.

Sheila Fitzpatrick est chercheuse scientifique à Agriculture et Agroalimentaire Canada (AAC). J'ai débuté en 1989 à la station de recherche de Vancouver (C.-B). En 1996 elle a déménagé au Centre de Recherches Agroalimentaires du Pacifique, situé à Agassiz (C.-B). Son intérêt pour le comportement des insectes a orienté son programme de recherche. Elle travaille principalement sur le comportement, l'écologie et la lutte intégrée des ravageurs des petits fruits. En tant qu'étudiante à la maîtrise avec W.G. Wellington à l'Université de Colombie-Britannique, elle a étudié le comportement territorial des mouches syrphidés. Elle a par la suite obtenu un doctorat en biologie de l'Université Laval, au Québec, sous la supervision de J.N. McNeil. Ce travail a porté sur la composition et le rôle des phéromones mâles dans la communication chez les Lépidoptères. Au cours de l'année suivant l'acquisition de ce diplôme, Elle a assumé le rôle d'associée de recherche industrielle en gestion intégrée des cultures pour le compte du Conseil des sciences de la Colombie-Britannique, où elle a travaillé sur le comportement et la gestion des ravageurs des vergers dans la vallée d'Okanagan. Le travail de son équipe de recherche à AAC s'est concentré sur : la confusion sexuelle à l'aide de phéromones, la biologie de la reproduction, les maladies à virus et les parasitoïdes de tordeuses des canneberges; les insecticides à base de *Bacillus thuringiensis* pour le contrôle des arpeuteuses tardives, arpeuteuses et tordeuses dans les petits fruits; les parasitoïdes des tordeuses des petits fruits; les nématodes entomopathogènes pour le contrôle des charançons dans la canneberge; le dépistage et le contrôle des charançons dans les framboises et les fraises; et le dépistage des phéromones, le comportement en vol, le comportement des larves et la lutte culturelle et physique de la pyrale des canneberges. Elle est active au sein de la Société d'Entomologie du Canada; elle a notamment agit comme directrice générale de 1995 à 1997 et comme présidente du comité des publications de 1996 à 1999. Elle a également travaillé avec la Société d'Entomologie de la Colombie-Britannique.

Entomologists at work / Entomologistes au travail

I would like to share with you one of my work stories. I study the wonderful world of insects that feed on stored grain and other food-stuffs. Many of these species have been domesticated, have lost the ability to fly and they have made themselves at home in our stored grain since the dawn of agriculture. Flour mills also are a great place to rear these insects, with year-round warmth and new food prepared 7 days a week, 24 hours a day. One of the dilemmas of our time, is that people have zero tolerance for insects in their food, and zero tolerance for insecticides.

Heat has been used for hundreds of years to control stored-product insects. Quaker Oats has been using it in their Peterborough plant since the 1950's as a non-chemical control method. I thought that we could combine heat with diatomaceous earth to get better control. Like all experiments, it was easier to design than to carry it out. The plan was simple, treat in checkerboard fashion a section of the floor with diatomaceous earth, apply rings to contain the insects, observe every hour, and note the time and temperature that the insects died as the temperature rose to 60°C.



AAFC

The red flour beetle, *Tribolium castaneum*, a common pest of flour mills, grain silos and Egyptian tombs.



The reality is that I flew in from Winnipeg, with temperature dataloggers in my checked luggage and vials full of insects in my carry-on luggage (amazing what you could get through security a few years ago). I ran around this huge food processing plant setting up the trial, before the heat was turned on. I then stayed up for 36 hours straight, running from floor to floor in rooms that were 40 to 65°C. At each station I would kneel down with a flashlight and check the number of live and dead insects, trying not to kill any of them by drowning them in my sweat.

Lots of work, but at the end of the weekend I had several graphs. For details see Fields et al. 1997, Fields and Dowdy 2002.

Paul Fields

Fields, P., Dowdy, A., and Marcotte, M. 1997.

Structural pest control: The use of an enhanced diatomaceous earth product combined with heat treatment for the control of insect pests in food processing facilities. Canada/United States Working Group on Methyl Bromide Alternatives. <http://res.agr.ca/winn/Heat-DE.htm>

Dowdy, A., and Fields, P.G. 2002. Heat combined with diatomaceous earth to control the confused flour beetle (Coleoptera: Tenebrionidae) in flour mills. *Journal of Stored Product Research*, **38**:11-21.

Le labo de Éric Lucas

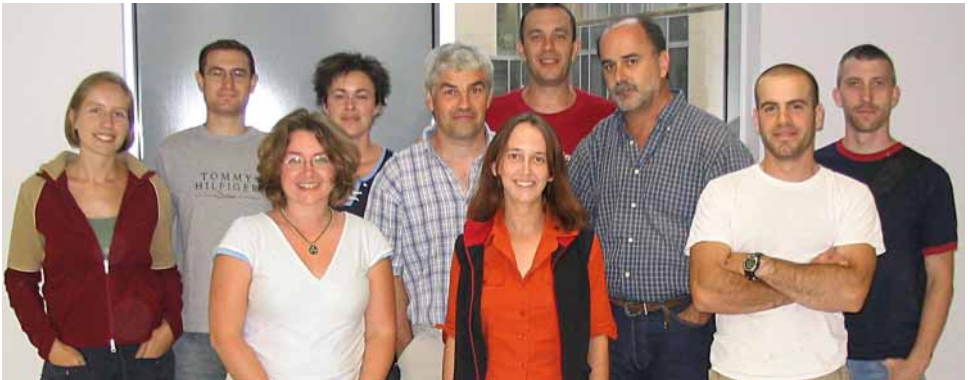
La recherche effectuée au laboratoire de lutte biologique de l'UQAM s'oriente autour de deux thématiques principales, en premier lieu l'écologie des organismes entomophages et en second lieu la lutte contre les arthropodes nuisibles. Au niveau de l'écologie des entomophages, deux grandes avenues sont explorées, 1- au niveau de l'individu, l'écologie comportementale des aphidiphages, plus particulièrement la prédation furtive et la prédation intragilde; 2- au niveau des guildes, l'étude des facteurs qui influencent la structure et la dynamique des guildes aphidiphages. Au niveau de la lutte contre les organismes nuisibles, plusieurs projets spécifiques portent sur la gestion de la tordeuse à bandes obliques, du carpocapse de la pomme, des pucerons en pomme de terre, des insectes des denrées entreposées, de la mouche blanche...

En ce qui a trait au fonctionnement du laboratoire, l'équipe de recherche se veut un groupe de travail où les mots clés sont motivation, échanges, entraide, respect et bonne humeur. La réunion hebdomadaire prend diverses formes selon les impératifs du moment (congrès à venir) et les intérêts de l'organisateur. Les travaux du labora-

toire s'inscrivent au sein du GRECA, le groupe de recherche en écologie comportementale et animale, fondé l'an passé à l'université. Il est à noter que le département des sciences biologiques de l'Université vient d'être déménagé au complet dans un nouveau bâtiment au sein du complexe scientifique de l'Université. À ce titre, les visiteurs, stagiaires et autres chercheurs en sabbatique sont les bienvenus. http://www.unites.uqam.ca/dsbio/professeurs/professeur_lucas.htm, courriel : lucas.eric@uqam.ca.

Olivier Aubry, candidat à la maîtrise

Étudiant français, j'ai obtenu une maîtrise de biologie des populations et des écosystèmes de l'Université Henri Poincaré (Nancy, France) en échange international à l'UQAM. Ce séjour au Québec m'a permis de réaliser un travail d'initiation à la recherche, portant sur l'asymétrie fluctuante, dans le laboratoire d'Éric où j'ai trouvé un cadre très stimulant et convivial. J'ai donc choisi avec enthousiasme de prolonger mon séjour à Montréal en commençant une maîtrise de biologie, sous la supervision d'Éric et de Daniel Cormier (IRDA). Mon sujet portait initialement sur deux nouveaux moyens de lutte à risques réduits contre le carpocapse de la pomme, *Cydia pomonella* L. : lutte



L'équipe du laboratoire de Éric Lucas, de la gauche vers la droite: Annabelle Firlej, Olivier Aubry, Geneviève Labrie, Louise Voynaud, Éric Lucas, Jacinthe Tremblay, Mircea Bejan, Claudio Nunes, Olivier Castonguay et Bruno Fréchette. Manquant de la photo: Julie Bourgeault, Benoît Guénard, Martin Lavoie, Nathalie Roullé et Samuel Pinna.

attracticide (phéromone sexuelle, insecticide et substance collante) et lutte biologique (lâchers inondatifs de parasitoïdes oophages). J'ai ainsi découvert un véritable attrait pour les parasitoïdes... ce qui a été concrétisé par un second volet dans mon sujet de maîtrise portant sur la sélection de l'hôte par *Trichogramma minutum* Riley sur les œufs du carpopapse et ceux de la tordeuse à bandes obliques, *Choristoneura rosaceana* Harris. Je teste ainsi la performance et la préférence du parasitoïde, en tenant compte de l'influence de l'habitat de l'hôte, ainsi que l'influence de l'hôte d'élevage. J'en suis à la moitié de ma maîtrise, mais je pense déjà à la suite... et le Canada est d'un attrait certain pour y poursuivre un doctorat !

Mircea Bejan, candidat à la maîtrise

Étudiant d'origine roumaine et après avoir obtenu un baccalauréat en foresterie, j'effectue ma maîtrise sous la coordination d'Éric Lucas et de Charles Vincent sur la résistance des plantes sauvages envers les pucerons. Plus spécifiquement, j'évalue la résistance de 12 accessions de plantes sauvages du genre *Solanum* (apparentées à la pomme de terre) au puceron vert du pêcher et au puceron de la pomme de terre. Je travaille en collaboration avec les membres du réseau POM-RAV (Université d'Amiens -France, UQAM Agriculture et Agroalimentaire Canada).

Julie Bourgeault, candidate à la maîtrise

Après avoir complété un baccalauréat en géographie, je poursuis une maîtrise en science de l'environnement. L'intégration au sein de l'équipe du laboratoire de lutte biologique d'Éric Lucas à l'UQAM ainsi que son encadrement en tant que directeur de recherche m'a permis d'enrichir mes connaissances en sciences biologiques et d'acquiescer une vision qui se veut davantage multidisciplinaire. Je tente, de part ma recherche, de découvrir quels sont les facteurs qui favorisent ou limitent l'adoption de la lutte intégrée au Québec. Mon étude permettra de mettre en lumière les déterminants qui sont prédominants à l'adoption de la lutte intégrée et de connaître l'importance de ceux-ci.

Martin Lavoie, candidat à la maîtrise

Le projet pilote du lac Supérieur vise à contrôler l'envahissement des herbiers de myriophylle à épi (*Myriophyllum spitacum*), une plante aquatique non-indigène introduite en Amérique du Nord dans les années 1940, par le transfert d'un grand nombre de charançons indigènes du Québec (*Euhrychiopsis lecontei*). Comme tout le cycle de vie de ce charançon s'effectue sur le myriophylle à épi, il induit des dommages qui limitent la croissance et la multiplication de la plante. Cette technique de contrôle biologique, qui semble avoir fait ses preuves aux États-Unis, est ainsi utilisée pour la première fois au Canada et dans un lac avec une latitude aussi élevée.

Jacinthe Tremblay, candidate à la maîtrise

Je fais une maîtrise en biologie sous la supervision de Jacques Brodeur (Université Laval), Éric Lucas (UQAM) et Daniel Cormier (Institut de recherche et de développement en agroenvironnement). Mon projet porte sur l'impact des boisés adjacents aux vergers sur l'abondance et le taux de parasitisme de la tordeuse à bandes obliques (TBO), *Choristoneura rosaceana* (Tortricidae), qui est un ravageur secondaire en vergers et dont certaines populations démontrent une résistance aux insecticides. Je m'intéresse particulièrement aux parasitoïdes *Meteorus trachynotus* (Braconidae) et *Actia interrupta* (Tachinidae), qui s'attaquent également à la tordeuse des bourgeons de l'épinette (TBE), *Choristoneura fumiferana*. Mes objectifs principaux sont : (1) établir si la composition du boisé influence l'abondance de la TBO, de ses parasitoïdes, ainsi que le taux de parasitisme de la TBO; (2) évaluer si la distance à la bordure boisé-verger influence leur abondance et le taux de parasitisme de la TBO et (3) préciser les périodes d'activité des parasitoïdes. Je travaille présentement dans les régions de St-Bruno, Rougemont, Dunham et Frelighsburg.

Louise Voynault, candidate à la maîtrise

Étant particulièrement intéressée par l'éthologie entomologique et les pratiques agricoles, la prédation intraguilde est rapidement devenue mon champ de bataille. Mon étude explore donc l'influence des caractéristiques intrinsèques des

populations de pucerons (*Macrosiphum euphorbiae* (Homoptera : Aphididae)) plus particulièrement du site de nutrition et de la propension à la chute sur une utilisation conjointe par deux types de prédateurs, deux prédateurs actifs (*Harmonia axyridis* (Coleoptera : Coccinellidae) ainsi que *Chrysoperla rufilabris* (Neuroptera : Chrysopidae)) et un troisième furtif (*Aphidoletes aphidimyza* (Diptera : Cecidomyiidae)). Ainsi, j'espère améliorer ma compréhension des relations prédateurs-proies tout en jetant une lumière supplémentaire sur l'utilisation des auxiliaires en lutte biologique.

Benoit Guénard, candidat à la maîtrise

Je travaille sur les interactions fourmis-pucerons et mon projet cherche à déterminer la susceptibilité de certains prédateurs à exploiter les colonies de pucerons entretenues par les fourmis. Cette approche nous a conduit à cibler l'étude sur un prédateur au comportement particulier, qualifié de prédation furtive, la cécidomyie *Aphidoletes aphidimyza*. Ce prédateur peut exploiter les colonies de pucerons sans provoquer de réactions défensives chez ses proies, par un jeu de mouvements lents et d'immobilisation de la proie après morsure. Nous avons alors vérifié si ce comportement le favorisait au sein des colonies de pucerons entretenues par des fourmis et si ces sites lui servaient de zone libre d'ennemi naturel.

De manière plus générale je suis passionné par les fourmis et les relations qu'elles entretiennent avec les organismes au sein de leur environnement.

Annabelle Firlej, candidate au doctorat

Sous la direction de Daniel Coderre et la co-direction de Guy Boivin et d'Éric Lucas, j'étudie les relations comportementales et physiologiques entre la coccinelle invasive *Harmonia axyridis* Pallas et le parasitoïde *Dinocampus coccinellae* Schrank. Je vérifie si les comportements de défense de la coccinelle, sa qualité nutritive et l'action de son système immunitaire peuvent expliquer pourquoi cette coccinelle est peu parasitée par *D. coccinellae* actuellement en Amérique du

Nord. Mon étude devrait aider à mieux comprendre pourquoi des espèces invasives sont souvent peu susceptibles aux ennemis naturels qu'ils rencontrent dans leur nouvel environnement.

Geneviève Labrie, candidate au doctorat

Mes intérêts en entomologie sont très diversifiés et j'apprécie particulièrement les projets qui touchent à différents aspects, autant physiologiques qu'écologiques ou des problématiques sociales liées aux insectes. J'effectue mon doctorat sous la direction de Daniel Coderre et la co-direction d'Éric Lucas sur la coccinelle asiatique *Harmonia axyridis* Pallas dans le but de comprendre les mécanismes d'invasion de cette espèce à la suite de son introduction comme agent de lutte biologique. Je me suis intéressée à différentes caractéristiques intrinsèques et extrinsèques de cette coccinelle qui lui permettent de réussir son invasion, au niveau du développement larvaire, de sa capacité de compétition directe et indirecte ainsi que ses réactions face aux facteurs environnementaux comme le climat durant l'hiver ou la productivité des ressources. Les impacts environnementaux et sociaux de cette introduction sont aussi des aspects qui m'intéressent. Les résultats de cette recherche amèneront une meilleure compréhension des caractéristiques des espèces invasives, tout en donnant des indications sur les agents de lutte biologique à choisir à l'avenir.



Harmonia axyridis

Bruno Fréchette



Punaise assassine

Claudio Nunes, candidat au doctorat

Mon travail de doctorat m'a amené en Amérique Centrale où j'ai étudié les agents de lutte biologique contre la mouche blanche *Bemisia tabaci* (Homoptera : Aleyrodidae), important vecteur viral des cultures maraîchères. L'étude a permis d'évaluer les ennemis naturels de *B. tabaci*, leur fluctuation en fonction de facteurs biotiques et abiotiques ainsi que leurs relations trophiques (plant, proie, prédateur). La recherche réalisée conjointement avec le Centro de Investigación en Protección Vegetal (CIPROV) a permis l'élaboration et la validation d'un programme de lutte intégrée contre cet important ravageur dans les cultures maraîchères nicaraguayennes.

Samuel Pinna, candidat au doctorat

Samuel Pinna possède une maîtrise en sciences de l'environnement dont le sujet portait sur l'impact de la fourmi électrique, *Wasmannia auropunctata*, sur les écosystèmes de Nouvelle Calédonie. Son sujet de doctorat traite de l'influence de la matrice paysagère urbaine sur l'entomofaune. Il s'intéresse plus particulièrement aux espèces invasives en milieu urbain ainsi qu'à la biodiversité entomologique qu'on y retrouve. Il travaille plus particulièrement sur les familles des Coccinellidae et Carabidae.

Nathalie Roullé, candidate au doctorat

Mon projet de doctorat porte sur les zones agricoles ; je travaille sur l'effet de la structure et de la dynamique du paysage sur les insectes des cul-

tures. Dans les champs de maïs, je m'intéresse aux pucerons, leurs prédateurs et leurs parasitoïdes. J'essaie de voir si la présence de zones non cultivées à proximité, le type de culture, la taille des parcelles, leur forme, leur agencement dans l'espace ont un effet sur les insectes que je trouve dans les champs de maïs. Mon projet s'intègre dans un projet plus vaste qui s'intéresse au paysage agricole dans un but d'aménagement. Un premier volet traite de la perception du paysage agricole selon les usagers et un deuxième volet de la pollution diffuse par le phosphore.

Au niveau appliqué, je m'intéresse aux questions environnementales en milieu agricole. Un des aspects intéressants des études sur l'agriculture est qu'il est nécessaire d'intégrer l'aspect humain. Les communautés d'insectes que l'on trouve à un endroit donné seront expliquées par la base physique, l'occupation du sol mais aussi par les pratiques agricoles, et ces pratiques agricoles dépendent d'un certain nombre de facteurs culturels et sociaux.

Au niveau théorique, je suis passionnée d'évolution. Comment ce qui est, est. Qu'est ce que le vivant ? Quelle est la différence entre le vivant et le non vivant ?

Bruno Fréchette, stagiaire post-doctoral

Au cours de ce stage post-doctoral, je cherche à déterminer le potentiel de certains aménagements effectués en verger de pommiers et visant à augmenter le contrôle naturel des populations de pucerons du complexe *Aphis* spp. Un objectif sous-jacent est de déterminer le rôle des prédateurs dans la régulation des populations de pucerons. Une première série d'observations visera à déterminer l'impact de la présence d'un couvert fleuri et d'une bordure de plantes compagnes sur les populations de pucerons et de prédateurs. De même, la susceptibilité aux infestations de pucerons de différents cultivars résistants à la tavelure sera évaluée. Le rôle éventuel joué par les prédateurs sera estimé en comparant les densités de pucerons dans des arbres où les prédateurs seront exclus avec celles d'arbres où aucune manipulation de prédateurs sera effectuée.

The student wing / L'aile étudiante

By Tonya Mousseau

There are now a number of positions available within the ESC for you to get involved with your society and help benefit yourself and fellow students! As Rick West puts it, "being an ESC committee member/chair looks great on your CV and is a good way to make contacts in the entomological community, contacts that might even help in finding future employment".



M. Alperin

ESC Student Representative Chair

After four years of being the ESC Student Representative, I would like to pass this exciting opportunity on to another student. This is a wonderful position, allowing many benefits within the ESC. The Student Representative is a member of the ESC Governing Board. S/he serves to make the Board aware of the student concerns and vice versa, and with this comes voting privileges. The Representative is encouraged to attend the Annual Board meeting, which is just before the ESC Annual Meeting, and if needed, some funds are available to assist with travel to attend the meetings.

Duties may include but are not limited to:

- attending the annual ESC Board meeting
- preparing two annual reports to the ESC Board on student activities
- writing a short column on student events for the *ESC Bulletin* (or delegate another to do this)
- overseeing the ESC student committee
- promoting student activities within the ESC

The Student Representative will be selected by a voting process. If you would like to be considered for this position, please send me 50-100 word auto-biography describing yourself, your research, etc... and it will be sent to all ESC members for voting.

Additionally, I am prepared to guide the new ESC student representative and stay on as a "secretary", managing the student lists, helping with the annual reports, etc...

ESC student Webmaster

As many of you know, students are allotted space from the ESC to put up their own webpage. We are looking for someone who can work with Barry Lyons (ESC webmaster) to put up the students' web pages as they come in, and to remove outdated pages.

Silent book auction volunteers

This year, the students will be in charge of the silent book auction at the ESC conference in Canmore, Alberta. I am looking for volunteers to help me find more sources for books (a good job for someone not planning on attending the meeting) and to run the table and auction at the meeting (for someone going to the meeting).

Also, if you are interested in joining the ESC Student committee, please let me know!
Thanks for your help!

Thesis roundup

If you know someone who has recently defended their thesis in the last year, let me know and I'll post their name, address, supervisor and research.

Arctic and boreal entomology course 2004

By Hisatomo Taki, Peter G. Kevan and Rob E. Roughley

General

From 31 July to 14 August, 2004, the second Arctic and Boreal Entomology course, provided by the University of the Arctic Field School was organized and run at the Churchill Northern Studies Centre (CNSC) in Churchill, Manitoba. After the great success of the first course, held in 2003, the second Arctic and Boreal Entomology course was implemented and took place at the same time as the University of Guelph's course in Arctic Ecology (Fig. 1).

The instructors were Rob Roughley (University of Manitoba), Peter Kevan (University of Guelph) and Paul Hebert (University of Guelph). There were a total of 11 participants from Canada, New Zealand, Japan and Israel. Some of the curricula, topics and activities of both courses tended to overlap and all participants of both were keen to learn about diversity, abundance and activity of insects in the transitional zone between the southern extremes of arctic tundra and the northern reaches of the northern boreal forest.

The Churchill Northern Studies Centre provided us wonderful hospitality. In addition to ac-

commodation and meals, the centre also provided the necessary equipment, classroom and laboratory facilities to conduct the field courses. The centre also housed other groups on research projects focusing on various aspects of biological and social sciences. With such a diverse collection of researchers and students, we had many opportunities to gain deeper insights and to be introduced to different views on many topics of importance to the north.

The weather during two weeks was hardly what one would expect when thinking "arctic". It was sunny and warm with temperatures in the mid-20s Celsius, which was high for such a long duration for the time of year at which the course was held. This mild weather provided plenty of opportunities to spend time in the field for insect observation as well as collecting. That was met with an enthusiastic welcome from the local black flies, horse flies and mosquitoes (Fig. 2).

Projects in brief

Some insect groups were extensively sampled. All aquatic beetles (with emphasis on Dytiscidae) were collected by Rob Roughley; in the last two years he has accumulated records of five species not previously recorded from the Churchill area. Carrion beetles (Silphidae) were collected by Stewart Peck, assisted by Tim Rollwagen, who compared the capture rates with pitfall traps baited



Figure 1. Course participants of the Arctic and Boreal Entomology course and University of Guelph's Arctic Ecology course in Churchill, 12 August 2004.

with chicken or fish. Hisatomo Taki and Peter Kevan concentrated efforts on bees (Apoidea). Fortunately, the timing of the course coincided with the blooming peak of some late-flowering plants in the area, so several flower-insect interactions were studied. Ofrit Shavit made extensive observations on flower visitors to patches of different sizes of Mastodon flower (*Senecio congestus*). Agata Pawlowski also worked on that plant, as well as fireweed (*Epilobium* or *Chamerion angustifolium*), comparing the invertebrate fauna associated with the stems and leaves. Numerous mosquitoes were found with pollinia of Northern bog orchids (*Platanthera obtusata*) (Fig. 3), so Katja Rochacewicz initiated some pollination studies. The importance of prey to carnivorous plants was studied by Jean Enneson. She discovered that plants of butterwort (*Pinguicula vulgaris*) growing in different habitats have different chances to capture prey (spring-tails, mites, and small flies): in drier habitats less prey was captured. Tracy Roy discovered that water mites (Hydracarina) really like to eat *Daphnia*. Several students worked on biodiversity comparing spiders (Alisha Prater) and epigeic invertebrates (Shelley Brule) in burned and unburned forest. Sean Murray found more spring-tails (Collembola) associated with the bases of cracks in than on top of the eroding peat plateau near CNSC. That result was attributed to the dry, warm conditions atop the plateau versus the damp, cooler, and shaded cracks. Similarly, Megan Becker noted that there was a positive effect of the moisture gradient on invertebrate diversity from the drier forest onto fen-lands near Twin Lakes.

Other activities and highlights

Explanation and demonstration of collecting techniques and equipment (e.g. sweep nets, aspirators, killing vials, even baseball hats for collecting specimens!) were included in field lectures. Various trapping methods were described and used, including: Malaise traps, pan traps, fan traps, light traps, pitfall traps, Berlese funnels and bottle traps for aquatic insects. The importance of pinning, preservation and proper labelling of specimens were also stressed at this time. Using the demonstrated techniques, many insect specimens



Figure 2. Student's head welcoming numerous mosquitoes.

were collected from various locations, including: the kelp strand, saline and shoreline ponds of Hudson Bay, bogs, ponds and streams, salt marshes adjacent to the Churchill River, the northern boreal forest, the forest margin, the willow scrub, boreal forest-tundra transition zones and tundra zones. All field sites were easily accessible from the CNSC.

As well as field lectures, evening lectures and discussions addressed a wide range of entomological topics with emphasis on the arctic tundra and boreal forest habitats. Some of these topics included diversity and classification of insects, insect cold hardiness and thermoregulatory behaviours. Also at evening sessions, course participants designed, implemented and reported on their research projects and special interests. Especially valuable were talks on comparison of insect diversity and behaviour in different environments. For example, in a talk about Antarctic entomology by Ian Hogg, a comparison was made of insect faunas from different environments using various insect trapping techniques in the Arctic and Antarctic, and Jarmilla Kukalova-Peck provided a highly entertaining lecture on the ori-

Hisatomo Taki and Peter G. Kevan (pkevan@uoguelph.ca) are from University of Guelph, Department of Environmental Biology, Guelph, ON, N1G 2W1, Rob E. Roughley (rob_roughley@umanitoba.ca) is from the University of Manitoba, Department of Entomology, Winnipeg, MB, R3T 2N2, www.uoguelph.ca/~pkevan, under courses

gins of insect wings.

Through the participants' research projects and demonstrations of traps, some very interesting specimens were collected. Some of the biggest surprises included capture of three large sawflies of the family Cimbicidae, and a tiger beetle Cicindelidae which were previously thought not to be present in these areas. These findings suggest an extension of certain insects to a more northerly habitat, perhaps in association with climate change. As the specimens are catalogued, we expect to list more additions to the insect fauna in the area. Most of the specimens are deposited in the J.B. Wallis Museum of Entomology at the University of Manitoba, but many specimens will be incorporated into a reference collection at CNSC.



Figure 3. Mosquito with pollinium of Northern bog orchids (*Platanthera obtusata*).

55th Annual General Meeting and Governing Board Meeting

The Annual General Meeting of the Entomological Society of Canada will be held at Radisson Hotel, Canmore, Alberta on Friday, 4 November 2005, 17:15-18:30. The Governing Board Meeting will be held at the same location on Wednesday, 2 November 2005 from 8:30 to 16:30. Matters for consideration at either of the above meetings should be sent to Rick West, Secretary of the ESC.

55^e L'assemblée générale annuelle et la réunion du comité directeur

L'Assemblée générale annuelle de la Société d'entomologie du Canada aura lieu au Radisson Hotel, Canmore, Alberta, le vendredi, 4 novembre 2005 à 17:15-18:30. La Réunion du comité directeur de la SEC aura lieu au même endroit le mercredi, 2 novembre 2005 de 8:30 à 16:30. Veuillez faire part au secrétaire, Rick West, de tout sujet pouvant faire l'objet de discussion à ces réunions.



Can you name this famous Canadian Entomologist? The answer is NO. No one ventured a guess as to who this could be. I will now up the stakes by offering an insect key chain, for the first correct answer. Editor

Symposium on a Plant Health Network at the Western Forum

The annual meeting of the Western Forum on Pest Management will be held in Canmore, Alberta from 6-8 November 2005 (immediately following the annual meeting of ESC). The meeting opens with registration and a reception on Sunday, 6 November, followed by meetings of the constituent committees on 7 November. On November 8, there will be a half-day symposium on a proposal to develop a Plant Health Network for Canada. The program includes a representative from the USDA to outline the system in the USA, one from CFIA presenting the history, current status, and vision for their PlantProNet initiative, and reaction to the proposal by entomologists, pathologists, weed scientists, and industry. This will be followed by a bear-pit session to allow meeting participants to provide direction to CFIA in the development of this initiative. Although this is a western meeting, participants from across the country are welcome.

Meeting details will be posted at <http://www.westernforum.org/> as they become available.

Canadians elected ESA fellows

Three Canadian scientists are among those receiving the Entomological Society of America's (ESA) highest honor in 2005. They are (in alphabetical order) George Ball of the University of Alberta (Edmonton), Henry Howden of Carleton University and the Canadian Museum of Nature (Ottawa), and Lubomir Masner of Agriculture and Agri-Food Canada (Ottawa). The designation of ESA Fellow recognizes individuals who have made outstanding contributions to entomology and represent the Best of the Best in entomological research, teaching, extension and administration. No more than 10 Fellows are named each year, and the pool of nominees is the global entomology community. Election is not restricted to members of the ESA, nor those resident in the ESA's core geographic region of Canada, Mexico and the US.

The 2005 pool of ESA Fellows highlights the last several decades of global leadership and excellence among Canadian insect systematists.

Congratulations to George Ball, Henry Howden and Lubomir Masner.

Michael A. Ivie, President
Entomological Society of America

Call for donations!

The Entomological Society of Canada Student Committee is organizing a table with books and possibly sampling gear to be sold by silent auction, in support of the ESC scholarship fund. Some new books will be donated from major publishers, but we're also looking for used ones. If you have a duplicate book that you think might be of interest, or some nets (e.g. a sweep net, or a Malaise trap) that you aren't using any more, consider donating it to the meeting for the auction.

Please send or bring items to Tonya Mousseau:
The Joint ESA/ESC Meeting
c/o Tonya Mousseau
Department of Biological Sciences
University of Calgary
2500 University Dr.
Calgary, Alberta, T2N 1N4 Canada

The art of memo writing

Memo writers can have a sense of humour! It makes dreary tasks less onerous. Some decades ago the following memos were exchanged between two members of the ESC Executive regarding the operation of an ad hoc committee:

1. "I feel that oral dialogue between two members of the Committee located in the same place would be more productive than correspondence. The latter is necessary with the third member of the Committee because of geographical distance."

2. "Thank you for the written memo on the need for oral communication between us. I concur entirely and will send you further written communications designed to increase the productivity of our oral dialogue."

(names suppressed to protect the humourists)

Joint annual meeting of The Entomological Society of Canada and The Entomological Society of Alberta

Entomology: A celebration of life's little wonders
Radisson Hotel and Conference Centre
Canmore, Alberta, 2-5 November 2005

On behalf of the Entomological Society of Alberta and the Entomological Society of Canada, we are pleased to invite you to the 2005 Joint Annual Meeting which will be held at the Radisson Hotel and Conference Centre in Canmore, Alberta. The theme for the meeting is *Entomology: A celebration of life's little wonders*, and we are confident that the symposia, workshops and submitted papers will combine to create an exciting and informative meeting.

Due to the proximity of the annual meetings of the ESC and the Entomological Society of America (the latter running 6-9 November), we are starting the Canmore meeting earlier than originally planned. The 2005 meeting will thus begin on Wednesday, 2 November and will wrap up on Saturday, 5 November. This should allow members who wish to attend both the ESC and ESA meetings to do so; Canmore's proximity to the International Airport in Calgary should make travel simple.

The 2005 JAM will have a spectacular setting. Canmore is located in the beautiful Rocky Mountains, minutes from Banff National Park, and an hour's drive (100 km) from the international airport in Calgary, Alberta. Banff townsite is only 20 km from Canmore. The Radisson Hotel is a 5-minute walk from downtown Canmore, or a 15-minute walk from a trail-head. The hotel includes 224 guestrooms, each with a mountain view, high-speed wireless internet access, an indoor pool, whirlpool, steam room, fitness centre, restaurant and children's playground. For more information, visit the Local Arrangements website at <http://www.esc-canmore.org>, or go straight to the Radisson reservations page at <http://www.radisson.com/canmoreca/>. The Radisson is offering us a special conference rate for the hotel of \$89.00 per night (for up to two people in a room, plus taxes). Be sure to mention the Entomological Society of Canada Conference when booking to get the conference rate.

If you have queries or suggestions, feel free to contact the chair of the Organizing Committee, John Acorn (janature@compusmart.ab.ca), or one of the Program Chairs, Dave Langor (DLangor@NRCan.gc.ca) and Felix Sperling (felix.sperling@ualberta.ca).

Please visit our webpage for more information and all the news as it develops about the meeting: www.esc-canmore.org.



Dan Johnson

Two Mountain Bug Trips!

It might not be ideal arthropod-watching weather in November, but that won't keep us indoors! Here are two optional tours for the adventurous entomologist:

(A) A grylloblattid hunt will be organized for one afternoon at the beginning or end of the meeting in Canmore. This will in part depend on weather, and also on your enthusiasm! For further details contact Dan Johnson at grylloblattids.r.us@gmail.com, and be sure to mention what afternoon (2 November or 5 November) best suits you. If we include National Park sites, that portion of the hunt will be 'photography only'.

(B) Cave tour! We have arranged for two "Explorer" tours of Rat's Nest Cave with Canmore Cavems Ltd. (see <http://canadianrockies.net/wild-cavetours>; telephone toll-free (877) 317-1178). This cave is located under Grotto Mountain and is the home for about 20 species of arthropods including overwintering harvestmen. Tours are physically challenging but no experience is necessary. Participants should be reasonably fit. Meet at the Radisson Hotel lobby at the designated time (see below). Wear clothing appropriate to the weather (there may be snow; the cave is a constant 5 C) and hiking boots or good runners. Bring a drink and a snack. Cameras should be in a plastic bag hung around the neck. Due to the adventurous nature of the activity, all participants are required to sign a waiver prior to the tour. To save time, please obtain the waiver from the Internet site and fill it out beforehand. Paying the fee prior to the trip will also save time. We will drive in our own or shared vehicles about 15 minutes to a



R. Cannings

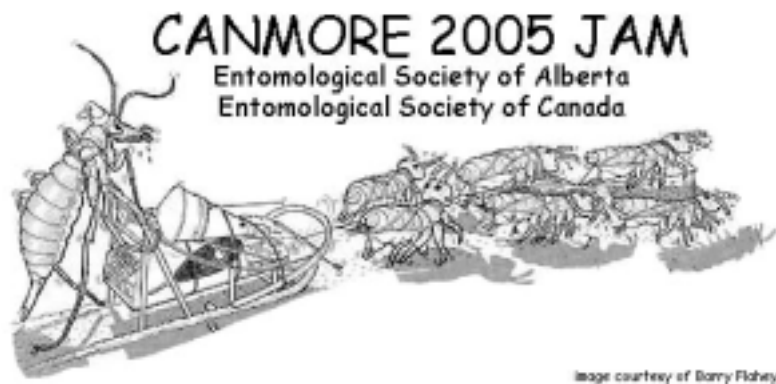
Grylloblatta campodeiformis campodeiformis, see Bull. 36:25 for the story of the origin of the ESC emblem.

parking lot and then hike about a half hour (1.5 km up 150 m) to the cave entrance. There we will don coveralls (there will be mud), knee pads (we will have to crawl in a couple of places), gloves, helmets and headlamps supplied by the tour operator. Limited collection of arthropods is allowed if the information obtained can be used for educational or conservation purposes. Minimum number to run a tour is 2; maximum, 8 people per guide. The minimum age is 9 years. **Please book with the tour operator directly** (see above). Cancellation policy: less than 48 hours 50% non-refundable; 24 hours 100% non-refundable. The (reduced) price is \$84.53 per person including GST. VISA, MasterCard and personal cheques are accepted. Tour times will be 4.5 to 5 hours from/to the hotel.

Tour #1 (before the conference): 12:30 PM, 2 November

Tour #2 (after the conference): 1:00 PM, 5 November

NOTE: By error of omission, previous notices for the 2005 Joint Annual Meeting have not indicated that two symposia are sponsored by the Biological Survey of Canada (Terrestrial Arthropods): these are *Maintaining arthropods in northern forest ecosystems*, and *Arthropods and fire*. The meeting organizers apologize for this lapse.



2-5 November 2005

Radisson Hotel & Conference Centre Canmore, Alberta

Meeting theme: Entomology: A celebration of life's little wonders

Symposia:

Maintaining arthropods in Northern forest ecosystems

Organizers: John Spence and David Langor

The biology and diversity of Arachnids

Organizers: Heather Proctor, Derrick Kanashiro, Robb Bennett

Arthropods and fire

Organizer: Rob Roughley

Wheat stem sawfly

Organizer: Hector Carcamo

Graduate student symposium

Organizers: Tonya Mousseau and Tyler Cobb

Graduate student symposium

The main goal of this symposium is to profile graduating students moving on to the next stage of their careers, and allow them a longer time slot to feature their research. To be eligible, students must have defended in the last year or plan to defend within one year of the meeting. Ideally, the topic of the presentation should be related to the theme of the meeting: *Entomology: A celebration of life's little wonders*. Current graduate students who participate in this symposium are also eligible to compete for the President's Prize; however, it is required that the symposium topic and President's Prize talk or poster be substantially different.

Help is needed to identify the most promising speakers for this symposium. If you are an eligible student interested in participating, or if you know of someone that would be suitable, please contact Tonya Mousseau (tmousseau@ucalgary.ca). Please reply with your expression of interest and title of your proposed talk by 15 June 2005. Full details will be available at the ESC website in the student section. <http://esc-sec.org/students.htm>.

REGISTRATION FORM

Name: _____

Title First Name Last Name

Preferred name for name tag (if different from above)

Affiliation: _____

Address: _____

Phone: _____ Fax: _____ E-mail: _____

(Note: registrations will be acknowledged by e-mail, given a current and legible e-mail address.)

Accompanying Person (there are no fees for accompanying persons; extra banquet tickets may be purchased at the registration desk): _____

Fees:	Before August 1st	After August 1st	Total
Regular ESC or AES member	\$140	\$180	\$ _____
Regular Non-member	\$180	\$220	\$ _____
Student or retired member	\$ 70	\$ 90	\$ _____

Banquet dinner preference: indicate meat/seafood entree or vegetarian

Registration includes: Program (with abstracts) and admittance to meetings, mixer and banquet. Extra banquet tickets may be purchased at the registration desk. No refunds on registration after 15 September 2005.

Payment Details:

Cheque for total (make payable to ESC/ESA 2005) or Credit card:

Name on Credit Card (please print) _____

Credit card type: VISA or Mastercard Credit card Number: _____

Signature: _____ Expiry Date: _____

Accommodation: Everyone is encouraged to stay at the Radisson Hotel (rate: \$89.00 for up to two people, if reserved before 2 October 2005). Please indicate when registering that you are with the Entomological Society of Canada conference to get the conference rate, and please reserve as early as you can to allow us to plan for the various events.

Please return this form with fees to:

ESC/ESA registration
 c/o Greg R. Pohl
 Insect I.D. Officer / Museum Curator
 Northern Forestry Centre - Canadian Forest Service
 5320 - 122 St., Edmonton, Alberta
 Canada T6H 3S5
 Phone: (780) 435-7211, Fax: (780) 435-7359
 e-mail: gpohl@nrcan.gc.ca
 ESA Website: www.esc-canmore.org

Hotel Reservations are available from:

Radisson Hotel and Conference Center Canmore
 511 Bow Valley Trail, Canmore, Alberta T1W 1N7
 Phone (403) 678 3625, Fax (403) 678 3765
 Toll Free 1- (800) 333-3333
 e-mail: rhi_cnmr@radisson.com
 Website: <http://www.radisson.com/canmoreca>

Congrès conjoint de la Société d'entomologie du Canada et de la Société d'entomologie d'Alberta

L'Entomologie: Une célébration des petites merveilles de la vie!

Hôtel et centre de conférence Radisson

Canmore, Alberta, 2-5 novembre 2005

Au nom de la Société d'Entomologie de l'Alberta et de la Société d'Entomologie du Canada, nous sommes heureux de vous inviter à la Réunion conjointe annuelle qui se tiendra à l'hôtel et centre de conférence Radisson à Canmore, en Alberta. Le thème de cette réunion est *Entomologie: Une célébration des petites merveilles de la vie!* et nous sommes confiants que les symposiums, ateliers et présentations soumises se combineront pour former une réunion excitante et informative.

À cause de la proximité entre les réunions annuelles de la SEC et de la Société d'Entomologie d'Amérique (cette dernière se déroulant du 6 au 9 novembre), nous débutons la réunion de Canmore plus tôt que ce qui était originalement planifié. La réunion de 2005 commencera donc mercredi le 2 novembre et se terminera le samedi 5 novembre. Ceci devrait permettre aux membres qui veulent assister aux deux réunions de le faire; la proximité de Canmore avec l'aéroport international de Calgary devrait rendre le déplacement facile.

La réunion conjointe annuelle de 2005 aura lieu dans un cadre spectaculaire. Canmore est situé dans les magnifiques montagnes Rocheuses, tout près du Parc National de Banff et n'est qu'à une heure de route (100 km) de l'aéroport international de Calgary en Alberta. La ville de Banff n'est située qu'à 20 km de Canmore. L'hôtel Radisson est à 5 minutes de marches du centre-ville de Canmore, ou à 15 minutes de marche d'un sentier. L'hôtel possède 224 chambres, chacune avec une vue sur les montagnes, un accès à internet haute vitesse, une piscine intérieure, un bain tourbillon, un sauna, un centre d'entraînement, un restaurant et un terrain de jeux pour les enfants. Pour plus d'information, visitez le site internet à <http://www.esc-canmore.org>, ou allez directement à la page de réservation de Radisson à <http://www.radisson.com/canmoreca/>. Le Radisson nous offre un tarif spécial de conférence de 89.00\$ par nuit (jusqu'à deux personnes par chambre, plus taxes). Assurez-vous de mentionner la conférence de la Société d'Entomologie du Canada pour obtenir ce tarif.

Si vous avez des questions ou des suggestions, n'hésitez pas à contacter le président du Comité organisateur, John Acorn (janature@compusmart.ab.ca), ou un des présidents du programme, Dave Langor (DLangor@NRCan.gc.ca) et Felix Sperling (felix.sperling@ualberta.ca).

Visitez notre site web pour plus d'information et les dernières nouvelles concernant la réunion : www.esc-canmore.org.



Paul Fields

Deux sorties entomologiques en montagne!

La température de novembre n'est peut-être pas idéale pour l'observation des arthropodes, mais ça ne nous empêchera pas de sortir! Voici deux sorties optionnelles pour les entomologistes aventuriers :

(A) Une chasse aux Grylloblattidae sera organisée durant un après-midi au début ou à la fin de la réunion à Canmore. Ceci dépendra en partie de la température, mais également de votre enthousiasme! Pour plus de détails, contactez Dan Johnson à gryllobattids.r.us@gmail.com, et assurez-vous de mentionner quel après-midi (le 2 ou le 5 novembre) vous convient le mieux. Si nous incluons des sites de Parcs Nationaux, cette portion de la chasse sera strictement photographique.

(B) Sortie dans des cavernes! Nous avons planifié deux tours pour "explorateurs" dans le "Rat's Nest Cave" avec la compagnie Canmore Cavers Ltd. (voir <http://canadianrockies.net/wild-cavetours>; numéro sans frais (877) 317-1178). Cette caverne est située sous la montagne Grotto et abrite autour de 20 espèces d'arthropodes, incluant des faucheuses en diapause. Les tours sont physiquement demandant, mais aucune expérience n'est nécessaire. Les participants doivent avoir une forme physique raisonnable. Le rendez-vous sera à l'accueil de l'hôtel Radisson à l'heure désignée (voir plus bas). Portez des vêtements appropriés à la température (il peut y avoir de la neige; la caverne est à une température constante de 5°C) et des bottes de randonnées ou de bons espadrilles. Apportez des boissons et une collation. Les caméras devront être placées dans des sacs de plastique accrochés autour du cou. À cause de la nature aventureuse de l'activité, tous les participants devront signer une décharge avant le tour. Afin de sauver du temps, veuillez vous procurer la décharge sur le site Internet et la remplir en



R. Cannings

Grylloblatta campodeiformis campodeiformis, voir Bull. 36:25 pour l'histoire de l'origine de l'écusson du SEC.

avance. Payer les frais avant la sortie permettra également de sauver du temps. Nous conduirons dans nos propres véhicules pour environ 15 minutes jusqu'à un stationnement et nous marcherons ensuite environ 30 minutes (1.5 km sur un dénivelé de 150m) jusqu'à l'entrée de la caverne. Des vêtements de protection (il y aura de la boue), des protecteurs pour genoux (nous devons ramper à plusieurs endroits), des gants, des casques, ainsi que des lampes frontales seront fournies par l'opérateur du tour. Une collecte limitée des arthropodes est permise si les informations ainsi recueillies peuvent être utilisées pour des fins éducationnelles ou de conservation. Le nombre de personnes minimal nécessaire pour effectuer le tour est de 2; le maximum est de 8 personnes par guide. L'âge minimal est 9 ans. **Veillez S.V.P. réserver directement avec l'opérateur** (voir ci-dessus). Politique d'annulation : moins de 48h en avance, 50% non remboursable; 24h en avance, 100% non remboursable. Le prix (réduit) est de 84.53\$ par personne, incluant la TPS. Les cartes VISA et Mastercard, et les chèques personnels sont acceptés. La durée de la sortie sera de 4.5 à 5 heures du départ au retour à l'hôtel.

Tour #1 (avant la réunion) : 12h30 le 2 nov.

Tour #2 (après la réunion) : 13h00 le 5 nov.

NOTE : À cause d'une omission par erreur, les avis précédents pour la Réunion annuelle conjointe 2005 n'ont pas mentionné que deux symposia seront commandités par la Commission Biologique du Canada (Arthropodes terrestres) : il s'agit de *Maintaining arthropods in northern forest ecosystems*, et *Arthropods and fire*. Nous nous excusons pour cette omission.



image courtesy of Barry Flahey

Entomologie: Une célébration des petites merveilles de la vie!

Colloques

Préserver les arthropodes dans les écosystèmes forestiers nordiques

Organisateurs : John Spence et David Langor

Biology et diversité des arachnides

Organisateurs : Heather Proctor, Derrick Kanashiro, Robb Bennett

Les arthropodes et le feu

Organisateur : Rob Roughley

Le cèpe du blé

Organisateur : Hector Carcamo

Le colloque des étudiants gradués

Organisateur : Tonya Mousseau

Le colloque des étudiants gradués

Ce colloque a pour but premier de mieux faire connaître les étudiants gradués qui progressent à un niveau supérieur de leur carrière, et de leur permettre de présenter leurs recherches de façon plus élaborée. Pour être éligible, les étudiants doivent avoir soumis leur thèse au courant de l'année passée ou bien prévoir de la soumettre au courant de l'année suivant le colloque. Idéalement, le sujet de la présentation doit être en relation avec le thème du colloque: *Entomologie: Une célébration des petites merveilles de la vie!* Les étudiants gradués qui participent à ce colloque peuvent également concourir au Prix du Président; par contre il est nécessaire que le sujet présenté au colloque soit différent de celui de la présentation ou de l'affiche présentée pour le prix.

De l'aide est requise pour sélectionner les meilleurs conférenciers. Si vous êtes un étudiant éligible et intéressé à participer ou si vous connaissez quelqu'un qui pourrait l'être, prière de contacter Tonya Mousseau (tmousseau@ucalgary.ca). Svp, faites nous part de votre intérêt et du titre de votre présentation avant le 15 juin 2005. Tous les détails sont disponibles sur le site Internet de l'ESC dans la section "Affaires étudiantes". <http://esc-sec.org/studentf.htm>.

FORMULAIRE D'INSCRIPTION

Nom : _____

Titre

Prénom

Nom

Nom à inscrire sur le porte nom (si différent du nom susmentionné)

Affiliation : _____

Adresse : _____

Téléphone : _____ Fax : _____ Courriel : _____

(Nota : L'inscription sera confirmée par courriel avec une adresse électronique valide et lisible.)

Personne accompagnatrice : (il y n'a pas des frais pour les personnes accompagnatrices ; on peut acheter des billets de banquet supplémentaire à l'inscription.) _____

Coût :	Avant le 1 ^{er} août	Après le 1 ^{er} août	Total
Membre régulier de la SEC ou de la AES	140 \$	180 \$	_____ \$
Non-membre	180 \$	220 \$	_____ \$
Étudiant ou membre retraité	70 \$	90 \$	_____ \$

Préférence pour le banquet : viande/fruits de mer ou plat végétarien

Compris dans les frais d'inscription : Programme (avec les résumés) et participation aux réunions, à la réception et au banquet. Des billets supplémentaires pour le banquet seront en vente au bureau d'inscription. Aucun remboursement après le 15 septembre 2005.

Mode de paiement

Chèque : (payable à l'ordre de la RAC SEC/SEA 2004) Carte de crédit :

Nom inscrit sur la carte de crédit (lettres moulées) : _____

Carte de crédit : VISA ou Mastercard, Numéro de la carte de crédit : _____

Signature : _____ Date d'expiration : _____

Hébergement : Vous êtes encouragés à loger à l'hôtel Radisson (tarif : 89 \$ pour deux personnes, si les réservations sont faites avant le 2 octobre 2005). Pour bénéficier du tarif spécial, au moment de faire votre réservation, veuillez mentionner que vous participez à la Conférence de la Société d'entomologie du Canada. Réservez le plus tôt possible pour nous permettre de planifier les diverses activités.

Retournez le formulaire et votre paiement à :

SEC/SEA Inscription

Greg R. Pohl

Insect I.D. Officer / Museum Curator

Northern Forestry Centre - Canadian Forest Service

5320 - 122 St., Edmonton, Alberta

Canada T6H 3S5

Téléphone : (780) 435-7211, Fax : (780) 435-7359

Courriel : gpohl@nrcan.gc.ca

SEA site web : <http://www.esc-canmore.org>

Hôtel :

Radisson Hotel and Conference Center Canmore

511 Bow Valley Trail, Canmore, Alberta T1W 1N7

Téléphone : (403) 678 3625, Fax : (403) 678 3765

Sans frais : (800) 333-3333

Courriel : rhi_cnmr@radisson.com

Site web : <http://www.radisson.com/canmoreca>

Catalogue of the Ceutorhynchinae of the world, with a key to genera (Insecta: Coleoptera: Curculionidae). Colonnelli, E. 2004. 124pp. Argania Editio. Barcelona, Spain. ISBN 84-931847-6-4. Available at <http://www.entomopraxis.com/argania/>, 72 Euros or at <http://www.pensoft.net/>, US\$ 90 (hardcover).

The weevil subfamily Ceutorhynchinae has become an increasingly important economic group in recent years. It is one of few groups of weevils that include both major pests (e.g. the cabbage seedpod weevil *Ceutorhynchus obstrictus*) as well as biological control agents (e.g. *Mogulones crucifer* introduced in Canada to control the weed hound's-tongue).

This book includes a short introduction, a brief review of historical taxonomic contributions on the group, a summary of nomenclatural changes implemented in the catalogue, a key to the world genera of Ceutorhynchinae as well as a catalogue of all species within the subfamily. The author of this book has published over 75 papers on weevils in the last 30 years, most of which deal with the subfamily Ceutorhynchinae from different regions of the world.

The two most significant contributions of this book are the key to the genera and the catalogue itself. The key includes all 177 ceutorhynchine genera recognized as valid in the catalogue. Because of the difficulty in accounting for all the variation within large genera, some of them appear in more than one couplet in the key. The key should be seen primarily as a tool for experienced taxonomists for two reasons. Firstly, there are no illustrations to explain the difference in the various character states; therefore, a good understanding of morphological structures is a must. Secondly, the key spans 14 pages and includes 204 couplets. This may deter even the most enthusiastic amateur.

The catalogue is the largest part of this book and covers pages 29-83. It contains 11 tribes, 177 genera and 1316 species that are recognized as valid. For each taxon (tribe, genus, species) a list of names, synonyms and references is given. This taxonomic list includes various spellings

found in the literature. For each genus, the type species is also given. Additional data is given under each of the valid species names. These are the current distribution (by country) and the list of host plants. There is no doubt that the catalogue of names associated with a synthesis of the current distribution and host records will be extremely valuable to a broad audience.

Because of the large number of scientific names and valid taxa included in the catalogue (more than 4500 entries), several inconsistencies were noticed. The European origin of the author is reflected in the fact that several species known to occur in North America are not listed as occurring there in the distribution section. Another disappointing aspect of the distribution data is that the countries where species have been introduced by man are not underlined, as they should be according to a comment by the author on p. 7. Although of relatively minor importance, it should be noted that the summary of plant hosts on p. 9 does not include all the hosts mentioned in the catalogue.

Overall, this book should be seen as a very valuable synthesis of taxonomic, distributional and ecological data on the weevil subfamily Ceutorhynchinae. The identification key should be used in combination with other recent publications on this group in order to get a good understanding of the morphological features. Alternatively, a good key to the North American members of the subfamily was published recently by Anderson (2002). The audience for this book will include weevil taxonomists, curators, biological control workers, integrated pest management specialists, etc.

References

Anderson, R. S. 2002. Family 131. Curculionidae Latreille 1802 [pp. 722-815]: In: American beetles, Volume 2, Polyphaga: Scarabaeoidea through Curculionoidea (R. H. Arnett, M. C. Thomas, P. E. Skelley, and J. H. Frank, editors). CRC Press, Boca Raton. 861 pp.

P. Bouchard
Ottawa, Ontario

Books to be reviewed

If you are interested in reviewing one of the following books, please contact Allan Carroll, Chair of the Publications Committee.

- Acorn, J. 2004. Damsel flies of Alberta: Flying neon toothpicks in the grass. University of Alberta Press, Edmonton. 156 pp.
- Anderson, N.M., and Weir, T.A. 2004. Australian water bugs: Their biology and identification (Hemiptera-Heteroptera, Gerromorpha & Nepomorpha). Apollo Books, CSIRO Publishing, Australia. 344 pp.
- Ben-Dova, Y., and German, V. 2003. A systematic catalogue of the Diaspididae (armoured scale insects) of the world, subfamilies Aspidiotinae, Comstockiellinae and Odonaspidinae. Intercept Limited, Scientific, Technical and Medical Publishers, Andover, Hampshire, UK. 1111 pp.
- Gullan, P.J., and Cranston, P.S. 2005. The insects: An outline of entomology. Blackwell Publishing, Oxford, UK. 505pp.
- Hajek, A. 2004. Natural enemies: An introduction to biological control. Cambridge University Press, New York, NY. 378 pp.

- Heckman, C.W. 2003. Encyclopedia of South American aquatic insects: Plecoptera. Kluwer Academic Publishers. 329 pp.
- LaFontaine, J.D. 2004. Noctuoidea, Noctuidae (Part): Noctuinae, Agrotini, *In: Hodges RW (Editor) The moths of America North of Mexico. Fascicle 27.1. The Wedge Entomological Research Foundation, Eugene, OR.* 385 pp.
- Neunzig, H.H. 2003. Pyraloidea, pyralidae (Part), phycitinae (Part), *In: Dominick, R.B. et al. (Editors) The moths of America North of Mexico. Fascicle 15.5. The Wedge Entomological Research Foundation, Eugene, OR.* 338 pp.
- Russell, S.A. 2004. An obsession with butterflies. Basic Books, Perseus Books Group, NY. 238 pp.
- van Emden, H.F., and Service, M.W. 2004. Pest and vector control. Cambridge University Press, New York, NY. 349 pp.
- Send correspondence concerning book reviews to the Chair of the Publications Committee:
Allan Carroll
506 West Burnside Rd, Pacific Forestry Centre
Victoria, BC, Canada V8Z 1M5
Tel: (250) 363-0639, Fax: (250) 363-0775
E-mail: acarroll@pfc.cfs.nrcan.gc.ca

Meeting announcements / Réunions futures

6th Pacific Rim Conference on the Biotechnology of *Bt* and its Environmental Impact

Victoria, British Columbia, Canada from 30 October - 2 November 2005

<http://www.biocontrol.ca>

52nd Annual Meeting of the Entomological Society of America

Fort Lauderdale, USA, 6-9 November 2005

http://www.entsoc.org/annual_meeting/2005/index.html

International Beekeeping Congress

Bangalore, India, 13-18 November 2005

Organized by: Century Foundation, Bangalore

54th Annual Meeting of the American Society of Tropical Medicine and Hygiene

Washington DC, USA, 11-15 December 2005

<http://www.astmh.org>

International Symposium: Integrated Pest Management in Oilseed Rape

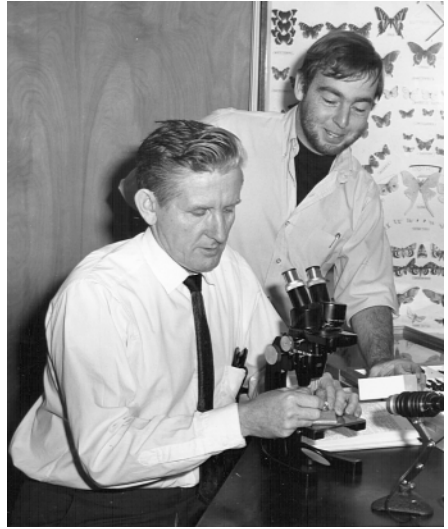
University of Göttingen, 3-5 April 2006

<http://www.symposium-ipm-oilseed-rape.de>

David Harvey Pengelly 1922-2004

David Harvey Pengelly passed away in his 83rd year on 31 October 2004. Professor Pengelly was born on 22 March 1922 in Red Deer, Alberta and raised on the family homestead near Delburne. On completing his high school, he enlisted in the Royal Canadian Air Force and trained as a pilot. In 1941, he was sent to England where he joined a Royal Air Force squadron and did his tour of operations on torpedo Bristol Beaufighters, after which he served as an instructor on Mosquito aircraft at an Operational Training Unit in Nova Scotia. He received his BSc (1950) at the University of Alberta, his MSc (Agr.) from the University of Toronto (1952) and his PhD in entomology (1955) from Cornell University. He went straight from Cornell to a faculty position in the Ontario Agricultural College, where he remained until his retirement from the Department of Environmental Biology in 1982.

Professor Pengelly, known affectionately as "D.H." to his students, had an enormous influence on Canadian entomology, and a remarkable number of today's professional entomologists were first "turned on" to the discipline through his undergraduate courses. His general entomology course (Natural History of Insects) was immensely popular, and a core course for hundreds of students a year. He not only designed a fine course and an innovative and effective system for laboratory teaching, he was also entirely devoted to his students at all levels. When I took his first course as an undergraduate student he was offering five labs a week for two semesters, and he did not leave the laboratory teaching to teaching assistants. Professor Pengelly was always there, always personable and always ready with a great story or identification tip. I am not sure if he really got to know all of the hundreds of students he taught each year, but I do know that he made every student feel recognized and important. That personal approach, combined with the intrinsically interesting subject area, brought many students into the field of entomology.



courtesy of Peter Arnfield

Dave Pengelly (seated) at work.

Those students who finished his introductory entomology course brimming with enthusiasm for insect diversity usually went on and took Dave's fourth year taxonomy course, the famous (infamous?) "collection course". In those days, his insect taxonomy course was also a requirement for graduate students in entomology, so the students in that course were a mixture of graduate students and extremely keen undergraduates. The cohorts of students Dave shepherded through the collection course shared the excitement of discovery (not to mention sharing hundreds of hours in the lab) and often emerged both as lifelong friends and colleagues in the entomological community.

Professor Pengelly had relatively few graduate students, but those of us lucky enough to work with him have fond memories of the experience. He always had time to talk, and always had a wise word. His standards were high, not only for scientific writing but also for professional ethics. He set high standards for those with whom he worked, and he also encouraged his students to remain generalists despite the need to specialize in order to complete a successful graduate degree. It is part of his legacy that Guelph entomol-

ogy graduates are widely recognized for their familiarity with insects as a whole, and not just their particular research groups.

Dave contributed immensely to the Entomological Society of Ontario, and during the 16 years he served as Secretary- Treasurer of the Society he handled virtually all of the Society's business, personally taking care of everything from stuffing envelopes to depositing cheques. This was a huge task, a fact appreciated by those of us who have since struggled to carry out either the Treasurer's OR Secretary's duties for relatively short periods during the years since D.H. retired in 1982.

One of his most lasting contributions to the Society, and entomology as a whole, was his maintenance and development of the collection of insect specimens and associated literature at University of Guelph. The University of Guelph Insect Collection had its start as the Entomological Society of Ontario collection and grew into a world-class resource under Professor Pengelly's care. A remarkable number of specimens in the collection, especially specimens of rare species, were collected and identified by Dave Pengelly himself. One of Dave's great interests throughout his career was the biology of leafcutter bees, and one of his formative experiences as an entomologist was to spend a summer, with his family, studying leafcutter bees and their relation to alfalfa seed set on the Warder Ranch near Dyer's Bay, Ontario in the 1950s. He continued working with leafcutter bees as alfalfa pollinators after he retired to a farm near Erickson, Manitoba.

The passing of Professor Pengelly marks the end of an era in Canadian entomology, but his powerful influence lives on in the attitudes, knowledge and careers of countless students.

Steve Marshall

Guelph, Ontario

Reprinted from the *Newsletter of the Entomological Society of Ontario*

The Entomological Society of Ontario has recently approved a proposal to develop a special D. H. Pengelly tribute issue, to be edited by Steve Marshall and to appear in late 2006. Please contact Steve if you are interested in contributing a paper dedicated to Dave Pengelly.

Recently deceased Compiled by Ed Becker

Chris Sanders, husband of Susan, 68 Parkdale Dr., Sault Ste. Marie ON, P6A 4C8, (705)759-6216, died on 27 May 2005. His death occurred on Drummond Island, MI (about 50 miles southeast of Sault Ste. Marie) while he was helping a friend sail a catamaran from Sanduskey, Ohio, to Sault Ste. Marie. Chris was man of many interests and he will be sorely missed by friends and colleagues in many circles.

Tom Angus, #403, 81 Base Line Rd. W., London ON, N6J 4Y5, died on 16 June 2005, at age 90. Tom's wife, Jane, predeceased him in 1992 and he has been living in London since the summer of 2002 to be near his daughters. The Memorial Service was held in London on June 18th. There was another service at the Westminster Presbyterian Church, Sault Ste. Marie on June 25th. Tom had been in failing health for several months.

Alexandra Smirnoff, widow of Wladimir Smirnoff, died on 28 July 2005. There was a brief obituary notice in the *Ottawa Citizen*.

Gerald Thomson, husband of Diana Thomson, 2226 - 35th Ave. W., Vancouver BC, V6M 1J5, (604) 266-2477, died on 13 July 2005 at age 83. In the 1950s, Gerald was in charge of various ecological research projects at Agriculture Canada. In 1958 he moved his family to Vancouver to take over the management of a number of historic family properties there. He was the recipient of the Queen's Golden Jubilee Medal for volunteer service.

Bruce McLeod 1926-2005

We first met Bruce when he joined the Winnipeg staff of the Forest Insect and Disease Laboratory, Agriculture Canada. He soon became a valued colleague and close friend, both on the job and in sharing accommodation, each other's cooking, and recreation, including parties, fishing, and the hunting of upland game and ducks. Bruce was a positive, supportive and upbeat individual, rarely critical of others, a self-starter, with a ready smile and a great sense of humour. He was passionate about photography, combining an artistic bent with careful attention to detail.

Bruce was born and raised in rural west-central Manitoba near the Riding Mountain National Park, and had a permanent attachment to the countryside and its history. He joined the Royal Canadian Navy Volunteer Reserve (RCNVR) and served on the west coast, where, as he said, he contributed to the war effort by spewing his guts out over the rail. After his discharge in 1945, he came to Winnipeg and took a Commercial Arts Course, giving him the knowledge on which to develop his interest in photography. In 1950, he became a Ranger with the Forest Insect and Disease Survey, recording the incidence of forest insects and

disease pests in Manitoba and Saskatchewan, assessing their impact on forest production, and collecting specimens. In 1970, he was transferred to Ottawa and then, three years later, to Sault Ste. Marie with C. H. Buckner, studying small mammal and avian predators, their impact on forest insects, and the effects of aerial spraying on non-target species. He travelled widely in Ontario, Quebec and the Maritimes, particularly enjoying working with the summer crews of University students. Bruce had a questing mind resulting in many publications on forest insects and small mammals.

In 1986, he retired and moved back to Winnipeg, where he was able to devote his time to photography and gardening. He traveled about rural Manitoba, photographing barns, abandoned farmsteads, cemeteries, etc. In the home garden he took beautifully composed shots of flowers, insects, and birds. Some of his photos were published in the *Prairie Garden*. He believed in giving back to the community, and volunteered with Ducks Unlimited at Oak Hammock Marsh, and at the Birds Hill Provincial Park near Winnipeg.

Bruce is survived by his wife, Carol, two daughters, a son, three grandchildren, and many friends. We all miss him.

Jim Drouin
Edmonton, Alberta
Bill Turnock
Winnipeg, Manitoba



courtesy of Bill Turnock

Elmer George Peters 1920-2003

Elmer was born on 18 August 1920 and raised in the Mennon district of north-central Saskatchewan. He attended Embury School, a one-room rural school where he completed nine grades of his early education, and then continued to work on the farm with his father until World War II began. On 9 October 1941, he joined the Saskatoon Light Infantry, later transferring to the First Special Service Force, an elite attack force using paratrooper tactics. In 1943, Elmer was sent to the Aleutian Islands and then to Italy where he participated in establishing the Anzio beachhead. On 20 February 1944 he was wounded, then repatriated and hospitalized. The following October he was discharged from the army and provided with an extensive rehabilitation program. On 9 November 1945 Elmer married Ruby Aikins in Regina, and on 3 May 1946 Elmer accepted an appointment as a technician at the then Dominion Entomological Laboratory, in Saskatoon. There he worked in programs investigating the many aspects of the biology and control of grasshoppers in Western Canada. As well, he was responsible for annual surveys of the abundance of grasshopper adult and egg populations, analysis of the data, and preparation of outbreak forecast maps. The high quality of Elmer's work played a major part in much needed forecast accuracy, and in developing improved measures for protecting crops from grasshopper damage. Elmer retired from the work force on 29 December 1975.

Elmer was a Charter Member of the Saskatoon Nutana Branch of the Royal Canadian Legion, and was an active participant in many Legion ac-



courtesy of Bob Burnage

tivities. He was an avid outdoorsman, was great on fishing, and he and Ruby, with daughter Joyce and son Casey, enjoyed many camping expeditions. Curling was another of Elmer's favourite recreations. Following his retirement, Elmer and Ruby frequently went south to warmer climes during part of the winter but always returned to Saskatoon. In later years disabling illness made many activities increasingly difficult for Elmer, and he died in Saskatoon on 28 January 2003.

Bob Burnage
Saskatoon, Saskatchewan

The Canadian Entomologist and past issues of the *Memoirs* are available from the Ottawa office, and may be purchased by Mastercard, Visa, cheque or money order.

Biological Survey of Canada: Terrestrial Arthropods

Survey Report

The Scientific Committee met in Ottawa on 21-22 April 2005. A more detailed account of the meeting appears in the *Newsletter of the Biological Survey of Canada (Terrestrial Arthropods)* 24(2), 2005, which is also on the BSC web site at <http://www.biology.ualberta.ca/bsc/english/newsletters.htm>

Scientific Projects

1. Grasslands

Several chapters for the first grasslands volume on ecology and interactions in grasslands habitats are under review and other chapters are expected soon. Preparatory work continues for volume 2 on arthropods in altered grasslands and volume 3 on faunistics. The grasslands newsletter has been discontinued in its current paper form; instead, information will be posted on the BSC website and email notifications sent as necessary. The annual grasslands field trip will be at Waterton Lakes National Park in conjunction with the forest arthropods project.

2. Arthropods of Canada - a BSC e-journal

A Canadian BSC e-journal will be launched to make available well illustrated identification guides to parts of the Canadian fauna. Detailed guidelines are being developed and the e-publication will be launched in 2006. An ongoing project on insect families will be adapted for use on the e-journal site.

3. Terrestrial arthropods of Newfoundland and Labrador

Drafts of keys to the terrestrial arthropods of Newfoundland and Labrador are available for several taxa, and will be developed for the BSC e-journal. Databases of entomological literature and of Newfoundland and Labrador taxa and collection localities are being maintained.

4. Forest arthropods

A newsletter - Arthropods of Canadian For-

ests - has been produced and distributed and is posted on the BSC and the Canadian Forest Service (CFS) web sites. A BSC-sponsored symposium on maintaining arthropods in northern forest ecosystems will take place at the 2005 Entomological Societies' joint annual meeting. The database of forest arthropod biodiversity projects has been updated. A project on the Cerambycidae of Canada and Alaska is now underway.

5. Insects of the arctic

The BSC symposium at the 2004 ESC annual meeting was well received. Recent interest and activity has been centred in Norman Wells and field work is also planned there in 2005. Work in western Alaska in 2004 recorded many species of black flies new for the area.

6. Seasonal adaptations

A number of papers on this topic are in press or submitted. Hugh Danks spent four months in Japan and his work there included review papers on insect cold-hardiness and on insect life cycles.

7. Invasions and reductions

The BSC will co-host (with CFS) a symposium in 2006 in Quebec on non-native arthropods. This symposium will focus on science related to the environmental consequences of invasion. A database of all Canadian non-native arthropods is being developed in cooperation with a Canadian Forest Service project on established alien species. Collection data and databases for a specific project on coccinellids in the context of invasive species continue to be developed.

Other scientific priorities

1. Arthropods and fire

A symposium on arthropods and fire will be held at the 2005 Entomological Societies' meeting in Canmore.

2. Databasing

Additional work has been done on the BSC's

database of important historic collecting localities, including problems to be resolved prior to posting the database on the BSC web site.

3. Survey web site

Numerous updates have been made to the web site, which continues to grow in content and complexity. The site currently receives more than 50,000 unique visitors per year.

4. Endangered species

Developments in Ontario including a recent report on rare and potentially rare Ontario Heteroptera were noted. A proposal for a Survey book on potentially rare insects in Canada is being developed.

5. Survey publicity

BSC Symposia at future entomological societies' meetings will continue to be identified clearly as such. A Survey poster is available to Committee members to download from the Survey web site. The feasibility of a flag bearing the BSC logo (to be flown at field sites) will be investigated.

6. BSC award

The first BSC postgraduate scholarship was awarded at the 2004 ESC meeting. The future of the award is secure after donations from the H.V. Danks Trust Fund.

7. Monitoring of continuing priorities

Some other Survey interests were reviewed, including specific projects in the Yukon and on special habitats, as well as small regional projects and agroecosystems.

8. Other priorities

The Committee also considered work on the arthropods of the Gulf of St. Lawrence Islands, faunal analysis, potential future publications, data standards and other topics.

Liaison and exchange of information

1. Canadian Museum of Nature (CMN)

Mr. Roger Baird, Director, Collections Division, reported that he had participated in the first conference for the Consortium for the Bar Code of Life (CBOL) initiative promoting DNA barcoding as an accurate and reliable tool for taxonomic research, for assigning unidentified specimens to their correct species and to expand activity in taxonomy. CBOL is being supported by the Alfred Sloan Foundation and the secretariat is hosted at the Smithsonian Institution. About 42 partners worldwide, including the CMN, have signed an agreement of understanding to collaborate in the CBOL. Mr. Baird reported on a federal science and technology forum in January 2005 organized by the Office of the National Science Advisor to the Prime Minister. There were public expressions of personal willingness to work horizontally across Departmental lines, but organizations are much less willing to work in this fashion, although some "horizontal projects" seem to succeed by force of will of the individual partners in spite of such hindrances.

2. Agriculture and Agri-Food Canada (AAFC)

Jean-Francois Landry reminded the Committee that three insect taxonomists had been recruited last year and all are developing good active research programs. Staffing for a nematologist and an acarologist specializing in phytophagous mites is in progress. A Collections Manager for entomology is being staffed for the first time. A highly valuable resource of volunteers assists with work at the Centre. The reorganization of AAFC is largely complete. The systematics research program falls under the Environment team, the Environmental Health program and the Biodiversity theme. Systematic entomology is one of the national studies in the Biodiversity theme. The new science structure seems to have benefited biodiversity. A Memorandum to Cabinet on invasive alien species was put forward by several federal departments and organizations. Agriculture and Agri-Food Canada participated but (unlike other departments) received no funding although it provides relevant expertise, collections and facilities especially to assist with identifications. AAFC is



Andrea Renelli

Participants waving the BSC flag at the 2005 Biological Survey BioBlitz at Waterton Lakes National Park. Left to right: Joe Shorthouse, Felix Sperling, Rob Roughley and Dave Langor.

the federal government lead on the Global Biodiversity Information Facility (GBIF). AAFC has committed some funding towards the NSERC grant for the Bar Coding of Life project.

3. Entomological Society of Canada

Robert Lamb reported that covers for the Society's publications have been redesigned. The Society is undergoing a strategic review, not because of any serious problems but because it has been 10 years since the last review. The focus will be on membership, finances and particularly electronic information issues. He believes that the electronic version of the *Canadian Entomologist* needs to be made more popular. The editor of the *Canadian Entomologist* welcomes comment on the roles (and the redesign) of the journal. Robert Lamb requested the Committee's advice about whether the ESC should contribute to the International Trust for Zoological Nomenclature. A number of Committee members agreed that the Trust should be supported because it is essential to systematics work.

4. General Status Program, Canadian Wildlife Service

Lisa Twolan explained that she coordinates the

General Status Program which attempts to establish rankings not just for species at risk but for all species within a given taxon. The first report (*Wild Species 2000*) targeted relatively well known taxa including vertebrates, ferns, orchids and butterflies. The working group is now leading up to a second report for March 2006 that will include rankings for dragonflies and damselflies and possibly general status ranks for tiger beetles. However, the three federal partners in this program do not have expertise in these groups and Lisa Twolan welcomed feedback and assistance.

5. Canadian Forest Service

David Langor provided an update from the Canadian Forest Service which is now being organized along business lines. The reorganization is part of an attempt to improve the linkage of CFS to the requirements of government policy. Some of the new business lines are relevant to biodiversity such as sustainable forests and climate change. Biodiversity is seen as something that cuts across all lines of business but will be prominent especially in the area of criteria and indicators. CFS received funding as part of the Alien Species Strategy.

6. Parasitology module, Canadian Society of Zoologists

David Marcogliese reported that the Stickleback project of the parasitology module continues to recruit new members and gather new data. He also reported on organizational changes in government agencies, reviewed personnel changes in parasitology, and circulated reports, journal papers and other documents.

Other items

1. Regional developments

Information of potential interest from different regions was outlined, such as diverse work by graduate students and others. A few selected items are noted below. In British Columbia, the University of British Columbia received an \$8 million gift toward a biodiversity research centre that will include a museum of natural history. However, the donor is insisting that all the collections must be publicly available, which will create serious problems for insect and other collections. Governments and Delta have contributed funds to purchase Burns Bog. In the Prairies, the Entomological Society of Saskatchewan produced an historical perspective of the Society commemorating the centennial of the province. At the Manitoba Museum a curator responsible for both vertebrates and invertebrates has been hired. In Ontario, all the science departments at the Royal Ontario Museum have been amalgamated into one Department of Natural History. Expansion of the insect collection at the University of Guelph is continuing. In Quebec, departures of staff and an impending retirement mean that there will soon be no agricultural entomologists at l'Université Laval. The Department of Natural Resource Sciences at McGill University has a newly approved graduate program in environmental assessment. The Université de Montréal again advertised a position in systematic entomology but was unable to hire anyone. In Newfoundland and Labrador and the Maritimes, the joint 2004 ESC/AES meeting last fall was a success. The online journal of the AES is officially running and accepting regional papers although nothing has yet been published. For the Arctic, a visit revealed that

western Alaska is far more rich in black flies than previously supposed. There are plans to visit Chukotka in 2005.

2. Other matters

The Scientific Committee discussed other matters arising, the Annual Report to the Canadian Museum of Nature, the next meeting of the Committee and other issues, and held the Annual Meeting of the Biological Survey Foundation.

Monarch Watch Program

Journey North (www.learner.org/jnorth) is an award-winning internet-based science program that helps students study and monitor the arrival of spring in North America. Over 300,000 students in Canada and the U.S.A. are using data collected by the program. Your generous contributions of sightings of monarch butterfly adults, eggs and larva would be greatly appreciated. Please register at the program web site and report your sightings there, or send the following information to this writer (donald_davis@yahoo.com): date of observation, name and e-mail address of observer, location of sighting (i.e. name of closest town or village) and details of sighting.

Since June 1st, when our weather suddenly became very warm, monarchs have been soaring into Canada, with sightings in northern Ontario, Manitoba, Quebec and even Nova Scotia.

For information on the new Monarch Way Station Program initiated by the Monarch Watch Program, go to <http://www.monarchwatch.org>. You can register your own special butterfly habitat with this program.

Thanks for your support.

Don Davis
Toronto, Ontario

Officers of Affiliated Societies, 2004-2005 Dirigeants des sociétés associées, 2004-2005

Entomological Society of British Columbia

President Dave Raworth
President-Elect Karen Needham
Past President Bob Vernon
Editor (Journal) Ward Strong
Editor (Boreus) J. Heron and S. Lavallee
Sec.-Treasurer Robb Bennett
B.C. Ministry of Forests, 7380 Puckle Rd.
Saanichton, BC V8M 1W4
Tel: (250) 652-6593, Fax: (250) 652-4204
E-mail: robb.bennett@gems6.gov.bc.ca
<http://esbc.harbour.com/>

Entomological Society of Alberta

President John Acorn
Vice President Maya Evenden
Past President Heather Proctor
Editor (Proceedings) Stephanie Erb
Editor (Website) Troy Danyk
Treasurer Kimberly Rondeau
Secretary Mike Undershultz
Alberta Environment
9th Floor, 9920 108 St.
Edmonton, AB T8C 1T6
E-mail: undershultz@gov.ab.ca
Tel: (780) 422-1508
<http://www.biology.ualberta.ca/courses.hp/esa/esa.htm>

Entomological Society of Saskatchewan

President Philip Curry
President-Elect Art Davis
Past President Jack Gray
Treasurer Dwayne Hegedus
Newsletter Editor Brian Galka
Secretary Larry Grenkow
Agriculture and Agri-Food Canada
107 Science Place, Saskatoon, SK S7N 0X7
Tel: (306) 956-7293
E-mail: grenkow1@agr.gc.ca
<http://www.usask.ca/biology/ess/>

Editor's note: Society Directors and Officers are reminded to check these lists, and submit corrections, including the names and positions of new officers.

Entomological Society of Manitoba

President Brent Elliott
President-Elect Rheel Lafreniere
Past-President John Gavloski
Treasurer Ian Wise
Newsletter Editors Manhood Iranpour
Patricia MacKay
Editor (Proceedings) Terry Galloway
Member-at-Large Lisa Baspaly
Secretary Noel White
Agriculture and Agri-Food Canada
195 Dafoe Rd., Winnipeg, MB R3T 2M9
Tel: (204) 983-1452, Fax: (204) 983-4604
E-mail: nwhite@agr.gc.ca
<http://home.cc.umanitoba.ca/esm/>

Entomological Society of Ontario

President Jim Corrigan
President-Elect Fiona Hunter
Past-President Bruce Gill
Treasurer Blair Helson
Editor (Journal) Yves Prévost
Secretary David Hunt
Agriculture and Agri-Food Canada
2585 Country Rd. 20, Harrow, ON N0R 1G0
Tel: (519) 738-2251 ext 427
E-mail: HuntD@agr.gc.ca
<http://www.entsocont.com>

Société d'entomologie du Québec

Président Jacques Brodeur
Président-sortant Michel Cusson
Vice-président Eric Lucas
Trésorier Nancy Larocque
Rédacteur (Antennae) Christine Jean
Secrétaire Mireille Marcotte
1055, rue du PEPS, C.P. 3800
Sainte-Foy, QC G1V 4C7
Tél. : (418) 648-4928, Fax : (418) 648-5849
E-mail: secretariat@seq.qc.ca
<http://www.seq.qc.ca/>

Acadian Entomological Society

President John Sweeney
Vice-President Reginald Webster
Past President Andrei Alyokhin
Treasurer Don Ostaff
Secretary Don Ostaff
Natural Resources Canada
P.O. Box 4000, Fredericton, NB E3B 5P7
Tel: (506) 452-3579
E-mail: dostaff@nrcan.gc.ca
<http://www.acadianes.org/index.html>

**Bulletin
of the Entomological Society of
Canada**

Editor: Paul Fields
Assistant Editor: Marjorie Smith

The *Bulletin of the Entomological Society of Canada*, published since 1969, presents quarterly entomological news, opportunities and information, details of Society business, matters of wider scientific importance and book reviews.

Published by the
Entomological Society of Canada
393 Winston Ave.
Ottawa, Ontario, Canada K2A 1Y8
<http://esc-sec.org>
entsoc.can@bellnet.ca

The Entomological Society of Canada was founded in 1863 primarily to study, advance and promote entomology. It supports entomology through publications, meetings, advocacy and other activities.

Send correspondence to:
Paul Fields
Bulletin Editor
Cereal Research Centre
195 Dafoe Road
Winnipeg, MB, Canada R3T 2M9
Telephone: (204) 983-1468
Fax: (204) 983-4604
E-mail: pfields@agr.gc.ca

ISSN: 0071-0741
Customer Account No. 3975533
Publications Mail Agreement No. 40033986
Printed in Canada
Contents copyrighted 2005 by the Entomological Society of Canada

**Submission deadline for
the next issue: 10 November 2005**



**Bulletin
de la Société d'entomologie du
Canada**

Rédacteur : Paul Fields
Rédactrice adjointe : Marjorie Smith

Le *Bulletin de la Société d'entomologie du Canada*, publié depuis 1969, présente trimestriellement des informations entomologiques, des occasions, des renseignements sur les opérations de la Société, des dossiers scientifiques d'importance et des analyses d'ouvrages.

Publié par
Société d'entomologie du Canada
393 Winston Ave.
Ottawa, Ontario, Canada K2A 1Y8
<http://esc-sec.org>
entsoc.can@bellnet.ca

La Société d'entomologie du Canada a été établie en 1863 principalement pour promouvoir l'étude et l'avancement de l'entomologie. Elle soutient l'entomologie par l'entremise de publications, de réunions et d'autres activités.

Envoyer vos sousmissions à :
Paul Fields
Rédacteur du *Bulletin*
Centre de recherche sur les céréales
195, chemin Dafoe
Winnipeg, MB, Canada R3T 2M9
Téléphone : (204) 983-1468
Télécopieur : (204) 983-4604
courriel : pfields@agr.gc.ca

ISSN: 0071-0741
Numéro de client : 3975533
Numéro de convention : 40033986
Imprimé au Canada
Droits d'auteur 2005 par la
Société d'entomologie du Canada

**Date de tombée pour le
prochain numéro :
10 novembre 2005**

The Buzz / Bourdonnements

Paul Fields, Editor / Rédacteur



I have lived in Winnipeg for 17 years, and I have come to realize that it is a great city in which to be an entomologist. It has the only remaining Department of Entomology (University of Manitoba) in the country, although the city has not been graced with an insect zoo of the likes that Andy Bennett describes in his column on page 139 of this issue. Still, we do have Madagascar hissing cockroaches at our zoo. Entomology regularly makes the front pages in the local newspapers. And, most people in the city know that there is a city entomologist, because of the long-standing controversy over what to do about mosquitoes, to spray or not to spray. So when you say that you are an entomologist, people don't assume that you have a fascination for words, but know that you enjoy spending your days thinking about small six-legged creatures. A case in point is that this fall the Winnipeg Art Gallery is hosting a show entitled *Bug City*. It has over 100 works by 34 artists. If you are in Winnipeg, before 8 January 2006 when the show closes, drop in and see insects through the eyes of artists from around the country. If you can't, then you can see some of the works online at <http://www.wag.mb.ca/whatson/exhibition/BugCity.htm>

Finally, I would like to welcome Marj Smith to the *Bulletin*. She has accepted the position of Assistant *Bulletin* Editor. Marj completed her PhD on aphid eco-physiology at the University of Manitoba. She is currently working on wheat midge as a Biologist for Agriculture and Agri-Food Canada in Winnipeg at the Cereal Research Centre. She has been a great help so far, and I look forward to working with Marj in the coming months.

J'habite à Winnipeg depuis 17 ans, et je veine de réaliser que Winnipeg est une ville formidable pour un entomologiste. Elle a le seul département d'entomologie (Université de Manitoba) dans le pays, même si la ville n'a pas de jardin zoologique des insectes de la sorte décrite par Andy Bennett dans son article qui se trouve à la page 139 de ce numéro. Cependant, nous avons des blattes souffleuses de Madagascar au zoo. L'entomologie fait souvent les manchettes des journaux locaux. Et, la plupart des gens dans la ville savent qu'il y a un entomologiste à l'emploi de la ville, probablement à cause de la controverse habituelle sur comment résoudre le problème avec les moustiques : d'arroser ou de ne pas arroser. Alors quand vous dites que vous êtes entomologiste, les gens savent que vous aimez passer la journée en train de penser aux insectes, plutôt que de casser votre tête avec les jeux de mots. Un exemple, c'est l'exhibition *Bug City* à la Winnipeg Art Gallery. Il y a plus de 100 oeuvres d'art par 34 artistes. Si vous êtes à Winnipeg, avant la date de fermeture de l'exposition, le 8 janvier 2006, venez, et voyez les insectes à travers les yeux d'artistes qui viennent des quatre coins du pays. Si vous ne pouvez pas venir, allez les voir en ligne à <http://www.wag.mb.ca/whatson/exhibition/BugCity.htm>

J'aimerais souhaiter la bienvenue au *Bulletin* à Marj Smith. Elle a accepté le poste de Rédactrice adjointe du *Bulletin*. Marj a fait sa thèse de doctorat sur l'eco-physiologie des pucerons à l'Université du Manitoba. Présentement, elle travaille sur la cécidomyie du blé comme Biologiste pour Agriculture et Agroalimentaire Canada, à Winnipeg au Centre de recherche sur les céréales. Elle m'a déjà aidé énormément, et j'ai hâte de travailler avec elle dans les prochains mois.

Entomological Society of Canada, 2004-2005 Société d'entomologie du Canada, 2004-2005

Executive Council / Conseil exécutif

President / Président

Robert Lamb
Cereal Research Centre
Agriculture and Agri-Food Canada
195 Dafoe Rd., Winnipeg, MB R3T 2M9
Tel: (204) 983-1458, Fax: (204) 983-4604
E-mail: rlamb@agr.gc.ca

First Vice-President / Premier vice-président

Dan Quiring
University of New Brunswick
Fredericton, NB E3B 6C2
Tel: (506) 453-4922, Fax: (506) 453-3538
E-mail: quiring@unb.ca

Second Vice-President / Second vice-président

Peggy Dixon
Atlantic Cool Climate Crop Research Centre
Agriculture and Agri-Food Canada
308 Brookfield Rd.
St. John's, NL A1E 5Y7
Tel: (709) 772-4763, Fax: (709) 772-6064
E-mail: dixonpl@agr.gc.ca

Past President / Président sortant

Charles Vincent
Horticultural Research & Development Centre
Agriculture and Agri-Food Canada
430 Gouin Blvd.
Saint-Jean-sur-Richelieu, QC J3B 3E6
Tel: (450) 346-4494, Fax: (450) 346-7740
E-mail: vincentch@agr.gc.ca

Directors-at-Large / Conseillers

David Gillespie (2005), Rosemarie De
Clerck-Floate (2006), Robert Roughley
(2007)

Regional Directors / Directeurs régionaux

Allan Carroll (ESBC), Hector Carcamo
(ESA), Lorraine Braun (ESS), Patricia
MacKay (ESM), David Hunt (ESO),
Stéphane Le Tirant (SEQ), Kenna
MacKenzie (AES).

Student Representative /

Représentante des étudiants

Tonya Mousseau
Department of Biology
University of Calgary
E-mail: tmousseau@ucalgary.ca

Trustees / Fiduciaires

Treasurer / Trésorier

Patrice Bouchard
Entomological Society of Canada
393 Winston Ave., Ottawa, ON K2A 1Y8
Tel: (613) 759-7510, Fax: (613) 759-1924
E-mail: bouchardpb@agr.gc.ca

Secretary / Secrétaire

Rick West
31 Drover's Heights
Portugal Cove-St. Philips, NL A1M 3G6
Tel: (709) 895-2734, Fax: (709) 895-2734
E-mail: reely.west@nl.rogers.com

Bulletin Editor / Rédacteur du Bulletin

Paul Fields
Agriculture and Agri-Food Canada
195 Dafoe Rd., Winnipeg, MB R3T 2M9
Tel: (204) 983-1468, Fax: (204) 983-4604
E-mail: pfields@agr.gc.ca

Ass. Bulletin Editor / Rédactrice adj. du Bulletin

Marjorie Smith
Cereal Research Centre
Agriculture and Agri-Food Canada
195 Dafoe Rd, Winnipeg, MB R3T 2M9
Tel: (204) 984-4889, Fax: (204) 983-4604
E-mail: msmith@agr.gc.ca

Webmaster / Webmestre

Barry Lyons
Tel: (705) 541-5617, Fax: (705) 541-5700
E-mail: blyons@nrcan.gc.ca, <http://esc-sec.org>

The Canadian Entomologist

Editor-in-Chief / Rédacteur en chef

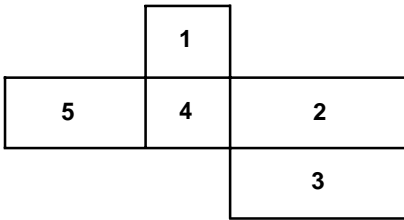
Richard Ring
Department of Biology, University of Victoria
Victoria, BC, Canada V8W 2Y2
Tel: (250) 721-7102, Fax: (250) 721-7120
E-mail: ring@uvic.ca

Divisional Editors / Rédacteurs de division

Michel Cusson, E-mail: cusson@cfl.forestry.ca
Don Lafontaine, E-mail: lafontaine@agr.gc.ca
David Gray, E-mail: David.Gray@nrcan-nrcan.gc.ca

Head Office / Siège social

Entomological Society of Canada
393 Winston Ave., Ottawa, ON K2A 1Y8
Tel: (613) 725-2619, Fax: (613) 725-9349
E-mail: entsoc.can@bellnet.ca, <http://esc-sec.org/>



Images

On the spine: The six-spotted tiger beetle, *Cicindela sexguttata* Fabricius (Cicindellidae), a common predaceous beetle in eastern North America, photo: H. Goulet.

Beside title: The emerald ash borer, *Agrilus planipennis* Fairmaire (Buprestidae), an invasive beetle from Asia that threatens North American ash trees, photo: K. Bolte.

Photos on front cover:

1. *Acyrtosiphon pisum* (Harris) (Aphididae), a species used in studies of seasonality, photo: R. Lamb.

2. Apple sawfly, *Hoplocampa testudinea* (Klug) (Tenthredinidae), trap used to determine population levels in orchards, photo: C. Vincent.

3. Dead lodgepole pine trees killed by mountain pine beetle, *Dendroctonus ponderosae* Hopkins (Scolytidae), in British Columbia, photo: A. Carroll.

4. *Syrphus ribesii* Linnaeus (Syrphidae), a common nectar-feeding hover-fly found in gardens, hedgerows and woodlands, photo: S. Marshall.

5. Research plots used to study the impact of *Macrosiphum euphorbiae* (Thomas) (Aphididae) on flax, photo: R. Lamb.

Back cover: *Ixodes gregsoni* Lindquist, Wu and Redner (Ixodidae), a tick parasite of mustelids, photo: K. Bolte.

Français à l'intérieur de la couverture avant

<http://esc-sec.org/>

Return Undeliverable Canadian Address to:
Entomological Society of Canada
Société d'entomologie du Canada
393 Winston Avenue
Ottawa, Ontario, Canada K2A 1Y8
E-mail: entsoc.can@bellnet.ca

Publications Mail Agreement No. 40033986
Date of issue: September 2005

ISSN: 0071-0741