

Bulletin

Entomological Society of Canada
Soci t  d'entomologie du Canada

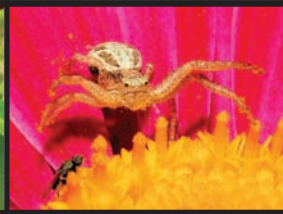
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Images

Sur le dos : *Silusa californica* Bernhauer (Staphylinidae, Aleocharinae), décrit originellement à Pasadena, Californie, possède une aire de répartition assez courante, transcontinentale au Canada avec une extension vers le sud dans les Rocheuses. Photo : K. Bolte

Sous le titre : *Aphodius distinctus* (Müller), une espèce européenne de bousier (Scarabaeidae) commune dans toute l'Amérique du Nord. Photo : H. Goulet & C. Boudreault

1. Élevé sur des cônes à graines du thuya géant, *Thuja plicata* Don ex D. Don (Cupressaceae), ce mâle d'*Eurytoma* Illiger spp. (Eurytomidae) est ou bien un parasitoïde associé à la cécidomyie des cônes du thuya géant, *Mayetiola thujae* (Hedlin) (Cecidomyiidae), ou alors un spermatophage. Photo : D. Manastyrski

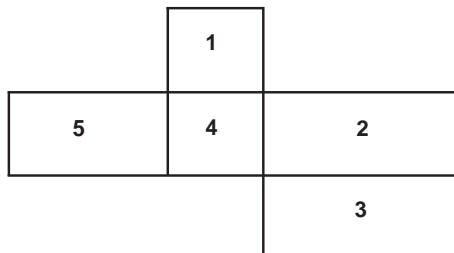
2. *Spilomyia alcimus* (Syrphidae) sur le ptéléa *Ptelea trifoliata*. Wheatley, comté d'Essex, Ontario, 2 juin, 2007. Photo : J. Lucier

3. Bob Lamb en train de faire des récoltes au parc national Riding Mountain, Manitoba, durant le Bioblitz de la Commission biologique du Canada en 2007. Photo : P. MacKay

4. Stade immature de *Xysticus* spp. (Thomisidae) sur une marguerite dans un jardin au pied du mont Bowman, Colombie-Britannique, juillet 2005. Photo : J. Bovee

5. Galles rouge vif de la génération agamique de *Trigonaspis quercusforticorne* (Walsh) (Cynipidae) sur des nouvelles ramilles du chêne à gros fruits (*Quercus macrocarpa*) à Souris, MB. Photo : S. Digweed

Plat inférieur : Abeille découpeuse, probablement *Megachile* sp. (Megachilidae), à Pender Island, Colombie-Britannique, juillet 2007. Photo : B. Roitberg





The Entomological Society of Canada, like many societies, depends heavily on volunteers. These members participate in the running of the Society by contributing varying amounts of their time to complete the work of their committee or job. We have only one paid employee (Derna Lisi, our Office Manager), and the rest of the work is currently done by 16 committees, 5 ad-hoc committees, and a number of individuals. Some of the more demanding jobs are Secretary, *TCE* and *Bulletin* editors, and Webmaster.

We have been fortunate in having Rick West as long-time secretary. He has been able to provide the continuity and corporate memory that is so important when the Executive is changing every year. Also, Barry Lyons has been our first and only webmaster since we decided we needed one. Barry has put considerable effort into getting the Society's information onto the website so it will be readily available to members and other interested parties. Unfortunately for us, both Rick and Barry have decided it is time to turn their jobs over to someone else. I know you will all join me in offering our sincere gratitude to both of these gentlemen for their valuable service to the organization.

La Société d'Entomologie du Canada, comme de nombreuses sociétés, dépend largement de ses bénévoles. Ces membres participent au bon fonctionnement de la société en donnant de leur temps afin d'effectuer les tâches de leur comité ou de leur poste. Nous n'avons qu'une seule employée salariée (Derna Lisi, notre gestionnaire), le reste de notre travail étant présentement effectué par 16 comités, 5 comités ad-hoc et un certain nombre d'individus. Parmi les postes les plus exigeants se trouvent les postes de secrétaire, rédacteurs du *TCE* et du *Bulletin*, ainsi que webmestre.

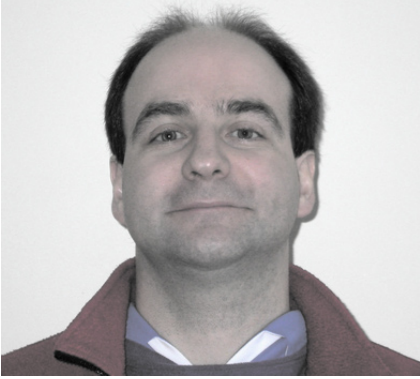
Nous avons été très chanceux d'avoir Rick West comme secrétaire pendant si longtemps. Il a su fournir la continuité et la 'mémoire' de l'organisation, si importantes lorsque le conseil exécutif change chaque année. De plus, Barry Lyons a été notre premier, mais aussi notre seul webmestre depuis que nous avons décidé d'en avoir un. Barry a fait des efforts considérables pour publier les informations concernant la Société sur le site Internet afin que celles-ci soient disponibles aux membres et autres parties intéressées. Malheureusement pour nous, Rick et Barry ont tous deux décidé qu'il était temps de céder leur poste à quelqu'un d'autre. Je sais que vous vous joignez tous à moi pour offrir notre sincère gratitude à ces deux hommes pour leur service incroyable.

Au moment où j'écris ces lignes, nous sommes toujours à la recherche de candidats pour ces postes. Si vous êtes intéressés à vous impliquer davantage au sein des activités de la SEC, et si vous avez les aptitudes requises, veuillez me contacter. De la même façon, si vous êtes intéressés à vous impliquer de quelque façon que ce soit, nous sommes toujours à la recherche de bénévoles. Il s'agit d'une belle opportunité pour mieux connaître vos collègues entomologistes, et cela pourrait aussi permettre d'assister plus facilement à nos réunions annuelles.

At the time of writing, we are still seeking candidates for these positions. If any of you have an interest in participating to a greater degree in the activities of the ESC, and have the necessary skill set, please contact me. Or if you are interested in participating in any other way we are always looking for volunteers. It's a great opportunity to get to know your fellow entomologists better, and may have the bonus of providing more leverage to get you to our annual meetings.



Calosoma sycophanta (Carabidae) is a European species of ground beetle that was introduced into North America to control gypsy moth, *Lymantria dispar* (Lymantriidae). (Photo courtesy of Henri Goulet.)



Maple Syrup, Hockey Sticks and Grylloblattids (Oh, My)

The laws of probability state that the likelihood of two independent events both occurring is equal to the product of their individual probabilities. Why, pray tell, is this relevant to an article on Canada and entomology? I believe that a lively anecdote is required.

I was with my charming and exceptionally tolerant wife at a picnic site in Kondalilla National Park, Queensland and there was an immature eurybrachyid planthopper sharing the picnic table with us (Fig. 1). It had the interesting behaviour of walking backwards everywhere to fool predators into thinking that its long dorsal filaments are actually antennae (thus deflecting attacks from its presumably more important head). As is often the case, my macrophotographic endeavours drew attention from a curious passer-by, but instead of the usual “watcha looking at?” I was greeted with a

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more erudite “you must be an entomologist”.

It turned out that he too was an entomologist working for the USDA. What are the chances? Surely there are only a few thousand, maybe several tens of thousands of entomologists around the world. With a current global population around 6.8 billion people, it’s not hard to understand why you don’t bump into other entomologists every day, even if you are doing your very best to attract them. I have had a few other instances while travelling when I have happened upon people who work with insects in some capacity, but in all my life, I am sad to say, that none of these have been Canadian. The reason for this, I’m sure, is not because Canadians don’t travel – how many people carrying Mountain Equipment Co-op backpacks have you met while travelling? No, it’s simply a factor of our relatively small population. This means that the chance of meeting a Canadian while travelling is small, but not insignificant. The chance of meeting an entomologist is very small (even if you are in the habit of waving large aerial nets through foreign shopping malls). And therefore, the chance of meeting somebody who is both an entomologist AND Canadian while on holiday is practically mymaridesque (that is to say, very, very small).

Should we be sad about this fact? Perhaps we should be proud that we belong to such an exclusive club. Here, for your reading pleasure is my list of pros and cons of being a CANADIAN ENTOMOLOGIST!

PROS

- 1) Second highest grylloblattid to entomologist ratio of any country on the planet (curse you, North Korea).
- 2) Name tags at ESC meetings? We don’t need no stinkin’ name tags!
- 3) Snow scorpionflies, snow “fleas”, ice crawlers. Come and get ’em!
- 4) Where else in the world can you safely aspirate insects off the windshield while

waiting in line for your Tim Horton's double-double? (Note I said "safely", so the northern US doesn't count).

CONS

- 1) We had the "privilege" of using US dollars at our own joint ESC-ESA meeting in Montréal in 2000.
- 2) Our largest male scarab beetle would make even the teeniest, most insecure Goliath beetle roll on its back in hysterics should it ever challenge the latter to a fight.
- 3) Oh look, the elusive spruce budworm moth! And another! And another...
- 4) This little, annoying phenomenon we Canadians like to call WINTER!

How can you show your National Entomological Pride (eh)? Joining (or continuing to support) the Entomological Society of Canada, that's how. Why on earth should you do this, you ask? There are at least three reasons to join ESC (oh, no, not another list):

- 1) to see each other's smiling faces at the annual meeting.
- 2) to keep the Society large enough to continue operating efficiently on a national scale.
- 3) to keep the Society financially solvent.

How can you help the financial well-being of our beloved Society? (Final list, I promise).

- 1) Always pay your dues.
- 2) Always pay your dues a day late so you incur the \$10 late fee. Note, I said A DAY late << insert your name here >>, not A YEAR late.
- 3) Stop receiving *The Canadian Entomologist* in print. This is a HUGE cost to the Society. You are deluding yourself if you believe that one day your computer will be broken and you will finally have the time to read all of those articles. Really now. The place for hard copies of every single *Can. Entomol.* article is in a library, not on your ever-increasingly cluttered shelves.

4) If you really can't afford the membership fee and/or you don't want access to *The Canadian Entomologist*, but you still want ESC to remain strong, then consider giving a smaller amount of money to the Society each year in the form of a donation or contribution to a student scholarship (see membership form on page 20). Otherwise, I might have to start publishing every second word of Moth Balls behind the vault-like protection of the private Members Area of the website.

Join .. next when . eviscerate entrails another Winnebago!



Andrew Bennett

Figure 1. Immature planthopper (Hemiptera: Eurybrachyidae). Kondalilla National Park, Australia.

by Cedric Gillott

40-odd years of entomological serendipity

When I was asked to provide a title for the Gold Medal Address, I took some time to reflect on the significant events that had occurred during my career as an entomologist. It soon struck me that I had been blessed with a series of fortunate breaks, which I was then able to take advantage of, and which ultimately have put me where I stand this morning. Only when I began to prepare this Address did the potential ambiguity of the title strike me. Would the audience think that I was going to deal only with the 40 'odd-numbered' years in my career, which would put me at slightly over 100 years old, or that I would focus only on the 'strange' years in my career? No, surely, they would realize that I was thinking of the approximately 45 years since I began my PhD studies at the University of Nottingham, under the supervision of Ken Clarke.

From the outset, fortune smiled on me. Ken's previous graduate student, Peter Langley, had been looking at factors that controlled growth and moulting cycles in insects. He had had a particularly frustrating time with his experiments and it was only in the last year of his research that he struck gold. Peter showed that the stomatogastric nervous system appeared to be the centre where the regulation of growth occurred and where a moulting cycle was initiated.

Thus, when I entered the lab, I had a ready-made thesis topic: to plan and execute experiments that would support, refute, or refine Peter's hypothesis. The experiments

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Marilynn Mierau

were very straight forward and, provided the insects survived the surgery that I performed on them, gave easily interpretable data. At this stage, the most important conclusion that I reached from my research was that it would not interfere with my playing for the University Soccer team!

After some 2½ years, sufficient data seemed to have been accumulated that it was time to write a thesis and start job hunting. And here is when the next and certainly the most significant serendipitous event took place. By 1965, obtaining a university position in the United Kingdom was already very difficult, and several of my applications had been either turned down or simply not even acknowledged. As a budding entomologist, I had anticipated the likelihood of moving to 'foreign parts', with Africa, Australia and New Zealand as possibilities, and I was in negotiations with Michael Locke for a post-doctoral fellowship at Case Western Reserve University in Cleveland.

In early January 1965, Professor Barrington, the Head of Zoology at Nottingham, walked into the lab and said "Gillott, there's a job in Canada that you may wish to apply for" and he handed me a letter. Now, 'Ernie', as we affectionately referred to him, was very much

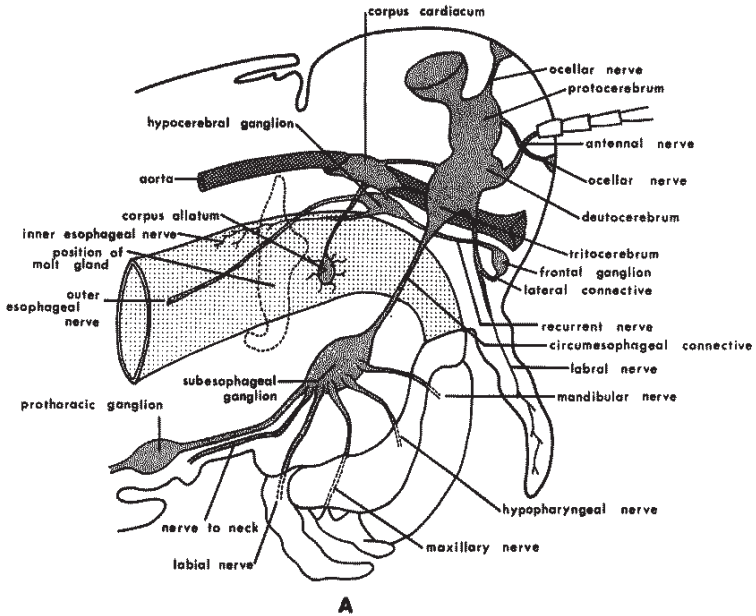


Figure 1. Where it all began. The stomatogastric nervous system of a locust.

old school, formal and starchy at the best of times, but on this occasion he seemed even more ‘huffy’ than usual. When I looked at the letter, I saw immediately what had upset him – the letter was addressed to Professor Barrington, The University of Leeds!

Wrong address notwithstanding, the contents of the letter were indeed interesting. The Department of Biology at the University of Saskatchewan had a position for an additional entomologist, with interests in physiology, ecology or genetics. I applied immediately, though I must admit that this was because Ernie would expect me to.

Things moved swiftly: by mid February my second application had been received. (I discovered quite accidentally that my initial application had been sent sea mail by the departmental secretary – it may still not have arrived!); a letter dated 2 March said I was high on the short list; and 4 days later I was offered the position. It was at about this point that my wife, Anne, and I decided to find out

just where Saskatoon and Saskatchewan were, and what went on there. Saskatchewan House in London sent us ‘tourist-type’ information, and the statement that the winters were ‘rigorous’ meant little to us!

All that remained was to satisfactorily complete my thesis defence, with Sir Vincent Wigglesworth as the external examiner. I was terrified, but all went well and afterwards we had a lovely conversation about the University of Saskatchewan, which he had visited. I believe this was in 1956, following the International Congress of Entomology in Montreal. Wigglesworth took the train across Canada, stopping in Saskatoon to visit his former student Lawrence Cameron who was on the Biology Faculty.

On arriving at the University, serendipity immediately smiled on me again. This was the discovery that Agriculture Canada, as it was then known, had a research facility within 50 yards of Biology, with a large complement of entomologists. I remain surprised, even today,

that this fact was not mentioned in any correspondence relating to the entomology position. That aside, this institution was destined to play a major role in my overall research experience/enjoyment. And I'll return to this aspect of my career in due course.

First, however, let me spend a little time dealing with my role as an entomological educator and, in particular, with the development of my textbook *Entomology*. The citation for the Gold Medal suggests that my book has been a major factor in my selection for this year's award. I can only hope that the Achievement Awards Committee did not simply accept at face value statements that my nominators may have made about the book. Rather, I trust that they immediately went out and bought themselves a copy (preferably the hard-back version) to see for themselves whether these claims were justified.

My initial experience as a teacher was typical of new faculty - trying to keep half a step ahead of students with lecture preparation, especially for 'Cell Physiology', a catch-all for some of the most boring topics one could imagine. As well as cell physiology, in my first year I taught the 'zoological component' in two introductory courses, and by special request I developed a reading, discussion, and lab project-style graduate course for a 'needy' student. That student was George Gerber!

I first offered an undergraduate unit in insect physiology in 1968 (I say 'unit' because it was initially half of a full-year course in General Entomology). What immediately struck me was that there was no textbook that covered the discipline in the breadth and depth that I felt was appropriate.

There was 'Boring and Too Long' (Borror & DeLong. *An Introduction to the Study of Insects*), of course, for whom the innards of insects were merely an 'inconvenience', to be dried out before the specimen could be pinned for identification. Even in the 5th edition (1981), its authors devoted but 1 of 33 chapters to anatomy and physiology. At the other end of the scale was Wigglesworth's *Principles of Insect Physiology*, then in its 6th

edition. Though it was a detailed treatment of the inner workings of insects, it assumed too much knowledge of general insect biology and diversity for an introductory course.

I must have been very naive because I decided that I would write a text suitable for a full-year, senior undergraduate course. Not only would it have a balanced, integrated treatment of insect structure and function, but the entire business of insect diversity would be treated from an evolutionary perspective, not from the old-fashioned view that insects were merely there to be identified. I discussed my idea with several entomological colleagues, and although they were encouraging, several of them suggested that I should get help. I don't think they meant that I should see a 'shrink', but rather that I would be wise to co-opt one or more coauthors for the project. My ego, plus a genuine feeling that the text would be much more coherent with a single author, made me decline this suggestion.

So, I prepared a Preface (outlining my rationale) and Table of Contents and wrote a couple of sample chapters. These were then offered to the numerous book reps that regularly visit university departments. Perhaps not surprisingly, I was not offered a contract by anyone. Undeterred, I decided that I would forge ahead, and what better time to do this than during a sabbatical leave. The university approved the idea, and in 1972 I returned to Nottingham to work on the book. By mid-1973, I had about half the book drafted. And there the project sat, gathering dust, until another act of serendipity took the stage. Early in 1975, one of the publisher's reps had dutifully passed on my sample material to his science editor, and although she had no interest in the project, she forwarded the material to her friend at Plenum, in New York. Plenum at that time was a publisher of entomological material, but had focused on high-level edited reviews. Plenum had my proposal and sample chapters reviewed, and decided to take me on.

What followed were, without question, the busiest (and most stressful) 4 years of my life. My basic research program was at a peak (in

terms of number of personnel and projects), I was just beginning the phase of cooperation with Agriculture Canada entomologists, and there I was with 12 more book chapters to write. Amazingly, and only by burning the candle at both ends, the book draft was completed and shipped off to Plenum only a year after the contract deadline. This included revision of the text after all chapters had been reviewed by specialists (among them, incidentally, previous Gold Medal recipients Geoff Scudder, George Ball, Keith Kevan, and Ken Davey). What seemed like an eternity then followed. Indeed, so much time elapsed that my next sabbatical came along. This time I went to Bristol University to work on receptivity in tsetse flies. While on this sabbatical, first the galleys, then the page proofs, arrived and were corrected. This left only one job – preparation of the Index, which was done manually using small cards. All these jobs required two persons, one reading out loud, the other scanning the typescript for errors or writing the index entry. My assistant, without whom the book would never have been finished, was my wife, and I should like to publicly acknowledge her at this time.

The younger generation should appreciate that all this was going on in the pre-desk-top publishing era. That is, the typed chapters had to be set by hand onto a printing press. From this, large ‘galley’ sheets were generated. After these were corrected (by the author), the printer made the page-proofs, when the figures and their legends were set in place. There were literally hundreds of errors in the galleys, and a few still in the page proofs, but, thankfully, not very many in the published version.

Suddenly, in late summer 1980, there it was, the culmination of about a decade’s work in all its beauty and, hopefully, salability! In fact, the book was very well received, and most of the reviews were strongly positive.

It was to be some 12 years before I contemplated a further edition. Fortunately, Plenum supported my idea (why wouldn’t they – it’s the author that does almost all the work) and, once again, a sabbatical leave was conven-

iently just round the corner. So, in 1993, I returned to the Division of Entomology, CSIRO, Canberra, Australia where the library facilities are first-class and there are excellent taxonomists and insect biologists for consultation and advice. I felt that, in particular, the chapters on insect diversity were the weakest section of the first edition, being quite out of date. (And before Henri Goulet starts jumping up and down in his seat, yes, there are also excellent taxonomists and insect biologists in Ottawa, but the choice of Canberra or Ottawa between November and April really is ‘no-contest’. And Ottawa doesn’t have the parrots!)

Preparation of the second edition was accomplished relatively smoothly, though it was still very much a ‘cut and paste’ process. I would work up the new sections, and my wife would cut out the old parts and paste in the new. The second edition, published in 1995, was again well received, and I decided that a third edition would be attempted once I retired.

Retirement came slightly earlier than planned, in 1999, due to the generosity of the University which initiated an attractive golden-handshake scheme to get rid of some of their highest-paid faculty. (I’m not sure I was one of those, but with 34 years of service I qualified anyway!) Of course, retirement didn’t get rid of me in the physical sense. I continued to occupy my original office on a full-time basis, as there were reviews to write, graduate students to co-supervise, and a bit of committee work to do – but I gave up undergraduate teaching.

Work on the 3rd edition finally began in late 2002, by which time the original publisher Plenum had been absorbed into the Dutch company Kluwer, which in turn was taken over by one of the world’s largest publishers, Springer. This time, I worked from electronic versions of the text and figures, which enabled the revisions to be made much more easily. The Publishing Editor for the Life Sciences, and her assistant, went to great lengths to help me with the undertaking, and between us, we were all very satisfied with the final product.

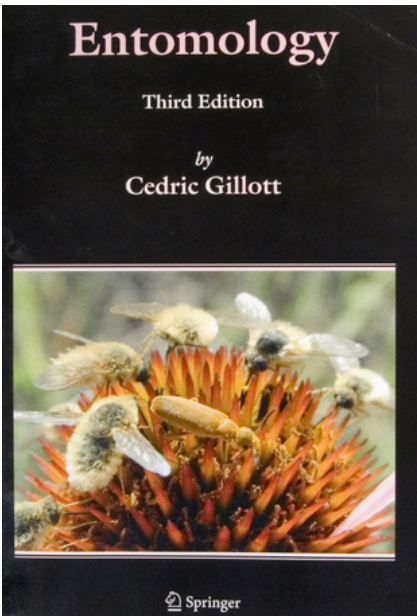


Figure 2. Entomology, Third Edition.

Let me turn now to the other major 'duty' of university faculty – research. My research program began to develop after about a year (in part because I had to wait till my lab was built from scratch), but then serendipity reared its head again. My first two graduate students, Roy Pickford and Bill Sawchyn were already experienced researchers with master's degrees. In fact, Roy Pickford, a scientist at Agriculture and Agri-Food Canada, was old enough to be my father and had already published a significant number of papers on the migratory grasshopper, *Melanoplus sanguinipes*, at that time the single most important pest on the prairies. Bill Sawchyn, who was of a 'more normal' age for a PhD student, had an excellent knowledge of aquatic biology, which he put to good use in his study of seasonal succession in damselflies.

Roy Pickford's thesis dealt with the reproductive biology of *M. sanguinipes*, emphasizing the role of the male. As many of you will know, prairie grasshoppers overwinter

in diapause, either in the egg or at some post-embryonic stage. This presents an immediate problem for an experimental entomologist who requires large numbers of insects at frequent intervals. Fortunately, Pickford and his colleague Bob Randell had developed a non-diapause strain of *M. sanguinipes* whose eggs develop directly rather than entering a lengthy diapause which requires a period of chilling to trigger post-diapause development. This grasshopper has proved to be a great experimental animal – it is a good size, is easily maintained, and has high fecundity (laying about 25 eggs every 2nd or 3rd day over a period of several weeks).

In his PhD study Roy Pickford made several important discoveries: 1) *M. sanguinipes* is highly promiscuous (given free choice, members of each sex will mate, on average, more than once per day; and 2) mating stimulates egg laying; and 3) the stimulant, which we called a 'Fecundity-Enhancing Substance' (FES), is chemical, not physical, in nature and is produced in the accessory glands of the male. Virgin females retain eggs in their oviduct (until they almost burst) while they await the chance to mate. The FES is a messenger, announcing to the female that she has been inseminated and can therefore oviposit. In insects, of course, sperm enter the eggs as the eggs pass down the common oviduct on their way to the outside – hence it is imperative to have a signal that sperm are available.

These observations, interesting though they were, may have simply gathered dust among the pages of *The Canadian Entomologist* and the *Canadian Journal of Zoology*. But once again, serendipity intervened. An Australian, Tom Friedel, had just joined my lab as a post-doctoral fellow, and our original intention was to examine the nature of yolk production and its endocrine control, a study that would parallel the work that Bob Elliott was doing in my lab for his PhD thesis. All of us quickly realized that this wasn't going to work. Bob required large numbers of females for his experiments and the rest were needed to keep the culture going. But there were lots of extra

males, so Tom suggested that we should follow up Pickford's work, that is, take a more detailed look at the nature, production and mode of action of the fecundity-enhancing material transferred during mating. This astute suggestion was to open the door to a long series of studies dealing with male reproductive physiology and the role of the male in regulating female reproductive activity. We had the field largely to ourselves, as most other insect reproductive physiologists seemed to be preoccupied with the female side of things.

Through the ensuing years, and some excellent students and post-doctorals, almost no part of the male reproductive system remained 'untouched'. We focused on the accessory glands (15 pairs!), but also looked at the seminal vesicle, and ejaculatory duct. We also did complementary studies on the female system to determine the fate and functions of the transferred male material.

Not all our projects (and students) were successful, of course. One student occupied a seat in the lab for 3 years before realizing he could make more money selling real estate in rural Saskatchewan!

An interesting 'aside' to our work on FES were invitations to prepare reviews on the structure and functions of the male insect accessory glands. These activities piqued my interest in another important group of accessory gland products that we called 'Receptivity-Inhibiting Substances' (RIS). These chemicals 'switch off' a female after her first mating so that she is no longer receptive to other males (sometimes for the rest of her life). This arrangement guarantees, of course, the paternity of the successful male. It is especially well known in Diptera, including mosquitoes, fruit flies, and several major fly pests. I was fortunate to be able to study RIS in two highly enjoyable sabbaticals – at Bristol University in 1979-80 at the Tsetse Fly Research Lab, and at the Division of Entomology, CSIRO, Canberra, in 1986-87, using the Australian Sheep Blowfly. Of course, there were ulterior motives for going to the 'Land of Parrots' – it allowed us to observe, in the wild, birds that

we had bred (or simply seen) in captivity. And there was the Great Barrier Reef!

All the while, while these basic studies were bubbling along, ties with colleagues at Agriculture Canada (now Agriculture and Agri-Food Canada) were being strengthened, and my parallel interest in applied entomology was being cultivated. In practical terms, it meant that I entered an era of taking on graduate students with a co-supervisor in AAFC. These were really fun times, and we explored diverse topics and pests. The first of these interactions



Figure 3. Some research favorites (top to bottom): a) Migratory grasshopper, *Melanoplus sanguinipes*; b) Australian sheep blowfly, *Lucilia cuprina*; c) Tsetse fly, *Glossina morsitans*.

started in January 1977 when Martin Erlandson began a master's degree co-supervised by John Doane and myself. Following his PhD at Queen's University, Martin returned to Western Canada to begin a long career as an AAFC employee. This pattern was repeated on a significant number of occasions over the next 15 or so years. However, the nature of the co-supervisor then changed as the previous generation of AAFC entomologists began to retire. We entered a new era, what we may call the 'second generation phase', when former students, now established researchers, became the co-supervisors.

An approximate count indicates that there are close to 10 former graduate students who are scientists or technicians on the AAFC staff. With the exception of one, who is at the Lethbridge Research Centre and 'doubles' as the *ESC Bulletin* Editor, these colleagues work in Saskatoon. What is curious, perhaps, is that despite my input into staffing federal government research labs, I have never received a single word of thanks from any Assistant Deputy Minister. One can only assume that they are simply too busy deciding who they will allow to attend meetings such as this!

In the spring of this year, the stars were obviously aligned correctly, and I experienced a wonderful month of serendipity. First, in late April, I received news that Tara Gariépy, who was supervised by Martin Erlandson, Ulli Kuhlmann and myself and who many of you know, had been awarded the University's Gold Medal as the outstanding graduate student. Not to be outdone, some 2 weeks later, I discovered that my home-made cider had taken the gold medal at an international brewing competition! Then, a short time afterwards came a phone call from Peggy (Dixon) who told me about the Society's Gold Medal award.

To conclude, I thank those who nominated me for this prestigious award, without doubt the highlight of my career; I thank the Achievement Awards Committee who selected me (and, of course, the Governing Board for accepting their recommendation). But above all, I thank the many students, both graduate and undergraduate, post-doctoral fellows, and numerous colleagues, on whom there has been a 'laying on of hands' (metaphorically speaking, of course) over the past four decades.

Thank you.



Figure 4. An alternative way to win a gold medal – home-brewed cider! (photo courtesy of On Campus News, U of S).

Annual Meeting of the Acadian Entomological Society

St. John's, Newfoundland and Labrador, 15-17 June 2008
<http://www.acadianes.org/> (and see item on next page)

XXIII International Congress of Entomology

Durban, South Africa, 6-12 July 2008
www.ice2008.org.za

XLI Annual Meeting of the Society for Invertebrate Pathology

Warwick, United Kingdom, 3-8 August 2008
<http://www.sipweb.org/meetings.cfm>

93rd Annual Meeting of the Ecological Society of America

Milwaukee, Wisconsin, 3-8 August 2008
<http://www.esa.org>

Joint Meeting of the Entomological Society of Canada and the Entomological Society of Ontario

Ottawa, Ontario, 18-22 October 2008
<http://esc-sec.org/agm.htm>

Annual Meeting of the Entomological Society of Alberta

Edmonton, Alberta, 6-8 November 2008
<http://www.biology.ualberta.ca/courses.hp/esa/esa.htm>

Annual Meeting of the Entomological Society of America

Reno, Nevada, 16-19 November 2008
<http://www.entsoc.org>

3rd International Symposium on Biological Control of Arthropods

Christchurch, New Zealand, 8-13 February 2009
<http://www.isbca09.com/>

6th International IPM Symposium, 'Transcending Boundaries'

Portland, Oregon, 24-26 March 2009
<http://www.ipmcenters.org/ipmsymposium09>

93rd Annual Meeting of the Pacific Branch, Entomological Society of America

San Diego, California, 28 March - 1 April 2009

Joint Meeting of the Entomological Society of Canada and the Entomological Society of Manitoba

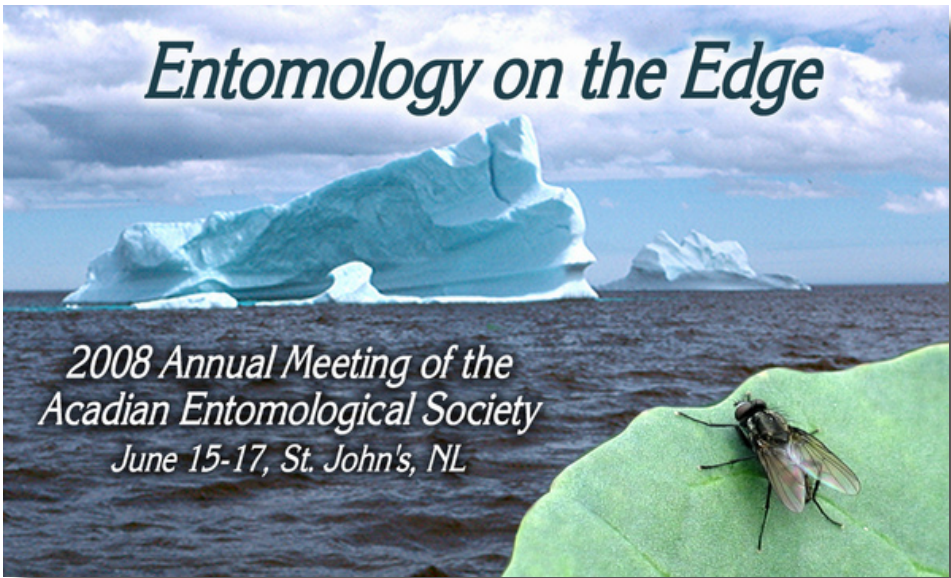
Winnipeg, Manitoba, 18-21 October 2009



2008 Meeting of the Acadian Entomological Society

Come to the edge of the earth and present your cutting-edge entomological research at the 2008 annual meeting of the Acadian Entomological Society, June 15th-17th at the Battery Hotel in St. John's, NL.

This year's meeting will centre around the theme of "Entomology on the Edge" and include a coastal collecting trip during peak iceberg and whale-watching season. A call for papers and details on registration are posted on the website, <http://www.acadianes.org/>



The student wing / L'aile étudiante



Chris Borkent



Greg Smith

With the New Year under way and the summer field season fast approaching we just wanted to remind you of some of the opportunities and events that you shouldn't forget about before heading out to enjoy some time with your favorite critters. First off, if you have recently finished, or are finishing your thesis in the coming year be sure to apply to be a part of the Graduate Student Symposium at the annual meeting in Ottawa. This symposium allows you more time to present your final results than a typical President's Prize session, thereby allowing you to go into more detail on your findings. The deadline for submission of abstracts is June 15. For further information on the symposium see pages 16-17.

The student forum page on Facebook is now up and running, with a number of jobs and grad student opportunities posted, as well as recent Society news and discussions on grad student topics. Join the group by clicking on the student forum link on the student affairs website and requesting to join. As this group grows it will continue to be a great place to keep up on what is happening for entomology students in Canada, as well as get tips on a variety of topics, from presenting research to searching for supervisors or jobs.

That's all for now. Good luck in your preparations for summer!

Greg and Chris



Thesis Roundup / Un foisonnement de thèses

- Bromilow, Sean; bromilow@ualberta.ca, MSc, September 2007. *The conservation and systematics of the Peace River grassland butterflies*. Supervisor: Felix Sperling, University of Alberta.
- Déchêne, Andrea D.; andrea.dechene@mail.mcgill.ca, MSc, February 2008. *The effects of harvesting and decaying logs on oribatid (Acari: Oribatida) mite assemblages in eastern Canadian mixedwood boreal forest*. Supervisor: Chris Buddle, McGill University.
- Elliott, Christina G.; elliott@ualberta.ca, MSc, November 2007. *Factors affecting flight capacity and the trade-off between flight and fitness in Choristoneura conflictana Walker (Lepidoptera: Tortricidae)*. Supervisor: Maya Evenden, University of Alberta.
- Grégoire-Taillefer, Amélie; amelie.gregoire-taillefer@mail.mcgill.ca, MSc, August 2007. *Colonization of restored peatlands by insects: Diptera assemblages in mined and restored bogs in eastern Canada*. Supervisor: Terry Wheeler, McGill University.
- Jones, Brad C.; bcjones@ualberta.ca, MSc, September 2007. *Development of a combined sex pheromone-based monitoring system to detect population density changes and monitor moth condition of Malacosoma disstria and Choristoneura conflictana*. Supervisor: Maya Evenden, University of Alberta.
- Knee, Wayne H.; wknee@ualberta.ca, MSc, August 2007. *Parasitic nasal mites (Rhinonyssidae, Ereyneidae & Turbinoptidae) associated with bird of Alberta and Manitoba*. Supervisor: Heather Proctor, University of Alberta.
- Mostafa, Ayman; ummstaf@cc.umanitoba.ca, PhD, August 2007. *Plant bugs (Hemiptera: Miridae) on buckwheat and seed alfalfa crops in Manitoba: Dynamics, yield implications and management*. Supervisor: Neil Holliday, University of Manitoba.
- Patenaude, Andrea; ampatenaude@yahoo.com, MSc, August 2007. *Diversity, composition and seasonality of wild bees (Hymenoptera: Apoidea) in a northern mixed-grass prairie preserve*. Supervisor: Rob Roughley, University of Manitoba.
- Rondeau, Kimberly J.; KRondeau@agr.bc.ca, MSc, September 2007. *Dispersal of the biocontrol agent, Cyphocleonus achates (Coleoptera: Curculionidae), on diffuse knapweed (Centaurea diffusa) (Asteraceae)*. Supervisors: Jens Roland & Rob Bouchier, University of Alberta.
- Sackett, Tara; tara.sackett@mail.mcgill.ca, PhD, May 2007. *Natural enemy ecology in apple orchards: spider colonization of orchards and effects of kaolin on the apple pest Choristoneura rosaceana and its natural enemies*. Supervisors: Chris Buddle, McGill University & Charles Vincent, Agriculture and Agri-Food Canada, Saint-Jean-sur-Richelieu.
- Sylvain, Zachary; zach.sylvain@gmail.com, MSc, October 2007. *Oribatid mite (Acari: Oribatida) assemblage response to changes in litter depth and habitat type in a beech-maple forest in southwestern Quebec*. Supervisor: Chris Buddle, McGill University.
- Wins-Purdy, Andreas; andreasw@ualberta.ca, MSc, August 2007. *Behavioural manipulation of Choristoneura rosaceana (Harris) (Lepidoptera: Tortricidae) using microencapsulated sex pheromones and horticultural oil*. Supervisor: Maya Evenden, University of Alberta.

Entomological Society of Canada Graduate Student Symposium 2008:

Call for Submissions

A Graduate Student Symposium will take place this year in Ottawa, Ontario, during the Joint Annual Meeting of the Entomological Society of Canada and the Entomological Society of Ontario, October 19th – 22nd 2008.

The principal goal of the symposium is to give a higher profile to graduating students as they move to the next stage in their careers by providing them a longer time slot to talk about their research.

To be eligible, students must have either defended their thesis in the past year or be planning to defend within 1 year of the meeting. The degree may be either MSc or PhD.

Students from all disciplines are encouraged to submit an abstract. Ideally, the symposium will follow the general theme of the meeting, “IDEAs: Integrating Diverse Entomological Approaches”. However, depending on the submissions a different focus may be selected.

- 4-6 presentations will be selected depending on the amount of time allotted to the symposium.

- presentations will be approx. 25 minutes in length with an additional 5 minutes for questions (30 minutes total).

- papers that are included in the Graduate Student Symposium will not be eligible for the President’s Prize. However speakers may also submit a paper on a more specific topic to the President’s Prize competition.

If you are eligible and want to be considered for the symposium please submit the following information by **15 June 2008**:

- 1. An expanded abstract** (200-300 words) describing your proposed presentation and briefly how it relates to the theme of the meeting “IDEAs: Integrating Diverse Entomological Approaches”.

- 2. A letter (or email) of support** from

your principal supervisor that confirms the anticipated or actual date of graduation, and comments on your proposed presentation.

Students who have been selected to speak will be contacted by 31 July 2008. When notified they will receive a list of the other speakers, email addresses and a copy of all initial abstracts to identify points for discussion in the talks and elimination of potential overlap.

Expanded abstracts of chosen speakers will be published in the December issue of the *Bulletin* of the Entomological Society of Canada.

Submissions for the graduate student symposium should be sent in Word or Rich Text format to: Chris Borkent (chris.borkent@mail.mcgill.ca) or Greg Smith (Greg.Smith@nrcan.gc.ca).



Plectrodera scalator (Coleoptera: Cerambycidae) is one of several insect species produced by the Great Lakes Forestry Centre, Canadian Forest Service. See related article on p. 29 (photo provided by Peter Ebling)

Symposium des étudiants gradués de la Société d'entomologie du Canada 2008:

Invitation générale

Un symposium des étudiants gradués est organisé à l'occasion de la réunion annuelle conjointe de la Société d'entomologie du Canada et de la Société d'entomologie de l'Ontario qui aura lieu à Ottawa, Ontario, du 19 au 22 octobre 2008.

Le but principal de ce symposium est de mettre en lumière les travaux de recherche des étudiants gradués alors qu'ils passent à la prochaine étape de leur carrière en leur fournissant une période plus longue afin de présenter leurs recherches.

Pour être admissible, les étudiants doivent avoir soutenu leur thèse au cours de la dernière année, ou planifié de le faire dans l'année suivant la réunion. Les étudiants à la maîtrise et au doctorat sont admissibles.

Les étudiants de toutes les disciplines sont encouragés à soumettre un résumé. Idéalement, le symposium devrait correspondre au thème général de la réunion, soit "IDÉEs: Intégration D'approches Entomologiques Éclectiques". Toutefois, selon les sujets proposés, il sera possible de lui donner une orientation différente.

- 4 à 6 présentations seront sélectionnées en fonction du temps alloué pour le symposium.
- Les présentations seront approximativement de 25 minutes avec une période de questions additionnelle de 5 minutes pour un total de 30 minutes.
- Les présentations incluses dans le symposium des étudiants gradués ne seront pas admissibles au Prix du président. Cependant, les conférenciers peuvent également soumettre un résumé sur un sujet plus précis afin de participer au Prix du président.

Si vous êtes admissible et souhaitez être considéré pour le symposium, veuillez nous faire parvenir les informations suivantes **au plus tard le 15 juin 2008:**

1. Un résumé détaillé (200-300 mots) décrivant la présentation proposée et faisant le lien entre le sujet de l'exposé et le thème de la réunion "IDÉEs: Intégration D'approches Entomologiques Éclectiques".

2. Une lettre (ou courrier électronique) d'appui de votre directeur de thèse confirmant votre date prévue ou réelle de graduation, et commentant la présentation proposée.

Les étudiants dont l'exposé sera sélectionné seront contactés au plus tard le 31 juillet 2008. Ils recevront alors la liste des autres conférenciers du symposium avec leur adresse électronique ainsi qu'une copie de leur résumé initial afin de se préparer aux discussions et d'éviter les chevauchements éventuels.

Les résumés détaillés des conférenciers seront publiés dans le numéro de décembre du *Bulletin* de la Société d'entomologie du Canada.

Les soumissions pour le symposium des étudiants gradués doivent être envoyées en format Word ou Rich Text à Chris Borkent (chris.borkent@mail.mcgill.ca) ou Greg Smith (Greg.Smith@nrcan.gc.ca).



Carolyn Parsons

Delia radicum (Diptera: Anthomyiidae)

Seeking Graduate Students

Laurentian University (Sudbury)

Graduate student positions are available for a systematic revision of the cynipid wasps of the genus *Diplolepis* inducing galls on the wild roses of North America. A collection of adults and galls made over the past 40 years has been assembled for this project. A second position is available for a student to study how gall wasps alter the developmental patterns of the plant organs attacked. Please contact:

Dr. Joe Shorthouse
Department of Biology
Laurentian University
Sudbury, ON, P3E 2C6
Tel: (705) 675-1151 Ext. 2285
E-mail: jshorthouse@laurentian.ca

University of British Columbia-Okanagan and Agriculture and Agri-Food Canada, Lethbridge Research Centre

We have available a wonderful system for studying insect-plant ecology, and an opportunity to address a current issue within classical weed biocontrol: the effect of introduced agents on non-target species. We are seeking an eager PhD candidate who enjoys field work (rangeland sites in the British Columbia (BC) interior), is interested in community ecology with a plant and insect focus, and is comfortable with using population models. The study will focus on the interaction between a biocontrol agent (a weevil), its host weed (houndstongue), and native plant species in the same family (Boraginaceae). The successful candidate will have the use of good field sites (already picked out), an established colony of the weevil ready for experimentation, and excellent insect research facilities at Lethbridge if required at some point during the project. The student will be based at the UBC-Okanagan campus in Kelowna, BC, and will be expected to work with provincial collaborators who are already in place. The nature

of the project requires some travel, especially during the summer months. Pending funding, a spring 2008 start of the position is planned. If interested please contact:

Dr. Robert Lalonde
Unit of Biology and Physical Geography
Univ. of British Columbia - Okanagan
3333 University Way
Kelowna, BC, V1V 1V7
Tel: (250) 807-8764
E-mail: robert.lalonde@ubc.ca

or

Dr. Rose De Clerck-Floate
Agriculture and Agri-Food Canada
Lethbridge Research Centre
P.O. Box 3000
Lethbridge, AB, T1J 4B1
Tel: (403) 317-2270
E-mail: floater@agr.gc.ca



Steve Marshall

Grylloblattid (Grylloblattaria: Grylloblattidae) on moss. The first member of this order was described in 1914 from specimens collected at Banff, Alberta. This primitive group of insects is restricted to mountainous habitats, often at high elevations near the edge of glaciers and snowfields. Grylloblattids also are known as rock crawlers or ice bugs.



Alicia Leroux

Newly hatched caterpillars



Jeff Battigelli

Caterpillar of the Variegated Fritillary (*Euptoieta claudia*)

Chemical Ecology Group in SLU, Sweden

By Véronique Martel

The Chemical Ecology Group (<http://www.chemicalecology.se/>) is a team of researchers within the Department of Plant Protection Biology (“växtskyddsbiologi” in Swedish) at the Swedish University of Agricultural Sciences (SLU, www.slu.se). The department is located on the Alnarp campus, in the province of Skåne in the South part of Sweden. You can find a really nice park on the campus, where you can have a nice walk in the wood, see many plants, flowers, birds and rabbits. This group is highly international, having people from all over the world: Belgium, Canada, Denmark, Ethiopia, France, Germany, Hungary, India, Iran, Libya, Netherlands, Pakistan, Sri Lanka, and of course, Sweden! It is then really interesting to hear many languages in the corridors, and to discover different traditions and cultures.

The Chemical Ecology group is interested in chemical interactions occurring in animals, either to communicate with each others, or to perceive information about their environment. The animals studied are mainly insects, although at least one postdoc (Anna-Sara Krång) is working on hermit crabs and a few people are working on nematodes. Three main areas are of interest for the group: sexual communication, interactions between insects and plants, and the insect nervous system (mainly concerning olfaction). Most of the people working in this group (at least all of the seniors) are a part of the IC-E3 (Insect Chemical Ecology, Ethology and Evolution), a Linnaeus-programme initiative (2006-2016) which has for goal to study the modulation of the insect response to chemical signals at physiological, behavioural and ecological time scales, using methods that range from molecular biology to landscape scale manipulation of behaviour (<http://ice3.se/>).

A wide variety of insects and techniques are used by the different researchers here. This is one of the strengths of this group: you can always find someone that can teach you what you need to learn. Everybody shares all the working spaces, labs and equipment, which increases the opportunities for research. Of course, the flip side is that you need to reserve the equipment you want to use in advance, and should identify carefully all your stuff! Among the species studied are some moths (*Spodoptera littoralis*, *Ostrinia lubilalis*, *Manduca sexta*, *Zeuzera pyrina*, *Tecia solanivora*, *Cydia pomonella*), beetles (*Ips typographus*, *I. duplicatus*, *Hylobius abietis*), flies (*Drosophila*, mosquitoes, gall midges) and even some parasitic wasps. The diverse techniques used to study them include some behavioural techniques (wind tunnel, olfactometer), electrophysiology (electroantennographs (EAG), single-sensillum recording (SSR), intra-cellular recordings, optical imaging, etc.), and of course, some chemical analyses tools like GC-MS, HPLC, etc. A lot of possibilities to study many insects!

Because of the size of the group (around 40-50 researchers, postdocs, students and staff), it is impossible for me to talk about everyone. I will then focus on the professors, giving a brief description of their research project.

Peter Anderson

Peter was born in Sweden. He is an associate professor currently working on different topics: the influence of plant odours on host choice in tritrophic systems, the electrophysiology of the detection of the plant compounds by odour receptors on insect antennae, the modification of insect behaviour by experience, the influence of increased atmospheric CO₂-levels on plant defence strategies, and trade-offs between olfactory and auditory inputs in moths. The models he is mainly working with are the Egyptian cotton leafworm (*Spodoptera littoralis*) and its parasitoids, in addition to the root flies (*Delia* sp.; see image, page 17) and their parasitoids.



The chemical ecology group. From left to right. Back row: Marie Bengtsson, Martin Andersson, Paul Becher, Saveer Ahmed, Jonas Bengtsson, Sophie Kromann, Yitbarek Wolde Hawariat, Tina Boddum, Peter Witzgall, Johannes Albertsson, Fredrik Schlyter, Linda-Marie Rännbäck, Ulf Nilsson, Barbara Randlkofer, Kevin Farnier, Elisabeth Marling, Holger Daniels, Marie-Louise Koog, Peter Anderson. Front Row: Anneli Norden, Rita Larsson, Nimal Punyasiri, Siju Kunhi Purayil, Elin Isberg, Anna Balkenius, Miriam Frida Karlsson, Emelie Jansson, Eline Aggerholm Kristen, Ylva Hillbur, Lina Bryngelsson, Hamida Khbaish.

Marie Bengtsson

Marie is a Swedish associate professor involved in a number of research projects. She is working on host recognition in insect herbivores, multiple roles of plant volatiles in vineyards, dispersal of potato moth, colonization of new host in the apple fruit moth, identification of behaviourally active compounds and underground chemical signals.

Teun Dekker

Teun is a Dutch assistant professor broadly interested in the chemical ecology of insects, but more specifically in: the evolution of olfaction in *Drosophila*; the orientation behaviour of mosquitoes to olfactory cues; the interaction of host stimuli in host-seeking mosquitoes; the interaction of olfactory stimuli with visual and mechanoreceptive cues in flying mosquitoes; and the odour perception and recognition by honeybees.

Bill Hansson

Bill is the leader professor of the group, but he is also the director of the Department of Evolutionary Neuroethology of the Max Planck Institute for Chemical Ecology in Jena, Germany. With these two positions, he is obvi-

ously involved in a large number of projects with different people, among which the olfaction and behaviour of mosquitoes.

Ylva Hillbur

Ylva is a Swedish assistant professor working on the evolution of host plant choice in gall midges; the ecology, biology and sustainable management of sorghum chafer (*Pachnoda interrupta*) in Ethiopia; the mass trapping for control of sorghum chafer in Ethiopia; and the pheromone communication in gall midges and application in pest management. In addition to that, she is also the head of the department: a very busy woman!

Rickard Ignell

Rickard is a Swedish researcher in the group. His main research topic is the chemosensory biology of mosquitoes. His research team is mainly focusing on the sensory coding processes and molecular events involved in host seeking of mosquitoes. He is also working on central nervous integration issues (in *Drosophila*, *Schistocerca* and *Spodoptera*) where his team is currently focusing on the function of local interneurons and how these affect the behaviour of the animals.



Rickard Ignell feeding the mosquitoes: he puts his hand in the cage for about 30-40 minutes, 1 to 3 times a week!

Mattias Larsson

Mattias is a Swedish assistant professor who works with all aspects of chemical signalling and information processing, from the release of chemical signals to the function and evolution of olfactory systems. His work is mainly centered on the genetics and physiology of the olfactory system of *Drosophila*. However, his other model organisms range from scarab beetles and moths to flowers and their odour signals. He also works with conservation and biodiversity of threatened insects and invasive species, studying their population dynamics and phylogeography by pheromone-mediated monitoring and molecular population genetics.

Fredrik Schlyter

Fredrik is Scanian (from the province of Skåne) by birth. He is a professor interested mainly in insect-plant interactions and the importance of non-host volatiles and antifeedants governing host selection behaviour in beetles, moth and dipterans. The application of these signals and pheromones, especially in forestry, to mitigate effects of global warming is an obligation. In addition, he is working on

semiochemical diversity, proposing with some collaborators (from France, Slovakia and Sweden) the “Semiochemical diversity-stability hypothesis” stating that mixed habitats with high biodiversity are more stable due to the abundance of non-host volatiles. He is mainly focusing on the non-host volatiles present in angiosperm dominated habitats affecting conifer insects.

Peter Witzgall

Peter is a Bavarian professor interested mainly in sex pheromones and plant volatiles mediating host finding behaviour in tortricid moths. He is involved in many projects, looking at chemical signals underground, multiple roles of plant volatiles in vineyards, dispersal of potato moth, identification of behaviourally active compounds and colonization of new hosts by the apple fruit moth. He is also involved with Biosignal and on the Phero.net board, a company that supplies certified lures for insect monitoring.

Working abroad

I am presently doing a 2-year postdoc that started in September 2007. I finished my PhD in April 2007, and wanted to continue in research by doing a postdoc. I had to ask myself what exactly I wanted to do, and where. One thing was clear for me: I wanted to leave the country. Why is that? First of all, I think that now is the best time for me to go away: I don't have a family, no obligations, no responsibilities... Secondly, I do believe that getting some experience abroad is more valuable in research: you discover different ways of conducting researches, you increase your opportunities for collaboration, you discover a new culture, and it can prove to a future employer that you have a good capacity of adaptation. Because of course, it needs some adaptation.

Leaving Canada

Leaving Canada of course implies many complicated things: getting rid of all your stuff (or finding a storage place for it!), finding a new home for your animals if you have any

(I personally had two cats, two turtles, and two fish tanks!), and, the most important, but complicated thing, deciding if you want to stay a Canadian resident or not. This is a difficult step. You have to fill a long form where the government wants to know everything about your links to Canada, and your links to your new country: do you have any furniture, belongings, animals, cars, an apartment, a husband/wife, a bank account, a credit card (and will you use it?), will you come back to Canada (when? how often? why?), do you have health insurance in Canada, etc. The objective of this form is to establish if you are still a Canadian resident, or if you are now a resident of your new country (in my case, Sweden). If you stay a Canadian resident, of course you keep many advantages (as health insurance, rights to vote, etc.), but you also gain the obligation of declaring any foreign incomes, and of course, to pay taxes on these! It is then something to really think about before filling the form (see <http://www.cra-arc.gc.ca/tax/nonresidents/individuals/leaving-e.html>).

Living in Sweden

When you go abroad for a long period, you need a working permit. These papers always take a long time to get, and cost money. If you are planning on going to a foreign country, think of asking for your permit well in advance, as soon as you have all the relevant papers (like your contract) and you know when you are going to leave. Personally, I had to wait almost two months before I got the visa - only two weeks before my contract actually started!

In addition, living abroad implies adapting to a new country, a new language, a new culture, a new climate, etc. In my case, I am now in a country where they speak a language I never heard before: Swedish! Fortunately for me, most of them have a really good level of English. But even then, English is not my first language (it is French), so it is still an adaptation at first to have to talk in your second language everyday, and sometimes you face misunderstandings because you are speaking a

language which is no one's mother tongue.

However, even if people do speak English, you still receive your bills in Swedish, read the menu at the restaurant in Swedish, shop for your phone/Internet Company in Swedish and have to go through these annoying automatic phone systems all companies have, but in Swedish! That is tricky! Nevertheless, I think that learning a new language is a richness, and so I am taking Swedish classes, watching DVDs with Swedish subtitles, and I always carry my English (or French) / Swedish dictionary! In fact, I have one at home, one in my office, and one in my bag! Always ready!

The culture is not really a problem for me. Sweden is a European country where the culture is not that different from ours. Of course, they don't celebrate the exact same holidays, or not the exact same way, but nothing that can be shocking, or traumatizing in any way. They drive on the same side of the road, eat similar food: no big deal! However, it might not be the case for every country - that is something to be aware of.

And finally, the climate... We are pretty lucky in Canada, because we have four seasons and know every kind of weather: snow, hail, icy rain, rain, sun... Nothing can really surprise us! I thought nothing could bother me. But I have to admit that here, in the south of Sweden, I miss our winter! A winter under snow, snowmen, snowball fights, and snow angels is much more enjoyable than a winter under the rain, where you wonder what the sun looks like (is it still there somewhere? Or did it migrate with the birds?), and when the days are so short... But isn't it why I decided to work abroad, to discover something different?

In addition to her duties as a postdoctoral fellow in Sweden, Véronique Martel is Chair of the ESC's Bilingualism Committee and regularly provides translations for items appearing in the Bulletin.

Joint annual meeting - First announcement!

Joint Annual Meeting of The Entomological Society of Canada and The Entomological Society of Ontario

19 – 22 October 2008, Crowne Plaza Hotel

Dear Colleagues,

On behalf of the Entomological Societies of Ontario and Canada we are pleased to invite you to attend the 2008 Joint Annual Meeting.

The theme of 2008 JAM is IDEAs: Integrating Diverse Entomological Approaches. Our Plenary Session features Maydianne Andrade from the University of Toronto, Dan Janzen from the University of Philadelphia, and John Heraty from the University of California, Riverside. A variety of symposia are planned as well as regular talks and the President's Prize competition for best student talks and posters.

The meeting will be held at the Crowne Plaza Hotel in Ottawa, a popular venue for conferences in the nation's capital. The hotel is located downtown in the heart of city's business and entertainment districts, and close to the Parliament buildings, museums and the Rideau Canal. It offers a spectacular view of the city from its penthouse where some conference events will be held.

We encourage you to stay at the Hotel to be close to the meeting location and to help keep our meeting costs down. The local organizing committee has negotiated an excellent guestroom rate: \$120 per night plus taxes, for 1-2 adults. Each additional adult is \$15 (maximum two additional adults).

To reserve a room, simply contact the hotel directly. You may make your reservation via any of the following five options:

Tel: 1-800-2CROWNE (1-800-227-6963)

Tel (local): 613-237-3600 ext. 6200

Fax: 613-688-6821

Email: cpreservations@chiphospitality.com

Internet: www.crowneottawa.ca

To get the special conference rate:

- By phone booking, mention the group name 'ESC'
- By website booking, click on 'Corporate, Group & IATA Identification', and insert 'ESC' in Group Booking Code.

For further information contact:

John Huber, JAM 2008 Organizing Chair

Agriculture and Agri-Food Canada

Neatby Building, 960 Carling Ave.

Ottawa, ON K1A 0C6

Tel: 613-759-1840

E-mail: huberjh@agr.gc.ca



How to get to Ottawa

By Air: The Ottawa International Airport (YOW) is located in the south end of the city, 15 km from the Crowne Plaza hotel, and is accessible via the Airport Parkway. Airport shuttle buses run to all downtown hotels every half hour.

Blue Line Taxi Co Ltd (613 238-1111) provides services throughout Ottawa (including to Ottawa International Airport), Gatineau and surrounding areas. Credit cards are accepted. The trip between the airport and the hotel is about \$25 one way.

By Rail: VIA Rail provides convenient daily train service to other major centres: <http://www.viarail.ca/>

By Bus: Voyageur/Greyhound provides intercity/province bus service: <http://www.greyhound.ca/>. Both the rail and bus terminals are located minutes from the downtown core.

By Car: Several routes lead to Ottawa: Highway 417 from the east, Highways 416, 16 and 31 from the south, Highway 7 from the west, and Highway 17 from the northwest, as well as Highway 148 (Quebec) from the northeast. Ontario's Ministry of Transport has road maps (PDFs) and other highway information.



JAM 2008 Website

(<http://www.canacoll.org/JAM2008/>)

Detailed information on submission of talks and posters, registration information, etc. is posted on the website. Please keep checking the website for more detailed information on the meeting and visiting Ottawa. In case you have questions please don't hesitate to contact info@ottawaent2008.com.

We are looking forward to your participation at a stimulating meeting, the first major entomological meeting in Ottawa since 2002.

With kind regards, *John Huber*

Congrès conjoint - Première invitation!

Réunion annuelle conjointe de la Société d'entomologie du Canada et de la Société d'entomologie d'Ontario

19 – 22 octobre 2008, hôtel Crowne Plaza

Chers collègues,

Aux noms des Sociétés d'entomologie d'Ontario et du Canada, il nous fait plaisir de vous inviter cordialement à la réunion annuelle conjointe 2008.

Le thème en 2008 est IDÉEs: Intégration D'approches Entomologiques Éclectiques. La session plénière présentera Maydianne Andrade de l'Université de Toronto, Dan Janzen de l'Université de Philadelphie, ainsi que John Heraty de l'Université de Californie, Riverside. Sont prévus une variété de symposiums, des présentations régulières ainsi que la compétition du Prix du Président pour les meilleures affiches et communications étudiantes.

La réunion se tiendra à l'hôtel Crowne Plaza d'Ottawa, un site populaire pour les conférences dans la capitale nationale. L'hôtel est situé au centre-ville, au cœur des quartiers d'affaires et de divertissements, à proximité du Parlement, des musées et du Canal Rideau. Son penthouse, où plusieurs événements auront lieu, offre une vue spectaculaire sur la ville.

Nous vous encourageons à loger à l'hôtel Crowne Plaza afin d'être à proximité du lieu de réunion, ainsi que pour nous aider à maintenir au minimum les coûts de la conférence. Le comité organisateur local a su négocier un excellent tarif pour les chambres : 120\$ par nuit plus taxes, occupation simple ou double. Un montant de 15\$ sera chargé pour chaque adulte de plus, avec un maximum de quatre adultes par chambre.

Afin de réserver une chambre, contactez directement l'hôtel. Les réservations peuvent être faites via:

Tél: 1-800-2CROWNE

Tél (local): 613-237-3600 ext. 6200

Télécopieur: 613-688-6821

Courriel: cpreservations@chiphospitality.com

Site Internet: www.crowneottawa.ca

Pour avoir le tarif spécial conférence:

- Pour réservation par téléphone, veuillez mentionner que vous faites partie du groupe 'ESC'.
- Pour réserver par Internet, sélectionnez l'option 'Corporate, Group & IATA Identification' et remplir 'ESC' dans la case 'Group Booking Code'.

Pour de plus amples informations, contactez:

John Huber, Président du comité organisateur de la réunion annuelle conjointe 2008

Agriculture et Agroalimentaire Canada

Édifice Neatby, 960 avenue Carling

Ottawa, ON K1A 0C6

Tél: 613-759-1840

Courriel: huberjh@agr.gc.ca



Comment se rendre à Ottawa

Par avion : L'aéroport international d'Ottawa (YOW) est situé à l'extrémité sud de la ville, à 15 km de l'hôtel Crowne Plaza, et est accessible via la promenade de l'aéroport. Une navette dessert tous les hôtels du centre-ville à chaque demi-heure.

Des taxis (Blue Line Taxi : 613-238-1111) desservent toute la ville d'Ottawa ainsi que celle de Gatineau et les environs. Les cartes de crédit sont acceptées. Le voyage de l'aéroport à l'hôtel coûte environ 25\$.

Par train : VIA Rail offre un service de train quotidien vers les autres villes principales : <http://www.viarail.ca/>.

Par autobus : Voyageur/Greyhound offrent un service d'autobus interurbain et interprovincial: <http://www.greyhound.ca/>. Les terminaux de trains et d'autobus sont tous deux situés à quelques minutes du cœur du centre-ville.

Par voiture : Plusieurs routes mènent à Ottawa : l'autoroute 417 en provenance de l'est, les autoroutes 416, 16 et 31 en provenance du sud, l'autoroute 7 en provenance de l'ouest, l'autoroute 17 en provenance du nord-ouest, ainsi que l'autoroute 148 (Québec) en provenance du nord-est.



Site Internet de la Réunion Annuelle Conjointe 2008 (<http://www.canacoll.org/JAM2008/>)

Les informations sur la soumission de communications orales et d'affiches, sur l'inscription, etc. sont affichées sur le site Internet. Veuillez consulter le site Internet pour plus de détails concernant la réunion et la visite d'Ottawa. Si vous avez des questions, n'hésitez pas à contacter info@ottawaent2008.com.

Au plaisir de vous voir à cette réunion stimulante, qui est la première rencontre entomologique majeure à Ottawa depuis 2002.

Salutations sincères,

John Huber

Contributors to Insect Producer Database requested!

The Canadian Forest Service has recently launched a global Insect Producer Database, a comprehensive world-wide listing of producers who are willing to sell or donate live insects, mites or nematodes (<http://www.insect.glf.cfs.nrcan.gc.ca/producers>). It is intended to provide those in need with a current source for acquiring live cultures and to give producers the opportunity to expand their client base. Producers listed on the database can be sorted according to order, family, genus, scientific name, common name, use category, or geographical region of production.

Although catalogues of live cultures have been prepared in the distant past, they have been difficult to update because of the format they were published in. With the advent of the Internet, this is now easily achieved. The electronic database that we've established has been designed to ensure and maintain validity in perpetuity. Submissions are screened, e-mail addresses are verified, and registrants are contacted annually to ensure validity of all contact information and available cultures. Registrants may review their information at any time and submit revisions.

Registrants are required to submit contact information, identify the culture(s) that they have available for sale or distribution, and select use categories and geographical region of production from drop down menus. Culture identities can be entered by selecting appropriate information from our drop down menus or by manually entering taxonomic data for those species not yet incorporated. As more is learned about various organisms, taxonomists often move the location of species within the established hierarchical system of nomenclature or revise the system accordingly, resulting in multiple somewhat disputed classification schemes. To ensure that taxonomy is applied consistently throughout the database, we have provided a static comprehensive list of orders for insects, mites and nematodes even though it would be unlikely that we'd ever have listings under each and every order identified. Thirty-five orders of insects have been listed, including the newly identified order Mantophasmatodea. The insect orders Heteroptera and Homoptera are listed separately, whereas some taxonomists combine them under the name Hemiptera. Insect orders Mallophaga and Anoplura are listed here separately, rather than combining them under the name Phthiraptera. All mites are identified under the single order name Acari. Twenty-one orders of Nematodes are listed from the classes Secernentea and Adenophorea.

A feature that will soon be added to the database is our adopt-a-colony program. Registrants who are no longer willing to maintain one of their colonies may post it for adoption and possibly connect with another establishment that may be willing to accept rearing responsibilities.

This database will become more useful as additional producers decide to participate and have their cultures listed. We hereby solicit your enrolment and encourage you to make your colleagues and peers aware of this database.

Contact: Peter Ebling
 Insect Producer Database Manager
 Great Lakes Forestry Centre
 1219 Queen St. East
 Sault Ste. Marie, ON P6A 2E5
 Tel: (705) 541-5517
 E-mail: pebling@nrcan.gc.ca

Annual Photo Contest

Seeking a Few Good Photos!

The Fourth Annual Photo Contest to select images for the 2009 covers of *The Canadian Entomologist* and the *Bulletin of the Entomological Society of Canada* is underway. The cover images are intended to represent the breadth of entomology covered by the Society's publications. Insects and non-insects in forestry, urban or agriculture; landscapes, field, laboratory or close-ups; or activities associated with physiology, behaviour, taxonomy or IPM are all desirable. A couple 'Featured Insects' (for the spine and under the title) are also needed. If selected, your photo will grace the cover of both publications for the entire year.

Contest rules are as follows:

1. Photos can be submitted as an electronic file (preferred), a slide or a print (negative will be required if chosen). Digital images must have a resolution of at least 50 pixels/cm.
2. Entrants can submit more than one photo. A brief description (i.e. caption) should be provided with each photo submitted.
3. Photos must be taken by the entrant, or the entrant must own the copyright.
4. The copyright of the photo remains with the entrant, but use must be granted to the Entomological Society of Canada for inclusion on the cover of one volume (i.e. 6 issues) of the *Canadian Entomologist* and one volume (i.e. 4 issues) of the *Bulletin* of the Entomological Society of Canada.
5. The entrant must be a member in good standing of the Entomological Society of Canada.
6. The judging committee will be chosen by the Chair of the Publications Committee of ESC.
7. Photos are not restricted to insect "portraits". To represent the scope of entomological research we encourage photos of field plots, laboratory experiments, insect impacts, sampling equipment, non-insect arthropods, etc.
8. A selection of the entries will be exhibited and the winners announced at the Annual Meeting of the Entomological Society of Canada.
9. There is no cash award for the winners, but, photographers will be acknowledged in each issue the photos are printed.
10. Submissions should be sent by **31 July 2008** to:

Kenna MacKenzie,
Chair, ESC Publications Committee
Agriculture and Agri-Food Canada
32 Main St.
Kentville, NS
CANADA B4N 1J5
Tel: 902-679-5731 Fax: 902-679-2311
E-mail: mackenziek@agr.gc.ca

Concours annuel de photographie

À la recherche de quelques bons clichés!

La quatrième édition du concours annuel de photographie visant à sélectionner des images pour les couvertures de *The Canadian Entomologist* et du *Bulletin de la Société d'entomologie du Canada* de 2009 est présentement en cours. Les images des couvertures doivent représenter l'étendue de l'entomologie couverte par les publications de la Société. Des photos représentant des insectes et d'autres arthropodes forestiers, urbains ou agricoles, des paysages, du travail de terrain ou de laboratoire, des gros plans, ainsi que des activités associées à la physiologie, au comportement, à la taxonomie ou à la lutte intégrée seraient souhaitées. Nous avons également besoin de quelques «insectes vedettes» (pour le dos et sous le titre). Si vos photographies sont sélectionnées, elles seront utilisées pour la couverture des deux publications pour l'année entière.

Les règlements du concours sont les suivants :

1. Les photos peuvent être soumises sous forme de fichiers électroniques (de préférence), de diapositives ou imprimées (le négatif sera requis si la photo est choisie). Les images numériques doivent avoir une résolution minimale de 50 pixels/cm.
2. Les concurrents peuvent soumettre plus d'une photo. Une brève description doit être fournie avec chaque photographie soumise.
3. Les photos doivent avoir été prises par le concurrent, ou ce dernier doit en posséder les droits d'auteur.
4. Les droits d'auteur de la photo appartiennent au concurrent, mais l'utilisation doit être accordée à la Société d'entomologie du Canada pour son utilisation sur la couverture d'un volume (i.e. 6 numéros) dans *The Canadian Entomologist* et un volume (i.e. 4 numéros) dans le *Bulletin de la Société d'entomologie du Canada*.
5. Le concurrent doit être un membre en règle de la Société d'entomologie du Canada.
6. Le jury d'évaluation sera choisi par le président du Comité des publications de la SEC.
7. Les photos n'ont pas à être restreintes à des « portraits » d'insectes. Afin de représenter l'étendue des recherches en entomologie, nous encourageons les photographies de terrain, d'expériences de laboratoires, d'impacts des insectes, d'équipement d'échantillonnage, d'arthropodes autres qu'insectes, etc.
8. Une sélection des candidats sera exposée et les gagnants seront annoncés à la réunion annuelle de la Société d'entomologie du Canada.
9. Il n'y a pas de récompense monétaire pour les gagnants, mais les photographes seront remerciés dans chacun des numéros où les photos apparaîtront.
10. Les soumissions doivent être envoyées avant le **31 juillet 2008** à :

Kenna MacKenzie,
Présidente, Comité des publications de la SEC
Agriculture et Agroalimentaire Canada
32 Main St.
Kentville, Nouvelle-Écosse,
CANADA B4N 1J5
Tél: 902-679-5731 Fax: 902-679-2311
Courriel: mackenziek@agr.gc.ca

Price for *Insects of the Yukon* reduced

The Yukon Territory is a fascinating region of Canada that has great biogeographical and ecological significance, not only from the point of view of the Canadian fauna, but also in a much wider North American and Palaearctic context, and in terms of the repercussions of the ice age on the composition of northern faunas. *Insects of the Yukon*, published by the Biological Survey of Canada in 1997, brought together research on the insects of the Yukon by 35 international experts. It received acclaimed reviews, such as:

This monumental volume is a prodigious achievement in welding the work of 35 authors into a coherent whole of over a thousand pages. ... It is a mine of data of the systematist, ecologist, and biogeographer, and it may well be an important base line for the future evaluation of consequences of global warming. (Quarterly Review of Biology, 74: 234-235 June 1999)

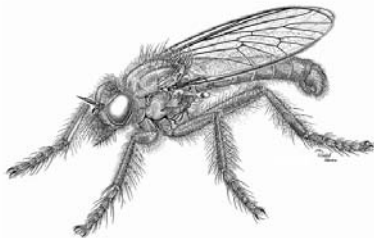
... a necessary addition to any academic library whose goals include decent holdings in entomology and biogeography. ... this book is a model of the value of long-term projects organized around a strong theme and thoughtfully synthesized. (Journal of the North American Benthological Society, 17: 377-378, 1998)

... Insects of the Yukon can be used as an excellent source of baseline information from which one can build a plan for future faunistic or taxonomic studies. The book can also be used as a source of comparative and thought provoking information for those contemplating virtually any type of study of the Yukon or Beringia fauna. ... anyone interested in the broader applications of faunistic data will find inspiration and some thought provoking studies and discussions. Again, this is another in a series of exceptional contributions provided through the efforts of the Biological Survey of Canada (Terrestrial Arthropods) and its contributing entomologists. (Annals of the Entomological Society of America, 91: 893-894, 1998)

... Insects of the Yukon is both a catalogue and a book of wonders. (The Globe and Mail, p. A10, Thursday, December 18, 1997).

Originally priced at \$95.00, the remaining volumes are now being sold for the bargain price of \$22 (CDN), \$37 (U.S.) in order to clear out the remaining stock. Hard copies of this volume will not be available for much longer.

For more details on the contents and how to order please visit the Biological Survey's web site at <http://www.biology.ualberta.ca/bsc/english/publications.htm>



Botfly Parasitism in Belize!

by Tim Goater

Each spring my Malaspina colleagues and I teach a 6-week field school in Belize, Central America. It is a fantastic opportunity to introduce students to the marvelous diversity and ecological and evolutionary complexity of the New World subtropical rainforest and coral reef ecosystems. However, each year, some of the students and teachers come away from Belize with more than a deep appreciation of the country and its diverse wildlife and people; they return home after becoming the unwitting host to one of possibly, nature's most hideous creatures – a botfly maggot! For many of my students getting a botfly is a right of passage – a bizarre contest in which they actually look forward to, and are hopeful of acquiring one or two during our stay in Belize! There are past students who actually go so far as to name their 'pet' botfly. For most 'normal' people, however, there is a serious 'grossness factor' and I (as a parasitologist and entomologist) am the one called on for removal of botflies from my students. Every time I get a botfly myself, or remove one, the students get an impromptu lecture on their fascinating parasitic adaptations and natural history; even the 'disgusting' botfly maggot has a lot to teach us of the intricacies of nature. This past field school year was truly memorable as one of my students, Chris Duncan, returned home, having 'incubated' his Belizean botfly for six weeks. It inspired what must have been the first of its kind – a 'botfly extraction party', the

Tim Goater is a professor in the Biology Department, Malaspina University-College, Nanaimo, BC V9R 5S5. His research focusses on the evolutionary ecology of host-parasite interactions.



Tim Goater meets a new friend in Belize.

photos from which are shown accompanying this article! Most of the students and Chris' family attended, but I must say my friends and neighbors chose to stay away.

So, how does one get infected with the human skin botfly, *Dermatobia hominis*, when they visit countries such as Belize and Costa Rica? The life cycle details are indeed fascinating. It starts when an egg-laden female botfly captures a female mosquito (usually members of the genus *Psorophora*) in the air and glues fertile eggs onto the mosquito's abdomen and then releases her. When the mosquito next takes a blood meal, the body heat of the mammalian host triggers the hatching of the botfly egg and the tiny microscopic larva immediately burrows into the host. The 'bot' creates its own burrow in the host's skin and develops through a series of molts for 6-8 weeks, converting human meat into botfly flesh, and growing larger at each molt. The botfly maggot is an air breather and has a snorkel-like siphon with a respiratory spiracle, which it pokes through the skin. It turns out that botflies may engage in microbial warfare and secrete an antibiotic into its burrow, an adaptation that prevents competition from contaminating bacteria and fungi. After their 2-month period of development, the larvae exits the host, pupates in the soil, and metamorphoses into adults to reproduce and begin the life cycle again.

The infection of live vertebrate hosts by fly larvae is referred to as myiasis. There is no

doubt that *Dermatobia hominis* causes some discomfort as it feeds and grows in its mammalian host's musculature. However, in some species the myiasis-causing flies can cause extensive tissue damage and be responsible for significant mortality in the host's population. Such lethal parasitism is known from a diversity of vertebrate hosts in nature, including certain frogs, chipmunks, ground squirrels and birds (see p. 35). Myiasis-causing flies can also be a significant pest of livestock, especially cattle and horses.

For the first three weeks of the field school we are not in the botfly habitat of the subtropical rainforest. Soon after visiting this paradise students show me possible botfly infections. Many are disappointed when they turn out not to be infected. All manner of suspicious looking potential bot fly wounds turn out to be pimples or infected insect bites. You know for sure you have a botfly when you see the tell-tale sign - a maggot's siphon emerging from its burrow to breathe! Another indicator is pain. If the maggot happens to feed on flesh adjacent to a nerve it can create a sudden pain similar to a wasp sting. When we later snorkel in the Belizean mangroves and coral reefs we have learned that our botfly guests do not appreciate prolonged swims in salt water. They constantly wriggle under the skin in response to the lack of air, often causing discomfort in the process. At this stage, there is no doubt that the little red serum-seeping wound is in fact caused by a botfly and the larva will continue to grow if something is not done to remove it. Very few people are willing to let nature take its course and have a 2-3 cm maggot emerge from their skin!

So how do we eventually remove these unwelcome guests? They cannot be squeezed out alive because they have exquisite morphological adaptations, including a series of backwards pointing spines on their cuticle. These function as holdfasts. They hold the maggot tenaciously in place in their burrows and prevent the host from manually removing them so that they can continue their larval development. Of course, they can be surgically



Bill Pennell, Malaspina University-College

Morphology of third-stage larva of the human botfly, showing prominent hooked mouthparts and rows of holdfast spines.

removed by a physician. However, the local Belizean people have developed several techniques for removing botflies from themselves and/or their domestic pets or livestock without the need of medical or veterinary intervention. One of the techniques the native Belizeans has taught us is the one we have used successfully over the years, even for the removal of Chris's large, almost fully developed botfly maggot. Nail polish is liberally applied to the botfly wound and then it is sealed over tightly with duct tape in order to poison and suffocate the larva. After 24 hours of this nail polish/duct tape treatment the maggot is dead and can be very gently but firmly squeezed out, intact. We have never had a problem with infection and the procedure leaves no scar; all signs of the bot's presence are gone in about two weeks.

As an interesting aside to the human botfly angle, it turns out that botflies may prove useful in estimating population sizes of mountain lions (pumas) in Belize. In the Cockscomb Basin Wildlife Sanctuary jaguar research is ongoing and population estimates of this magnificent animal are based on motion detecting cameras set up on remote wilderness

trails. Photographs can then be retrieved and individual jaguars can be recognized by differences in the stripe patterns of their coats to estimate population size. This is not the case for pumas and it is impossible to determine how many individuals of these cats pass by the cameras in a given field season. It turns out that mountain lions are particularly susceptible to botfly parasitism and the nasty scars left behind on their coats after botflies emerge may be used to recognize individuals. This may allow a unique approach to estimate the population size of pumas in this spectacular sanctuary – a unique biological tag, indeed!

Another intriguing natural history lesson involving botflies stresses the complexity of ecological interactions in the Neotropics. This fascinating story revolves around four key players: a species of botfly (*Philornis* sp.), the giant cowbird, birds known as oropendolas, and finally venomous and aggressive social bees and wasps. *Philornis* is a devastating parasite and can be a significant source of mortality among oropendola nestlings. Oropendolas can avoid botfly parasitism, as well as mammalian and snake predation of their young, by building their pendulous nests in trees in proximity to the aggressive wasp or bee colonies. Any disturbance by botflies or predators triggers attack by the wasps and the

nestlings are protected until they fledge. A particularly remarkable feature of this system is that the oropendolas that nest in waspless trees, and are thus subject to botfly attack, are protected if a giant cowbird nestling, parasitic on the oropendolas brood, is present. In other words, the host oropendola bird benefits from being parasitized! Avian brood parasites are those birds that lay their eggs in other bird species nests; the foster host parent birds raise the brood parasite offspring as if they were their own. Usually the brood parasite is truly parasitic, reducing the fitness of the host bird. However, in this case, paradoxically, when a cowbird nestling is present in the nest more oropendola nestlings fledge! This is because the cowbird nestling preens and eats the botfly or its eggs and/or larvae on its host nest mates before they invade the host and cause irreversible tissue damage. Thus, in waspless trees when the risk of botfly parasitism is high, oropendola behaviour is altered and they do not chase cowbirds away; moreover, they accept the cowbird brood parasite's eggs even though the eggs do not resemble their own. In effect, the parasite acts as a mutualist in some ecological circumstances because of its impact on controlling another parasite - the giant cowbird offers its oropendola hosts parasite protection in exchange for foster care!



Lethal myiasis of a Richardson's ground squirrel, caused by the sarcophagid fly, *Neobellieria citellivora*. (Photograph courtesy of Gail Michener, University of Lethbridge)



Botfly extraction party at Lantzville, BC. **A** - Malaspina University-College students in attendance. **B** - Inflammation and breathing hole in the skin created by botfly (located on lower back). **C** - Gentle squeezing to remove recently killed botfly, and start of emergence. **D** - Posterior region of botfly emerged, showing respiratory siphon and a row of midbody spines. **E** - Intact third-stage larva of human skin botfly, *Dermatobia hominis*. **F** - Chris Duncan proudly showing off his 6-week old maggot.

Research definitions

It has long been known –

I haven't bothered to look up the original reference.

Of great theoretical and practical importance –

Interesting to me.

While it has not been possible to provide answers to these questions –

The experiment didn't work, but I figured I could get some publicity out of it.

Handled with extreme care during experiment –

Not dropped.

Typical results are shown –

The best results are shown.

Presumably at longer times –

I didn't take the time to find out.

It is believed that –

I think.

It is generally believed that –

A couple of other folks think so too.

It might be argued that –

I have such a good answer for this objection that I shall now raise it.

**It is clear that much additional information will be required
before a complete understanding –**

I don't understand it.

Correct within an order of magnitude –

Wrong.

Seeking Secretary

The Entomological Society of Canada is looking to fill the position of Secretary, beginning in January 2009. Please note that the Secretary is considered a Trustee of the Society and is expected to attend meetings of the Governing Board and the Executive Council. The Secretary prepares meeting agendas; records the minutes for, and identifies action items arising from, all meetings of the Board and of the Society; prepares all ballots; notifies Board Members and Members of the Society of forthcoming meetings; distributes reports and other material as required, using the *Bulletin* and Website when appropriate; and assists the President by helping to prepare committee lists, communicating concerns from members of the Board, Committee Chairs and the Society, and providing information on past activities of the Society from electronic and archived files. The ability to work in both French and English, experience as a past board member, and a general knowledge of the bylaws, standing rules and committee guidelines of the Society would be an asset. Please express your interest in the position to the President, Terry Shore, by **30 April 2008** (TShore@pfc.cfs.nrcan.gc.ca). The final selection will be made by an ad hoc committee convened by the President.

À la recherche d'un(e) secrétaire

La Société d'entomologie du Canada cherche à combler le poste de secrétaire à compter de janvier 2009. Veuillez noter que le/la secrétaire est considéré(e) comme un fiduciaire de la Société, et doit assister aux réunions du conseil d'administration et du conseil exécutif. Le/la secrétaire prépare l'ordre du jour des réunions; écrit le procès verbal et identifie les actions à prendre lors de toutes les réunions du conseil d'administration et de la Société; prépare les bulletins de vote; avise

les membres du conseil d'administration et les membres de la Société des réunions à venir; distribue les rapports et autres documents lorsque nécessaire en utilisant le *Bulletin* et le site Internet lorsque approprié; et assiste le/la président(e) en aidant à la préparation des listes de comités, en communiquant les préoccupations des membres du conseil d'administration, présidents des comités et membres de la Société, et en fournissant les informations concernant les activités passées de la Société à partir des archives papiers et électroniques. La capacité de travailler en français et en anglais, l'expérience en tant que membre du conseil d'administration et une connaissance générale des règlements intérieurs, des règles permanentes et des lignes directrices des comités de la Société sont des atouts. Veuillez manifester votre intérêt dans ce poste au Président, Terry Shore, au plus tard le **30 avril 2008** (TShore@pfc.cfs.nrcan.gc.ca). La sélection finale sera faite par un comité ad hoc convenu par le Président.

Executive Council Meeting

The Executive Council will meet on April 26 at the ESC office in Ottawa. Agenda items should be sent to Rick West, ESC Secretary.

La réunion du Conseil exécutif :

Le conseil exécutif se réunira le 26 avril au bureau de la SEC à Ottawa. Les sujets à traiter au programme doivent être envoyés à Rick West, le Secrétaire de la SEC.

Seeking Webmaster

The Entomological Society of Canada is looking to fill the position of Webmaster, beginning in January 2009. Please note that the Webmaster is considered a Trustee of the Society and is expected to attend the annual meeting of the Governing Board. The duties would cover, but not be limited to, continual updating and maintenance of content on the ESC website, the creation of new web pages as appropriate and ex officio membership on the ESC Publications Committee. Previous experience in web page maintenance and design and an ability to work with French and English content is desired as is a general knowledge of the affairs of the Society. Please express your interest in the position to the President, Terry Shore, by **30 April 2008** (TShore@pfc.cfs.nrcan.gc.ca). The final selection will be made by an ad hoc committee convened by the President.

À la recherche d'un(e) webmestre

La Société d'entomologie du Canada cherche à combler le poste de webmestre à compter de janvier 2009. Veuillez noter que le/la webmestre est considéré(e) comme un fiduciaire de la Société et doit assister à la réunion annuelle du conseil d'administration. Les tâches incluent, mais ne se limitent pas, à une mise à jour continue et à la maintenance du contenu du site Internet de la SEC, à la création de nouvelles pages lorsque approprié et à une participation ex officio au comité des publications de la SEC. De l'expérience dans la maintenance et la création de pages web et la capacité de travailler avec un contenu en français et en anglais, ainsi qu'une connaissance générale des affaires de la Société sont requis. Veuillez manifester votre intérêt dans ce poste au Président, Terry Shore au plus tard **le 30 avril 2008** (TShore@pfc.cfs.nrcan.gc.ca). La sélection finale sera faite par un comité ad hoc convenu par le Président.

(continued from p. 48)

seem to attack a single plant species. With over 5000 plant species in Canada, 1000 eriophyoid species seems conservative. This example also shows how little we know mites, including in Canada.

Besides attempting to resolve the taxonomy of phytophagous mites – needless to say, I'm tackling less intimidating groups than eriophyoids first – I receive requests for identification from various clients, notably the Canadian Food Inspection Agency regarding mites on imported plant products. Other times, I get more 'local' requests such as one last summer, when a mite that was causing damage in pastures in the Prairies was sent to me for identification. After examination, the animal in question appeared to be undescribed. I often get excited with such requests because I learn about new mites with ecological or even economic importance, and this provides me with

some research directions on which taxa most need revision. Anyway. If you have a mite problem, I'd be happy to hear from you!

(suite de la page 48)

notamment l'Agence Canadienne d'Inspection des Aliments à propos d'acariens récoltés sur les produits végétaux importés. D'autres fois, je reçois des requêtes plus 'locales' comme une de l'été dernier, où un acarien causant des dégâts dans des pâturages des Prairies m'a été envoyé pour identification. Après l'avoir examiné, la bête en question m'est apparue comme une nouvelle espèce. Des requêtes de ce genre peuvent parfois m'emballer parce que j'apprends à propos de nouveaux acariens qui ont un impact écologique ou économique, et ça me donne des idées sur quels taxons ont le plus besoin de révision. Bon. Si vous avez un problème d'acariens, n'hésitez-pas à me contacter !

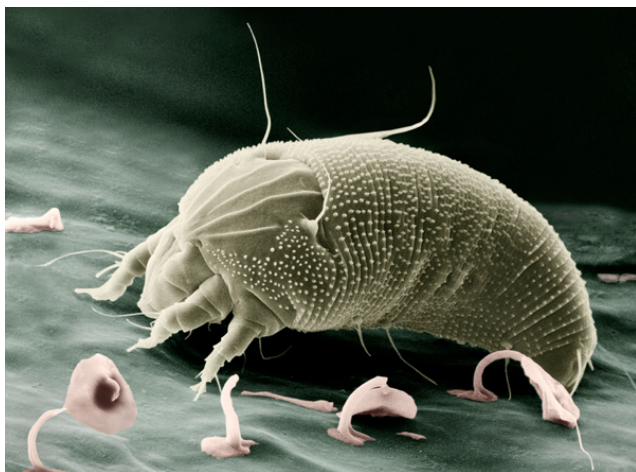
Grasshopper Identification Booklet wins international award

Grasshoppers are a common pest of pulse crops, but not all grasshopper species are bad; some are actually beneficial. To help growers recognize a good grasshopper from a bad one, funding from Agriculture and Agri-Food Canada's Pesticide Risk Reduction Program resulted in the publication of a Grasshopper Identification Booklet. The booklet was written by Dan Johnson, a former AAFC scientist currently at the University of Lethbridge, with collaboration among Health Canada's Pest Management Regulatory Agency, Saskatchewan Pulse Growers, Pulse Canada, Saskatchewan Agriculture and Food and Direct Focus Marketing Communications.

This user-friendly booklet includes colour photographs and distinguishing characteristics of grasshoppers, categorized as either a high threat, low threat or beneficial. The booklet also reviews IPM practices for grasshopper control to help growers make decisions about when to use pesticides. With the field booklet, growers can properly assess grasshopper threats to their crops, reducing the costs and amount of pesticide used. Due to high demand, work is underway to update the information and reprint for further distribution. In a follow-up survey, the vast majority of growers considered the information valuable.

Recently, the booklet won an Award for Excellence from The Communicator Awards. Based in New York, this international awards program honours creative excellence for communications professionals in all fields (not just agriculture). Founded by communications professionals, The Communicator Awards received over 8,000 entries from companies and agencies of all sizes, making it one of the largest award competitions of its kind in the world.

Bill Boddis, Pest Management Centre, Agriculture and Agri-Food Canada, Ottawa, ON



R. Ochoa, E. Erbe, and C. Pooley (USDA-ARS)

Low temperature scanning electron micrograph of *Aceria anthocoptes* (Acari: Eriophyidae) on Canada Thistle



“Heidi Fry (center) survives the ‘near death’ experience of her MSc defense, held 31 October 2007 at the University of New Brunswick. Also present were The Grim Reaper (Dan Quiring, Heidi’s main supervisor) and Krista Ryall (a co-supervisor).”

Ouch!

*What did one flea say to the other flea?
“Shall we walk or take the dog?”*

*A termite walks into a bar and says,
“Is the bar tender here?”*

*Bartender to grasshopper: “Did you know we have a drink named after you.”
Grasshopper: “Really? You have a drink named Steve?”*

THE ADVENTURES OF **ENTO-MAN** (EPISODE X)

TEXT: ANDREW BENNETT

ART: GAËTAN MOREAU



Entomologists at work

**“Oh, Mother, tell your children,
not to do what I have done”**

by Dan Johnson

We all hear admonitions that we sometimes ignore. Don't talk on your cell phone while driving. Floss. Don't go off alone with strange coleopterists. There is wisdom in such aphorisms. When experienced members (me, in this case) of our discipline ignore caution and make unfathomably stupid decisions, pig-headedly ignoring conscious and subconscious warnings of impending catastrophic loss, the resulting lesson is wasted if not shared. Take heed. Do not do as I have done.

I moved to a new institution that had no formal insect collection. I used numerous field trips and holidays during the next two years to establish a new collection of North American Orthoptera and other insects. In order to curate research collections and be able to donate my personal collection of pinned specimens, I received a national infrastructure grant that included a fund to buy steel museum cabinets. When I placed the order, the 15% of the purchase price that was devoted to buying the boxes to go in the drawers, plus additional Schmidt boxes, did not receive local purchase authorization because the specs were for museum cabinets, not for cabinets and little boxes. Lesson one, anticipate and follow the rules, like them or not. I was able to protect only a portion of my pinned collection properly, around 1,000 specimens, and curate it in an official lab setting (specimens in alcohol were not affected). Until I could obtain the needed boxes, I pinned the remaining duplicates and special interest specimens, around 5,000, on

Styrofoam insulation from Home Depot – we have all done something like that, as a method for interim storage, or during drying. Since space was short, I co-opted the guest rooms in my basement, which became a working museum of exposed, dried insects. Perhaps you can see where this is going. Lesson two: plan for known hazards, and as Buzz Holling used to tell us students, always think safe-fail, not fail-safe.

My smaller collection at the University was secure, and successfully applied to community analysis and environmental impact studies. Over 40 species were even bar-coded by Robin Floyd of the University of Guelph BOL project. Photographs of 35 species from this set went into a field guide for growers and naturalists, which comes out in spring of 2008, with an additional 20 species ready for a future version. So far so good. Meanwhile, I went into the basement museum when I could, and worked on my favorite groups from the larger collection. Teaching new classes, having new babies, etc., delayed me in getting through it in the time I had expected.

We all know about dermestid beetle larvae attacking collections, but because we are used to the proven value of para-dichorobenzene or dichlorvos in a “real” collection, we become inured to the specimen-munching threat, and forgetful of how quickly and completely they can do their work. At home, this chemical prophylaxis is eschewed for reasons of health and safety, so I was moved bits of the collection in and out of a freezer devoted to this purpose. Dermestids that may threaten insect collections are like grizzlies, feared but rarely seen, and it is easy to drop your guard. The reality of the risk came crashing down one day, when I went into the back stacks to look for some particular katydid and saw the signs of rapid dermestid build-up. It suddenly became clear that the majority of my collection only looked like grasshoppers and bush crickets from the outside; they were actually little hollow rearing tubes for dermestids. I can't ask

Dan Johnson is a Professor of Environmental Science and a Canada Research Chair for Sustainable Grassland Ecosystems, at the University of Lethbridge, in Lethbridge, Alberta

how this could happen, because I KNEW it could happen. I saved what I could and set the rest outside in -24 °C weather, to end the infestation, and admittedly to allow some natural justice, if not revenge (akin to spraying a field when the crop has been entirely eaten). To those who are considering expanding or temporarily housing a collection, the moral of this cautionary tale is not to become complacent. Do not underestimate the speed at which a dermestid infestation can explode. Dermestids don't care who is at fault for leaving them such a rich food supply; they just quietly take advantage of it. My sin, and ultimate misery, was from leaving the interim collection unprotected for too long. In an environment without sealed containers or chemical preservatives, it can be destroyed even faster than you might realize.

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

Bulletin of the Entomological Society of Canada

Editor: Kevin Floate
Assistant Editor: Frédéric Beaulieu

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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.

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

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The Buzz / Bourdonnements

By Fred Beaulieu, Assistant editor / Rédacteur adjoint



This is my first issue of the ESC *Bulletin* as Assistant Editor. This should be a fun experience, learning some of the intricacies of modern editing, and getting acquainted, at least via the *Bulletin*, with Canadian entomologists and their Society.

I work as a research scientist with Agriculture and Agri-Food Canada in Ottawa, at the Canadian National Collection of Insects, Arachnids and Nematodes (CNC). My job is to identify and describe species of mites associated with plants – primarily phytophagous mites, but I also examine predators and fungivores when needed. Mites are about the tiniest arthropods, but are quite more diverse and ecologically exciting than one may think, at least from my biased point of view. For example, eriophyoid mites (see image on p. 40), sometimes known as gall mites, range in body size from 80 to nearly 500 microns, and have only four legs instead of the usual set of eight. Although there are about 100 species known in Canada, there may be over 1000 for the following reasons. First, it appears that possibly most plant species have eriophyoids on them, and second, most eriophyoid species

(continued on p. 39)

Ceci est mon premier numéro du *Bulletin* de la SEC en tant que rédacteur adjoint. Cette expérience devrait être enrichissante et me permettre d'apprendre les subtilités des techniques de rédaction et de me familiariser, du moins via le *Bulletin*, avec les entomologistes canadiens et leur société.

Je travaille comme chercheur scientifique pour Agriculture et Agroalimentaire Canada, à la Collection nationale canadienne d'insectes, arachnides et nématodes (CNC). Mon travail consiste à identifier et décrire les espèces d'acariens associées aux plantes – d'abord les acariens phytophages, mais aussi les prédateurs et les fungivores, au besoin. Les acariens sont, en gros, les plus petits arthropodes, mais ils sont bien plus diversifiés et excitants écologiquement parlant que l'on peut croire. Enfin, ça dépend du point de vue ! Par exemple, les acariens ériophyoides (voir image, page 40), dont beaucoup causent des galles chez les plantes, mesurent entre 80 et presque 500 microns de long, et n'ont que quatre pattes au lieu de huit comme chez la plupart des acariens. Même si environ 100 espèces seulement sont dénombrées au Canada, il pourrait y en avoir plus de 1000 pour les raisons suivantes. Premièrement, il semble possible que la plupart des espèces de plantes aient des ériophyoides qui leurs sont associés, et deuxièmement, la plupart des espèces d'ériophyoides semblent chacune s'attaquer à une seule espèce de plante. Étant donné qu'il y a plus de 5000 espèces de plantes répertoriées au Canada, un estimé de 1000 espèces d'ériophyoides semble plutôt conservateur. Cet exemple démontre aussi à quel point les acariens sont méconnus, et ce, incluant au Canada.

En plus de tenter de résoudre la taxonomie des acariens phytophages – nul besoin de préciser que je m'attaque d'abord à des groupes moins intimidants que les ériophyoides – je reçois des requêtes provenant de clients variés,

(continue à la page 39)

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Images

On the spine: *Silusa californica* Bernhauer (Staphylinidae, Aleocharinae), originally described from Pasadena, California, represents a fairly common pattern of distribution being transcontinental in Canada and ranging south along Rockies. Photo: K. Bolte

Beneath the title: *Aphodius distinctus* (Müller) is a European species of dung beetle (Scarabaeidae) that is common throughout North America. Photo: H. Goulet & C. Boudreault

Photos on front cover:

1. Reared from seed cones of western red cedar, *Thuja plicata* Don ex D. Don (Cupressaceae), this male *Eurytoma* Illiger sp. (Eurytomidae) is either a parasitoid associated with the red cedar cone midge, *Mayetiola thujae* (Hedlin) (Cecidomyiidae) or a spermatophage. Photo: D. Manastyrski

2. *Spilomyia alcimus* (Syrphidae) on Hoptree *Ptelea trifoliata*. Wheatley, Essex County, Ontario, June 2, 2007. Photo: J. Lucier

3. Bob Lamb collecting in Riding Mountain National Park, Manitoba, during the Biological Survey of Canada's 2007 BioBlitz. Photo: P. MacKay

4. Immature *Xysticus* sp. (Thomisidae) on a daisy in a garden at the foot of Mt. Bowman, British Columbia, July 2005. Photo: J. Bovee

5. Bright red galls of the agamic generation of *Trigonaspis quercusforticorne* (Walsh) (Cynipidae) on new twigs of bur oak (*Quercus macrocarpa*) at Souris, MB. Photo: S. Digweed

Back cover: Leafcutting bee, probably *Megachile* sp. (Megachilidae) taken on Pender Island, BC, July 2007. Photo: B. Roitberg

Français à l'intérieur de la couverture avant