Bulletin

Entomological Society of Canada
Société d'entomologie du Canada

Volume 45
Number / numéro 1

March / mars 2013

Published quarterly by the
Entomological Society of Canada

Publication trimestrielle par la
Société d'entomologie du Canada

Images

Sur le dos: Des oeufs de punaise Pentatomoidea trouvés sur le feuillage d'un pin tordu à Tappen, C.-B. Photo: W. Strong

Sous le titre: Nymphes de *Pachycoris klugii* sur *Jatropha cucras*, Tehuacan, Chiapas, Mexique. Photo: T. Haye

1 Une femelle *Agapostemon* sp. (Halictidae) butinant sur un épilobe en épi en juin sur le campus Okanagan de l'UBC, Kelowna. Photo: B. Lalonde

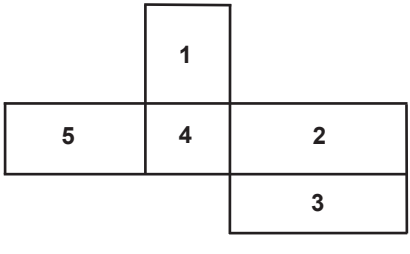
2 Fauchage de la végétation pour capturer des arthropodes terrestres dans le cadre de l'inventaire du Programme sur la Biodiversité Nordique depuis 2010. La photo été prise à Skeleton Creek Valley, juste sous le lac Hazen dans le nord de l'île Ellesmere. Les étudiants sont (de gauche à droite) Christine Roussel (UPEI), Sarah Loboda et Meagan Blair (toutes deux de McGill) Photo: D. Giberson

3 *Stratiomys badia*, une imitateur d'abeille, se repose dans un jardin au crépuscule à Chesterville, Ontario. Photo: C. Ernst

4 Une larve de *Papilio machaon dodi* (Lepidoptera: Papilionidae) sur *Artemisia dracunculus*, près de Drumheller, Alberta. Photo: J. Dupuis

5 Des pupes avancées de l'abeille *Apis mellifera*, disséquées pour trouver des acariens varroa (aucun n'a été trouvé). Prises d'une ruche dans la région de Gisborne sur la côte est de l'île du Nord en Nouvelle-Zélande, mars 2012. Photo: J. McLean

Couverture arrière: Une femelle gravide de l'hespérie du Dakota, *Hesperia dacotae* (Skinner) (Hesperiidae), espèce menacée, perchée sur *Achillea millefolium* (Asteraceae) dans une prairie à herbes hautes au nord-est de Deleau au Manitoba. Photo: C. Rigney



Up front / Avant-propos

Rosemarie De Clerck-Floate,
President of ESC / Présidente de la SEC

ESC Anatomy and Function 101

As I move deeper into my President's year, I continue to be impressed by the anatomy and function of societal operations. Given that one of my goals this year is to demystify what goes on in the running of the Society (see my ESC Blog entry; http://escsecblog.com/), I want to share my understanding with you.

I now see that the training process for those who are elected to carry out the Society's business over four-year spans of individual commitment was well-planned by those who laid the ESC's foundation. As 2nd Vice-President (VP), I imbibed background on the ESC's identity, projects and mission so as to represent us in public relations (i.e., as Chair of the Science Policy and Education Committee). As 1st VP, I gained an appreciation of the excellence and dedication among our membership while serving as Chair of the Achievement Awards Committee. During the 2 years as VP, participation in Executive Council and Governing Board meetings prepares the incoming President so they can hit the ground running

Anatomie et fonctions de la SEC 101

Alors que je progresse dans mon poste de présidente pour cette année, je ne cesse d'être impressionnée par l'anatomie et les fonctions des opérations sociétales. L'un de mes objectifs pour cette année étant de démystifier le fonctionnement de la Société (voir mon billet sur le blogue de la SEC http://escsecblog.com/), je veux partager ma compréhension avec vous.

Je constate désormais que le processus de formation pour les élus qui mènent les affaires de la Société sur 4 années d'implication individuelle a été bien planifié par ceux qui ont érigé les fondations de la SEC. En tant que seconde vice-présidente (VP), j'ai intégré le contexte et les antécédents de l'identité, des projets et de la mission de la SEC afin de nous représenter dans les relations avec le public (i.e. en tant que présidente du comité des politiques scientifiques et de l'éducation). En tant que première VP, j'ai acquis une appréciation de l'excellence et du dévouement parmi nos membres en servant comme présidente du comité des prix d'excellence. Durant les deux années passées comme VP, la participation dans les réunions du conseil exécutif et du conseil d'administration prépare le futur président à tourner à plein régime au moment de prendre le relais. Le processus amène également des interactions avec ceux qui formeront l'équipe de confiance des bénévoles. Au moment où le poste de président sortant est atteint (et en tant que président du comité des nominations), les connexions, l'expérience et la vision d'ensemble sont en place afin d'aider à choisir les prochains candidats pour le poste de second vice-président.

Les documents qui guident notre Société sont le règlement intérieur, les règles permanentes ainsi que les lignes directrices des comités. Notre règlement intérieur explique la

by the time of gavel hand-off. The process also engenders interactions with those that will be your trusty team of volunteers. By the time the Past-President stage is reached (and as Chair of the Nominations Committee), the connections, experience and overview are in place for helping choose the next candidates for 2nd VP.

Our Society's guiding documents are the By-laws, Standing Rules and Committee Guidelines. Our By-laws explain the basic, required structure and process of our governance that ensure our legal status as a 'not-for-profit' organization, whereas our Standing Rules provide a set of instructions for how we function. The Standing Rules go into more detail in defining the types of members, and the roles of various bodies and positions that contribute to the "management and operation of the Society" (e.g., governing board, trustees, employees, committees, representatives), ,that is, the anatomy of the ESC. For those who have served on one of our 17 regular committees, you will know that the composition, term durations, purpose, and responsibilities of each committee are spelled out in the Committee Guidelines, which simply flesh out the bones given in the Standing Rules, thus providing a detailed record of what must be done from year to year by each committee. All our documents are 'living' in that they are altered as circumstances dictate to improve societal function. Reading and voting on by-law or standing rule changes may cause most members to yawn, but I now appreciate more than ever the importance of these documents to the existence and continuance of the ESC, especially now witr change at our doorstep.

We have learned that we have until 17 October 2014 to transition to the new "Not-for-profit Corporations Act", and I'm extremely thankful for the experience and competence of Bill Riel (Chair, By-laws, Rules and Regulations Committee) and Gary Gibson (Committee member) who have agreed to help us with this all-important task. Basically, it means we will have to change our By-laws and Standing Rules, although it appears that the former will be simplified, and the latter enhanced to

structure et les processus de base requis pour notre gouvernance afin d'assurer notre statut en tant qu'organisme à but non lucratif, alors que les règles permanentes fournissent des instructions sur la façon dont nous fonctionnons. Les règles permanentes vont davantage dans le détail en définissant les catégories de membres et les rôles de différents corps et postes qui contribuent à la gestion et aux opérations de la Société (p. ex. le conseil d'administration, les fiduciaires, les employés, les comités, les représentants), c'est-à-dire l'anatomie de la SEC. Pour ceux qui ont servi sur un de nos 17 comités réguliers, vous savez que la composition, la durée des mandats, le but et les responsabilités de chaque comité sont décrits dans les lignes directrices aux comités, qui étoffent simplement ce qui se trouve dans les règles permanentes, fournissant ainsi un document détaillé sur ce qui doit être fait d'une année à l'autre par chaque comité. Tous nos documents sont « vivants », dans le sens où ils sont modifiés lorsque les circonstances demandent d'améliorer la fonction sociétale. Lire et voter les changements au règlement intérieur et aux règles permanentes peuvent faire bailler la plupart des membres, mais j'apprécie plus que jamais l'importance de ces documents pour l'existence et la continuation de la SEC, particulièrement aujourd'hui avec des changements à notre porte.

Nous venons d'apprendre que nous avons jusqu'au 17 octobre 2014 pour faire la transition vers la nouvelle « loi canadienne sur les organisations à but non lucratif », et je suis extrêmement reconnaissante de l'expérience et des compétences de Bill Riel (président, comité des règlements) et Gary Gibson (membre du comité) qui ont accepté de nous aider avec cette tâche très importante. En résumé, cela signifie que nous devons modifier notre règlement intérieur et nos règles permanentes, bien qu'il semble que le premier sera simplifié alors que ces dernières seront améliorées afin d'assurer la continuité de nos opérations. Cela voudra peut-être dire un changement dans l'anatomie de notre corps administratif, mais je vous tiendrai au courant de la situation

assure our continued operation. It also may mean a change in the anatomy of our governing body, but I will keep you apprised of the situation as it develops, as we will need your help voting on proposed changes (likely at the Guelph JAM).

A positive way to look at this news is that it coincides perfectly with the Society's much-needed re-examination of mission and future, but also of how we function. Can we be more efficient with our time and money, given our recent leap to the digital age (e.g., journal and various modes of communication)? Can we reduce the workload on the dedicated members who volunteer their time to keep the Society functioning? As mentioned in the December 2012 Up-Front, Michel Cusson is Chairing an ad hoc committee (on Mission and Future) to revisit and perhaps modernize our mission, and to plot our next path forward. In addition to recommending possible new projects to advance entomology in Canada, the aim is to provide a clear plan for where we want to be as a society in 5, 10 or even 20 years. A clear plan may also create new opportunities for sponsorship and membership, as the newly reconstituted Marketing and Fund-raising Committee (Charles Vincent, Chair) is currently investigating.

Some exciting news to leave you with. First, the ESC Governing Board agreed in principle at the Edmonton JAM to the merger of our 2016 Annual Meeting with the International Congress of Entomology in Florida. Brent Elliott and the Annual Meeting Committee are currently developing a list of ESC requirements and recommendations for this possibility to go forward. Further, I just received news from the Entomological Society of Alberta, who hosted a terrific JAM last year in Edmonton, that the meeting was profitable for them. Congratulations! The Local Organizing Committee, led by Greg Pohl, also has done an excellent job in providing us with a report on their lessons learned, which will greatly aid the organization and execution of future JAMs.

So there are exciting things happening and about to happen within our Society, and now au fur et à mesure qu'elle se développera, puisque nous aurons besoin de vos votes pour les changements proposés (probablement à la réunion conjointe annuelle de Guelph).

Une façon positive de voir ces nouvelles est que cela coïncide parfaitement avec le réexamen plus que nécessaire de la mission et du futur de la Société, mais aussi de la façon dont nous fonctionnons. Pouvons-nous être plus efficaces avec notre temps et notre argent, considérant notre récent saut dans l'âge numérique (p. ex. la revue et différents modes de communication)? Pouvons-nous réduire la charge de travail de nos membres dévoués qui donnent bénévolement leur temps afin de faire fonctionner la Société? Tel que mentionné dans son Avant-propos de décembre 2012, Michel Cusson préside un comité ad hoc (sur la mission et le futur) afin de revisiter et peut-être de moderniser notre mission, et afin de diriger notre prochain pas vers l'avant. En plus de recommander d'éventuels nouveaux projets pour la progression de l'entomologie au Canada, le but est de fournir un plan clair de l'endroit où nous voulons être en tant que société dans 5, 10 ou peut-être même 20 ans. Un plan clair pourra également amener de nouvelles opportunités de commandites et d'adhésions, tel que présentement examiné par le comité du financement nouvellement reconstitué (Charles Vincent, président).

Je vous laisse sur quelques nouvelles excitantes. Tout d'abord, le conseil d'administration a donné son accord de principe lors de la réunion conjointe annuelle d'Edmonton afin de fusionner notre réunion annuelle 2016 avec le Congrès international d'entomologie (International Congress of Entomology*)* en Floride. Brent Elliot et le comité de la réunion annuelle préparent actuellement une liste des exigences et recommandations de la SEC afin d'aller de l'avant avec cette option. De plus, je viens tout juste de recevoir des nouvelles de la Société d'entomologie d'Alberta, qui a accueilli une réunion conjointe annuelle fantastique l'an dernier à Edmonton, me disant que la réunion leur a été profitable. Félicitations! Le comité organisateur local, mené par Greg Pohl, a fait

that our team is assembled (i.e., our anatomy is complete and functioning), we are all set to go. Thanks to all new and continuing Committee Chairs and members for agreeing to serve in 2012-13. I was pleased to see some new recruits within many of the Committees. A final reminder though that we are still looking for an experienced person to fill the position of Webmaster (see the ad on page 35), and for new people to fill the Chairs of the Annual Meeting, Finance, and Publications Committees beginning at our next JAM in Guelph, October 2013. Think of the opportunity to serve the ESC as an opportunity for personal and/or career growth and adventure, as challenges are simply new possibilities about to happen. Anyone interested in serving in these positions can send me an e-mail (Rosemarie.DeClerck-Floate@agr.gc.ca).

un excellent travail en nous fournissant un rapport sur les leçons apprises, ce qui aidera grandement l'organisation des réunions annuelles futures.

Il y a donc des choses excitantes qui se passent ou qui vont se passer au sein de notre Société, et maintenant que notre équipe est assemblée (i.e. notre anatomie est complète et fonctionnelle), nous sommes prêts. Merci aux nouveaux présidents et membres de comité, ainsi qu'à ceux qui continuent, d'avoir accepté de servir en 2012-2013. J'ai été ravie de voir de nouvelles recrues au sein de plusieurs comités. Un dernier rappel cependant : nous sommes toujours à la recherche d'une personne d'expérience afin d'occuper le poste de webmestre (voir l'annonce à la page 35), ainsi que de gens pour occuper les postes de présidents des comités de la réunion annuelle, des finances ainsi que du comité des publications à partir de la prochaine réunion annuelle à Guelph, en octobre 2013. Pensez à l'opportunité de servir la SEC comme une possibilité de croissance personnelle et/ou de carrière ainsi qu'une aventure, puisque les défis sont simplement de nouvelles possibilités sur le point de se produire. Toute personne intéressée par un de ces postes peut m'écrire (Rosemarie.DeClerck-Floate@agr.gc.ca).

Felix Sperling

Nurturing Entomological Enthusiasm

I am profoundly honoured and delighted to receive the Gold Medal from our Entomological Society of Canada. However the people who really should get this award are the extended community of entomological enthusiasts in whose midst I have had the privilege to be embedded for a lifetime. Entomology has been the central organizing principle of my life ever since I was a child chasing butterflies using a net that my mother made. Many people have nurtured and abetted my entomological pursuits over the years, and they are the ones who deserve the recognition. In this essay I'll try to describe some of the people and factors that I feel were essential to creating the conditions that launched and sustained me as an entomologist.

My appreciation of insects started early, on a farm on the northeast edge of Calgary. My parents, Werner and Gudrun Sperling, were immigrants from Prussia who had been uprooted from their homes and centuries of family heritage with the collapse of Germany at the end of WWII. But they were determined to look forward and keep building, and when I was nine we moved to a larger, freshly cleared farm south of Bragg Creek, in the foothills west of Calgary. It was an economically constrained life, with amenities including an outhouse (challenging at -40C) and no television but an abundance of books. My three siblings and I spent much of our spare time helping on the farm when we weren't doing homework or coping with the hour-long school bus ride. But most of our farm and the surrounding area was covered by mile after mile of woodland and swamp. There I roamed for years, entranced by everything from wildflowers to mice, fossils, roadkill (a fine source of skeletons) and above all butterflies. I still can't imagine a better upbringing for a biologist.

Early and plentiful exposure to nature is listed in Richard Louv's "Last Child in the Woods" as the most important factor in preventing what he called nature-deficit disorder. I did get lot of contact with nature. But I think that an equally important factor was the inclusive sense of community that I found among naturalists. That feeling was nurtured at an immediate, local scale where such interactions among naturalists made all the difference in sustaining our enthusiasms when other people thought we were anything from odd to crazy.

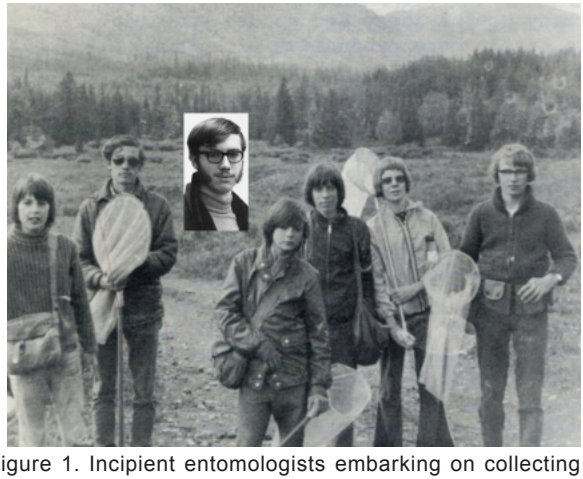


Figure 1. Incipient entomologists embarking on collecting trip organized by Ted Pike (inset photo) in July 1972 to the Kananaskis area, Alberta. Left to right: Robin McQueen, Gerry Hilchie, Jim Watts, Peter Allen, John Acorn, Felix Sperling.

In the beginning, I wondered whether there was anyone else in Alberta who was a bug enthusiast. There was no one my age at school who shared any interest in insects, although later I had a supportive

Felix Sperling (Felix.Sperling@ualberta.ca) is a Professor of Biological Sciences and the Curator of the Strickland Museum of Entomology, University of Alberta.

high school teacher, Vivian Pharis, who went on to become an influential environmentalist in Alberta. So it was a happy day when I met Ted Pike at a science fair in Calgary, and through him also Gerry Hilchie. They were both collectors, especially of butterflies, and Ted soon organized a trip to the mountains for several people like me who he had taken under his wing as part of TIEG – Teen International Entomological Group. Ted was a charismatic leader and avid correspondent who also invited John Acorn down from Edmonton to join us. Ted's photo of our group (Figure 1) captured the wide-eyed but determined mood of this mix of teenagers who met for the first time on a cold and rainy day in July 1972. As far as I know, each of us has continued our entomological interests in some form. Ted Pike himself soon left for Edmonton to study entomology at the University of Alberta as an undergraduate. And the adventures continued, including a trip to the Yukon by Gerry and myself in 1975, where we found a little-collected butterfly and officially named a mountain after it – Distincta Peak. Entomological enthusiasm can be wonderfully self-reinforcing among friends with common interests.

Even though I found other naturalists with similar inclinations, I still thought we were living in splendid scientific isolation. After all, I was discovering butterflies that were obviously new to science because I couldn't identify them using the only book I had – a small Golden Nature Guide. I remember complaining to the proprietor of Evelyn de Mille Books in Calgary that there were no books on Alberta butterflies. She replied that I would have to write one. I was shocked – that was just not possible. She was nonplussed. It didn't have to be this year, she said seriously, but with just a couple of years of work there was no reason why not. And within a year I met Charley Bird, a professor at the University of Calgary who was doing just that. He wanted to see my collection to see if I had any good records, which I did. Two decades later several of the participants on our TIEG trip, together with Bird, had published not one but two books on the butterflies of Alberta. Entomology is funny that way; it broadens your horizons so that almost anything is possible.

When I finished high school, it seemed only natural to go on to the University of Alberta to study entomology. Ted was already there, and Gerry was moving there to do a Master's degree. For anyone interested in bugs in Alberta, it was the obvious place to go. Founded by E. H. Strickland in 1922, the Department of Entomology had become an epicentre of entomological exuberance 50 years later. Originally from England and with graduate training at Harvard, Strickland had been an entomology researcher at the Dominion Entomological Laboratory in Lethbridge since 1913. Upon moving to the University of Alberta 9 years later, Strickland established a reference collection for all insects he encountered in Alberta. It was an almost unbelievably huge task but he made so much progress in all major groups that the reference collection remains useful today, 60 years after he retired.

While he was in southern Alberta, Strickland would have met many of the members of the entomological community in the area, which included people like Frederick Hova Wolley Dod, an expatriate Englishman of independent means and an amateur Lepidopterist of renown who lived southwest of Calgary. Dod was part of a community of Alberta naturalists that formed the North-West (Canada) Entomological Society in 1898, which became a natural history society 5 years later and has been renamed but continues today. However, the growing numbers of university and government entomologists during the early 1900s were not usually active in naturalists' societies. Instead a new society composed primarily of professional entomologists, the Entomological Society of Alberta, was formed in 1953. E.H. Strickland served as its first president in the same year that he retired from the University of Alberta.

George Ball arrived at the University of Alberta in 1954 as a new professor of entomology, bringing a focus on beetles and taxonomy from his alma mater, Cornell University. He took on graduate students from around the world as well as locally, giving them the freedom to pursue

taxonomic projects on any group or using any approach that they really wanted to pursue. By the time I was interested in starting a Master's project in 1980, he was supervising a large group of about a dozen graduate students. He gave each of us his full attention for at least a half hour every 2 weeks, one-on-one. Ted and Gerry had gone before me, as had great numbers of other graduate students who by this time populated universities and major museums around the world. But the project I had set for myself was a bit of a black hole – sorting out a species complex of swallowtail butterflies where populations hybridized in some places but not in others, complicated by geographic race formation, color polymorphisms and changing larval host associations. The years came and went, fellow graduate students came and went (the closest being John Acorn and David Maddison), normative deadlines came and went, my funding came and went, and I had still not finished my thesis. Ball patiently advised and prodded, while I found financial and intellectual refuge for a while working with John Spence, a newly arrived insect ecologist. And with much agony and lack of sleep, I finally finished my MSc thesis more than 6 years after I started. I was relieved and grateful, and made a point of thanking Ball for believing this project would work out in the end. He raised his eyebrows and replied that he didn't actually believe the project was likely to amount to much. I stepped back, aghast. He laughed and pointed out that it was me he was supporting, not the project. I have tried to extend that same stance to my own students ever since.

The most important lesson I learned early is that entomology is about people at least as much as it is about insects. It is not just that insect pests would not be pests if we were not part of the equation, or that their biological processes would not be interesting if we were not fascinated by them. But entomologists are themselves an essential part of any entomological

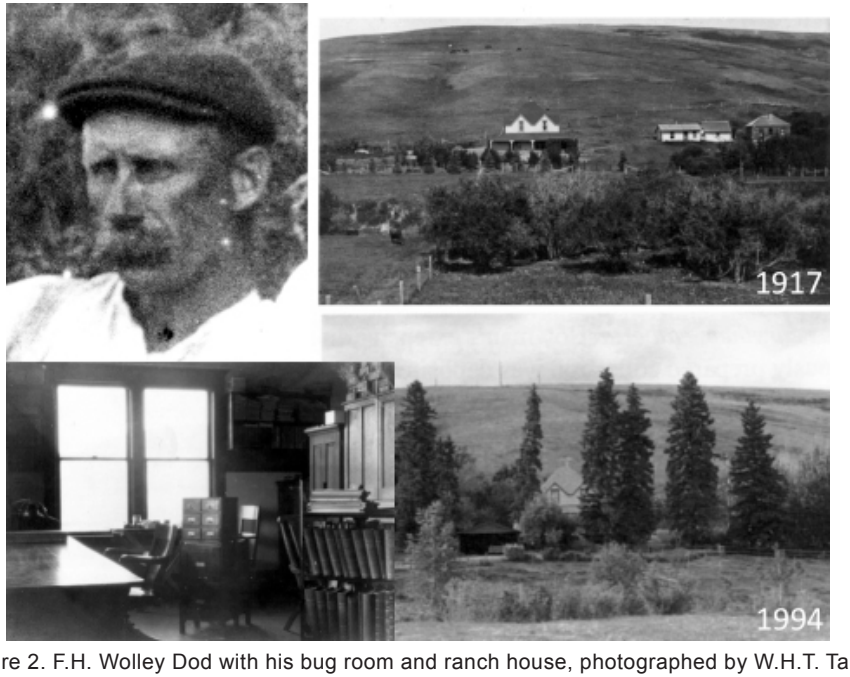


Figure 2. F.H. Wolley Dod with his bug room and ranch house, photographed by W.H.T. Tams in 1917. The same view in 1994 shows the ranch house now almost obscured by trees, with the Ann and Sandy Cross Conservation Area behind it.

experience, through the extended networks that entomologists form, transcending the boundaries of geography and time. For example, while I was growing up, I had no clue that I was living just a few miles from the former homestead of F.H. Wolley Dod. His global network of correspondents included Walter Rothschild, who was the heir to a vast banking fortune and an irrepressible collector and museum builder. Rothschild and his curator, Karl Jordan, produced a comprehensive monograph on swallowtail butterflies that included commentary about the taxonomically difficult populations collected by Dod west of Calgary. I ended up doing my Master's thesis on those same populations 70 years later. Dod's Alberta collections have found their way into museums around the world, and his legacy still speaks to us a century after his death in 1919. It is a kind of immortality, and is as good as any of us will ever get.

Figure 3. Some of my PhD students at the University of California, Berkeley, May 1999. Left to right: Dan Rubinoff, me, Mike Caterino, Anthony Cognato.

Entomological influences and foundations are certainly not restricted to specimens. Another of Dod's legacies was that he trained W.H.T. Tams, a young assistant who he employed on a trip to London to help him on his collection at Calgary. Tams returned to London and, with no further training, was employed as a curator at the British Museum of Natural History. Interestingly, in 1917 Tams took some photos of Dod, his homestead and his bugroom (Figure 2). Tams eventually gave these photos to Jack Franclemont, a professor at Cornell University, who in turn gave them to me a few decades later when I was a PhD student at Cornell. In fact, Franclemont was also one of George Ball's PhD supervisors. I love these kinds of connections. Entomological networks can link and support people in the most unexpected ways.

Near the end of my Master's project, I was tempted to take George Ball up on his offer to have me switch into a PhD. But somehow I resisted that easy solution, and eventually went to Cornell for a PhD with Paul Feeny. It was the right decision, although it took a while to get sufficiently comfortable with the fundamentally different academic and biological environment that I found in upstate New York. I had been shielded from academic politics at the University of Alberta, but soon learned of their pervasive importance at Cornell. That exposure eventually stood me in good stead when I had to cope with such human complexities elsewhere. At Cornell, I immersed myself in a whole community of entomologists that had developed at the original home of American entomology, founded by John Henry Comstock. As a researcher, I learned a divide-and-conquer approach to scientific projects, rather than producing a single magnificent monograph of the kind that few people were reading anymore. And I was joined after 2 years by my wife Janet, an Albertan entomologist whose father's MSc thesis in physiology was among the first that George Ball examined as a new professor upon his arrival at the University of Alberta. Our first son arrived a year later, and then a second son just as I finished my PhD and moved to take up a postdoctoral position at the University of Ottawa. Life in Ottawa was a big blur as I worked in the Drosophila genetics lab of Donal Hickey, piling up as many papers as I could to increase my competitiveness for jobs, the idyllic contemplation of my MSc days long gone. I did have days during which I visited the Canadian National Collection, where many of my fellow graduate students from my University of Alberta days had gotten jobs as research

scientists and curators. But theirs seemed like such a different world.

After 3 years as a postdoc in Ottawa, I moved to California to take a position as assistant professor at the University of California at Berkeley, where I found a wonderfully stimulating but exhausting entomological environment. UC Berkeley had its own distinct entomological culture that, most importantly for me, included Jerry Powell. Jerry had trained many of the major Lepidopterists who occupied positions in North America, and although he had just retired he was unfailingly generous in continuing to try to teach my students and me everything that there was to know about microlepidoptera. It was an ideal situation, refreshingly uncomplicated by my own lack of any history in California. My new lab rapidly filled up with extraordinary students and postdocs (Figure 3) who have since gone on to populate numerous institutions in multiple countries, themselves training the next generations of entomologists. Research funding and resources came too, and in time I even got the unanimous vote of my colleagues in favour of tenure. So it was with great regret that I realized, at the same time, that my life in California was unsustainable at a personal level. Quite simply, the University of California didn't pay me enough to ever hope to support my family, which had grown to three sons by this point, without enormous cost to my family. No one in the UC administration seemed both interested and capable of finding a long term solution to this dilemma which also affected many of my colleagues. So when a position opened up at the University of Alberta, I applied and got it, coming full circle just by seizing opportunities as they came up.

Arriving back in Alberta, my feeling was that I was of this land and of these people. From a biologist's perspective, California was wonderfully intriguing, with its own distinct social history and enticing entomological differences. Every day contained a new discovery of some kind. But returning to Alberta with my family after 13 years away from my familiar hills and haunts and habitats, back to a supportive extended family and to the entomological community of Alberta with its deep connections to entomologists around the world, made the move seem worthwhile. It helped that I liked snow. And there were plenty of creative challenges waiting for me in Alberta. I have had excellent students and postdocs from around the world (Figure 4). Many of them have already moved on to good positions such as collection manager of the Cornell University Insect Collection (Jason Dombroskie), or research scientist at the Natural History Museum in London (Thomas Simonsen). When I think of lineages looping back, I can also proudly say that Bob Reed, an undergraduate who did his honours thesis in my lab at UC Berkeley, eventually replaced Paul Feeny at Cornell when he retired. It is a deeply satisfying feeling to be able to contribute to renewing the institutions that supported me along the way.

Figure 4. At the Waterton Bioblitz, Alberta, July 2005, with Sperling lab members and friends. Left to right: Dave Lawrie, Chris Schmidt, Marie Djernaes, Gary Anweiler, Lisa Lumley, Amanda Roe, Judy Weisgarber, Vazrick Nazari (with son Norbert), and Thomas Simonsen.

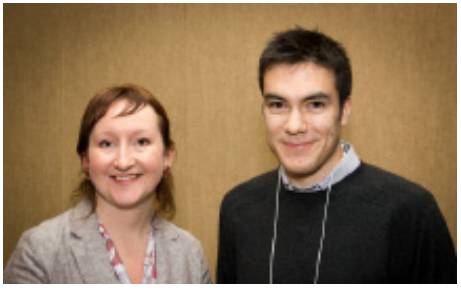
One of the most interesting issues that I found in Alberta was that although amateur naturalists and collectors were instrumental in founding the first entomologically inclined society in the region, the Entomological Society of Alberta had gone in a different direction. I had

Figure 5. The founding meeting of the Alberta Lepidopterists' Guild, Olds, Alberta, October 1999. From left to right: front row; Gary Anweiler, Ernest Mengersen, George Ball, Buck Godwin; 2nd row: Danny Shpeley, Ted Pike, Doug Macauley, John Spence, Jan Volney; 3rd row: Charley Bird, Dave Lawrie, Felix Sperling, Louis Morneau; back row: Chris Schmidt, Greg Pohl, Andrew Mitchell.

often thought that it would be mutually beneficial to bring amateur naturalists back into regular contact with professional entomologists. So when I returned to the University of Alberta, I was delighted to find a number of keen lepidopterists with a variety of backgrounds who were poised to form a new society that created a close integration between amateurs and professionals – the Alberta Lepidopterists' Guild (Figure 5). Founded in 1999, the ALG has been intentionally inclusive, as implied by the word "guild", supporting anyone interested in moths or butterflies through a community and listserve that links people who have questions with people who can and do answer them. The key members of this group have included people like Gary Anweiler, a retired amateur, Greg Pohl, a Forestry Canada biologist, and Charley Bird, now long retired from the University of Calgary. Among them, and with collaboration by many others, they have written many hundreds of species pages to update Strickland's vision of an accessible identification resource, as well publishing a major catalogue of Alberta Lepidoptera. ALG members have contributed to international and local conferences on butterflies and moths, and are now in the process of launching an Atlas of Alberta Butterflies. We have also established a more broadly based entomological listserve, called Albertabugs, managed by John Acorn and myself. It is a real pleasure to watch as entomological enthusiasts of all ages, such as Jan Scott in Medicine Hat, gradually grow into the role of confidently and competently providing answers where just few years earlier they only had questions. So Alberta entomological networks and communities are alive and well, in large part because they have kept changing to suit the times.

Insect and arachnid diversity is so astronomical that the possibilities are effectively limitless. That makes entomology into an extraordinary, endless adventure. On my first lecture in my entomology classes, I tell my students that if you learn about insects you will never be bored. If you connect with entomologists you will never be lonely. And if you collect insects or publish about them, your legacy will live long, long after you are gone. That's not a bad return on taking an entomology course.

I am convinced that to be an entomologist is to have rich, full life worth living. Entomology will do that for you. You just have to let the bugs into your heart, so to speak. But remember to give everyone a big smile when you say that, or people will know you are completely crazy. You wouldn't want that. Or would you?



Hi everyone! Welcome to the first student wing of the New Year. My name is Boyd Mori, and I am excited to be the new Student Representative to the Entomological Society of Canada and to be the Co-chair of the Student Affairs Committee (SAC) with Chandra Moffat. I want to thank Chandra for all of her hard work as the Student Representative and Chair of the SAC. Over the past 2 years Chandra has led many student initiatives including co-chairing the Graduate Student Symposium, updating the Directory of Entomology Education in Canada, and helping to maintain a low registration fee for students at the JAM. I am delighted that she will continue to act as Co-chair for the SAC, and her guidance will be a great asset to me and the other SAC members. I hope I can be as strong a student advocate as her.

For those of you who I have not met, let me introduce myself. I am currently completing my PhD at the University of Alberta under the supervision of Maya Evenden. My work explores the use of pheromones to monitor and manage the red clover casebearer, *Coleophora deauratella*, a significant pest of red clover in North-western Alberta. I have broad interests in chemical ecology, plant-insect interactions, and agricultural entomology.

Of course, the SAC could not function without the volunteer efforts of its committee members who have a diverse array of talents and research interests and are located all across the country. I want to thank the previous SAC members for their service, and am looking forward to working with the current SAC members over the coming year. On that note, I present your SAC members for this year:

Bonjour à tous! Bienvenue à la première Aile étudiante de la nouvelle année. Mon nom est Boyd Mori et je suis content d'être le nouveau représentant étudiant de la Société d'entomologie du Canada, ainsi que le co-président du comité des affaires étudiantes avec Chandra Moffat. Je voudrais remercier Chandra pour son excellent travail comme représentante étudiante et présidente du comité. Durant les deux dernières années, Chandra a mené plusieurs initiatives étudiantes incluant la coprésidence du symposium des étudiants gradués, la mise à jour du Répertoire des formations entomologiques au Canada, et l'aide au maintien de frais d'inscription pour la réunion conjointe annuelle réduits pour les étudiants. Je suis ravi qu'elle continue d'être co-présidente pour le comité des affaires étudiantes, et ses conseils seront un atout formidable pour moi et pour les autres membres du comité. J'espère que je serai aussi bon qu'elle en tant que défenseur des étudiants.

Je me présente pour ceux qui ne me connaissent pas. J'effectue actuellement mon doctorat à l'Université de l'Alberta sous la supervision de Maya Evenden. Mes travaux explorent l'utilisation des phéromones afin de surveiller et gérer *Coleophora deauratella*, un important ravageur du trèfle des prés dans le nord-ouest de l'Alberta. Je m'intéresse à l'écologie chimique, aux interactions plantes-insectes et à l'entomologie agricole.

Il est évident que le comité des affaires étudiantes ne pourrait pas fonctionner sans le travail bénévole de ses membres qui possèdent un large éventail de talents et d'intérêts de recherche et qui sont situés partout dans le pays. J'aimerais remercier les anciens membres du comité pour leur service, et j'ai hâte de travailler avec les nouveaux membres durant la prochaine année. À ce sujet, je vous présente les membres du comité des affaires étudiantes de cette année :

Chandra Moffat (co-présidente, Fredericton)

Chandra est impliquée au sein du comité depuis 2010. Elle a complété un baccalauréat à l'Université de Victoria où, via le programme Coop, elle a acquis de l'expérience en entomologie agricole, en écologie des plantes enva-

Chandra Moffat (SAC Co-Chair, Fredericton)

Chandra has been involved with the SAC since 2010. She completed a BSc at the University of Victoria where, through the co-op program, she gained experience in agricultural entomology, invasive plant ecology and biological control. After her BSc, she worked for both the CFIA and CABI Europe-Switzerland, and then completed an MSc investigating the host-associations of a candidate weed biological control agent in its native range. Chandra has recently started a PhD at the University of New Brunswick with Stephen Heard and is studying the ecology and evolution of host specificity of herbivorous insects on goldenrods.

Paul Abram (Montréal)

Paul recently started his PhD at the University of Montreal after completing a master's degree at Carleton University in Ottawa. His research interests include behavioural ecology of insect natural enemies and its application to arthropod biological control. His PhD project is focused on the effect of temperature on parasitoid behaviour using egg parasitoids of stink bugs as a model system.

Léna Durocher-Granger (Saint-Jean-sur-Richelieu/Honduras)

Léna completed her master's degree in 2011 on reproductive strategies of parasitoids at McGill University and Agriculture and Agri-Food Canada. She is now working in Central America to support IPM projects with small producers, but still helping in the SAC.

Guillaume Dury (Montréal)

With the help of his parents, Guillaume started collecting insects before he was 5 years old. The passion has only grown; during his undergraduate degree at the University of Quebec at Montreal, Guillaume studied the feeding behavior of forest tent caterpillars. He is currently studying circular group defense in the larvae of neotropical leaf beetles (Chrysomelidae: Chrysomelinae); using molecular phylogeny he will uncover evolutionary history of this behaviour. He is currently completing this Master's project at McGill's Macdonald Campus and the Smithsonian Tropical Research Institute in Panama.

hissantes et en lutte biologique. Après son baccalauréat, elle a travaillé pour l'ACIA et CABI Europe-Suisse, et a ensuite effectué une maîtrise sur les associations d'hôtes d'un agent potentiel de lutte biologique contre une mauvaise herbe dans son aire de répartition native. Chandra a récemment débuté un doctorat à l'Université du Nouveau-Brunswick avec Stephen Heard et étudie l'écologie et l'évolution de la spécificité d'hôtes d'insectes herbivores sur la verge d'or.

Paul Abram (Montréal)

Paul a récemment débuté son doctorat à l'Université de Montréal après avoir terminé une maîtrise à l'Université Carleton à Ottawa. Ses intérêts de recherche incluent l'écologie comportementale des ennemis naturels et son application à la lutte biologique des arthropodes. Son projet de doctorat traite de l'effet de la température sur le comportement des parasitoïdes en utilisant des parasitoïdes des œufs de punaise comme organismes modèles.

Léna Durocher-Granger (Saint-Jean-sur-Richelieu/Honduras)

Léna a terminé en 2011 une maîtrise sur les stratégies de reproduction des parasitoïdes à l'Université McGill avec Agriculture et Agroalimentaire Canada. Elle travaille maintenant en Amérique centrale afin de soutenir des projets de lutte intégrée auprès de petits producteurs, mais continue d'aider le comité.

Guillaume Dury (Montréal)

Avec l'aide de ses parents, Guillaume a commencé sa collection d'insectes avant même d'avoir 5 ans. La passion n'a fait que grandir : durant ses études de premier cycle à l'Université du Québec à Montréal, Guillaume a étudié le comportement de nutrition de la livrée des forêts. Il étudie présentement la défense de groupe circulaire chez les larves de chrysomèles néotropicales (Chrysomelidae : Chrisomelinae). En utilisant la phylogénie moléculaire, il élucidera l'histoire évolutive de ce comportement. Il termine actuellement son projet de maîtrise au campus Macdonald de l'Université McGill avec l'Institut tropical de recherche du Smithsonian.

Brock Harpur (Toronto)

Brock a fait ses études de premier cycle à

Brock Harpur (Toronto)

Brock completed his undergraduate degree at the University of Northern British Columbia where he learned to love social insects (thanks, Staffan) and genetics. He decided to trudge across the country and start his Master's degree with Amro Zayed. He is currently completing this degree at York University; his thesis studies genomics and immunology in the honey bee. After completion of his Master's degree, Brock will enter a PhD program to continue his studies on arthropod genomics.

Julia Mlynarek (Ottawa)

Julia completed her undergraduate and Master's degrees at McGill University - Macdonald Campus, where her passion for insects developed. With her systematics background, she decided to tackle understanding the evolution and ecology of species interactions. Julia is now pursuing a PhD in host-parasite associations at Carleton University, trying to determine what best explains interspecific variation in parasitism using damselflies as hosts parasitized by water mites and gregarines.

Ikkei Shikano (Vancouver)

Ikkei completed his Master's degree at the University of British Columbia where he ignited a passion for insects while researching their ability to retain long-term memory. He is currently working on a PhD at Simon Fraser University studying self-medication behaviour associated with tritrophic interactions between cabbage loopers, their host plants, and entomopathogens.

Graduate Student Showcase

The Graduate Student Showcase (GSS) (formerly the Graduate Student Symposium) occurs each year at the Joint Annual Meeting. The purpose of the GSS is to provide a high profile opportunity for graduate students near the completion of their degrees to present a more in depth overview of their thesis research. Start preparing those abstracts and look for a revamped edition of the GSS this year! Keep up-to-date with information on the ESC website and in the June Bulletin.

Student Resources

There are plenty of resources available to

l'Université du Nord de la Colombie-Britannique où il a appris à aimer les insectes sociaux (merci Staffan) et la génétique. Il a décidé de cheminer à travers le pays et a débuté une maîtrise avec Amro Zayed. Il termine actuellement ce diplôme à l'Université York : son mémoire de maîtrise porte sur la génomique et l'immunologie de l'abeille. Après avoir terminé sa maîtrise, Brock débutera un doctorat afin de poursuivre ses études sur la génomique des arthropodes.

Julia Mlynarek (Ottawa)

Julia a fait ses études de premier cycle et sa maîtrise au campus Macdonald de l'Université McGill où sa passion pour les insectes s'est développée. Avec ses connaissances en systématique, elle a décidé de s'attaquer à la compréhension de l'évolution et de l'écologie des interactions entre espèces. Julia poursuit maintenant un doctorat sur les associations hôtes-parasites à l'Université Carleton, tentant de déterminer ce qui explique le mieux la variation interspécifique dans le parasitisme en utilisant les demoiselles comme hôtes parasités par des hydracariens et des grégarines.

Ikkei Shikano (Vancouver)

Ikkei a fait sa maîtrise à l'Université de Colombie-Britannique où sa passion pour les insectes s'est développée alors qu'il travaillait sur leur capacité de mémoire à long terme. Il fait actuellement un doctorat à l'Université Simon Fraser sur le comportement d'automédication associé avec les interactions tritrophiques entre la fausse arpenteuse du chou, ses plantes hôtes ainsi que ses entomopathogènes.

Vitrine pour les étudiants gradués

La vitrine pour les étudiants gradués (anciennement le symposium des étudiants gradués) se tient chaque année à la réunion conjointe annuelle. Le but de cette vitrine est de fournir aux étudiants gradués près de la graduation une opportunité de premier choix pour présenter un survol plus approfondi de leurs recherches. Commencez à préparer ces résumés et attendez de voir l'édition revampée de cette année! Restez à jour grâce au site Internet de la SEC et au Bulletin de juin.

Ressources pour les étudiants

Il y a plein de ressources disponibles pour

students starting with this article in the Bulletin where we will highlight current student issues. Also, make sure to check out the ESC Student Facebook page, where you can interact with other students, learn about current research opportunities, the ESC website, where there is an entire section dedicated to students including job and research postings, and finally the ESC blog, discussing all things entomological.

Other student related news

The SAC is your student voice to the Entomological Society of Canada, if you have any questions, comments, or suggestions about student concerns feel free to email us at students@esc-sec.ca. We have a lot of exciting things happening over the course of the year and are looking forward to serving you.

Until next time! Good luck in your field season preparations!

Boyd
(bmori@ualberta.ca)

Thesis roundup

As always, we like to know when a student defends their thesis. If you (or anyone you know of) have defended your thesis recently, please send us your name, degree and date achieved, thesis title, supervisor's name, university and e-mail address to me at students@esc-sec.ca.

les étudiants, en commençant par cette rubrique du Bulletin où les questions pertinentes pour les étudiants sont abordées. Consultez également la page Facebook des étudiants de la SEC où vous pouvez interagir avec d'autres étudiants et découvrir des opportunités de recherche, le site Internet de la SEC où une section entière est dévouée aux étudiants, incluant des annonces d'emplois et de recherche, ainsi que le blogue de la SEC, qui discute de divers aspects entomologiques.

Autres nouvelles pertinentes

Le comité des affaires étudiantes est votre voix étudiante au sein de la Société d'entomologie du Canada, alors si vous avez des questions, commentaires ou suggestions qui concernent les étudiants, vous pouvez nous écrire à students@esc-sec.ca. Il y aura beaucoup d'évènements excitants au cours de la prochaine année, et nous avons hâte de vous servir.

À la prochaine! Bonne chance dans la préparation de votre saison de terrain!

Boyd
(bmori@ualberta.ca)

Foisonnement de thèses

Comme toujours, nous aimons savoir quand un étudiant soutient sa thèse. Si vous (ou quelqu'un que vous connaissez) a récemment soutenu sa thèse, merci de nous envoyer votre nom, diplôme et date d'obtention, titre de la thèse, nom du superviseur, université et courriel à students@esc-sec.ca.

Esch, Evan D. MSc, 2012. Interactions between the mountain pine beetle (Dendroctonus ponderosae Hopkins) and whitebark pine (Pinus albicaulis Englemann). Supervisors: John Spence and David Langor, University of Alberta.

Nardone, Erika. MSc, 2012. The bees of Algonquin Park: a study of their distribution, their community guild structure, and the use of various sampling techniques in logged and unlogged hardwood stands. Supervisor: Peter Kevan, University of Guelph

Villa-Rogriguez, Sandra. MSc, 2012. Reproductive biology and floral phenology of Sicyos Deppei G. Don (Cucurbitaceae) in disturbed areas in the city of San Andres Cholula, Peubla, Mexico. Supervisor: Peter Kevan, University of Guelph

Wick, Ashley A. MSc, 2013. Beyond the host plant: Multi-scale habitat models for a northern peripheral population of the butterfly, Apodemia mormo (Lepidoptera: Riodinidae). Supervisors: Nadir Erbilgin and John Spence, University of Alberta.

Wood, Charlene M. MSc, 2012. Saproxylic beetles (Coleoptera) associated with aspen deadwood in broad-leaved boreal mixedwood stands. Supervisors: John Spence and David Langor, University of Alberta.

I know you usually offer advice to graduate students, but I'm hoping you can help me too. I hear my younger colleagues going on about all these new tools available online and that I should be using them in my work, but I don't have the time to research them myself. Can you help me? What should I be using? And are things like Twitter and blogs really something you can use for work?

Signed 'Confused in Coquitlam'

Thanks for the question! Buggy is happy to answer questions from anyone. What you're asking is a bit of a tall order though. There are hundreds, if not thousands, of so-called 'productivity tools' out there that sell themselves as the next best thing for making your work easier. So, what I did is pick out a few common tools - RSS feeds, social media, cloud storage and blogs - that are becoming everyday aids in the young entomologist's tool box. I'm sure you have heard of some of these but what you may not have considered is how you could incorporate them into your own work. I'll introduce each, what they replace, why you should use them, and if they are really research tools.

RSS

What is it?

RSS is an acronym for 'Really Simple Syndication'. RSS feeds are used by websites to alert their followers when new content appears on their site.

What does it replace?

E-mail alerts, mail distribution lists, and remembering to check bookmarked sites for updates.

Why should I use it?

By following RSS feeds, you can cut down on the e-mails coming into your inbox and get instant notification when new articles are available online. It can also alert you to meeting announcements, workshops, and funding opportunities.

How do I use it?

You need an RSS reader which is either a stand-alone piece of software or a web service like Google Reader (and depending on which e-mail program you use, you may already have an RSS reader on your computer). In your RSS reader you can subscribe to RSS feeds by searching for specific journals or blogs using a built-in search tool, but the easier way is to visit a site you're interested in and look for the RSS symbol (Fig. 1). This will link you to the RSS feed's web address. You then enter the URL in your reader (often this will be done automatically when you click the link) and bingo, you're subscribed. Then,

Fig. 1. RSS feed icon.

Chris MacQuarrie is a research scientist with Natural Resources Canada Canadian Forest Service in Sault Ste. Marie where he studies the management of native and invasive insects. Currently, he's waiting for spring to come and reveal the toddler toys and dog bones that are buried in the backyard. Have an idea for a column? Send it to cjkmacquarrie@gmail.com, ping me on twitter @cmacquar, or post in the Facebook student group

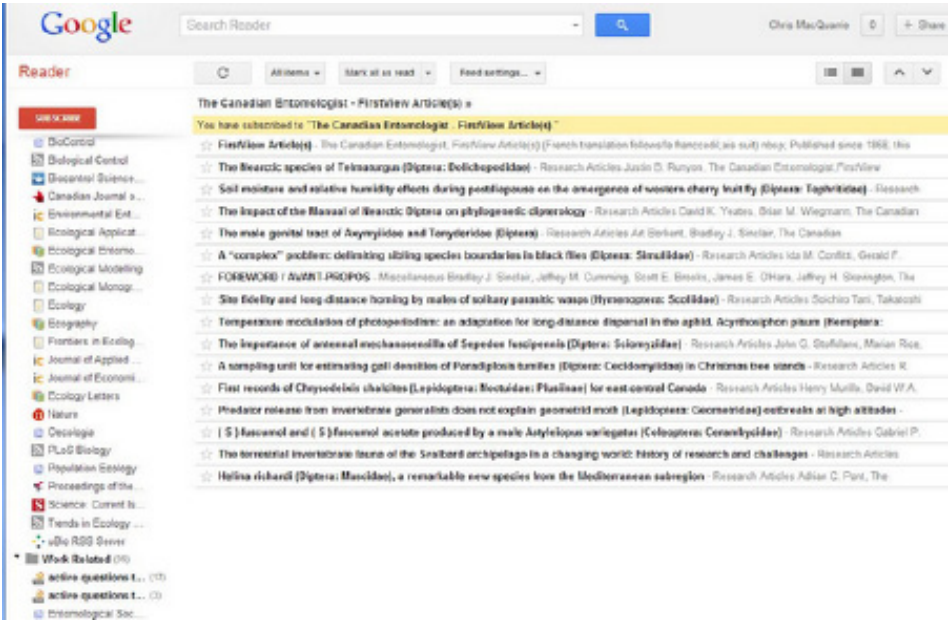


Fig. 2. Example of RSS reader image.

when the content of the website changes or the site is updated, a notice will immediately show up in your reader - no more having to check a website to see if new information has been posted.

Is it really a tool for work?

RSS feeds are great for quickly skimming new journal content (Fig. 2). They also help reduce the number of mundane distribution-list email messages that arrive in your e-mail inbox by shifting those notifications to a different piece of software. All RSS feeds from journals include the titles and authors, and some include partial abstracts. An entry in an RSS feed for a new journal article will always link to the online or pdf version of the article, so at most it takes just one or two clicks to get from the entry in your RSS feed to the actual paper. And, depending on your reader software, you can flag articles to read later, or forward them on to colleagues or students. In addition to journals, many societies (including the ESC) now post meeting announcements and member news in their RSS feed first, well before it shows up in a weekly or monthly e-mail newsletter.

Cloud storage

What is it?

Online data storage you can access from anywhere you have an internet connection.

What does it replace?

Physical media (thumb drives, CDs, hard drives) for backing up, sharing and transferring files.

Why would I use it?

With cloud storage you never have to carry your laptop home again, lose a presentation because of a bad or lost thumb drive, or worry about file sizes on e-mail attachments. Cloud storage gives you access to all your files anywhere you have an internet connection and all your files synchronized over all your computers or other devices.

How do I use it?

You need to register for a service. There are many, many options out there and they range from free (e.g., Google Drive) to fee-based services depending on the amount of space you use (e.g., Dropbox). You may already have access to a cloud storage system if you use an Apple product (iCloud) or if you have upgraded to Microsoft's newest operating system (SkyDrive). Once you're set up on a system, you simply start saving files to the 'cloud' rather than on your computer's hard drive. This process is simple, since many of the services will install a small application (an "app") on your computer that creates a folder that links to your cloud account. Anything you save in that folder is automatically synchronized to your cloud as long as you're connected to the internet (or as soon as you reconnect) and any computer linked to your cloud storage account will receive an updated version of your file. Most services will also provide you with a link to your files that you can paste in an e-mail, which is a great feature when working with large files. Instead of e-mailing a big document to a collaborator or sending multiple e-mails to transfer a large amount of data, you can just send them the link.

Is it really a tool for work?

How often do you carry a laptop home just so you can work on the files contained on the hard drive? This is where cloud storage is so useful. If you have a computer at home, there is no reason to lug a laptop just to transport the files. Cloud storage also offers the bonus of backing up your files remotely so you're unlikely to suffer a data loss due to a crash or theft. Many of these services also offer tools that let you work with your files online. For instance, I write my columns in Google Drive using its internal word processor. This means that I can work on the column, send it to my proof-reader, and then finally e-mail it to the Editor without ever saving a file to my hard drive. Cloud storage services also let you access your files anywhere through either a website or an app on your phone, so you can have all your files in your pocket or on any computer anywhere you go. This is a nice feature for those with long commutes or who travel a lot. For instance, I used my cloud storage account quite a bit on my last conference trip. I loaded my presentation and all the files I thought I'd need onto my Google Drive which meant I could leave my big heavy laptop in the office and just carry my small and light notebook computer.

Social media

What are they?

How we describe virtual communities that allow people to create and share information, data and media.

What do they replace?

Nothing, really. They are a new way of interacting using digital networks.

Why would I use them?

Expand your network, spread news about what you're working on, and get help from thousands of people

How do I use them?

You need to sign up for an account with one of the many, many social media services (Twitter, Facebook, LinkedIn, etc...) and begin making connections between you and people you know, or people you find interesting. Post information you think is interesting and comment on things that other people are saying.

Are they really tools for work?

The utility of social media depends a lot on the network. Facebook is your friends and family, LinkedIn is your professional life, and Twitter is the conversation going on in the hallway outside your office. Social and professional networks are valuable for establishing collaborations and finding out new information. These networks have always existed, but the curation of information contained within your networks has moved online. Twitter is a different beast - it can be a tool for work, but it can also be a giant time waster. To use a network like Twitter effectively

you need to control how you interact with it. You don't listen to every conversation that goes on in the hallway, but sometimes you need to stick your head out and see what's going on in the world. That's kind of how Twitter works; you drop in and see what's going on, maybe chime in a bit, and then go back to work. In this way Twitter helps you expand your network through these interactions by introducing you to people you may never meet in person. I've met and interacted with colleagues on Twitter from around the world that I may never meet in person. Outside of these more popular communities, there are also smaller and more targeted social networks that are meant for specific groups. The best example is the Stack Exchange group of websites (stackexchange.com) where experts and novices in various disciplines (e.g., biology, statistics) go to ask questions and give advice.

Blog

What is it?

An online journal; originally, an abbreviation of 'web log'

What does it replace?

In part: static web pages like personal websites, departmental and academic web pages; but also an addition to these web pages where more interaction can take place

Why would I use it?

Write and publish summaries of your work; comment on topics that interest you; share progress on projects; document progress on your research

How do I use it?

You need a website and blogging software. Some services offer both (e.g., Wordpress) and you only need sign up for an account. Otherwise, you need a piece of software to help you post text to the blog, and a place to host your blog. Text for your blog can be written in any word processor. If you can write a document in a word processor you can author a blog post.

Is it really a tool for work?

In its simplest form a blog can operate like a lab notebook, a place to record your thoughts and document your work. It doesn't even need to be accessible to the public. A public blog allows you do all that, but it also can be a web site about your research program. You can post and highlight new publications, share information about your research projects and introduce new graduate students. Some of you may already do this with a departmental web page, but the neat thing about a blog is that it allows you publish updates whenever you want, on whatever topic you like, without relying on an administrator to do the changes or conforming to a departmental template. The natural extension of starting a blog is to write and publish about topics that interest you; for instance, it's becoming common to see researchers using their personal blogs to weigh-in on new studies from other labs. This type of commentary has always existed, but blogs allow us to bring those kinds of discussion into the open and expose the process of science to the broader community.

Well, Confused, I doubt that will have answered all your questions. What I hope I have done is sparked some interest in you to explore these new tools on your own. Adopting all of them, all at once is likely not a good idea, but I encourage you to pick one and start getting your feet wet. Tools such as RSS and Cloud Storage can automate and simplify much of your work life, leaving you time to concentrate on more important things, whereas social networks and blogs can expose you to a much larger community than you knew was out there. I encourage you to get started!

Cheers
Buggy

Entomopathogenic fungi as potential bio-pesticides to control varroa mites and to boost bee immunity in honey bee colonies

Mollah Md. Hamiduzzaman, Alice Sinia, Paul H. Goodwin, and Ernesto Guzman-Novoa

Varroa destructor, an ecto-parasitic mite, is the main threat to honey bee health and to the beekeeping industry worldwide. Varroa mites feed on the blood of honey bees, opening wounds which promote secondary infections by other agents like viruses and bacteria, and suppress bee immunity in general. They originated in Asia where they parasitize the Eastern honey bee, *Apis cerana*. Less than 60 years ago, they increased their host range by moving onto the Western honey bee, *A. mellifera*, causing severe damage to bee populations in many countries around the world.

Varroa mites complete their life cycle inside comb cells containing bee brood within 5-7 days, and are able to increase their populations to damaging levels in one or two seasons. Beekeepers have been using miticides, medicaments that specifically kill mites. However, difficulties soon arise because varroa mites quickly develop resistance against the chemical ingredients of these medicines. If left untreated, or treated with miticides against which the parasites have developed resistance, varroa mites may cause entire colonies to collapse. Therefore, beekeepers are experiencing more winter colony losses in Canada in recent years (McRory 2007, Guzman-Novoa 2008). A study conducted by our lab showed that despite the use of synthetic miticides, 85% of the winter mortality cases of honey bee colonies in Ontario, are associated to the presence of varroa mites (Guzman-Novoa et al. 2010). The results of this study stress the importance of finding alternative, environmentally friendly, control strategies against these mites.

Some beneficial fungi are important natural enemies of mites and thus could be used as potential bio-control agents against varroa. Among these, entomopathogenic fungi invade their hosts through their cuticle, penetrating the haemocoel of the hosts, where the fungal mycelium grows and forms hyphal structures. Host death comes as a result of a combination of the effect of toxins and the destruction and collapse of the host's internal organs caused by the fungi (Vey et al. 2001). Field studies such as those by Kanga et al. (2006) and Meikle et al. (2008) reported that entomopathogenic fungi (*Beauveria* spp. and *Metarhizium* spp.) could be used in bee hives for the control of *V. destructor* in some limited ways. However, these and other studies have not addressed the important question of how fungi might affect the different developmental stages of honey bees and their natural defenses after fungal-treatment.

We have been testing some isolates of entomopathogenic fungi (*Beauveria bassiana*, *Clonostachys rosea* and *Metarhizium anisopliae*) as potential bio-control agents against varroa mites, but also looking at their effects on the development, length of life and immune response of honey bees. The primary goal of these studies is to develop a bio-pesticide that is effective at killing the target mite, but at the same time, safe to honey bees and to the environment. Fungi could be ideal varroacides; they occur naturally, are non-toxic to humans, can grow on culture media, can be produced massively, and are detrimental to mites.

Among the fungal isolates first tested, *B. bassiana* GHA and *M. anisopliae* UAMH 9198 caused more than 90% *V. destructor* mortality at 7 days following inoculation (dpi) of mites (Fig. 1, left graph). Then, to explore the molecular mechanisms of interaction associated with

Mollah Md. Hamiduzzaman (mhamiduz@uoguelph.ca) and co-authors are in the Honey Bee Research Centre (Head: Ernesto Guzman-Novoa), School of Environmental Sciences, University of Guelph.

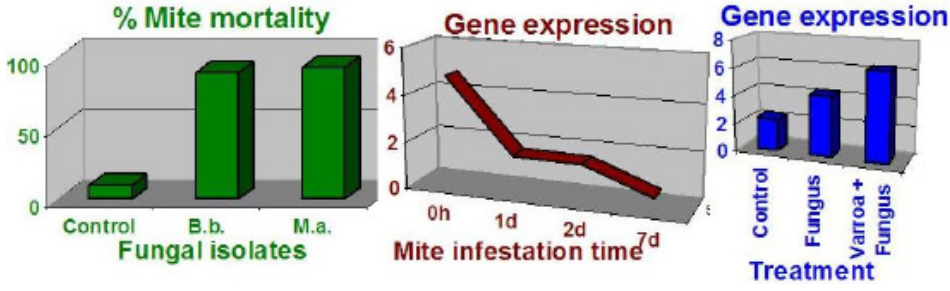


Fig. 1. The graph to the left shows the mean percent mortality of *Varroa destructor* mites treated with two different isolates of the entomopathogenic fungi: *Metarhizium anisopliae* UAMH 9198 (M. a.) and *Beauveria bassiana* GHA (B. b.). Control is showing the percent mortality of mites without fungi. The graph in the middle shows the effect of *Varroa destructor* infestation on the expression of the immune-related gene, *hymenoptaecin* in honey bee brood. RNA transcripts were quantified by RT-PCR from brood artificially-infested with varroa mites at different time points. The graph to the right shows the effect of entomopathogenic fungi on the expression of *hymenoptaecin* in brood artificially infested with *Varroa destructor* mites. RNA transcripts were quantified from brood treated with *Metarhizium anisopliae* or with fungus-treated varroa mites (Varroa + *M. anisopliae*) at 7 dpi. The relative expression of a PCR product was quantified from the ratio of the intensity of the *hymenoptaecin* amplicon to that of the honey bee house keeping gene (*RpS5*) amplicon in the same reaction as per Hamiduzzaman et al. (2012).

the mite-bee-fungal complex, we wanted to know whether fungi and/or mite infestation have effects on bee immunity. Like other insects, honey bees, produce antimicrobial peptides (AMPs) such as *apidaecin*, *abaecin*, *defensin* and *hymenoptaecin* to defend themselves from pathogens. These AMPs are controlled by immune-related genes (Casteels et al. 1993). Results of our experiments showed that mite infestations suppress the expression of immune genes in honey bees. For example, the relative expression of the gene *hymenoptaecin* decreased over time in bees infested with varroa mites compared to control bees (without mites). The lowest level of expression of this gene was observed at 7 dpi (Fig. 1, middle graph). Conversely and interestingly, gene expression increased significantly in bees treated with entomopathogenic fungi, indicating the release of secondary metabolites from the fungi that might help improve the expression of immune genes in bees. Other experiments were designed to investigate gene expression levels when brood were exposed to varroa mites that had been inoculated with either *B. bassiana* or *M. anisopliae*. Gene expression was even more up-regulated in bees infested with fungal-treated mites in comparison with controls. For instance, while the level of expression of *hymenoptaecin* was two times higher in bees inoculated only with entomopathogenic fungi compared to control bees (no mites, no fungi), expression levels three times higher were observed in bees treated with varroa mites that had been inoculated with fungi (Fig. 1, right graph).

Expression of *hymenoptaecin* showed different responses to parasitism by varroa mites and entomopathogenic fungi. The down regulation of gene expression for *hymenoptaecin* in brood infested only with *V. destructor* in our recent study indicates that successful varroa mite parasitism may require suppression of honey bee defense and stress-response gene expression, to avoid or suppress parasite/pathogen associated molecular pattern (PAMP)-triggered immunity (PTI) in honey bees, which could be caused by the mite while feeding on the bee. In contrast, both *B. bassiana* and *M. anisopliae* appear to induce PTI in honey bee brood, which is the first report of this effect by entomopathogenic fungi in honey bees (Hamiduzzaman et al. 2012). While varroa

mites can suppress gene expression in bee brood, varroa mites infected with entomopathogenic fungi induced their expression. This may be due to a low level of fungal infection of the bee, which negated the effector-triggered susceptibility (ETS) by *V. destructor*.

One concern about the use of entomopathogenic fungi to control varroa mites is that they might be pathogenic to bees and could have a detrimental effect on brood development. However, they would be useful if we could find a fungal strain that kills varroa at doses that are relatively harmless to bees. If this were possible, entomopathogenic fungi could reduce varroa mite damage to honey bee brood by both infecting the mite and preventing varroa-caused suppression of honey bee immunity. Alternatively, the possible triggers of PTI in brood could be isolated from *B. bassiana* or *M. anisopliae*, and then these PAMPs could be applied to brood to induce defense gene expression, which could possibly help reduce the ability of varroa to parasitize bees.

References

Casteels, P., Ampe, C., Jacobs, F., and Tempst, P. 1993. Functional and chemical characterization of hymenoptaecin, an antimicrobial peptide that is infection-inducible in the honeybee (*Apis mellifera*). Journal of Biological Chemistry **268**: 7044-7054.

Guzman-Novoa, E. 2008. Mortality causes of overwintered honey bee colonies in Ontario, Ontario Bee Journal **27**: 22-23.

Guzman-Novoa, E., Eccles, L., Calvete, Y., McGowan, J., Kelly, P.G., and Correa-Benitez, A. 2010. *Varroa destructor* is the main culprit for the death and reduced populations of overwintered honey bee (*Apis mellifera*) colonies in Ontario, Canada. Apidologie **41**: 443-450.

Hamiduzzaman, M.M., Sinia, A., Guzman-Novoa, E., and Goodwin, P.H. 2012. Entomopathogenic fungi as potential biocontrol agents of the ecto-parasitic mite, *Varroa destructor*, and their effect on the immune response of honey bees (*Apis mellifera* L.). Journal of Invertebrate Pathology **111**: 237-243.

Kanga, L.H.B., Jones, W.A., and Garcia, C. 2006. Efficacy of strips coated with *Metarhizium anisopliae* for control of *Varroa destructor* (Acari: Varroidae) in honey bee colonies in Texas and Florida. Experimental and Applied Acarology **40**: 249- 258.

McRory, D. 2007. Monthly report for November 2007, The Sting **25**, 24-25.

Meikle, W.G., Mercadier, G., Holst, N., Nansen, C., and Girod, V. 2008. Impact of two treatments of a formulation of *Beauveria bassiana* (Deuteromycota: Hyphomycetes) conidia on Varroa mites (Acari: Varroidae) and on honey bee (Hymenoptera: Apidae) colony health. Experimental and Applied Acarology **46**:105-177.

Vey, A., Hoagland, R.E., and Butt, T.M. 2001. Toxic metabolites of fungal control agents. *In* Fungi as Biocontrol Agents. *Edited by* T.M. Butt, C. Jackson and N. Magan, CAB International, New York, pp. 311-346.

From the Distant Past

As a contribution towards the celebration of the sesquicentennial of the Entomological Society of Canada, members of the Heritage Committee will present tributes to individuals who played significant roles in the development of entomology as a discipline in Canada. One tribute will appear in each of the four issues of the Bulletin *during 2013.*

Charles J.S. Bethune (from *The Canadian Entomologist* **64**: facing page 97 [1932], with permission)

Part 1: Charles J.S. Bethune (1838-1932): Co-founder of the ESC

Cedric Gillott

Charles Bethune was a remarkable individual whose three-part career spanned more than 60 years. Born in 1838 in West Flamboro' township, Bethune was the third son of the second Lord Bishop of Toronto, the Reverend Alexander Neil Bethune. He received his early education at Upper Canada College, then proceeded to Trinity College where he obtained a BA (1st class Honours in Classics, with Distinction in Mathematics), followed by an MA in 1861. Trinity College also awarded Bethune an honorary DCL degree in 1883 (Anonymous 1880; Charlesworth 1919).

Perhaps not surprisingly, he followed in his father's footsteps, becoming an ordained deacon in 1861, then priest of the Church of England in 1862, and was soon appointed as curate of St. Peter's Church in Cobourg, Ontario, where his father was still rector. In 1866 he took his only parish priest position, in Peel County, Ontario, where he oversaw the construction of churches in Dixie and Port Credit. Though his time as a minister was short-lived, throughout his life he continued to be an active member of the Church as honorary clerical secretary of the Toronto synod, as a delegate to diocesan and provincial synods, and as honorary clerical secretary of the general synod of the Church of England in Canada (Bridger 1934).

In 1870 Bethune began the second phase of his career when, with some reticence (and after some persuasion by his father), he accepted the position of Headmaster at Trinity College School, which was about to reopen its doors at a new site in Port Hope, Ontario.

Here, over the next 29 years, Bethune was to raise the profile of the School from one that lacked any endowment or even a finished building to one of the most prestigious boys' schools in Canada. His journey was not a smooth one: the late 1870s and late 1880s saw major economic depressions that severely affected the school's enrolment. Then, over a 4-year period, four fires occurred at the school, the last in 1995 almost destroying the school buildings (Humble 1965).

Even before these fires, Bethune was becoming increasingly disenchanted with his workload and in 1890 asked the school's governing board to provide him with relief from some duties. Thus, from 1891 to 1893 he served as the school's warden, in charge of financial matters, with the new headmaster (the Reverend Arthur Lloyd) handling the academic side. Lloyd's term lasted only 2 years when he resigned for work-related and personal reasons, leaving Bethune to take on the headship for a further 6 stressful years. In 1899, he resigned and moved to London, Ontario (Humble 1965).

Though little seems to be recorded about Bethune's years in London, it is clear that during this period he began to devote much more attention to his third area of expertise – entomology. Though his entomological interest had begun as a child, it was while an undergraduate at

Trinity College that Bethune began to collect and study insects in earnest, activities that were eventually to become the major focus of his life. Professor Henry Croft (Chemistry), himself an amateur entomologist, put Bethune in contact with William Saunders, a druggist in London, Ontario, and a fellow insect collector and naturalist. As their friendship developed, Bethune and Saunders decided to compile and publish a list of entomologists in Canada to facilitate interaction between such like-minded individuals. After much letter writing, Bethune and Saunders collected 36 names, including those of 5 women and 5 ordained ministers. The latter figure reflects what has been observed elsewhere, for example, in England, namely, the seemingly magnetic attraction of 'men of the cloth' to 6-legged creatures and their relatives. Thus, Bethune and Saunders, along with Croft, determined that the time had arrived to try and form a national entomological society. A meeting at Croft's Toronto home in the fall of 1862 saw only 10 persons present, so formal organization of the Entomological Society of Canada (ESC) was deferred until 16 April 1863, with Croft as President and Saunders the Secretary-Treasurer. In its first year the Society had 22 paid-up members.

In 1864 Bethune was appointed Secretary-Treasurer of the ESC, a position he held until 1871, at which time the Society was renamed the Entomological Society of Ontario (ESO). The manner in which the Society took on its new (regional) name, while in fact retaining a Canada-wide membership, is of interest and perhaps not surprisingly involved Bethune (Baker 1939a).

In 1870, at the request of the Board of Agriculture and Arts Association of Ontario (forerunner of the Ontario Department of Agriculture), Bethune and others prepared the first Annual Report on the Noxious Insects of the Province of Ontario. The Report was published in 1871, at which point the Society received a grant of $400; further, in accord with this action, the Society was incorporated by an act of legislature as the ESO. Bethune remained involved in the preparation of the annual reports for almost another three decades. These included a special report on the Colorado potato beetle, which led to the Board increasing its annual grant to the Society to $1000. This prompted Bethune to note in his 1913 Presidential Address that 'What really made the fortunes of the Society was the invasion of Ontario by the Colorado Potato Beetle.'

Bethune remained fully involved with the ESO for the next several decades, notwithstanding his massive role in running Trinity College School. He was the Society's President for some 9 years (1871-1876, 1890-1893, and 1912-1913). He served as the Society's librarian and curator of the insect collection for most of his years in London (Baker 1939b). As well, for 28 years (1868-1873 and 1887-1909) he edited the Society's publication, *The Canadian Entomologist*, becoming Editor Emeritus in 1909 when, due to failing eyesight, he asked to be relieved of his duties (Lyman 1910a, b).

Such was Bethune's entomological reputation that in 1906, aged 67, he was invited to become Professor and Head of the Department of Zoology and Entomology, at the Ontario Agricultural College in Guelph. Bethune joined the Department on 1 June of that year, remaining as Chair until his retirement in October 1920. During his 14-year tenure, Bethune built the Department into a strong teaching and research unit, and many future well known entomologists were mentored by him (Baker 1939b).

Considered by his contemporaries to be among the best economic entomologists, Bethune's most notable publications were *Insects Affecting Vegetables* (eight editions, 1907-1917) and *Insects Affecting Fruit Trees* (1907). As well, he published *Insects of the Northern Parts of British America*. This work was a much pared down and annotated version of William Kirby's (1837) *Fauna Boreali Americana: Insecta* which, due to its rarity, had been largely unavailable to North American entomologists. The revision was published as a series of parts in *The Canadian Entomologist* between 1870 and 1881 and as a complete book in 1876. Bethune was also responsible for many obituaries, book reviews, and other newsworthy items during his terms

as Editor of *The Canadian Entomologist*.

Given his massive influence on early North American entomology, it is not surprising that many honours and awards were bestowed upon Bethune. He was elected a Fellow of the Royal Society of Canada in 1892 (becoming President of Section 4 in 1900), of the American Association for the Advancement of Science (1875), and of the Entomological Society of America (1906), serving also as President of the latter in 1913. He was also elected a Corresponding Member in other scientific societies in Canada, the USA, and England (McDunnough 1932; Baker 1939b).

Among other activities undertaken by Bethune were preparation of the Annual Bibliography of Canadian Entomology for the Transactions of the Royal Society of Canada, and service as the entomological editor for the Canadian Farmer and Weekly Globe (Toronto). He served as President of the London Horticultural Society and Vice-President of the London Civic Improvement Society. He also assisted in the formation and was a member of the American Association of Economic Entomologists (1887) (Charlesworth 1919).

References

Anonymous, 1880. Bethune, Charles J.S., Rev., M.A. *In* The Canadian Biographical Dictionary and Portrait Gallery of Self-Made Men, Ontario Volume. American Biographical Publishing Company, Toronto. pp. 38-39.

Baker, A.W. 1939a. A short history of the Entomological Society of Ontario. *The Canadian Entomologist* **71**: 14-20.

Baker, A.W. 1939b. The founders of the Society. *The Canadian Entomologist* **71**: 25-27.

Bridger, W.R.P. 1934. Bethune, Charles James Stewart (1838-1932). *In* A Standard Dictionary of Canadian Biography: Canadian Who Was Who, Vol. I. *Edited by* C.G.D. Roberts and A.L. Tunnell. Trans-Canada Press, Toronto. pp. 46-47.

Charlesworth, H. (editor) 1919. Bethune, the Rev. Charles Jas. Stewart, M.A., D.C.L. A Cyclopedia of Canadian Biography. Hunter-Rose Company Limited, Toronto. pp. 76-77.

Humble, A.H. 1965. The School on the Hill: Trinity College School 1865-1965. Trinity College School, Port Hope, Ontario.

Lyman, H.H. 1910a. Valedictory. *The Canadian Entomologist* **62**: 1-2.

Lyman, H.H. 1910b. The Rev. Charles James Stewart Bethune, M.A., D.C.L., F.R.S.C. *The Canadian Entomologist* **62**: 2-3.

McDunnough, J. 1932. Charles James Stewart Bethune, M.A., D.C.L. *The Canadian Entomologist* **64**: 97-98.

Buying/selling insects on the internet

Tom Terzin

Purchasing insect specimens for research is not a common practice among entomologists. Most entomologists are taxonomists specialised in a particular group of insects, studied and collected on field trips. If some additional specimens are required for research, exchange with colleagues or borrowing voucher specimens from museums is a common practice. However, there is a large number of amateur entomologists who do not have easy access to museum collections, as well as entomologists who study insect features not constrained to a particular narrow taxonomic group, for example, colour patterns and mimicry. There is also a huge army of insect collectors who acquire all kinds of interesting, mostly tropical, species for the sake of aesthetics and the pleasure of possession more than for the sake of serious scientific work. For all those enthusiasts and interdisciplinary researchers who depart from the "canonical" picture of an entomologist, the internet can be an important, if not the most important, source of specimens. And for all "canonical" entomologists, it is good to know that there is an easy way to use the internet to cash in your extra specimens, under the conditions that they are your private property, attractive, fairly undamaged and well preserved. This article is about obtaining or selling dry insect specimens only.

T. Terzin.

Figure1. *Urania sloanus*, an extinct, day-flying moth from Jamaica. The specimen was purchased through eBay by Tom Terzin for US$5,840 for the Augustana Faculty, University of Alberta, in September 2012. Staff members of Augustana Faculty expressed great collegiality and contributed the whole amount through individual donations collected within 24 hours.

Buying on the internet

If you decide to obtain insect specimens from the internet, there are several basic things you need to know before you start. There are well-established online dealers and there are beginners. It is usually safe to purchase from well-established sellers since they know how to properly pack your fragile dry specimens so that you do not receive damaged goods. Most sellers are honest and have the interest to keep customers returning, so it is low risk investment. Many dealers have their own web stores where you can log in and do the purchase as in any other online store, using your credit card or PayPal account. On its home page, InsectNet has direct links to the best online insect stores: http://www.insectnet.com/

*Tomislav Terzin (terzin@ualberta.ca) was born in 1971 in Serbia (former Yugoslavia). He received his PhD from Western University (formerly University of Western Ontario) in 2007. His graduate studies were in the field of developmental biology of polyembryonic parasitoid wasps (see Nature, **432**: 764-769). He is currently Assistant Professor of Biology at the University of Alberta, Augustana Faculty. He studies mimicry and development of colour patterns in insects. In his research, Tom uses specimens from his extensive private collection of tropical insects, mostly obtained from eBay and other internet sources.*

Most online stores offer fixed prices which is sometimes negotiable if you make a larger purchase, so it is good to contact the seller **before** you make your purchase and to try to negotiate a discount or free shipping. Besides online stores, many sellers and amateur collectors list their specimens on eBay. Most of the specimens available on eBay are in the auction format where you place a bid and compete for the item with other potential buyers. This can be addictive and sometimes cause an unreasonable increase in the final price. The particular reason for higher auction format prices is the fact that many people are not aware of the availability of the same species in fixed price format from specialised online stores. Another reason is that on eBay, in most cases you can see the colour picture or even several pictures from different angles of the actual specimen you are buying, which is seldom the case in online stores. On eBay more variety can be found and sometimes even extreme rarities (Figure 1), which attracts more customers and additionally increases the prices. The problem with eBay is that auction style listings are usually set for 7 days and frequent search for new items is time-consuming. Sellers can be from different time zones so if you would like to ensure the auction-style purchase of some rare item, the best is to place a bid in the last seconds before the auction expires, but because of different time zones that means staying awake deep in the night. Sellers often allow combining purchases from 2-3 week auctions into a single parcel and single shipping charge, but that needs to be communicated and pre-arranged. Most eBay sellers require their customers to have an active PayPal account, so make sure you have one before you start bidding. Once more, I underline that bidding can be addictive, so I cannot be held accountable if someone suffers from financial problems based on the ideas from this article.

Shipping costs can be significant and particularly high for already spread Lepidoptera specimens because of the volume of the parcel, so it is always better to purchase many specimens from a single seller than a few specimens from several sellers. Shipping is always less expensive for papered specimens (specimens in envelopes with closed wings, or stapled to cardboard). Such specimens require your work on re-hydration and spreading before you can add them to your collection, but their volume in the parcel is small and there is a very low chance for papered specimens to be damaged in transportation. Mounted specimens are usually cross-pinned and packed in a double box to prevent damage. They are ready to go straight to your collection when you receive them, but there is higher chance for damage. Most sellers offer the option for return and money back, but they do not cover minor damages such as broken antennae. Additionally, it is good to keep newly received specimens in quarantine for a couple weeks to be sure they are not infested with Dermestid pests, or to put them in the freezer for a few days as prevention.

The price of various insect specimens depends on their scarcity, popularity (demand) among collectors, quality and size. Size is particularly important for giant Coleoptera species (e.g., Dynastinae, Lucanidae), where a difference of several millimetres can drastically change the price if close to the world record. Quality is graded but subjective and varies from seller to seller. A1 specimens are of the best quality, with all body parts intact and colours fresh. A1- and A- specimens have a minor defect like a broken but reparable antenna or tarsus, a fracture in the wing or a slightly damaged colour pattern, while A2 specimens have larger defects like a missing leg or a missing piece of wing. B specimens are seriously damaged but can still be valuable if extremely rare.

Selling on the internet

The best way to sell your unwanted or extra specimens is to use eBay. eBay offers 50 free-of-charge listings every month. You will need a PayPal account to be able to receive the payments from your customers. You also need to have a good quality digital camera to sell your items on eBay, because a picture of the item is required. And the fact is that picture sells the item,

so the achieved price will be higher if your pictures are good or exceptional. The same quality specimen presented with a low quality picture will sell for less and attract fewer customers to compete for your auction. Since insects are relatively small, you are going to need a macro objective to capture sufficient details of your item. Don't be disappointed if you do not sell in your first trial. New sellers need time to be noticed and established among eBayers, and you will need to collect feedback ratings to gain their trust. The title of your listing needs to be efficient to be easily found using the search function and for that you will need some experience and to see how established sellers name their listings. Make sure you know how to properly pack and ship your specimens once you sell them. Unhappy customers may leave negative feedback for you which will decrease your opportunities to sell. It is also recommended to list at least 50 or more specimens in a single auction as more specimens give more options to the customers to choose from and to combine items for the same shipping charge. The more you list, the better, but be aware that creating listings, each with a picture and description, requires a significant amount of work. The best strategy is to post your listings on Sunday morning so that you cover two weekends with a single 7-day auction. Buyers mostly have time to search eBay during the weekends, which will increase your chance to sell.

Meeting announcements / Réunions futures

11th International Congress of Orthopterology (Orthoptera in Scientific Progress and Human Culture)
Kunming, Yunnan, China, 11-15 August 2013
http://ico.greatlocust.com/

Joint Annual Meeting of the Entomological Societies of Ontario and Canada (Pre-dating the Nation - A Sesquicentennial Celebration of Entomology in Canada)
Guelph, Ontario, 20-23 October 2013
http://www.uoguelph.ca/debu/esc-eso2013/esc-eso.html

61st Annual Meeting of the Entomological Society of America (Entomology 2013: Science Impacting a Connected World)
Austin, Texas, 10-13 November 2013
http://www.entsoc.org/entomology2013

ECE X (Tenth European Congress of Entomology)
York, UK, 3-8 August 2014
www.ece2014.com

XXV International Congress of Entomology (Entomology without Borders)
Orlando, Florida, 25-30 September 2016

Readers are invited to send the Editor notices of entomological meetings of international, national or Canadian regional interest for inclusion in this list.
Les lecteurs sont invités à envoyer au rédacteur en chef des annonces de réunions entomologiques internationales, nationales ou régionales intéressantes afin de les inclure dans cette liste.

JOINT ANNUAL MEETING OF THE ENTOMOLOGICAL SOCIETY OF CANADA AND THE ENTOMOLOGICAL SOCIETY OF ONTARIO

The University of Guelph and the Delta Guelph Hotel & Conference Centre, Guelph, Ontario
Sunday 20 October – Wednesday 23 October 2013

PRE-DATING THE NATION: A SESQUICENTENNIAL CELEBRATION OF ENTOMOLOGY IN CANADA

The Entomological Society of Ontario invites you to the 2013 Joint Annual Meeting of the Entomological Society of Canada and the Entomological Society of Ontario, to celebrate the Sesquicentennial Anniversaries of both societies and our joint history. In recognition of the 150th Anniversary, we are extending the conference to 4 full days and including a wide range of symposia, workshops and associated events.

The Sunday program and some special events will be held on the University of Guelph Campus. The remainder of the conference will be held at the Delta Guelph Hotel & Conference Centre, 50 Stone Road West Guelph, Ontario N1G 0A9 Canada (see https://www.deltahotels.com/Groups/Delta-Guelph-Groups/U-of-G-EntomoLogical-Society-of-Canada). Room rates are from $134/night plus taxes, and include parking. Call 519-780-3700 or 1-800-268-1133 for reservations. (Group Code: GLCON2013).

Program Highlights

Plenary Symposium and Heritage Lecture: The plenary symposium is designed to celebrate the history of the ESC and ESO, include a range of entomological topics, and highlight the success of Canadian entomological education.
Graduate Student Showcase, following the Plenary session
Sustainable Agriculture and Integrated Pest Management
Beneficial Arthropod Health and Agroecosystems
New Technologies for Investigating Old Ecological Problems
Application of Insect Genomics in Canada: Problems of the Past, Solutions of the Future.
The Canadian Pollination Initiative: 5 Years of Integrative Research Addressing Pollination Decline in Canada.
How Insects Work: Highlighting Research into Insect Physiology and Biochemistry.
The Science of Emerald Ash Borer: Where Are We after 10 Years of Research?
Challenges of Insect Management in Stored Products.
Orchids and Insects.
Biological Survey of Canada Symposium.
Canadian Forum for Biological Control Symposium.
Student Paper and Poster Competitions
Regular Paper and Poster sessions
Lunch-time Workshops
Curation Blitz
Associated Events on Saturday and Thursday with Separate Registration.

NEW THIS YEAR: Lunches (Mon-Wed) are included in registration; Full day scientific program on Wednesday.

Check the JAM 2013 webpage (http://www.uoguelph.ca/debu/esc-eso2013/esc-eso.html) for updated information on symposia and other events, registration and the call for papers.

RÉUNION CONJOINTE ANNUELLE DE LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA ET DE LA SOCIÉTÉ D'ENTOMOLOGIE DE L'ONTARIO

L'Université de Guelph et l'hôtel et centre des congrès Delta de Guelph, Ontario Du dimanche 20 octobre au mercredi 23 octobre 2013

ANTÉRIEURE À LA NATION : UNE CÉLÉBRATION DU CENT CINQUANTENAIRE DE L'ENTOMOLOGIE AU CANADA

La Société d'entomologie de l'Ontario vous invite à la réunion conjointe annuelle 2013 de la Société d'entomologie du Canada et de la Société d'entomologie de l'Ontario afin de célébrer l'anniversaire cent cinquantenaire des deux sociétés et notre histoire commune. En reconnaissance du 150e anniversaire, nous allongeons la conférence sur 4 jours complets et incluons une vaste gamme de symposiums, ateliers et évènements associés.

Le programme du dimanche et quelques évènements spéciaux se tiendront sur le campus de l'Université de Guelph. Le reste de la réunion se tiendra à l'hôtel et centre des congrès Delta, au 50 Stone Road West Guelph, Ontario, N1G 0A9, Canada (voir https://www.deltahotels.com/Groups/Delta-Guelph-Groups/U-of-G-EntomoLogical-Society-of-Canada). Le tarif des chambres débute à 134$ plus taxes/nuit, incluant le stationnement. Appelez au 519-780-3700 ou au 1-800-268-1133 pour réserver. (Code de groupe : GLCON2013).

Points saillants du programme

Session plénière et allocution du patrimoine: la session plénière est organisée pour célébrer l'histoire de la SEC et de la SEO, inclut une gamme de sujets entomologiques et mets en valeur les succès de l'éducation entomologique canadienne.
Vitrine pour les étudiants gradués
Agriculture durable et lutte intégrée
Santé des arthropodes bénéfiques et écosystèmes
De nouvelles technologies pour explorer de vieux problèmes écologiques
Application de la génomique des insectes au Canada : problèmes du passé et solutions du futur
L'initiative de pollinisation canadienne : 5 ans de recherche intégrative sur le déclin de la pollinisation au Canada
Comment les insectes fonctionnent : souligner la recherche en physiologie et biochimie des insectes
La science de l'agrile du frêne : où en sommes-nous après 10 ans de recherche?
Les défis de la lutte contre les insectes des produits entreposés.
Les orchidées et les insectes
Symposium de la Commission biologique du Canada
Symposium du Forum canadien pour la lutte biologique
Compétition étudiante : présentations et affiches
Présentations et affiches régulières
Ateliers du midi
Blitz d'identification
Évènements associés le samedi et le jeudi avec inscriptions séparées

NOUVEAU CETTE ANNÉE: Les diners (lun-mer) sont inclus dans l'inscription; programme scientifique pour la journée complète du mercredi.

Consultez le site Internet de la réunion 2013 (http://www.uoguelph.ca/debu/esc-eso2013/sec-seo.html) pour des informations à jour sur les symposiums et autres évènements, l'inscription et l'appel à soumission.

People in the news / Gens qui font les manchettes

Rob Cannings


S. Cannings

Rob Cannings has retired as Curator of Entomology at the Royal British Columbia Museum in Victoria, British Columbia. Rob joined the RBCM on 2 January 1980 and retired exactly 33 years later. From 1987 to 1996 he also managed the Natural History Section at the Museum. He has been named a Curator Emeritus and will continue his research projects there.

Rob grew up in the grasslands of the Okanagan Valley in southern British Columbia and his early fascination with these habitats and their associated ponds and lakes led to his later interest in robber flies (Asilidae) and dragonflies (Odonata), which were diverse there. His undergraduate and MSc studies examined chironomid midge assemblages in grassland saline lakes. Although for years he has focused on the systematics and faunistics of dragonflies and robber flies, he publishes widely on many insect groups, from mantidflies and moths to lampyrid beetles and bumble bees. In retirement, Rob says he'll concentrate more on the Asilidae than he has in the past. His main focus in robber fly research has been the systematics of *Lasiopogon*, diverse in North Temperate regions, which was the subject of his doctorate, although he has a fondness for *Efferia*, too. Studying the diversity of the asilid fauna of Canada, especially, will be a priority.

Rob has a strong interest in popularizing insects and insect identification through handbooks, keys and the internet. He is the author or co-author of several books, including *The Dragonflies of British Columbia* (1977), *Birds of the Okanagan Valley, British Columbia* (1987), *The World of Fresh Water* (1998), *Introducing the Dragonflies of British Columbia and the Yukon* (2002), and *The Systematics of Lasiopogon (Diptera: Asilidae)* (2002).

Rob has served on the Scientific Committee of the Biological Survey of Canada (Terrestrial Arthropods), the Invertebrate Subcommittee of COSEWIC (Committee on the Status of Endangered Wildlife in Canada) and the British Columbia Invertebrate Recovery Team.

Active in the Entomological Society of British Columbia, Rob was President (1986, 2001) and Regional Director to the Entomological Society of Canada (1983-86). He started the ESBC newsletter *Boreus* in 1981 and was editor until 1991; he is an associate editor of the ESBC Journal. He has served as the chair of the Entomological Society of Canada's Endangered Species Committee.

In former lives, Rob worked as a biologist and nature interpreter for British Columbia Parks and the Canadian Wildlife Service and was a lecturer and museum curator at the University of British Columbia. He earned a BSc and MSc from the University of British Columbia; his PhD comes from the University of Guelph.

In 2008 Rob and his two brothers, Richard and Syd, were made Fellows of Okanagan College for "bringing British Columbians and Canadians a richer appreciation of the natural world through their writings, professional activities and dedication". Rob was presented the 2009 Bruce Naylor Award, a national honour that recognizes "exceptional contributions to the study of museum-based natural history in Canada".

After taking a break for a couple of months, Rob says he'll pick up his projects where he left off, working at home and visiting the RBCM collection a day or so a week. He still can be reached at his RBCM email address (rcannings@royalbcmuseum.bc.ca).

Brock Harpur

Not Far From The Tree (NFFTT), Toronto

The Canadian Association of Professional Apiculturists has announced that Brock Harpur, a PhD candidate at York University, is the recipient of its 2012 award. Brock is also the recipient of the competitive Elia Scholarship from York Univeristy. Brock is a student of Dr Amro Zayed and is focusing on honey bee genomics and immunity.

Brock's scientific record is outstanding. He has published early in his career and his work is relevant to apiculture, honey bee science, social insects and entomology as a whole. Brock has been recognized internationally for his work. Along with a productive research career, Brock is also active in the beekeeping community.

Raphael Royauté

Raphael Royauté (étudiant au PhD à l'Université McGill sous la direction de Chris Buddle et Charles Vincent) a remporté la première place des présentations orales lors du Colloque du Centre des Sciences de la Biodiversité du Québec tenu à l'Université du Québec à Montréal les 13 et 14 décembre 2012. Sa présentation était intitulée «Effets d'une exposition sublétale au phosmet sur les variations individuelles de comportement de l'araignée sauteuse *Eris militaris* (Araneae: Salticidae)».

Raphael Royauté (PhD student at McGill University, supervised by Chris Buddle and Charles Vincent) gave the best oral presentation at the Colloque du Centre des Sciences de la Biodiversité du Québec held on 13 and 14 December 2012 at the Université du Québec à Montréal. His presentation was entitled «Effets d'une exposition sublétale au phosmet sur les variations individuelles de comportement de l'araignée sauteuse *Eris militaris* (Araneae: Salticidae)».

Richard (Dick) Vockeroth

2 May 1928 - 16 November 2012

The entomological community suffered a great loss when Dick Vockeroth passed away on the morning of 16 November 2012. Almost everyone who studies flies knew Dick, and most of us have some hilarious Vockeroth stories that will undoubtedly continue on for several generations. His breadth of knowledge was unsurpassed and many of us owe him considerably as a mentor. He always amazed us by seeming to know something about virtually every fly species put in front of him. Of course, putting a fly in front of Dick was just the excuse to open the floodgates. For those who could concentrate for long enough, his stories always had a point. They could continue for a long time, but they always wound back to where they started, completing another lesson for those willing to listen. If only we had a way to save all of his immense knowledge. Fortunately, he was always willing to share. He published 120 papers on 27 families of flies over his career. His unpublished manuscripts and keys also fill many boxes in our collection. Copies of many of these are spread around the world with Dick's colleagues and will ultimately be incorporated and published as part of new studies. In addition to giving freely of his scientific knowledge, Dick was a true philanthropist. He seemed to donate virtually every penny that he had to anyone who stopped at his door or called. He was incredibly frugal with his own purchases and we all benefitted from/endured his purchases of cheap (or free) produce and bread that often had seen better days. His immune system seemed to enjoy these nutritional challenges although ours were perhaps not always up to it. We recall a few years ago when Dick had the first cold that he could remember having since he was a child, as well as the first headache in his life a year or two later. Diabetes was his primary health challenge and it was a significant one in his later life. It was likely a contributing factor to the Alzheimer's that eroded his mind over the last 3 years.

The following is excerpted from: Cumming, J.M., Sinclair, B.J., Brooks, S.E., O'Hara, J.E. and Skevington, J.H. 2012. The history of dipterology at the Canadian National Collection of Insects, with special reference to the Manual of Nearctic Diptera. *The Canadian Entomologist* **143**: 539-577. This paper is the introduction to a three volume Festschrift in *The Canadian Entomologist* honouring Dick and the other coordinators of the Manual of Nearctic Diptera. Picking through these papers, you will find some classic stories about Dick and expand your impression of the impact that he played in the Diptera community over the last 60 plus years.

Dick was born on 2 May 1928 in Broderick, Saskatchewan. He received his BA and MA from the University of Saskatchewan in 1948 and 1949, respectively, and his DPhil on the genera of Scathophagidae from Oxford University in 1954. He officially joined the Canadian National Collection of Insects (CNC) Diptera Unit in 1949. Dick retired in 1991, but contributed broadly to Diptera activities at the CNC as an Honorary Research Associate until 2009. He became a world expert on several families, particularly Mycetophilidae s.l., Dolichopodidae, Syrphidae, Scathophagidae, and Muscidae. He was an avid collector and contributed over 220,000 pinned Diptera to the CNC. Dick authored or co-authored 120 scientific publications, including 12 chapters in the Manual of Nearctic Diptera. He published 173 new Diptera taxa (1 family-group name, 42 genus-group names, and 130 species-group names). Dick was awarded the C.P. Alexander Award in 1997 by the North American Dipterists' Society. This lifetime award, which can only

be held by a single dipterist at a time, publicly acknowledges the most important and influential member of the North American Dipterists' Society. The Award reads: *"John Richard Vockeroth is recognized as our most knowledgeable dipterist, and for his critical and unique contributions in expanding our knowledge of flies, especially flower flies, educating and encouraging a cadre of world leaders for Systematic Dipterology"*.

Evidence of the respect of Dick's scientific achievements can be seen in the 91 patronyms that have been attributed to him by the entomological community (http://www.canacoll.org/Diptera/Staff/Vockeroth/Vockeroth_Patronyms.pdf). This list will no doubt continue to grow as his collections live on and support new research on the flies that Dick was so passionate about. We have all missed his antics and contributions in the lab since he left in 2009. Let's hope that we can all leave even a fraction of the lasting legacy and legends that Dick has left behind.

If you wish to make a donation in Dick's name, he would no doubt be honoured if it went to the Canacoll Foundation (www.canacoll.org), which supports improvements to the CNC by visiting specialists. Cheques made out to the Canacoll Foundation can be sent to the Treasurer, Andrew Bennett, at the K.W. Neatby Building, 960 Carling Avenue, Ottawa, ON, K1A 0C6, Canada. Tax receipts will be issued.

Jeffrey H. Skevington and Jeffrey M. Cumming
Canadian National Collection of Insects, Arachnids and Nematodes,
Agriculture and Agri-Food Canada, Ottawa

Donald Wayne Webb (12 July 1939 – 5 September 2012)

Don Webb was raised in Brandon, Manitoba, and went on to receive his Bachelor's and MSc degrees from the University of Manitoba, the latter under the supervision of E.T. (Ted) Garside. He received his PhD from the University of Illinois in 1981 and worked for the Illinois Natural History Survey for over 40 years. He published numerous manuscripts and catalogues, receiving the North American Benthological Society's Distinguished Service Award in 1999.

Fumio Matsumura (5 February 1934 – 6 December 2012)

Born in Japan, Fumio Matsumura received his Bachelor's degree in Agricultural Biology in 1957 from the University of Tokyo. He then moved to Canada where he obtained his MSc in entomology in 1959 from the University of Alberta (Supervisor W.G. [Bill] Evans) and his PhD in entomology from the University of Western Ontario in 1961 (Supervisor A.W.A. [Tony] Brown). He joined the University of California Davis faculty in 1987 as Associate Director of the Toxic Substances Program and later served as Director of the Center for Environmental Sciences.

Throughout his career, Dr Matsumura was an author on >400 publications, including his classic textbook, *Toxicology of Insecticides*, first published in 1975. As well, he was for many years Editor-in-Chief of the journal *Pesticide Biochemistry*

63rd Annual General and Governing Board Meetings

The Annual General Meeting of the Entomological Society of Canada will be held at the Delta Guelph Hotel and Conference Centre, Guelph, Ontario, on Tuesday, 22 October 2013, from 17:00 to17:45. The Governing Board Meeting will be held at the same location on Saturday, 19 October 2013, from 08:30 to 17:00. The incoming Governing Board will also meet immediately following the Annual General Meeting. Matters for consideration at any of the above meetings should be sent to Alec McClay, Secretary of the ESC.

63e assemblée générale annuelle et réunions du conseil d'administration

L'assemblée générale annuelle de la Société d'entomologie du Canada se tiendra à l'hôtel et centre de conférence Delta de Guelph, en Ontario, le mardi 22 octobre 2013, de 17:00 à 17:45. La réunion du conseil d'administration se tiendra au même endroit, le samedi 19 octobre 2013 de 8:30 à 17:00. Le nouveau conseil d'administration se réunira également immédiatement après l'assemblée générale annuelle. Les sujets à aborder pour n'importe laquelle de ces réunions doivent être envoyés à Alec McClay, secrétaire de la SEC.

Call for nominations: Second Vice-President, Director-at-Large

Nominations for the Second Vice-President and Director-at-Large must be signed by three active members of the Society and should be received by the Secretary of the Entomological Society of Canada, Alec McClay, by 30 April 2013 (see inside back cover for contact details).

Appel à candidatures : Deuxième vice-président et conseiller

Les candidatures pour les postes de deuxième vice-président et conseiller doivent être signées par trois membres actifs de la Société et doivent être reçues par le secrétaire de la Société d'entomologie du Canada, Alec McClay, au plus tard le 30 avril 2013 (voir le troisième de couverture pour les coordonnées détaillées).

Seeking Webmaster

The Entomological Society of Canada is looking to fill the position of Webmaster, beginning in Fall 2013. 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, databases 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, Rose De Clerck-Floate, by **31 May 2013** (Rosemarie.DeClerck-Floate@agr.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 l'automne 2013. 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 continuelle et à la maintenance du contenu du site Internet de la SEC, bases de données, 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, Rose De Clerck-Floate au plus tard **le 31 mai 2013** (Rosemarie.DeClerck-Floate@agr.gc.ca). La sélection finale sera faite par un comité ad hoc convenu par le Président.

Beware of sound-alike conferences!

In late December, the Entomological Society of America warned its membership of a sound-alike meeting being planned for Orlando, Florida, 4-6 September. The meeting, organized by the OMICS group, is being advertised as the 'International Conference on Entomology'. Note the similar name to the International Congress of Entomology (ICE). And while the real ICE is also being held in Orlando, it doesn't occur until late September 2016. In some of its other promotional material, OMICS refers to its meeting as 'Entomology-2013'; this title is almost identical to the recent re-branding of the ESA's annual meeting as 'Entomology 2013 (notice, no hyphen). This year, however, the ESA is meeting in Austin, Texas, not Orlando.

Confused? You're not the only one. ESA reports that some its members have mistakenly agreed to attend the OMICS group meeting thinking they were signing up for an ESA-organized event.

If you receive any material from a conference organizer with the title International Conference on Entomology, or are invited to attend or present in Orlando in 2013 be aware that this is not an ESA meeting or the official ICE. If in doubt, check the conference listings on the Entomological Society of Canada's website or the meetings page on the Entomological Society of America's site.

Chris MacQuarrie
Sault Ste. Marie

2012 Pest Management Report / L'édition 2012 de la Rapport de recherches sur la lutte dirigée

The 2012 Pest Management Research Report is now available. Please feel free to share this information with anyone you think may be interested.

L'édition 2012 de la Rapport de recherches sur la lutte dirigée est maintenant disponible. N'hésitez pas à partager cette information avec tous ceux qui seraient intéressés.

http://phytopath.ca/pest_management-reports.shtml

UNIVERSITY of GUELPH

ONTARIO AGRICULTURE COLLEGE
School of Environmental Sciences

The Rebanks Family Chair in Pollinator Conservation
School of Environmental Sciences, University of Guelph

The School of Environmental Sciences (SES) at the University of Guelph seeks applications from academics in the field of pollinator conservation for a newly created endowed chair. We seek an outstanding mid-career scientist, eligible for appointment at the associate or full professor level, who conducts research on the conservation of native pollinators in human dominated ecosystems, preferably but not limited to agroecosystems. The successful candidate will: become a key voice in the development of public policy that influences the conservation of pollinators; build partnerships that will contribute to the development of effective and practical approaches to ameliorating human impacts on pollinators; and, contribute to undergraduate and graduate teaching in SES. The Chair will play an important leadership role in the SES and the University of Guelph.

The ideal candidate will have a Ph.D. in conservation biology, ecology, entomology, or a related field, and will be a leader in pollinator conservation with demonstrated experience and a proven desire to engage with the public, government, NGOs and industrial stakeholders. He or she will have a strong and sustained record of excellence in research and academic publications on topics that may include the ecosystem services provided by pollinators, and the extinction risks to, and conservation strategies for, important pollinator species. The successful candidate will be expected to complement, but not duplicate, existing strengths in honey bee research at the University of Guelph. She or he will also have a strong record of teaching including the training of graduate students and post-doctoral fellows, supporting their career advancement in academia, government, industry and/or conservation organizations.

For more information on the School of Environmental Sciences, see: http://www.uoguelph.ca/ses/. SES is one of six academic units of the renowned Ontario Agricultural College (OAC). More information can be found at http://www.uoguelph.ca/oac/.

The deadline for applications is **April 1, 2013** though the competition will remain open until suitable applicants can be identified. The nominal starting date is January 1, 2014. The University of Guelph is committed to employment equity and free and open competition for all positions on campus, we therefore cannot guarantee employment at the University for a spouse or partner. Please consult our official policy for further information: http://www.uoguelph.ca/facultyjobs/spousal.shtml. Please send a single PDF file containing your: *curriculum vitae*, vision statement for the position (3-pages or less), and contact information for three references to:

Professor Jonathan Newman
Director, School of Environmental Sciences
University of Guelph
jonathan.newman@uoguelph.ca

The University of Guelph is committed to equity in its policies, practices, and programs, supports diversity in its teaching, learning and work environments, and ensures that applications for members of underrepresented groups are seriously considered under its employment equity policy. All qualified individuals who would contribute to the further diversification of the University community are encouraged to apply.

Ninth Annual Photo Contest

The Ninth Annual Photo Contest to select images for the 2014 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 of '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. In addition, winning photos and a selection of all submitted photos will be shown on the ESC website.

Contest rules:

Photos of insects and other arthropods in all stages, activities, and habitats are accepted. To represent the scope of entomological research, we also encourage photos of field plots, laboratory experiments, insect impacts, research activities, sampling equipment, etc. Photos should, however, have a clear entomological focus.

Digital images must be submitted in unbordered, high-quality JPG format, with the long side (width or height) a minimum of 1500 pixels.

Entrants may submit up to five photographs. A caption must be provided with each photo submitted; photos without captions will not be accepted. Captions should include the locality, subject identification as closely as is known, description of activity if the main subject is other than an insect, and any interesting or relevant information. Captions should be a maximum of 40 words.

The entrant must be a member in good standing of the Entomological Society of Canada. Photos must be taken by the entrant, and the entrant must own the copyright.

The copyright of the photo remains with the entrant, but royalty-free use must be granted to the ESC for inclusion on the cover of one volume (6 issues) of *The Canadian Entomologist*, one volume (4 issues) of the *Bulletin*, and on the ESC website.

The judging committee will be chosen by the Chair of the Publications Committee of the ESC and will include a member of the Web Content Committee.

The Photo Contest winners will be announced on the ESC website, and may be announced at the Annual Meeting of the ESC or in the *Bulletin*. There is no cash award for the winners, but photographers will be acknowledged in each issue the photos are printed.

Submission deadline is **31 July 2013**. Entries should be submitted as an attachment to an email message; the subject line should start with "ESC Photo Contest Submission". Send the email message to: photocontest@esc-sec.ca

Neuvième concours annuel de photographie

Le neuvième concours annuel de photographie visant à sélectionner des images pour les couvertures de *T*he Canadian Entomologist et du Bulletin de la Société d'entomologie du Canada pour 2014 est en cours. Les images sur la couverture doivent représenter l'étendue entomologique couverte par les publications de la Société. Des photos représentant des insectes ou autres arthropodes forestiers, urbains ou agricoles, des paysages, du travail de terrain ou de laboratoire, des gros plans, ainsi que montrant des activités associées à la physiologie, au comportement, à la taxonomie ou à la lutte intégrées seraient souhaitées. Deux « insectes vedettes » (pour le dos et sous le titre) sont également recherchés. Si elle est sélectionnée, votre photo ornera la couverture des deux publications pour l'année entière. De plus, vos photos gagnantes et une sélection de photos soumises seront montrées sur le site Internet de la SEC.

Règlements du concours :

Les photos d'insectes et autres arthropodes à n'importe quel stade, effectuant n'importe quelle activité et dans n'importe quel habitat sont acceptés. Afin de représenter les sujets de la recherche entomologique, nous encourageons également les photos de parcelles de terrain, expériences de laboratoire, impacts des insectes, activités de recherche, équipement d'échantillonnage, etc. Les photos doivent, cependant, avoir un intérêt entomologique clair.

Les images numériques doivent être soumises sans bordure, en format JPG de haute qualité, avec le plus grand côté (largeur ou hauteur) d'un minimum de 1500 pixels.

Chaque participant peut soumettre jusqu'à cinq photographies. Une légende doit être fournie pour chaque photo soumise : les photos sans légendes ne seront pas acceptées. La légende doit inclure la localisation, l'identification du sujet le plus précisément possible, la description de l'activité si le sujet n'est pas un insecte, et toute information intéressante ou pertinente. Les légendes doivent avoir une longueur maximale de 40 mots.

Les participants doivent être membres en bonne et due forme de la Société d'entomologie du Canada. Les photos doivent avoir été prises par le participant, et le participant doit en posséder les droits d'auteur.

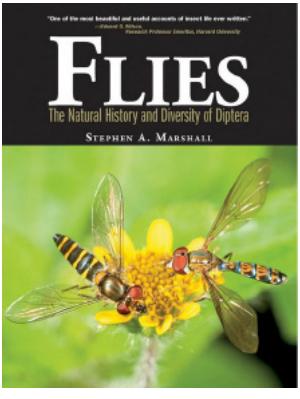
Le participant conserve les droits d'auteur de la photo, mais l'utilisation libre de droits doit être accordée à la SEC afin de l'inclure sur la couverture d'un volume (6 numéros) de *The Canadian Entomologist*, un volume (4 numéros) du *Bulletin*, et sur le site Internet de la SEC.

Le comité d'évaluation sera choisi par le président du comité des publications de la SEC et inclura un membre du comité du contenu du site Internet.

Les gagnants du concours de photographie seront annoncés sur le site Internet de la SEC et pourront être annoncés à la réunion annuelle de la SEC ou dans le *Bulletin*. Il n'y a pas de prix en argent pour les gagnants, mais les photographes seront remerciés dans chaque numéro où les photos seront imprimées.

La **date limite de soumission est le 31 juillet 2013**. Les soumissions doivent être faites en pièces jointes d'un courrier électronique. L'objet du message doit débuter par « Soumission pour le concours de photographie de la SEC ». Envoyez vos courriels à : photocontest@esc-sec.ca

Flies. The Natural History and Diversity of Diptera.
Marshall, S.A. 2012. Firefly Books Ltd., Richmond Hill, Ontario. 616 pp. ISBN-13: 978-1-77085-100-9. $125.00 (CAD/US).



This book is a remarkable achievement and without a doubt should be in every entomologist's library. It presents a superb overview of one of the largest lineages of animals on the planet, arguably the best such summary every published. I learned something new on practically every page. The strength of the text comes from the combination of Steve's immense field knowledge (global in scale) and his intimate familiarity with the oldest to the most recent Diptera literature. Steve's field skills have undoubtedly been sharpened by his increasing use of a camera over a net in the last decade or more and there are now very few people with his comprehensive knowledge of flies. His photo collection is diverse and the images are often jaw dropping. For example, the detail in some of the aquatic larval photos is amazing and had me going back to admire them over and over. Firefly should also be complimented for allowing Steve to publish so many photos in a single volume. It certainly adds to the richness of the resource. The reproduction of the photos is generally excellent – a nice improvement over those from Steve's last tome (*Insects: Their Natural History and Diversity*), partly reflecting the care taken by the publisher and printer and also due to the high quality digital format for the images that Steve used.

So do I have any critique to offer? Of course. There can always be improvements in even the best books. That's what second editions are for. I guess my biggest criticism is that the book does not clearly target a particular audience. If it went after the vast amateur naturalist market, the text should have used less jargon and been cut down in length, and perhaps the figure captions could have been increased in both size and length to tell more of the story. For example, there are lots of morphological terms that are used without any attempt to illustrate them in an introductory chapter (however, note that most are illustrated in the final pages of the book). I tried to read this with both of my hats on (I am a naturalist and scientist) and I could see some potentially confusing statements. For example, on page 47, the figure caption refers to a bubbling fly. Is this in reference to an odd common name, the parasitic mite discussed later in the caption, or the behavioural trait called bubbling that many will not have heard of before and will not find discussed until much later in the book? Of course it is the latter, but there are many statements like this that may confuse or put off someone new to Dipterology. If the target of the book were professional Dipterists, increased citation would have been immensely useful. I was constantly bemoaning the lack of citations, as I would like to follow up on some of the statements made. Some things are clearly simplified for the text so being able to easily follow up on topics would make this book truly complete in my eyes. For example, the statement that *Stylogaster* stab their eggs into their hosts is a simplification, and being directed to Marion Kotrba's (1997) paper "Shoot or stab? Morphological evidence on the unresolved oviposition technique in *Stylogaster* Macquart (Diptera: Conopidae), including discussion of behavioral observations" in the *Proceedings of the Entomological Society of Washington* would have been a nice touch. It is actually quite difficult to find specific publications dealing with some of the topics discussed (such as the use of flies in sewage treatment) so the liberal use of citations throughout the text would have made this book even more indispensible. The citations that are

given often leave you scratching your head as to why these were chosen over others.

I found the use of photos throughout the main body of text to be a spectacular addition but they were often misplaced (several pages before or after the relevant statements) and the captions never gave me enough information (identification and location please!). Citing the figures in the body of the text would have allowed the folks doing the book layout to more tightly control the location of the figures with respect to the text and would have helped the reader to clearly associate text and figures. Why the generic or specific names were usually not included in the figure captions throughout the main body of the book is curious. In the photographic guide section (an amazing photographic overview of Diptera diversity!), everything is described as far as possible. Larger format photos used with the main body of text were typically (always?) also included in this other section of the book but you have to go and hunt for them if you want to know what they are. Remarkably, to find out what the flies are on the spectacular cover photo you have to go hunting to find the picture reproduced on page 428 (the flies are syrphids, *Allograpta fasciata* and *Toxomerus nasatus* for the curious).

There is some repetition in the text but overall it reads very well. Some sections, such as the one on dung, are both fascinating and amusing and were obviously a lot of fun for Steve to write. It is entertaining to follow Steve's travels by seeing where all of the flies were photographed. There is a clear bias towards more images being from the New World and Australia but Steve is clearly trying to be global in his approach. I look forward to seeing more photos from the Oriental and Afrotropical regions in Steve's next edition of this book (as much as I am sure Steve is looking forward to more travel in these regions!). The effort that he has made to identify and get expert confirmation on his images is herculean. A quick read of the acknowledgements shows that Steve has tapped a high proportion of the world experts on flies to check his determinations. I could find no errors in groups with which I am familiar.

The final chapter of the book is rich in information on observation and collecting techniques. The family level keys at the end of the book are a wonderful addition. Steve has developed these keys over several decades in his courses on insect systematics. Generations of his students (including myself) have tested these keys and they have developed into robust and easy to use resources.

In summary, despite leaving a bit of room for improvement, this is a fabulous book that should be in every entomologist's and every naturalist's libraries. You may want to get a copy for home and work so that it is always within reach to answer your deepest dipterological questions. Now we just need Firefly to produce an electronic version so that we can have a copy available on our portable devices too.

Jeffrey H. Skevington
Canadian National Collection of Insects, Arachnids and Nematodes
Agriculture and Agri-Food Canada, Ottawa

Dragonflies & Damselflies in the Hand: An Identification Guide to Boreal Forest Odonates in Saskatchewan and Adjacent Regions. Hutchings, G. & Halstead, D. 2011. Nature Saskatchewan, Regina. 158pp. (softcover). ISBN: 978-0-921104-25-4. $24.95.

Gordon Hutchings and David Halstead published their *Dragonflies and Damselflies in the Hand: an Identification Guide to Boreal Forest Odonates in Saskatchewan and Adjacent Regions* to help novice and seasoned naturalists with the identification of odonates in the field. The two purposes of this field guide are: 1) to increase the visibility of odonates as subjects of study and 2) to demonstrate how odonates can be important to observe environmental change.

The authors focus on an ecological region, the Boreal Plains ecozone, rather than a geopolitical boundary. This guide includes 49 species of damselflies and dragonflies that are present in the Western Boreal Forest which stretches from the Southern tip of Lake Winnipeg in the East to the foothills and mountains of Alberta and British Columbia in the West.

This book begins, as most field guides do, with a short introduction to dragonflies and damselflies. This introduction includes information about how their anatomy evolved for them to be such great hunters, their mating rituals and their metamorphosis from nymphs to adults. This section is a really good introduction to odonates. This is followed by a section discussing how to best observe, collect and photograph odonates. The following section is interesting and points out the difficulties of collecting these really fast animals. Once the reader has a good understanding of odonate natural history and the skills necessary to have these animals in hand, the authors introduce useful morphological characters for their identification. This section is very useful because the authors explain the characteristics important for species identification even before the dragonfly and damselfly species are discussed. Finally, the authors discuss where to best find Odonates in the field.

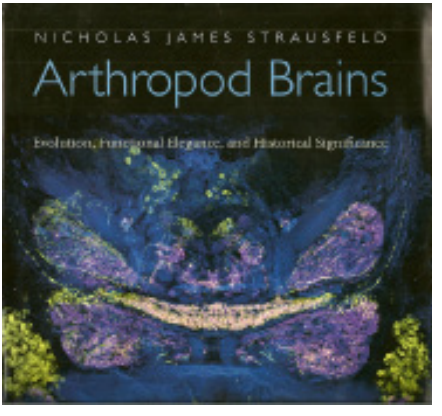
The next section, Hutchings' and Halstead's keys and species accounts, presents the 49 species of the Boreal plains ecozone. They begin with a general key to the suborders and families. Then they expand on each order and family. They start by discussing the Zygoptera and the three families found in the ecozone (Calopteryidae, Lestidae and Coenagrionidae) and follow with the Anisoptera and the four families found in the ecozone (Aeshnidae, Gomphidae, Corduliidae and Libellulidae). This section mostly follows general field guide 'guidelines'; a page description of every species with a photograph or two for each. What is interesting, however, is that at the beginning of each odonate family, they have a key to the proper identification of that group. In addition, these keys are supplemented with either drawings or photographs of the major characteristics. There is also a checklist for the species. Once the main species have been discussed, there is a short section on the fringe species that may be encountered at the limits of the ecozone.

Gordon Hutchings and David Halstead have achieved their goal in creating a comprehensive field guide to the odonate species of the Boreal forest that can be easily used in the field. This field guide is very clear. I think the addition of illustrated keys to the species makes this guide a valuable tool. The drawings and photographs also really help to enhance the usefulness of the book, because I know that many often find themselves wondering "what does this character really look like?"

The only problem is in the Introduction; I found it a little jumpy. If the "The Boreal Forest" and "Where to find Odonates" came at the beginning followed by the rest of the introduction on odonates, how to collect them and their key characteristics, I believe the Introduction would have had a better flow. I would also have liked the fringe species to be included into the keys, because there are some species that are very similar and if you find yourself at the limit, you may have identification problems. Even with these minor negative points, I think this is an excellent guide that every naturalist should have with them in the field if they are discovering the wonders of the Boreal forest.

Julia Mlynarek
Carleton University, Ottawa

Arthropod Brains: Evolution, Functional Elegance, and Historical Significance.
Strausfeld, N.J. 2012. Harvard University Press, 848 pp. Hardcover, ISBN 9780674046337, US$65.00



In her brief review on the dustcover of this book, Susan Fahrbach states very simply that "This work is unlike anything else in the current or historical literature." At its core a guidebook to the arthropod nervous system, this volume is also the first detailed account of the history of arthropod neurobiology, a glossy coffee table book bursting with exquisite and colorful photomicrographs and schematics, and a journey back in time to the enigmatic origins of these creatures and their beautifully complex brains.

For the specialist (arthropod neurobiologists and evolutionary biologists), it goes without saying that this book is a must-read, and will reside within arm's reach of your workspace for some time to come. Current understanding of the structure and function of the major arthropod brain regions (with focus on those of malacostracan crustaceans and insects, the best studied representatives) and their likely evolutionary history make up a significant portion of the book. Functional roles of brain regions are interwoven with accounts of the behaviors of animals in their natural habitats, a crucial but oft-neglected necessity for understanding what arthropod brains do, and how they evolved. Frequent forays into history and accounts of the experimental subjects as collected in their often-exotic natural habitats, all in an easy, conversational writing style, keep these chapters from becoming encyclopedic.

For the general biologist, the historical accounts of the first three chapters will be particular highlights. Stories told of the major players in early arthropod neurobiology are accompanied by vivid tales of the search for original notebooks and slide preparations undertaken by the author and colleagues around the world. These 100+ year old slides and lithographs provide stunning figures that accompany the stories of their creators. Many interesting characters populate the history of arthropod neuroscience, and their tales reveal the thought processes behind their major discoveries as well as the trials and tribulations of the scientific life. The tale of F.C. Kenyon,

who during his short career produced enormous contributions to the understanding of the cellular structure of the insect mushroom bodies, is particularly compelling as a heartbreaking description of the fate of the poor and mentally ill that is perhaps not so different today.

I began graduate studies in entomology 20 years ago in large part because I was fascinated by the evolution of insects. Thus, the last four chapters of this book, which detail the evolution of the arthropod body plan and nervous system were enthralling. The story of the arthropod great appendages and the identity and origin of the insect labrum has fascinated me since graduate school, and I was delighted to see so much time devoted to it in the book. The final three chapters employ comparative neuroanatomy, cladistic analysis and recent fossil discoveries from the Chengjiang Lagerstatte in China to create a grand portrait of the origin and evolution of the arthropod brain. The origin of insects from within the branchiopod crustaceans has been troubling to arthropod neuroanatomists given the great number of similarities between the brains of insects and malacostracan crustaceans, and the simplicity of the brain of branchiopods. The author makes a convincing case for a common ancestor of all three groups possessing a complex brain, with subsequent simplification in the branchiopod lineage, a hypothesis supported by recent fossil data showing well-developed and complex brains and compound eyes in mid-Cambrian stem arthropods.

The sheer volume of information contained within this book makes it an excellent introduction to arthropod neurobiology for graduate students. While some guidance will be necessary in the more technical sections on neuroarchitecture, the easy writing style, copious illustrations and clear and informative schematics will be more than sufficient at laying the groundwork for understanding and interpreting the primary literature in the field. I also believe that the sheer beauty of histological preparations of the arthropod brain and the order and complexity represented in the schematics will also appeal more generally to readers interested in the visual arts. The schematic of the segmental organization of insect appendages in Figure 9.14 is exemplary, reminiscent of the work of Charley Harper, and suitable to grace a t-shirt at a website like Design by Humans.

It is abundantly clear throughout the book that for all its broad scope, this book is underpinned by a fundamental appreciation of the physical beauty and functional complexity of arthropods. As in many of the author's journal articles, stunning pictures of living animals are lovingly placed next to detailed schematics and photomicrographs. Such vivid reminders that nervous systems belong to behaving animals shaped by millions of years of adaptation to their surroundings are only infrequently encountered in the modern neuroscience literature, especially given the centrism of a handful of well-funded model systems. Perhaps the most profound success of this book is to have presented the state of the field with such detail and completeness, while never losing sight of the animals themselves.

Sarah M. Farris
West Virginia University, Morgantown

Books available for review

The ESC frequently receives unsolicited books for review. A list of these books is available online (http://www.esc-sec.ca/bulletinbooks.html) and is updated as new books are received.

If you wish to review one of these books, please send an email to the Chair of the Publications Committee

(Kevin Floate, Kevin.Floate@agr.gc.ca).

You should briefly indicate your qualifications to review the topic of the book, and be able to complete your review within 8 weeks.

Preference will be given to ESC members.

Guidelines

Book reviews should be approximately 800-1200 words in length. They should clearly identify the topic of the book and how well the book meets its stated objective. Weaknesses and strengths of the book should be described.

Formatting of the review should follow that of reviews in recent issues of the Bulletin. A scan of the book cover (jpeg or tiff format, about 500 kb) should be submitted with the review.

Livres disponibles pour critique

La SEC reçoit fréquemment des livres non demandés pour des critiques. Une liste de ces livres est disponible en ligne (http://www.esc-sec.ca/fr/f-bulletinbooks.html) et est mise à jour lorsque de nouveaux livres sont reçus.

Si vous souhaitez critiquer un de ces livres, veuillez envoyer un message au président du comité des publications

(Kevin Floate, Kevin.Floate@agr.gc.ca).

Vous devez brièvement indiquer vos qualifications pour critiquer le sujet du livre, et être en mesure de terminer votre critique en 8 semaines.

La préférence est donnée aux membres de la SEC.

Lignes directrices

Les critiques de livre doivent compter entre 800 et 1200 mots. Elles doivent clairement identifier le sujet du livre et si le livre rencontre bien les objectifs énoncés. Les forces et faiblesses du livre devraient être décrites.

Le format des textes doit suivre celui des critiques des récents numéros du Bulletin. Une version numérisée de la couverture du livre (en format jpeg ou tiff, environ 500 kb) devra être soumise avec la critique.

Currently available for review / Disponibles pour critique

Devorshak, C. (Ed.). 2012. Plant Pest Risk Analysis. Concepts and Applications. 312 pp. CABI Publishers. (details) [Note – the book will be provided to the reviewer as an eBook in PDF format.]

Pfau, H.K. 2011. Functional Morphology and Evolution of the Male Secondary Copulatory Apparatus of the Anisoptera (Insecta: Odonata). 103 pp., 65 figures, 31 x 23 cm (Zoologica, Volume 156) ISBN 978-3-510-55043-2 paperback. (details)

Van Emden, H.F. 2013. Handbook of Agricultural Entomology. 334 pp. JohnWiley and Sons. ISBN 978-470-65913-7 hardcover (details)

Officers of affiliated Societies, 2012-2013
Dirigeants des Sociétés associées, 2012-2013

Entomological Society of British Columbia

President	Ward Strong
President-Elect	Mike Smirle
Past President	Rob McGregor
Treasurer	Max Salomon
Editor (Journal)	Dezene Huber
Editors (Boreus)	Gabriella Zilahi-Balogh
	Jennifer Heron
Webmaster	Alec Chubaty

Secretary Leo Rankin
Ministry of Natural Resource Operations
200-640 Borland St, Williams Lake, BC V2G 4T1
Tel: (250) 398-4352
E-mail: Leo.Rankin@gov.bc.ca
http://www.sfu.ca/biology/esbc/

Entomological Society of Alberta

President	Felix Sperling
Vice-President	Mike Dolinski
Past President	Lloyd Dosdall
Treasurer	Carolyn Whitehouse
Editor (Proceedings)	Meghan Evans
Webmaster	Alec McClay
Secretary	Ken Fry

Olds College
4500 - 50 Steet, Olds, AB T4H 1R6
Tel: (403) 556-8261
E-mail: entsocalberta@gmail.com
http://www.entsocalberta.ca

Entomological Society of Saskatchewan

President	Doug Baldwin
President-Elect	Margie Gruber
Past President	Jeff Boone
Treasurer	Dwayne Hegedus
Newsletter Editor	Dave Halstead
Secretary	Iain Phillips

Saskatchewan Watershed Authority
101-108 Research Drive, Saskatoon, SK, S7N 3R3
Tel: (306) 933-7474
Email: iain.phillips@swa.ca
http://www.usask.ca/biology/ess/

Entomological Society of Manitoba

President	Bob Lamb
President-Elect	Robbin Lindsay
Past President	Lisa Capar
Treasurer	Ian Wise
Newsletter Editors	Mahmood Iranpour
	Marjorie Smith
Editor (Proceedings)	Terry Galloway
Webmaster	Rob Currie
Secretary	David Wade

City of Winnipeg Insect Control Branch
1539 Waverley Street, Winnipeg, MB, R3T 4V7
E-mail: dwade@winnipeg.ca
http://home.cc.umanitoba.ca/esm/

Entomological Society of Ontario

President	Bruce Gill
President-Elect	Jeff Skevington
Past President	Hannah Fraser
Treasurer	Shiyou Li
Editor (Journal)	John Huber
Webmaster	Morgan Jackson
Secretary	Nicole McKenzie

Vista Centre
1830 Bank St. P.O. Box 83025
Ottawa, ON K1V 1A3
E-mail: nicole_mckenzie@hc-sc.gc.ca
http://www.entsocont.ca

Société d'entomologie du Québec

Présidente	Jade Savage
Vice-présidente	Véronique Martel
Présidente sortante	Sophie Rochefort
Trésorier	François Fournier
Rédactrice (Antennae)	Louise Voynaud
Webmestre	Thierry Poiré
Secrétaire	Julie-Éléonore Maisonhaute

Université du Québec à Montréal
Département des sciences biologiques
C.P.8888, Succ. Centre Ville, Montréal (Qc) H3C 3P8
Tél: (514) 987-3000 ext. 4799
E-mail: secretariat@seq.qc.ca
http://www.seq.qc.ca/

Acadian Entomological Society

President	Gaetan Moreau
Vice-President	Chris Cutler
Past President	Christine Noronha
Journal Editor	Don Ostaff
Webmaster	Rick West
Secretary/Treasurer	Rob Johns

Atlantic Forestry Centre
P.O. Box 4000, 1350 Regent Street South
Fredericton, NB, E3B 5P7
Tel: (506) 452-3785
E-mail: treasurer@acadienes.ca
http://www.acadianes.org/index.html

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: Cedric Gillott
Assistant Editor: Julia Mlynarek

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

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

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

Send correspondence to:
Cedric Gillott
Bulletin Editor
Department of Biology
University of Saskatchewan
112 Science Place, SK S7N 5E2
Telephone: (306) 966-4401
Fax: (306) 966-4461
E-mail: cedric.gillott@usask.ca

ISSN: 0071-0741
Customer Account No. 3975533
Publications Mail Agreement No. 40033986
Printed in Canada

Submission deadline for the next issue: 30 April 2013

Bulletin de la Société d'entomologie du Canada

Rédacteur: Cedric Gillott
Rédactrice adjointe: Julia Mlynarek

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

Publié par la
Société d'entomologie du Canada
393 Winston Ave.
Ottawa, Ontario, Canada K2A 1Y8
www.esc-sec.ca/
entsoc.can@bellnet.ca

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

Envoyer vos soumissions à:
Cedric Gillott
Rédacteur du *Bulletin*
Department of Biology
University of Saskatchewan
112 Science Place, SK S7N 5E2
Telephone: (306) 966-4401
Fax: (306) 966-4461
courriel : cedric.gillott@usask.ca

ISSN: 0071-0741
Numéro de client: 3975533
Numéro de convention: 40033986
Imprimé au Canada

Date de tombée pour le prochain numéro: 30 avril 2013

The last word / Le dernier mot

Cedric Gillott, Editor / Rédacteur

An issue of contrasts

Readers may have noticed already that this issue presents two strongly contrasting articles. On the one hand, Chris MacQuarrie's Dear Buggy column offers a brief look at the modern world of electronic communication and acquisition of information, through RSS feeds, cloud storage, blogs and the various social media. In contrast, I (wearing my Heritage Committee Chair's hat) take readers back to 'the beginning' (no, not the Garden of Eden, rather the earliest days of our Society!) with an account of one of Canada's foundational entomologists, Charles Bethune, including his role in the formation of our Society a century and a half ago.

In this, the Society's sesquicentennial year, I would argue that we must embrace such contrasts. Certainly, in the second decade of the 21st century, we should familiarize ourselves with methods that will improve our ability to ingest and process the mass of information that crosses our desk daily. At the same time, we should always welcome reminders of how we came to be where we are today, specifically, to pay tribute to those who established entomology as a discipline in Canada. In this vein, I am delighted to see that the Plenary Symposium and Heritage Lecture at this year's JAM are devoted to this topic. With many other interesting activities planned for Guelph, let's make this our biggest and best meeting ever.

P.S. Don't forget to raise a glass and drink a toast on 16 April in celebration of our Society's formation 150 years ago to the day!

Un numéro tout en contraste

Les lecteurs ont peut-être déjà remarqué que ce numéro présente deux articles très contrastés. D'un côté, la rubrique Cher Bibitte de Chris MacQuarrie offre un bref aperçu du monde moderne de la communication et de l'acquisition d'information électronique, via les fils RSS, le stockage nuagique, les blogues et les différents médias sociaux. D'un autre côté, je (portant le chapeau du président du comité du patrimoine) ramène les lecteurs « au début » (non, pas au jardin d'Éden, mais plutôt aux premiers jours de notre Société!) avec un récit sur un des entomologistes fondateurs du Canada, Charles Bethune, incluant son rôle dans la formation de notre Société un siècle et demi plus tôt.

En cette année du cent cinquantenaire de la Société, j'argumenterais que nous devons embrasser ces contrastes. Nous devrons certainement, lors de la seconde décennie du 21e siècle, nous familiariser avec les méthodes qui amélioreront nos habiletés à ingérer et digérer la masse d'information qui passe par nos bureaux chaque jour. En même temps, nous devrions toujours accueillir les rappels de comment nous sommes devenus ce que nous sommes aujourd'hui, particulièrement afin de rendre hommage à ceux qui ont établi l'entomologie en tant que discipline au Canada. Dans cet ordre d'idée, je suis ravi de voir que la session plénière et l'allocution du patrimoine à la réunion conjointe annuelle de cette année sont dévouées à ce sujet. Avec de nombreuses autres activités intéressantes prévues pour Guelph, faisons en sorte que ce soit notre plus grande et notre meilleure réunion à ce jour.

P.S. N'oubliez pas, le 16 avril, de lever vos verres et de boire à la formation de notre Société il y a 150 ans jour pour jour!

Executive Council / Conseil exécutif

President / Présidente
Rosemarie De Clerck-Floate
Agriculture and Agri-Food Canada
5403 - 1 Avenue South, PO Box 3000
Lethbridge, Alberta T1J 4B1
Tel: (403) 317-2270, Fax: (403) 382-3156
Email: Rosemarie.Declerck-Floate@agr.gc.ca

First Vice-President / Première vice-présidente
Rebecca Hallett
University of Guelph
50 Stone Road East
Guelph, ON N1G 2W1
Tel: (519) 824-4120 ext54488
Fax:(519) 837-0442
Email: rhallett@uoguelph.ca

Second Vice-President / Second vice-président
Staffan Lindgren
University of Northern British Columbia
Prince George, British Columbia, V2N 4Z9
Tel.: 250-960-5846
Fax: 250-960-5539
E-mail: lindgren@unbc.ca

Past President / Président sortant
Michel Cusson
Service canadien des forêts, Resources naturelles Canada
1055 rue du P.E.P.S., C.P. 10380, Succ. Sainte-Foy, Québec, QC G1V 4C7
Tel: (418) 648-3944, Fax: (418) 648-5849
E-mail: michel.cusson@RNCan-NRCan.gc.ca

Directors-at-Large / Conseillers
Brent Elliott (2013)
Chris MacQuarrie (2014)
Zoë Lindo (2015)

Regional Directors / Directeurs régionaux
Bill Riel (ESBC), Kevin Floate (ESA), Martin Erlandson (ESS), Kateryn Rochon (ESM), Patrice Bouchard (ESO), Annabelle Firlej (SEQ), Carolyn Parsons (AES)

Student Representative / Représentant des étudiants
Boyd Mori
University of Alberta
E-mail: bmori@ualberta.ca

Trustees / Fiduciaires

Treasurer / Trésorier
Scott Brooks
Entomological Society of Canada
393 Winston Ave. Ottawa, ON K2A 1Y8
Tel: (613) 694-2718 Fax: (613) 759-1927
Email: scott.brooks@agr.gc.ca

Secretary / Secrétaire
Alec McClay
Tel: (780) 953-4077, Fax: (780) 410-0496
Email: secretary@esc-sec.ca

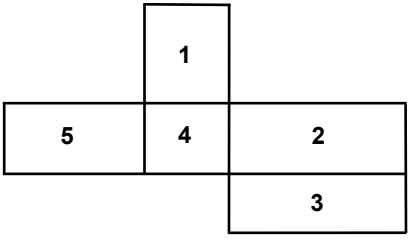
Bulletin* Editor / Rédacteur du *Bulletin
Cedric Gillott
Dept of Biology, University of Saskatchewan
112 Science Place, SK S7N 5E2
Tel: (306) 966-4401, Fax: (306) 966-4461
E-mail: cedric.gillott@usask.ca

Ass. *Bulletin* Editor / Rédactrice adj. du *Bulletin*
Julia Mlynarek
Carleton University, Biology Department
1125 Colonel By Drive, Ottawa, ON K2A 1Y8
Tel: (613) 520-2600 ext. 3872
E-mail: julia_mlynarek@carleton.ca

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

The Canadian Entomologist
Editor-in-Chief / Rédacteur en chef
Christopher Buddle
McGill University
Ste-Anne-de-Bellevue, QC H9X 3V9
Tel: (514) 398-8026
Email: chris.buddle@mcgill.ca

Head Office / Siège social
Derna Lisi (Office manager)
Entomological Society of Canada
393 Winston Ave., Ottawa, ON K2A 1Y8
Tel: (613) 725-2619, Fax: (613) 725-9349
E-mail: entsoc.can@bellnet.ca, www.esc-sec.ca/



www.esc-sec.ca/

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

Publications Mail Agreement No. 40033986
Date of issue: March 2013

ISSN: 0071-0741

Images

On the spine: Stinkbug eggs found on the foliage of lodgepole pine, Tappen, BC. Photo: W. Strong

Beneath the title: Nymphs of *Pachycoris klugii* on *Jatropha cucras* tree, Tehuacan, Chiapas, Mexico. Photo: T. Haye

1 A female *Agapostemon* sp. (Halictidae), foraging on fireweed in June on the UBC Okanagan (Kelowna) campus. Photo: B. Lalonde

2 Sweeping vegetation for terrestrial arthropods as part of the Northern Biodiversity Program survey during 2010. The location is the Skeleton Creek Valley, located just above Lake Hazen on the northern Ellesmere Island. Students are (from left) Christine Roussel (UPEI), and Sarah Loboda and Meagan Blair (both from McGill). Photo: D. Giberson

3 *Stratiomys badia*, an impressive bee mimic, rests in a garden at dusk, in Chesterville, Ontario. Photo: C. Ernst

4 Larva of *Papilio machaon dodi* (Lepidoptera: Papilionidae), on *Artemisia dracunculus*, near Drumheller, Alberta. Photo: J. Dupuis

5 Late stage pupae of the honey bee, *Apis mellifera*, dissected as part of a search for breeding varroa mite (none found). Taken from a hive in the Gisborne area on the East Coast of the North Island of New Zealand, March 2012. Photo: J. McLean

Back cover: A gravid female of the threatened Dakota skipper, *Hesperia dacotae* (Skinner)(Hesperiidae) perched on Yarrow, *Achillea millefolium* (Asteracaea) in a tallgrass prairie northeast of Deleau, Manitoba. Photo: C. Rigney

Français à l'intérieur de la couverture avant.