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Images

Sur le dos : La coccinelle *Anatis labiculata* (Coleoptera: Coccinellidae) se nourrissant d'un adulte d'*Uroleucon rudbeckiae* (Hemiptera: Aphididae). Photo: Pat MacKay

Sous le titre : L'uropore des chardons, *Urophora cardui* (Diptera: Tephritidae), originaire d'Europe et introduit en Amérique du Nord pour le contrôle du cirse des champs, *Cirsium arvense*. Photo: Steve Marshall

1. Mâle chalcis du sapin de Douglas, *Megastigmus spermatrophus* (Hymenoptera: Torymidae). Photo: Dion Manastyrski

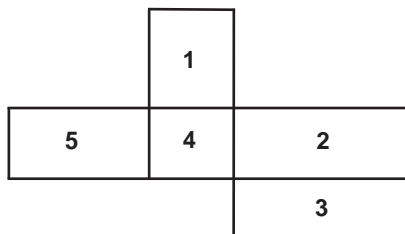
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4. Vérification des pièges à charançons dans les fraisiers. Photo: Kenna MacKenzie

5. Accouplement de *Misumena vatia* (Araneae: Thomisidae) et souper d'empidide (Diptera: Empididae). Photo: Brian Klinkenberg

Couverture arrière : Une libellule tropicale, *Neurothemis* sp. (Odonata: Libellulidae), se rafraîchissant par thermorégulation, Thaïlande. Photo : Jeremy McNeil





Why come to the Entomological Society of Canada meeting in Winnipeg this October? Why do we still hold meetings face to face at all?

Never before have we had a better reason NOT to go to meetings. The technology for communicating ideas small and large has exploded. Telephones, cell phones, smart phones, conference calls, video conference calls, Blackberries, twittering, email, YouTube, web pages, webinars, podcasts, the list goes on and on.

Talk is cheap. Telephone rates have dropped so low that we don't worry about the cost. The internet has made it cheap and easy to keep in touch with people. Voice over internet, Skype, Gtalk and their like have made it even easy and cheap to talk to people around the world. Cell phones allow people to stay connected to the rest of the world anytime, any place. Everyone is connected with email and web pages. Submit a paper, send it by email. You want a paper, pull it from the journal's web site. Video conference calls allow anywhere from 2 to 200 people to attend a meeting without leaving their offices. If you missed a presentation at the Entomological Society of America meeting, download the PowerPoint presentation with the audio. The more sophisticated among us

Pourquoi assister à la réunion de la Société d'entomologie du Canada à Winnipeg en octobre? Pourquoi tenons-nous encore des réunions en personne?

Nous n'avons jamais eu de meilleures raisons de ne PAS aller aux réunions. La technologie permettant de communiquer les petites comme les grandes idées a explosé. Le téléphone, les téléphones cellulaires, les téléphones intelligents, les appels-conférences, les vidéoconférences, les BlackBerry, le twittering, les courriels, YouTube, les sites Internet, les conférences en ligne, la baladodiffusion, et la liste continue.

Parler ne coûte pas cher. Les tarifs téléphoniques sont rendu tellement bas que nous n'avons pas à nous soucier du prix. Internet est également devenu abordable et facilite les contacts entre les gens. Grâce à voix par Internet, Skype, Gtalk et leurs semblables, il est maintenant facile et abordable de parler aux gens partout dans le monde. Les téléphones cellulaires permettent de rester connecté au reste du monde en tout temps, n'importe où. Tout le monde est connecté grâce aux courriels et aux sites Internet. Pour soumettre un article, envoyez un courriel. Vous voulez un article, téléchargez-le du site Internet de la revue. Les vidéoconférences permettent d'avoir de 2 à 200 personnes assistant à une réunion sans quitter leur bureau. Vous manquez une présentation à la réunion de la Société d'entomologie d'Amérique, vous n'avez qu'à télécharger la présentation PowerPoint avec le son. Les plus sophistiqués d'entre nous organisent ou assistent à des conférences en ligne (<http://fr.wikipedia.org/wiki/Webinar>). YouTube a évidemment beaucoup de vidéos de chiens qui dansent ou d'adolescents en planche à roulettes, mais contient également 1800 cours du MIT. Un des mes sites de vidéos favoris est le site de conférences TED (www.ted.com). Une présentation par Hans Rosling, un statisticien suédois, a retenu l'attention de mes adolescents et moi pour un bon 20 minutes.

are setting up or attending webinars (<http://en.wikipedia.org/wiki/Webinar>). YouTube has a lot of dancing dog videos, and teenage boys skateboarding into railings, but it also has 1800 courses from MIT. One of my favourites video sites is TED conferences (www.ted.com). One lecture by Hans Rosling, a Swedish statistician, held the attention of my teenage boys and I for the full 20 minutes.

Air travel costs hundreds of dollars. Adding the hotel and meals, a meeting can cost well over \$1000. It also is costly in time: you lose a day in travel each way. So why do we still meet face to face? Well, in my experience, meeting face to face is still the best way to learn, to be inspired and to be surprised. How many new ideas you have had during a phone conversation? How many eureka moments have you had reading an email? How many collaborations have been born over a video conference? Now, how many of those arise during face to face exchanges?

There is unpredictability about meetings. Travelling out of the office and lab shakes up our ideas, allows you to look at things in a new light. Sitting in a bar, or having coffee, you meet people that you would never actively sought out to meet. Sandwiched between two talks you definitely wanted to see, will be an unexpected gem. Yet those people and those talks can change the course of your research.

I look forward to seeing you in Winnipeg, and I am sure you will come away with a handful of new ideas that you would not have had if you had stayed at home answering your emails and surfing the web.

Le transport aérien coûte des centaines de dollars. En ajoutant l'hôtel et les repas, une réunion peut coûter facilement plus de 1000\$. Ça demande également du temps: vous perdez une journée de déplacement dans chaque direction. Alors pourquoi nous rencontrons-nous en personne? Et bien, selon mon expérience, les rencontres en personne demeurent la meilleure façon d'apprendre, d'être inspiré et d'être surpris. Combien de nouvelles idées que vous avez eu durant une conversation téléphonique? Combien d'eureka avez-vous eu en lisant un courriel? Combien de collaborations sont nées lors d'une vidéoconférence? Maintenant, combien ont émergé lors d'échanges en personne?

Il y a de l'imprévu dans les réunions. Voyager à l'extérieur du bureau et du laboratoire brasse vos idées, vous permet de voir les choses différemment. En vous assoyant dans un bar ou en buvant un café, vous rencontrez des gens que vous n'auriez jamais activement cherché à rencontrer. Ces rencontres entre deux conférences que vous tenez à voir seront un joyau inattendu. Et ces gens, et ces conférences peuvent changer le cours de vos recherches.

J'ai hâte de vous voir à Winnipeg, et je suis certain que vous viendrez avec un tas de nouvelles idées que vous n'auriez pas eu en restant à la maison à répondre à vos courriels et naviguer sur Internet.



Olivier Lalonde

Gasteracantha elipsoïdes

It's a Dirty Ento-Job...

I'm sure some of you can remember back to the days before you became entomologists. For most, I imagine, it seems a much simpler time – free from the public scrutiny and endless appearances associated with our exalted position in society. And whereas, the fame and fortune that our career has provided definitely has its benefits, I always try to remember my roots and realize that not all jobs in entomology are the azimuth of society that the lens of the paparazzi portrays. In fact, let us not forget, that behind the glamour and glitz that is the facade of entomology, there lies a darker, hidden side. Within these shadows,

some of the real entomology occurs. And although it is hard for many of us to remember, there are aspects of entomology that are downright distasteful, and even yours truly has experienced this to some degree.

In terms of my worst job with insects, I think my Honours thesis at UBC takes this prize. I reared hundreds of variegated cutworm larvae in little Petri dishes in a walk-in incubator all summer long. When they're small, they're very cute. When they get large they have an unbelievable ability to fill their Petri dishes to bursting with frass. And then if Mr. Fungus gets introduced into the equation, you have half-liquefied cutworm larvae, some of which are still alive, that become tempting sources of extra protein for their not-yet-fungal-infected-turned-cannibalistic brethren. Needless to say – not a pretty site. But having said that, I'm sure in the entire history of ento-manity, the nastiness of my job pales in comparison to other insect-related jobs. To help us all remember where we came from and/or cheer up anybody who may be disillusioned with their entomo-occupations, *Moth Balls* presents the top ten (or is that bottom ten?) Bad Insect Jobs throughout history.



- 10) **Woolly bear setae enumeration technician** (3134 , 3135... Can you get the phone? ... Oh crap!)
- 9) **President, Xerces Blue Conservation Society** (Funny... they were here a while ago...)
- 8) **Royal flea taxonomist to King Charles II, Great Plague (London, 1665-66)** (OK, who can the King blame this one on?)
- 7) **De-lousing officer, RMS Titanic** (Sure, it's not going to be the best job, but once the passengers are dealt with, it's clear sailing!)
- 6) **Judge, Third Annual Winnipeg Windshield Splatter Artistic Challenge** (I've never seen malpighian tubule fluid used that way before...)
- 5) **Fruit fly geneticist** (Just between "Paint Drying Observationist" and "Dead" on the list of

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all time most boring pastimes.)

- 4) **Defense lawyer, Maggots versus Canadian Meat Packers Association** (There is no evidence whatsoever, that my clients even like meat!)
- 3) **Experimental subject (control replicate with water), DEET investigational trial** (I didn't think that many black flies could fit on a single arm...)
- 2) **Entomological casting director, Indiana Jones and the Temple of Doom** (Another day in paradise... the leaf insects are on a hunger strike and my lead centipede won't come out of his trailer)
- 1) **Sacred scarab handler of Rameses II, Great Dysentery Outbreak (1243-1239 BC)** (The colony should be fine, your Holiness, as soon as the larvae learn how to use straws...)

So next time you are being swarmed by paparazzi or libelled in yet another scandalous tabloid article, just remember – it could be worse!

Join *Moth Balls* next issue for more down and dirty details on the life of insects and the people who study them.



Jay Cossey

A cecropia silkmoth (*Hyalophora cecropia*)

Fiona Hunter's lab

Brock University, St. Catharines, ON

My lab at Brock University is affectionately known as the “Fly Lab” and is always abuzz with action, busy students, and escapees! My students and I have generally worked on the systematics and behavioural ecology of Diptera, with a special interest in flies of medical and veterinary importance (although I have supervised the occasional butterfly or bee student along the way!). I completed my BSc in Zoology and MSc in Botany, both at the University of Toronto, and then went on to do a PhD in Biology at Queen's University. I also studied for a year in Germany, at the Tropical Medizinisches Institut in Tuebingen, where I worked with a WHO research team looking at onchocerciasis (river blindness) transmission by black flies (Simuliidae) in Africa. Although black flies are probably still my favourite biting flies – because they are so cute – the focus in the lab has switched over to mosquitoes (Culicidae) in recent years, following the appearance of West Nile virus in Canada. Former medical entomology graduate students from my lab are now working for the Ontario Ministry of Health and Long Term Care, Zoonotics Division, and Health Canada First Nations and Inuit Health Branch. The mosquito focus remains in the lab, with a concentration on *Anopheles* species that are potential vectors of malaria. (Fiona's e-mail: hunterf@brocku.ca)

The Students...



Ben Abraham examining specimens under the microscope: “I'm working here!”

Ben Abraham, BSc thesis student

While working toward my BSc, I studied the effects of sugar composition on certain life history traits of the adult fruit fly, *Drosophila melanogaster*. More specifically, the study involved comparing the influence of simulated nectar and homopteran honeydew solutions on the longevity and fecundity of adult fruit flies. Although fruit flies are naturally saprophytic insects, the existence of a vast literature on the physiology, nutritional ecology, and life history of this dipteran suggested that it would provide an ideal system with which the relative suitability of these sugar solutions could be determined. Basically, I presented the fruit flies with diets consisting of either artificial nectar or honeydew and measured survivorship and daily oviposition rates to obtain estimates of longevity and fecundity, respectively, for each diet treatment. In other words, I spent most of my time baby-sitting fruit flies, ensuring that they were well-fed, and regularly relocated to clean containers, all while counting any number of eggs they had laid and the days (sometimes eagerly) until they were deceased. For as long as I could remember I have always found animal (insect or non-insect) physiology fascinating and the opportunity to work with fruit flies was an adequate excuse for getting my “nerd” on. In the near future I intend to work with animals and eventually earn my MSc while working in a related field. (Ben's e-mail: ba05ru@brocku.ca)

Daniel Antwi-Amoabeng, MSc student

I work with black flies in the fly lab. My focus is feeding ecology and how it relates to longevity and immunity. My partners in this are the lovely Peking ducks; without them it would be nearly impossible for me to collect any parasite-infected black flies. Black flies transmit parasitic protozoa to ducks (both wild and domestic). What I seek to do is find out if any of the two main sugar diets naturally available to black flies offer any form of fitness advantage when the flies feed on them. If any does, how does it offer this advantage? In my native Ghana, black flies transmit microfilaria

to humans, which can cause permanent blindness. My hope is to be able to transfer any new knowledge realized from this work to black fly control programs in Ghana and West Africa. (Daniel's e-mail: da07ti@brocku.ca)



Daniel Antwi-Amoabeng intently collecting black flies in Algonquin Provincial Park, Ontario

Dave Lübbert, BSc thesis student

For my work, I am interested in *Atherix* (Diptera: Athericidae) water snipe flies, specifically the neurotoxin which is produced in their larval stage. The larvae are found around Algonquin Park, Ontario and little is known about them. Working mostly *in vitro* on isolated poison glands, the characteristics of this unknown but extremely potent neurotoxin are being discovered. Since immigrating to Canada as a little Swiss boy, I've always had a knack for solving mysteries; in this case, discovering the characteristics of the unknown neurotoxin. The component molecular weights



Dave Lübbert and his infamous leaky flume (note the containment fish tank)

have been analyzed using mass spectrometry and its potency tested with bioassays. Having recently completed my BSc, my future work includes sequencing of the neurotoxin as well as additional bioassays to understand its mode of action. The title of Flume Technician has been bestowed upon me by my fellow lab mates, which, despite their intentions, is an honour. I often get the question, 'What does a flume technician do?' My job is to ensure that the structural and watertight integrities of any and all flumes are maintained using technical equipment including duct tape, bungee cords, and clothespins (MacGyver style). (Dave's e-mail: dl05hu@brocku.ca)

Christina Mychaskiw, BSc student, lab assistant

I am the resident research assistant who joined the Hunter lab in summer 2008. Over the course of the last summer, I aided in mosquito field collection, larval rearing, and species identification as part of Aynsley Thielman's PhD data compilation. I am a fourth year undergraduate biology major at Brock University. My experience in the Hunter lab has caused me to develop a passion for entomology and for the eccentricities of entomologists alike. I hope to continue to develop further skills and experience in the entomological field under the guidance of the Hunter lab. (Christina's e-mail: cm05qk@brocku.ca)



Christina Mychaskiw setting up a mosquito trap near St. Catharines, Ontario

Lauren Pinault, PhD student

After completing my BSc working on weevils with Bob Anderson and a Masters with Dan Quiring on the pale-winged gray moth (Geometridae) as a forest pest in Nova Scotia, I migrated to Fiona’s lab to study everybody’s favourite insect, mosquitoes! I am working on anopheline vectors of malaria along the Andean corridor in Ecuador and am interested in determining if the larval vector habitat might become suitable at higher altitudes with climate change. While highland malaria is a real problem in many regions of Africa, it is barely studied in the South American Andes. To accomplish this, I am conducting field work to characterize larval habitats in lowland areas and to look for the same types of habitats available at higher altitudes. I am interested in how land uses in different regions affect the suitability of *Anopheles* larval habitat. Also, I am planning transposition studies of common lowland vectors to higher altitudes. As part of the project, I am talking to local landowners to discuss standing water management and to determine their perception of malaria risk. This work is conducted through a collaboration with Dr. Renato León at the Universidad

San Francisco de Quito, with whom we are planning exciting future projects! When I am not in the lab, I can usually be found getting bitten in the field, involved in student groups or human rights activism, or generally running amok in the halls of Brock. (Lauren’s e-mail: lauren.pinault@gmail.com)



Lauren Pinault scouts for sampling sites near Santo Domingo de los Colorados, Ecuador

Aynsley Thielman, PhD student

After completing my BSc in Molecular Biology and Genetics at the University of Guelph, I started working with mosquitoes while working on the Ontario West Nile virus mosquito surveillance project with Dr. Hunter at Brock University in 2001. In 2004, I was accepted into the MSc Biology program at Brock and began to study *Anopheles* mosquitoes in Ontario from morphological and cytological perspectives. Soon after my first field season, I transferred into the PhD Ecology and Evolution program and expanded my project to include specimens from across Canada and two other types of analyses, including ecological and molecular. I spend my summers travelling

Lab profile

across the country, extensively in Ontario, collecting specimens (larvae and adults) and returning them to the lab for rearing to the appropriate developmental stage for analysis. Specimens are then preserved in various ways to allow analysis from multiple perspectives. In the fall, winter, and spring, I am in the lab, preparing polytene chromosome slides, identifying my specimens, and sequencing different genes to look for evidence of cryptic species within the *Anopheles* genus in Canada. Last summer, I participated in the Arctic and Boreal Entomology course in Churchill, Manitoba. It was an amazing experience that inspired me to want to study the mosquitoes in northern Canada in the future. (Aynsley's e-mail: athielman@brocku.ca)



Aynsley Thielman and her daughter Layla set sail for an island at last year's BioBlitz at Bruce Peninsula National Park, Ontario



The Hunter lab (left to right): Daniel Antwi-Amoabeng, Christina Mychaskiw, Lauren Pinault, Aynsley Thielman, Fiona Hunter, Dave Lübbert. Missing: Ben Abraham

Low-cost insect boxes and high-volume storage cabinets that are efficient and readily available in large quantities

If global biodiversity estimates are accurate indicators of the contribution insects make towards species diversity worldwide (87% of 5 000 000 species; Wilson 1988) then many conservation biologists may eventually become entomologists. Arguably, insects are one of the most significant of the many life forms that run the world. Therefore, comprehensive conservation efforts should devote a substantial effort towards entomology. Developing an accurate insect taxonomy and classification, prospecting for new insect species, assessments of local, regional and global insect faunas, and monitoring habitat and population spatial and temporal dynamics from the perspective of insects are key to all successful long-term conservation programs. The infrastructure required to support extensive insect collections to support this research can be very expensive due to the volume of material that must be properly acquired, curated, and distributed. This is especially so if the specimens must be pinned (or pointed), and stored in boxes. In fact, many taxonomic experts that insect conservation biologists depend upon are unwilling to analyze collections if they are not pinned. Typically the investment in time and finances to support this research effort falls upon individuals with limited financial support (if any) and other necessary infrastructures (space and material for processing collections). For most insect taxa the only way to become an expert is to personally accumulate a series of specimens of many different species readily available for close inspection. This also applies, one would hope, to the recent phenomena of expert barcoders. Escalating financial and infrastructure burdens continue to overwhelm individual entomologists as museums and universities keep cutting support for collections of insects.

For more than 30 years I have systematically hunted the ca. 705 species of carabid beetles in the Pacific Northwest of North America and now curate one of the largest, 'privately owned' beetle collections of the region. Many of these species are small-bodied and require a pointed series of specimens and a good dissecting scope to classify accurately. I have acquired this collection, and curate it, with minimal grant support and levels of funding unable to finance the purchase of expensive institutional-grade insect boxes and storage cabinets. This situation has forced me to seek an affordable, yet efficient alternative.

In the early 1990s I discovered a mail order paper supply company that sold rigid paper boxes originally designed to hold a ream (500 sheets) of letter-size (8.5" x 11") paper. These boxes fit perfectly into standard file cabinets (see photo, next page). Unfortunately, at about the end of that decade, my supplier informed me that Weyerhaeuser had stopped manufacturing these boxes and therefore they were no longer available. I was unable to find any more of those boxes and lamented that I had assumed they would always be available and had not stockpiled a lifetime supply. Fortunately, I have recently found an almost identical product. The purpose of this letter is to inform other collectors of my current technique, which is, I think, probably the most efficient, cost-effective way to store pinned insects in large quantities. If it is not, I would certainly appreciate learning of a better alternative. Increased demand for this product should promote their availability in the future.

The boxes I use now are available from ULINE (www.uline.com; 1-800-295-5510), a mail order company that claims to have "over 800 box sizes in stock and ready to ship"! On pg. 22 of their 2008-9 catalog they offer a "rigid set up box" (Cat No. S-10708). These rigid-paper boxes measure 8.5" x 11" x 2", are glossy white, and come fully assembled. The top of this box

James Bergdahl works at the Conservation Biology Center, University of the Wilderness, in Spokane, Washington State. He can be contacted at: jcbergdahl@gmail.com.

telescopes entirely over the bottom of the box. Twenty of these boxes (one carton) cost US\$29. An additional US\$11 for shipping makes their cost US\$2.00 per box. For pinning pads at the bottom of each box I order 20 custom-cut sheets (8.5" x 11") of polyethylene foam from BioQuip Products (www.bioquip.com; 1-310-324-0620; Cat. No. 028NT). My latest order cost US\$2.25 per pad, including shipping. I glue the pads to the bottom of the box with clear, 100% silicon rubber caulk that can be found at any good home improvement store for about US\$5 per tube. One tube is enough to glue up 20 boxes. At the same time I glue an empty, clear plastic, snap cap, 35mm film canister into one of the inside corners of each box. The purpose of the canister is to provide a place to put mothballs. Before the canister is installed I punch a hole in its side with a hand-held single-hole paper punch to allow ventilation. I get the canisters free from local film processing labs. These canisters are 2" tall so you must cut out a small piece of the corner of the foam pad before gluing so that the top of the box will slide all the way over the bottom. Using this technique, the total cost of each box is ca. US\$4.50.

Probably the single most important feature of these low-cost, paper insect boxes is that they fit nicely into standard, metal file cabinets available through office supply stores for a very reasonable price. I typically purchase used, high-quality, 2-drawer metal file cabinets that are ~28" deep for about US\$40 each. Each of these cabinets will hold 24 insect boxes (12 per drawer). These cabinets can be used to support a large desk top made from a 30-36" solid core door, under which one can put a five standard file cabinets – enough storage space for a substantial insect collection (120 boxes). The total cost of this technique (120 boxes and five 2-drawers cabinets) is about \$700. A similar sized, museum-grade storage setup would probably retail for more than a few US\$1000s. Also, combinations of 2- and 4-drawer cabinets may be stacked to your room's ceiling since even when full they are not that heavy. For easy reference, I keep brief notes on each box's contents and pest management activity on the top or side of each box, such as the dates the box was frozen.

A paper insect box (9" x 13" x 2.5") available from BioQuip costs is about the same price, however they do not fit efficiently into standard office file cabinets since they are 13" long. ULINE also sells a 3.5" x 7" x 2" rigid paper box; these can be neatly stacked and mixed with ULINE's larger boxes in the same file cabinet much like a museum-unit tray.

My insect storage technique should be useful to any one curating a large pinned collection with a small budget. Even for well-financed projects, cutting the cost of storage will help make more funds available for other necessary supplies, labor, travel expenses, publication, etc. As always, any well maintained insect collection needs chemical (fumigants) and temperature (freezing) controls for avoiding pests – my storage technique is no exception.



Insect boxes fitting perfectly into file cabinets

I have no financial interest in any of the companies mentioned above and am not a sales person of any of these products – just an avid collector of carabid beetles requiring low cost storage methods.

References

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Oliver Lalonde, MAPAQ

A photo of *Agapostemon splendens* (Halictidae), which was awarded the 1st price of the 2007 photo contest of the Entomological Society of Quebec.

Dear Buggy / Cher Bibitte

By Chris MacQuarrie

Dear Buggy,

Im starting my second season of research and my data is a mess. I've got spreadsheets on my laptop, notes in my field book, data sheets in my folders, specimens on my desk, and tally marks on the back of my hand. I don't think I've lost anything (yet) but I'm one stiff breeze away from a total catastrophe. How do I manage all this data!

Befuddled in Baie-Comeau.

Dear Befuddled,

Hopefully this response finds you still in possession of all your data, and your sanity as well.

Before we begin let me assure you you're not alone. In the rush to get to the field or the bench and accomplish the 'fun' part of research, we often neglect to stop and consider how we are going to handle all the information we plan to generate. Often the most appropriate method suggests itself, but like all aspects of your research it's worth taking the time to think about how to process, manage and store your data.

First off, it sounds like you actually have two problems; how do you store the data you already have and how will you manage the data you are going to produce. Let's handle these two issues separately.

Storing data

Choose a medium of data storage that you like and are willing to use consistently. Some people will prefer a field or lab notebook, others will prefer spreadsheets or databases. Regardless of the method(s) you choose you have to commit to using it as the main repository for your data. So, Befuddled, it sounds like your first task is to assemble your multitude of data and consolidate them into one common location. Which you choose is up to you, but here are some suggestions to consider as you decide.

Is it appropriate for all my data? – Spreadsheets are great for tabular data, but are poor repositories for field notes or digital media files. Have you explored databases?

Is it secure? Your data has value and it should be kept in more than one place. Digital data is relatively easy to backup and store, but do you have a plan? What about large data files? Consider also how you backup and store written material like protocols, field observations and data sheets. Plan for the worst; e.g., what happens if your lab burns down or your laptop is stolen?



Chris MacQuarrie is a Postdoctoral Fellow with the Canadian Forest Service in Edmonton, Alberta, where he studies the ecology and population dynamics of mountain pine beetle. Contact Chris with your questions or suggestions for future columns of 'Dear Buggy' (e-mail: cjkmacquarrie@gmail.com). You can view and comment on past editions of Dear Buggy at <http://mrbugman.wordpress.com>.

Is it compatible? Your data ‘belongs’ to you (at least for now) but it’s likely that your supervisor has a vested interest in it as well. For digital data, consider the programs you use – can they be opened on another computer on another operating system? If you’re part of a large project, does your method of data storage mesh with that of your collaborators? For analog data, do you follow your lab’s protocols for recording measurements? Does your supervisor have a preferred method of data storage?

Is it achievable, searchable and understandable to others? You’re probably collecting data with your own project in mind, but you should consider the possibility that you may want to use it later, far down the road from now. Could you pick up your data and notes from last summer and understand them two years from now? Ten years from now? In a more basic sense, where will you store your data, in what form and who will be responsible? More importantly, could someone *else* access your data and, without your input, discern what you did and what your measurements mean? Remember, data without context is noise. If you go to the trouble of measuring something make sure you can maximize its value now **and** in the future.

There are any number of digital tools and computer packages to help you manage data, probably too many to list here, and there will be no clear cut solution for each researcher or field. In short, it’s up to you to find the tools that you like and that work for you. In my opinion, everyone’s ‘research toolkit’ should at the very least include a notebook and a good pen. Nothing digital has yet replaced the portability and fail-safe attributes of paper and pen for recording observations. In my own research, I find it helpful to write down the details of my analyses, the location of my data files, and even paste in the outputs of statistical analyses, and copies of my figures and graphs as I produce them. When used consistently, a notebook can serve as a valuable reference for your ideas and thought processes as you’re working. If you’re stuck for a way to organize your data, I’d suggest starting with pen and paper. This method may not be optimal for all your data, but at least you’ll start to consolidate it in one place.

Managing data

OK Befuddled, now that we’ve got your problem with your existing data well in hand, how are we going to handle all those fresh new data points? Well, we’ve already covered storage, which will be a big component of your strategy for managing your data. What we want to do now is consider ways to prevent you from getting disorganized in the first place.

Presumably you’ve already thought up and designed your new experiments or at the very least have an idea of what data you want to capture. Perhaps you’ve even talked to a statistician about your experimental design. Your first goal then, should be to design a way of effectively capturing all the data you want to collect. Typically this will take the form of a data sheet. Designing a data sheet feels like a trivial exercise but consider this; your data sheet is the ultimate record of the data that will form your research. You may have a good idea of what you want to collect, but how about your field assistants – could they take your data sheet and fill it in without you being there? More importantly, if you have many different measurements to take, a well designed data sheet can serve as a reminder to make sure all the data you want are collected. Taking some time to figure out how to capture data goes a long way to making sure you collect everything you need.

Once your data are collected, your first goal should be to transfer them as soon as possible to a safe and secure place. Now here I’m not talking about locking them in a truck, or storing them in a binder. An important part of managing your data is getting it into your data storage system as soon as possible. This practice serves three important functions: 1) it secures your data against accidental loss; 2) you can immediately review your data and check it for errors (imagine discovering in September your pH meter went south 2 days into a 20-day experiment

back in July, or that your assistant is misidentifying your specimens); and most importantly 3) you can start working with your data. This last aspect is probably the most exciting as you can often see trends starting to develop and, if you're lucky, you may see patterns emerge that suggest new directions for research. Plus, by this point you've probably been sweating over your project for quite a while now, wouldn't it be nice to see some payoff? Seeing trends starting to develop in your own data can serve as a big motivator on those rainy days in the field, or when the instruments just aren't working. Plus it will serve to keep you on top of entering your new data as it comes in.

Now that your data is being managed and transferred into your storage system, the next steps of analysis and presentation should be easy (or at least easier). Probably one of the greatest wastes of time in any project, and the act that introduces the most error, has to be 'reshaping' data into a form that it is compatible with whatever analyses you decide to run. Having a coherent and consistent plan to manage and store your data allows you to enter data once, check it for errors and then proceed unfettered, without needing to consider your data's structure. Being able to trust in the integrity of data allows you to be confident in your results. After all that, writing the papers should be easy!

A short aside. As more and more researchers become 'cogs' in the machinery of large, multi-disciplinary, long-term projects, it is important to consider how your data fits into the overall enterprise. Sometimes staff may be assigned to keep watch over the data (these are known by many names: Bioinformatician, Database manager, Project co-ordinator, Research director). Within these large projects the way you collect data, and even your experimental design, may be dictated to you by the needs of your project. Ideally, you may even be allowed to design your own experiments that operate within the larger project. In either case it's wise to consult these "keepers of the data" early on in the design stage of your experiment. They may have already developed some of the tools you may need in your research, and will likely have useful suggestions for how you might set up your data management system. Consulting a data management professional early (even if you aren't part of a large project) may even save you time at the end of your research if you're expected to deposit your data into a central framework. No one wants to spend a week after they defended their degree reshaping spreadsheets just so they can get that last signature on their thesis!

So Befuddled, I hope that helps. In the perfect research project, we'd pay as much attention to managing the data as we do to the design and analyses of the experiments. In reality, the impetuosity to get to the field or the bench often overwhelms our desire to carefully plan for every aspect of the research (as you found out). Taking a little time to think about the data before collecting it saves more time than it wastes.

Cheers!

Buggy

Have any other suggestions for Befuddled? Comment on this column at <http://mrbugman.wordpress.com>

I'd like to thank Jason Edwards, Charlene Hahn, Brad Tomm (field co-ordinators and data managers for the EMEND project) for helpful discussions that shaped the response to Befuddled; and David Langor (who still uses data from his PhD) for suggesting this month's topic.



Hello everyone! Whether you're already out in the field, stuck in the lab, or writing your thesis, I hope you are all enjoying a wonderful spring. Summer can be a very busy time for entomology students, so don't forget to register and submit your abstract for the Joint Annual Meeting of the Entomological Societies of Canada and Manitoba. The meeting will be held in Winnipeg, Manitoba from October 18-21, 2009. Information about the meeting can be accessed through the Entomological Society of Manitoba website. The registration and paper submission websites are now open. The deadline for paper submissions is **July 15**. The deadline for early registration (cheaper!) is **August 15**. The deadline for booking rooms at The Fort Garry Hotel is **September 15**.

I look forward to seeing everyone there!

Bonjour à tous! Que vous soyez sur le terrain, coincé au labo ou en train de rédiger votre thèse, j'espère que vous profitez bien de ce magnifique printemps! L'été est parfois une période bien occupée pour les étudiants en entomologie, alors n'oubliez pas de soumettre votre résumé pour la réunion conjointe annuelle des Sociétés d'entomologie du Canada et du Manitoba. La réunion se tiendra à Winnipeg, au Manitoba, du 18 au 21 octobre 2009. Les informations concernant la réunion se trouvent sur le site Internet de la Société d'entomologie du Manitoba. L'inscription et la soumission des résumés sur le site Internet sont maintenant possibles. La date limite pour la soumission d'un résumé est le **15 juillet**. La date limite pour les inscriptions hâtives (moins dispendieuses!) est le **15 août**. Finalement, la date limite pour réserver des chambres à l'hôtel Fort Garry est le **15 septembre**.

J'ai hâte de vous y voir!

Réunion annuelle SEC/SEM 2009 – Événement étudiant: Quiz entomologique

Cette année, le comité des affaires étudiantes organise un quiz entomologique qui se tiendra durant le cocktail étudiant. Nous espérons qu'il s'agira d'un ajout amusant aux événements réguliers de la réunion. Les étudiants s'affronteront en équipe de quatre afin de gagner le prestigieux titre des « Plus grands nerds des bibittes 2009 » ainsi que quelques prix entomologiques. L'événement se tiendra le lundi 10 octobre de 19h30 à 22h30 dans la salle de conférence de l'hôtel (un bar payant sera disponible). Il y aura des ordinateurs et des projecteurs afin de projeter une présentation PowerPoint contenant les questions et des images, vidéos ou fichiers audio requis. Les participants seront assis en groupe et recevront une feuille de réponse afin d'inscrire leur réponse aux questions entomologiques posées par les membres du comité des affaires étudiantes.

ESC/ESM JAM 2009 - Student Event: Insect Trivia Contest

This year, the Student Affairs Committee is organizing an Insect Trivia Contest to be held during the Student Mixer. We are hoping that it will be a fun addition to the regular meeting events. Students will compete in teams of four to earn the prestigious title of "Biggest Bug Nerds 2009" and some entomological prizes as well. The event will take place on Monday, October 19th from 7:30-10:30pm in a conference room at the hotel (cash bar will be available). There will be a computer and projector for a Powerpoint presentation of the questions and any related images, videos, or audio files. Contestants will sit in their groups and be given an Answer Sheet to record their answers to the entomology trivia questions posed by SAC members.

Watch the Student Affairs section of the ESC website for more information about this event. It is sure to be good times, so start thinking about putting together a team and get ready to see who will be The Biggest Bug Nerds in 2009!

Silent Auction Donations Needed

The Student Affairs Committee will be holding another Silent Auction this year to raise money for ESC graduate student scholarships. If you or someone you know is cleaning out their office and getting rid of entomology related books or other items (trinkets, artwork, field gear, etc), please bring them with you to the meeting for the auction.

Seeking Graduate Students

In past issues of the *Bulletin*, Professors have advertised available opportunities in their labs by submitting brief descriptions of the positions to the Seeking Graduate Students section of the Student Wing. If you or someone you know is looking for grad students, please send me a short description of the position(s) available and your contact information.

Consultez la section des affaires étudiantes du site Internet de la SEC pour plus d'information concernant cet événement. Ce sera sans aucun doute une soirée agréable, alors commencez dès maintenant à former vos équipes et soyez prêts à voir qui seront les plus grands nerds des bibittes!

Dons pour les enchères silencieuses demandés

Le comité des affaires étudiantes tiendra une autre enchère silencieuse cette année afin d'amasser des fonds pour les bourses d'étudiants gradués de la SEC. Si vous, ou quelqu'un de votre entourage, fait du rangement dans son bureau et se débarrasse de livres sur l'entomologie, ou d'autres items (colifichets, art, équipement de terrain, etc.), veuillez les apporter avec vous lors de la réunion.

À la recherche d'étudiants gradués

Dans les numéros précédents du *Bulletin*, des professeurs ont affiché les opportunités disponibles dans leurs labos en soumettant une brève description des postes dans une section « À la recherche d'étudiants gradués » de l'aile étudiante. Si vous, ou quelqu'un de votre entourage est à la recherche d'étudiants gradués, veuillez me faire parvenir une courte description des postes disponibles et vos coordonnées.

Le groupe des étudiants de la SEC sur Facebook

Quand je suis devenu présidente du Comité des affaires étudiantes, je suis également devenue administratrice du groupe des étudiants de la SEC sur Facebook. J'ai essayé de me tenir à jour avec les offres d'emploi dans la section des Nouvelles récentes, mais puisque ces offres sont déjà disponibles dans la section des affaires étudiantes du site Internet de la Société d'entomologie du Canada, je ne me suis pas sentie particulièrement pressée pour les afficher sur Facebook. Que pensez-vous du groupe sur Facebook? Veuillez s'il-vous-plaît prendre quelques minutes pour jeter un œil au

ESC Student Facebook Group

When I became Chair of the Student Affairs Committee, I also became the Administrator of the ESC Student Facebook group. I have tried to keep up with job postings in the Recent News section, but since they are already available in the Job Postings area of the Student Affairs web-pages on the Entomological Society of Canada's website, I haven't been particularly concerned about posting them all on the Facebook page too. What are your thoughts on this Facebook group? Please take some time to check out the Facebook group and post your comments in the Discussion Topics section (or you can e-mail me directly if you don't use Facebook). I do plan to start posting more things on the Facebook group if students are interested, but not if nobody is going to read them. I would really appreciate any feedback you have on this issue. Thanks!

groupe sur Facebook et partager vos commentaires dans la section du forum de discussion (ou vous pouvez me les envoyer par e-mail directement si vous n'utilisez pas Facebook). Je planifie d'afficher davantage sur Facebook si les étudiants sont intéressés, mais pas si personne ne les lit. J'apprécierais énormément vos commentaires à ce sujet. Merci!

Aynsley Thielman

E-mail: athielman@brocku.ca

Ed Becker Conference Travel Award 2009

The Ed Becker Conference Travel Award is a cash award of \$500 for students to travel to the Joint Annual Meeting to present a paper or poster. This year the meeting will be held in Winnipeg Manitoba on October 18-22. The competition for this award is open to students with active membership in the ESC (i.e. paid for the current year), who are either in a graduate or undergraduate program at a Canadian university. The details for applying are available on the Society website (<http://www.esc-sec.ca/>) under the 'Student Affairs' section. The application should include an abstract of the paper or poster to be given at the Joint Annual Meeting. This may exceed the meeting's stipulated abstract word limit, but must not exceed 250 words in length. (Note: an official abstract fulfilling the requirements of the paper or poster presentation still needs to be submitted separately to the Organizing Committee of the Joint Annual Meeting). Deadline for applications is 15 August 2009.

Bourse Ed Becker pour la réunion annuelle de la SEC 2009

La bourse Ed Becker pour la réunion annuelle de la SEC est un prix monétaire de 500\$ pour permettre aux étudiants de se rendre à la réunion conjointe annuelle et y présenter une conférence ou une affiche. Cette année, la réunion se tiendra à Winnipeg, Manitoba, du 18 au 22 octobre. La compétition pour cette bourse est ouverte aux étudiants membres de la SEC (ayant payé pour l'année en cours), qui sont soit aux études graduées, soit inscrits à un programme de 1^{er} cycle dans une université canadienne. Les détails pour appliquer sont disponibles sur le site Internet de la SEC (<http://www.esc-sec.ca/>) dans la section des 'Affaires étudiantes'. Les applications doivent contenir un résumé de la présentation ou de l'affiche à présenter à la réunion. Ce résumé peut dépasser la limite imposée par la réunion, mais ne doit en aucun cas dépasser 250 mots. (Note : un résumé officiel satisfaisant les critères demandés doit quand même être soumis séparément au comité organisateur de la réunion annuelle conjointe). La date limite pour appliquer est le 15 août 2009.

Joint Annual Meeting / Réunion conjointe

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

Hotel Fort Garry, Winnipeg, Manitoba

Noon Sunday 18 October – Noon Wednesday 21 October 2009

On behalf of the Entomological Societies of Manitoba and Canada we are pleased to invite you to attend the 2009 Joint Annual Meeting. The meeting will be held at the historic Hotel Fort Garry, a full service hotel that is a short walk from The Forks Markets and Entertainment Complex located in downtown Winnipeg. The hotel is approximately 20 minutes by cab from the airport and 5 minutes by foot from the train station.

We encourage you to stay at the Hotel to be close to the meeting location and to help keep our meeting costs down. The local organizing committee has negotiated an excellent guestroom rate: \$129 per night plus taxes, double occupancy. Each additional adult is \$10 (maximum two additional adults). Please use the Group Code 1049YS when making your reservation.

Registration rates remain unchanged from 2008 with early registration being the wisest choice. Rates are \$265/365 (early/late) for regular members, \$100/160 for student and retired members. One day registration and guest tickets for the banquet are also available.

To register, submit a paper, or get more information, go to:

<http://home.cc.umanitoba.ca/~fieldspg/ESC2009.html>

Program Highlights

Plenary symposium: Climate Change: from Geology to Ecology

- *History of glacial Lake Agassiz and climate since the last Ice Age, as reflected in lake sediments*
Dr James Teller, University of Manitoba
- *Evolution and Climate Change: potentials and pitfalls*
Dr Camille Parmesan, University of Texas
- *Future shock: invasive insects, climate change, and Canada's forest ecosystems*
Dr Shelley Hunt, University of Guelph

Symposia:

- *Apiculture: Bee–Virus Interactions*
- *Arthropod Host–symbiont Relationships: Diversity, Distribution and Ecology*
- *Biological Survey of Canada Symposium*
- *Canadian Forum on Biological Control Symposium: Putting the 'I' Back into IPM – How To Integrate Biological Control Effectively in IPM Programs*
- *Entomological Issues in Potato Production*
- *Graduate Student Symposium*
- *Pollination Biology*
- *Protecting Urban Forests and Structures from Insects*
- *Forest Entomology*

Heritage lecture: History of Beekeeping Research in Western Canada.

Donald Dixon

Student paper competition (presented paper and poster sessions)

Poster session

Presented papers sessions

Important Dates

15 July 2009 *Deadline for paper submissions*
15 August 2009 *Early registration deadline*
15 September 2009 *Hotel booking deadline*

Entomological Societies of Canada & Manitoba

ESM^C2009
Winnipeg, 18-21 October

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

Hotel Fort Garry, Winnipeg, Manitoba

Midi, dimanche le 18 octobre – midi, mercredi le 21 octobre 2009

Au nom des Sociétés d'entomologie du Manitoba et du Canada, nous avons le plaisir de vous inviter à assister à la réunion annuelle conjointe 2009. La réunion se tiendra sur le site historique de l'Hôtel Fort Garry, situé à une courte distance de marche des Marchés Forks et du complexe de divertissement situés au centre-ville de Winnipeg. L'hôtel se situe à environ 20 minutes en taxi de l'aéroport et 5 minutes à pied de la gare de train.

Nous vous encourageons à loger à l'hôtel afin d'être à proximité du site de la réunion et nous aider à maintenir des coûts minimaux. Le comité organisateur a su négocier d'excellents prix pour les chambres : 129\$ (+ tx) par nuit, occupation double. Des frais de 10\$ s'ajoutent pour chaque adulte additionnel (pour un maximum de deux adultes additionnels). Veuillez utiliser le code de groupe 1049YS lorsque vous réserverez.

Les frais d'inscription sont les mêmes depuis 2008, les inscriptions hâtives étant le choix le plus éclairé. Les taux sont de 265\$/365\$ (hâtive/tardive) pour les membres réguliers, et de 100\$/160\$ pour les membres étudiants et les membres retraités. Des inscriptions d'une journée et des billets d'invités pour le banquet sont également disponibles.

Pour s'inscrire, soumettre un résumé ou obtenir plus d'informations :

<http://home.cc.umanitoba.ca/~fieldspg/ESC2009.html>

Aperçu du programme

Session plénière: Changements climatiques: de la géologie à l'écologie

- *Histoire du lac Agassiz et du climat depuis la dernière ère glaciaire, illustrée par les sédiments*
Dr James Teller, University of Manitoba
- *Évolution et changements climatiques: potentiels et pièges*
Dr Camille Parmesan, University of Texas
- *Choc futur: insectes envahissants, changements climatiques et les écosystèmes forestiers du Canada*
Dr Shelley Hunt, University of Guelph

Symposia:

- *Apiculture: interactions abeilles-virus*
- *Relations arthropode hôte-symbiote: diversité, distribution et écologie*
- *Symposium de la Commission Biologique du Canada*
- *Symposium du Forum canadien sur la lutte biologique: comment intégrer efficacement la lutte biologique dans les programmes de lutte intégrée*
- *Problématiques entomologiques dans la production de la pomme de terre*
- *Symposium des étudiants gradués*
- *Biologie de la pollinisation*
- *Protéger les forêts et structures urbaines contre les insectes*
- *Entomologie forestière*

Allocution du patrimoine: Histoire de l'apiculture dans l'Ouest du Canada. Donald Dixon

Compétition étudiante (présentations orales et affiches)

Session d'affiches

Session de présentations orales

Dates importantes

- 15 juillet 2009 *Date limite pour les soumissions*
15 août 2009 *Date limite pour les inscriptions hâtives*
15 septembre 2009 *Date limite de réservation à l'hôtel*

Entomological Societies of Canada & Manitoba

ESM^C2009
Winnipeg, 18-21 October

Meeting announcements / Réunions futures

1st International Entomophagous Insects Conference

Minneapolis, Minnesota, 27-31 July 2009

www.cce.umn.edu/entomophagous

2009 International Congress of the Society for Vector Ecology

Antalya, Turkey, 11-16 October 2009

<http://www.intsove09.hacettepe.edu.tr/>

Joint Meeting of the Entomological Societies of Canada and Manitoba

Winnipeg, Manitoba, 18-21 October 2009

<http://home.cc.umanitoba.ca/~fieldspg/ESC2009.html>

57th Annual Meeting of the Entomological Society of America

Indianapolis, Indiana, 13-16 December 2009

<http://www.entsoc.org/am/fm/2009/index.htm>

Entomological Societies of Canada & Manitoba
ESM2009
Winnipeg, 18-21 October

People in the News / Gens qui font les manchettes

Congratulations to **John Borden**, who received an honorary degree at the spring convocation of the University of Northern British Columbia. John, a forest entomologist, received the degree for his decades of service to the province's forestry professionals.

During his 37-year tenure at Simon Fraser University, John led the formation of the Chemical Ecology Research Group, which joined biologists and chemists in an incredibly successful and productive unit at SFU. He trained and supervised Canada's first forensic entomologist, supervised 101 graduate students, and oversaw 17 research associates and postdoctoral fellows. Every university-level course on forest entomology in BC is currently taught by former students or associates of Borden, and every regional forest entomologist in the province is one of his former students.

It was three of John's former students who nominated him for the UNBC honour. "In a community with an economy that is so susceptible to forest insect pest outbreaks, we can think of no one more deserving or appropriate for the honour," wrote Staffan Lindgren, Dezene Huber and Lisa Poirier.

John received his PhD from the University of California, Berkeley and is currently a professor emeritus at Simon Fraser University and Chief Scientific Officer for the pest management company, Contech Enterprises. His numerous awards include a gold medal from the Science Council of British Columbia, the Hewlett-Packard Canada Forum Award, the Scientific Achievement Award from the Canadian Institute of Forestry, the J. Everett Bussart Award from the Entomological Society of America, the Founders' Award from the Western Forest Insect Work Conference, and both the ESC's Hewitt Award (1977) and the Gold Medal (1988).

John is a Fellow of the Entomological Societies of Canada and America, an Honorary Life Member of the Entomological Society of British Columbia and the Professional Pest Management Association of British Columbia and was elected a Fellow of the Royal Society of Canada in 1999. The ESC's John H. Borden scholarship is named in his honour.

How entomology can help us interpret archaeological sites: Archaeoentomology in Greenland

By Frédéric Dussault and Allison Bain

Archaeology explores past human settlement patterns and living conditions primarily through the excavation of structures and the subsequent analysis of artefacts. Since the 1970s, new specialisations that study past climates and environments play increasingly important roles. Archaeoentomology, or the analysis of preserved insects and arachnids from sediment samples collected from archaeological sites, is one of these new specialisations. Information obtained through these studies can provide surprisingly detailed information about the local climate, environment and living conditions of the past.

Not all insects and arachnids can be used in archaeoentomology. Beetles, flies, mites and ectoparasites are commonly used with each group conveying different types of information. Coleoptera generally preserve well due to their chitinous exoskeletons, and their adaptation to specific niches and ability to rapidly colonize new environments makes them valuable proxy indicators of past climates and environments. Diptera larvae, often used in palaeoecology, may be useful indicators of past temperatures, and fly remains may furnish precise details about the presence and decay of organic material. Oribatid mites are rarely studied from archaeological sites, but can be useful in palaeoenvironmental reconstructions. Lastly, ectoparasites such as lice and fleas enable archaeoentomologists to study past hygienic practices.

Frédéric Dussault (dussault.fred@gmail.com) is a Master's candidate at Université Laval in Quebec City. Dr. Allison Bain (Allison.Bain@hst.ulaval.ca) is an Associate Professor of environmental archaeology in the History Department at Université Laval. The web site for environmental archaeology laboratory is: www.laboarcheologie.ulaval.ca/laboratoires/environnementale/.

While palaeoentomological research in Greenland has been used to document climatic change over time, two other studies (Böcher and Fredskild 1993; Haarløv 1967) have examined insect remains in association with human occupations predating the Norse colonisation of Greenland.



Figure 1. Map of northwestern Greenland indicating archaeological sites mentioned.

Preliminary results from the Inglefield Land Archaeological Project: A portrait of the past

During the summer of 2008, the Inglefield Land Archaeological Project (ILAP) (<http://www.bowdoin.edu/arctic-museum/cape-grinnell/index.shtml>) team funded by the National Science Foundation and lead by Drs. Genevieve LeMoine (Bowdoin College, Maine) and Christyann Darwent (University of California Davis) spent seven weeks investigating Greenland Inuit houses at Cape Grinnell in Northwest Greenland (Fig. 1). Associated with the research initiatives of the International Polar Year, the ILAP project hopes to better understand Inuit adaptation to this region over time.

The excavations focused on three houses (H-16, H-18 and H-20) thought to be the same structures sighted and drawn by the Kane expedition in the 1850s (Kane 1856). These are associated with the Thule Inuit who first arrived in Greenland around 1200 A.D. Samples from House 20 were taken from the front of the house near the entrance tunnel, from the entrance tunnel near the cold trap (preventing cold air from entering the house), from the sleeping platform, and from the main living area. Ten of these sediment samples were processed using kerosene flotation and then identified using identification keys and comparative reference collections. Although no coleopteran remains were identified, many ectoparasites were found, including three different species of lice. In two samples taken on the stone pavement near the cold trap, two head lice (*Pediculus humanus capitis* De Geer) were found, while a single sample from the cold trap yielded the most interesting results which included ten human body lice (*Pediculus h. humanus* L.), nineteen head lice, and one crab louse (*Phthirus pubis* L.) (Fig. 2).



Figure 2. Ectoparasites found in House 20, from left to right: *Pediculus h. humanus* L. female, *Pediculus h. humanus* L. male, *Pediculus h. capitis* De Geer, *Phthirus pubis* L.

The presence of these irritants offers a better understanding of the living conditions at the site, as they allude to the hygienic practices of Cape Grinnell's past residents. The presence of lice is generally considered an indication of poor hygiene as lice bites are easily infected and lice are, at times, vectors of disease such as typhus. However, the opposite may also

be argued in this case as it appears there was specific attention paid to delousing near the entrance tunnel and not in the primary living and sleeping areas. Before the use of shampoos and other chemical treatments, manually removing lice would have been an important sanitary activity, one that was noted by the Danish explorer Knud Rasmussen (1927) who documented daily life amongst the Inuit of Greenland. Head lice were also found on mummies discovered in Qilakitsoq, in west central Greenland (Peder et al. 1991). Fabricius even claimed that Greenlanders found them delicious, which Danish archaeologists feel is substantiated by the lice remains found in one mummy's faeces (Peder et al. 1991: 161).

The study of the entomological faunas from Cape Grinnell is still in its early stage and further excavations and study are planned for the summer of 2009 at the sites of Qaqaisut and Glacier Bay. It is hoped that more ectoparasites and other insects will be found, allowing for a comparison of these across the region, along with more intimate details about Greenlandic daily life in the past.

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Arctic & Boreal Entomology Field Course 2008

Churchill Northern Studies Centre

By Tom Woodcock, Peter Kevan, and Robert Roughley

Once again, the field course in Arctic and Boreal Entomology was taught at the Churchill Northern Studies Centre (CNSC) in Churchill, Manitoba from July 7-18, 2008. This year's edition featured regular instructors Dr. Peter Kevan (University of Guelph) and Dr. Robert Roughley (University of Manitoba), with the first-time addition of Dr. Thomas Woodcock (Wilfrid Laurier University). The town of Churchill, although small and remote, boasts friendly residents and a wide variety of attractions. Course participants (Fig. 1) learned a great deal about the biology of the boreal forest and tundra habitats in the area, taxonomy of the insect inhabitants, a wide variety of insect collecting methods, and the design and execution of research projects in entomology. The experience was enriched by the staff and fellow researchers at CNSC, which proved again to be an excellent location for the course. The provision of space and equipment for lectures and lab work, together with pleasant dormitory and kitchen facilities, contributed to the success of the course. For practically the entire two weeks, the weather was predominantly warm (some would say hot) and dry... good for us, but probably not good for many resident plants and animals. On the positive side, when temperatures rose above the



Figure 1. Arctic and Boreal Entomology 2008 course participants beneath the venerable Birdfish. Back row left to right: Alan Mellors, Guelph, Ont.; Bonnie Beresford, Guelph, Ont.; Aynsley Thielman, Brock University, Ont.; Christa Rigney, King City, Ont.; Tom Woodcock, Wilfrid Laurier University, Ont.; Peter Kevan, University of Guelph, Ont.; Juliska Princz, University of Saskatchewan; Front row left to right: Rob Roughley, University of Manitoba; Keegan Roughley, Winnipeg, Man.; Katrina Froese, University of Manitoba; Alexis Schafer, University of Saskatchewan.

Special features

mid-20s culicids and simuliids were relatively inactive, leaving only a few brave tabanids to contend with. Students also had ample opportunity to see the sights of the Churchill region, including Fort Prince-of-Wales, the Eskimo Museum, trips by powerboat or kayak to visit the local beluga whales, and of course visits to shops, eateries, and the local pub.

The course included extensive general collection of insects in many of the local habitats, including dry tundra, wet tundra, fens and peatlands, rocky seacoast and beach areas, boreal forest, and the riparian and aquatic habitats of Ramsay Creek, Goose Creek, the Churchill River, and Twin Lakes. Several Malaise traps were installed in different habitat types, and allowed to collect for approximately one week. These sites, together with a few others, also had a transect of 6-10 pitfall traps installed (Fig. 2), which were emptied once or twice during the course. Additional passive collection methods included transects of blue and yellow “bee bowls”, flight intercept, light, and fan traps, and the incredibly efficient Manitoba tabanid trap. Students were also acquainted with active collection methods such as sweep-netting and dip-netting, and how to observe and collect insects in their natural habitats. Many of the specimens acquired by general collecting will be submitted to experts in taxonomy of the various groups for identification to species level, and sent to the Barcode of Life project at the Biodiversity Institute of Ontario, University of Guelph. The general collecting was augmented by the interests of the participating students. Katrina collected series of specimens of at least two-thirds of the species of odonates known to occur in the area, while Aynsley concentrated on the biting Diptera, particularly the mosquitoes. She also insisted on aspirating mosquitoes anywhere and everywhere, particularly from the bodies of course participants when they least expected it.

Collecting and field trips filled the days, and evenings were devoted to lab work and lectures provided by the instructors. Students had access to microscopes, and learned how to sort, pin, and identify their insect specimens to the family level and beyond. Lecture topics included general entomological information, such as sampling methods and basic taxonomy, in addition to more specific material related to the research interests of the instructors. Rob Roughley summarized the wide variety of collecting techniques used in entomological research, and Tom Woodcock introduced the students to ordinal classification of the insects of the region. More specialized lectures included thermoregulatory strategies of arctic and boreal insects and plants (Peter Kevan), a survey of aquatic beetles of the Churchill area (Rob Roughley), and the identification and ecology of stream-dwelling insects in the boreal and tundra biomes (Tom Woodcock).



Figure 2. Installation of a pitfall trap at a dry tundra site.

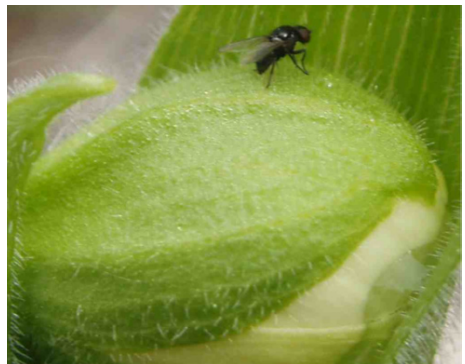


Figure 3. A possible pollinator? One of several specimens of a small acalyprate fly observed resting on unopened Sparrow's-Egg Orchid (*Cypripedium passerinum*) flowers.



Figure 4. Sneaking up on a clump of seabeach sandwort (*Honckenya peploides*).

Dr. Kevan's lecture was publicly held at the Parks Canada headquarters in Churchill, and was well-attended by park staff and members of the local community.

Research projects were varied, and reflected both the interests of the students and instructors, and the questions of ecology and insect distributions inherent in working in such a varied landscape. Peter continued his investigation of the pollination ecology of the Sparrow's-Egg Orchid (*Cypripedium passerinum*), covering numerous plants with insect exclusion bags to evaluate the capacity of the plant for self-pollination. Generally, orchids have specialized floral architecture that takes advantage of certain pollinator species, but any insect pollinator of this orchid must be very small (Fig. 3), able to squeeze through one of two openings only a millimeter or two in diameter. Upon entering the orchid, the insect is limited to escape via one of these small openings, which require it to brush against the anther on the way out and pick up a smear of gooey pollen (which Dr. Kevan insisted on colourfully referring to as "ear wax"). Upon visiting another orchid, the insect would deposit the pollen on the stigma as it moves around in the blossom searching for the exit.

Individual student research projects are a requirement of those taking the course for credit, and were as varied as the interests of the participants. Although time was limited, the students approached their research questions with great enthusiasm, and the final results are eagerly awaited by the instructors. Alan took a philosophical approach to the project, undoubtedly inspired by observations of the success of very small living things in the harsh northern habitats. He conducted surveys of people at CNSC, and mused on how life is defined by different people both within and outside the course, and what it means to be alive.

Two students concentrated on aquatic insect fauna in their research projects. Katrina compared odonate and dytiscid fauna of two types of abundant pools in the landscape (dry tundra, fen), using both bottle traps and kick-netting. Bonnie enthusiastically investigated the aquatic fauna of any surface water she could find, from streams and ponds on tundra and fen through saline rock pools along the coast of Hudson Bay. Aynsley also sampled numerous aquatic habitats for mosquito larvae and pupae, rearing many to adults for species-level identification.

The remaining students examined the insect fauna in a variety of terrestrial habitats, and addressed interesting ecological questions with their designs. Juliska surveyed the soil arthropod fauna in a variety of habitats, including tundra, forest, and fen areas, with a particular focus on Collembola and Acari. Alexis also compared the insects of different habitats, comparing bee bowl and pitfall trap catches along a habitat gradient (lakeshore, boreal forest, dry tundra) near Ramsay Lake. Aynsley used Malaise traps and sweep-netting to examine assemblages of flower-visiting insects in large patches of four different plants – marsh ragwort (*Senecio congestus*), sparrow's-egg orchid (*Cypripedium passerinum*), northern hedsysarum (*Hedysarum mackenzii*), and narrowleaf arnica (*Arnica angustifolia*). Christa also surveyed the insects associated with a particular plant species, in this case seabeach sandwort (*Honckenya peploides*, Fig. 4). Her study compared the fauna that use these clump-forming plants at night and during the day, and evaluated differences in abundance and composition of the assemblages in clumps of varying diameters (5-15 cm, 20-30 cm, 35-45 cm, 50-60 cm).

This course is planned for next summer at the Churchill Northern Studies Centre. For students who may be interested in participating in Arctic and Boreal Entomology 2009, please contact either Peter Kevan (pkevan@uoguelph.ca) or Rob Roughley (Rob_Roughley@umanitoba.ca). Further information may be found on the website of the University of the Arctic (www.uarctic.org) or the University of Guelph Department of Environmental Biology.

Entomologists who were employed by the Meteorological Service During World War II

Reading in the March issue of the *Bulletin* (Vol. 41(1), pp. 28-30), the account of Bill Wellington's employment by the Meteorological Service during World War II reminded me that some others in the entomological fraternity were similarly employed.

The Meteorological Service supplied weather forecasts for flights by the Royal Canadian Air Force (RCAF) and training in meteorology for aircrew enrolled in the British Commonwealth Air Training Plan (BCATP) in stations set up across Canada. During the war, the Service recruited about three hundred university graduates and trained us in meteorology in a series of four-month courses in the Service's buildings on Bloor St. in Toronto, as described by Thomas (2001).

On posting later to stations of the RCAF, we were commonly nick-named "metmen" and provided weather forecasts and instruction in meteorology, and also on training stations of the BCATP. Thomas (2001) records that Bill Wellington was employed at the BCATP station at Malton, Ont.

Douglas Davies (1919-2008) enrolled in Course No. 6, June - August, 1942 and served until the end of the war. He received his PhD degree from the University of Toronto and specialized in the biology of blackflies. He joined the Faculty of Zoology at McMaster University. At the time of his death on 1 February 2008, I wrote an account of his activities in the Wood Duck of the Hamilton Naturalists Club (Judd 2008) recalling that he once identified blackflies I collected in the Byron Bog at London, Ont. (Judd 1957).

Fred A. Urquhart (1912-2002) received his PhD degree in 1940, enrolled in Course No. 7, September to December 1942, and served until the end of the war. He returned to Toronto and the Royal Ontario Museum. One of his notable activities was tagging monarch butterflies to track their annual migration from southern Ontario to a roosting place in a forest in Mexico.

Fred Ide (d. 1996) took leave from his position in the Department of Zoology at the University of Toronto, where he taught and carried on research in aquatic entomology. He enrolled in Course No. 8, January - April 1943. He served at RCAF operational stations at Torbay and other sites in Newfoundland and after the war returned to the University of Toronto.

After two years (1941-1942) in the PhD program at the University of Toronto, I enrolled in Course No. 8, January - April 1943, and was assigned to the RCAF operational station at Dartmouth, Nova Scotia until September 1945. Our main task was making forecasts for bombers on flights providing cover for freighters in convoys heading across the Atlantic with ammunition and supplies for the British Isles (Judd 2001).

With the encouragement of Dr. Dixie Pelluet, Department of Zoology, at Dalhousie University in Halifax, I was given access to laboratory space and use of microscopes, and on some of my 24-hour leaves, I completed several drawings later used in my PhD thesis at the University of Toronto (Judd 1948).

Following the war, I completed my PhD at Toronto in 1946 and since then have taught and conducted research at McMaster University (1946-1950) and University of Western Ontario (1950-1981) where I still have office space. My research files are deposited in the archives at Western, catalogued (Judd 1989, 2006) and include items recalling my role as a metman during the war.

William W. Judd
London, ON

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Thrips of California. Distinguishing pest species among California's rich native thrips fauna. Mark S. Hoddle, Laurence A. Mound and Dena Paris. 2008. (CD)

Published by Centre for Biological Information Technology (CBIT), The University of Queensland, Australia. \$59.00 (AUD). ISBN 978-1864999143 <http://www.cbit.uq.edu.au/>

Thrips are widespread in North America and comprise a diverse native fauna and a significant adventive fauna as well. A number of thrips species are economically important invasive pests on horticultural plants and agricultural crops. This computer-identification product, using the Lucid key technology, is a guide to the thrips species of California, a significant portion of the North American fauna. It provides an interactive identification key to 208 species of thrips and descriptions of 264 species. Additional summary information on the biology, distribution and taxonomy of the species is supplied as well as overviews on the endemic and introduced faunas and plant hosts in California. More than 1300 high-quality images of species-level morphological features are provided. Additional supporting information on general biology, classification, preparation of thrips specimens and thrips as pests, is given.

A unique feature of this product is an interactive glossary of terms where the technical terms of thrips morphology are defined and also illustrated through the use of an image zoom feature and moving arrow animation to shift the view of the particular feature. In addition to its intended use as an identification key, this software provides an excellent platform for teaching and learning about thrips biology and taxonomy. All information is presented within a well-organized and phylogenetic framework. There are additional informative links to online sources of information on thrips and to copies of useful taxonomic publications.

This is an extremely well-produced product, which takes advantage of the latest developments in the use of digital technology in systematics. Most workers, both taxonomists

and the users of taxonomic products, have a computer near their microscopes. This type of interactive, well-illustrated software is an indication of future directions in digital-age taxonomy; so much supporting information and imagery can be supplied, much more than the financial-constrained, traditional approach of hard-copy publication.

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Catalogue of Palaearctic Coleoptera, Volume 4: Elateroidea, Derodontoidea, Bostrichoidea, Lymexyloidea, Cleroioidea, Cucujoidea. Löbl, I. and Smetana, A. (Eds.) 2007. Apollo Books, Stenstrup, Denmark. 935 pp.

Every aspect of this fourth volume of this Catalogue of Palaearctic Coleoptera is remarkable. Thirty-five distinguished coleopterists, in many instances the leading authorities of their respective taxonomic groups, have contributed to 59 sections on the families and subfamilies of the Elateroidea, Derodontoidea, Bostrichoidea, Lymexyloidea, Cleroioidea, and Cucujoidea of the Palaearctic Region.

The book contains all the elements that one would expect of a thorough and comprehensive catalogue: a complete listing of all taxa in systematic order with complete information on all species, authors, and dates of publication, and all published synonymies. For every valid species its country-by-country distribution in the Palaearctic region (and province-by province distribution in China) is listed. This is accompanied by an encyclopedically thorough compilation of cited references (which extends over 258 pages) of great utility to entomologists and other researchers. There are separate indices for family group names (4 pages) and genus group names (25 pages) with synonyms indicated in italics.

All these elements should be present in a good catalogue, and they are in this one, compiled in thorough, attentive, and painstaking detail, which are the *sine qua non* of a catalogue worth its systematic salt. However, this catalogue contains even more. Ten pages at the beginning of the volume list the errata for the first three volumes of the series. The subsequent 49 pages contain detailed and very useful information compiled under the rubric of "New Acts and Comments." In this section all the new taxonomic acts reported in the volume are listed, and in some families there are a very large number of new synonyms, names, combinations, and revalidations. For example, in the section on Elateridae (by Peter Cate), 443 new synonymies, 41 new combinations and assignments, four replacement names, three changes in rank, one resurrection, and six changes in spelling are reported. The compilation of all these taxonomic and nomenclatural changes, and the many comments written by the respective authors, constitute a very useful compilation of systematic information.

For anyone interested in any aspect of the study of Coleoptera in the Palearctic region, this book will be a welcome reference. Moreover, even for North American coleopterists, this will be a useful volume, given the large number of adventive species on this continent, and the fact that there are many commonalities in the supra-specific taxonomy of Palearctic and Nearctic Coleoptera. To facilitate even more detailed queries on any of the material in the book, complete addresses (snail-mail and e-mail) are provided for all the contributing authors of the volume.

Moreover, the book is beautifully printed and bound in hardcover with sewn signatures, easy to read and certain to last a lifetime. It is available from Apollo Books (<http://www.apollobooks.com/>) in Denmark at a cost of \$216 USD.

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Books available for review:

Control of Pests and Weeds by Natural Enemies: An Introduction to Biological Control. Van Drieshe R., M. Hoddle and T. Center. 2008. Wiley-Blackwell Publishing. 484 pp.

Ecology of Insects: Concepts and Applications. 2nd Ed., 2008. Speight, M.R., M.D. Hunter and A.D. Watt. 2008. Wiley-Blackwell Publishing.

Biological Notes on an Old Farm: Exploring Common Things in the Kingdoms of Life. Wiggins, G.B. 2009. Royal Ontario Museum.

Frog Biting Midges of the World (Corethrellidae: Diptera). Borkent, A. 2008. Zootaxa (Auckland, New Zealand: Magnolia Press) 1804: 456 pp.

Please send correspondence regarding book reviews to the Chair of the Publications Committee.

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Reginald W. Salt (1910-2009)

Dr. Reginald W. Salt, an entomologist at the Government of Canada, Agriculture Research Centre in Lethbridge, Alberta, from 1930 to 1970, died March 5, 2009 in Calgary at the age of 98 years. In the 1950s and 60s he achieved international recognition for his research on diapause and cold hardiness of insects.

Dr. Salt (who preferred to be known as “Reg”) was born in Leicestershire, England on September 10, 1910, but moved with his family to Calgary, Alberta in March of the following year. During his childhood he developed a keen interest in natural history emulating his older brothers, George and Ray, who both also became well known biologists, the former as an entomologist at the University of Cambridge and the latter as an anatomist and amateur ornithologist at the University of Alberta. Reg obtained a BSc from the University of Alberta in 1930 and started his career at the Dominion Entomological Laboratory in Lethbridge as an Insect Pest Investigator the same year.

In the fall of 1931 he took educational leave to study for a MSc at Montana State University

which he completed in 1933 with a thesis on the effect of low temperature on the Colorado potato beetle, *Leptinotarsa decemlineata* (Say). He then continued his studies on insect cold-hardiness at the University of Minnesota where he obtained a PhD in 1936 with a thesis on the experimental freezing of insects. During his graduate studies he worked during the summers at Lethbridge as a student assistant. After graduation he conducted research on a variety of entomological projects and was among the first to recognize the importance of wild bees in alfalfa seed production (1).

He then took leave from the fall of 1940 until the spring of 1942 to serve as acting head of the Entomology Department at the University of Alberta, replacing E.H. Strickland who had returned to active service in the army.

It was upon his return to Lethbridge that he began the research on the cold tolerance of insects that soon attracted international attention. Up to this point in his career, interrupted as it was by educational leaves and teaching, he had seven scientific publications, whereas during the next 25 years he was to publish 45, including three in *Nature*, one in *Science*, two review articles (2, 3) and one book chapter (4). For much of his work the insect of choice was the larva of the wheat stem sawfly (*Cephus cinctus* Nort.), its parasitoid (*Bracon cephi* (Gahan)) and the eggs of *Melanoplus* grasshoppers.

The facilities and equipment required to study the effects of low temperatures on insects were lacking so Reg spent considerable time designing constant temperature rooms and the instrumentation for determining the freezing point of individual insects. One of the devices he built was in use at the Lethbridge Research Centre until about ten years ago.

His discovery that some insects produced glycerol as an antifreeze prior to the advent of winter captured widespread scientific and popular interest. His later work focused on the roles of supercooling, nucleating agents and polyols in the progression and nature of freezing in biological tissues and was considered a milestone in the study of freeze-resistance

and freeze-tolerance of organisms and tissues. In 1972 he received the Entomological Society of Canada Gold Medal and in 1988 he was honoured with the Society for Cryobiology's inaugural Gold Medal for his work as a pioneer in the field. An excellent tribute to Dr. Salt, written by Richard A. Ring and Paul W. Riegert, was published in "Insects at Low Temperature" in 1991 (5).

Throughout his career Reg had the support of his wife, Beulah, who he met during his PhD studies at the University of Minnesota and married in 1935. They were the proud parents of two children, Douglas and Lucille. After retirement they continued to live in Lethbridge until 2002 when they moved to Calgary to be closer to family – Beulah passed away later that year. They were regular contributors to the Lethbridge Regional Hospital Foundation and in 2003 a substantial donation was made to create the Reg and Beulah Salt Endowment Fund.

Reg's family and friends also remember him for his wood-carvings which he continued to produce until shortly before his death.

J. Robert Byers
Lethbridge, Alberta

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More puns dedicated to Alwyn Ewen

(presented by Robin Leech)

Al Ewen died on 25 September 2008, and an obituary was written in the December 2008 issue of the *Bulletin*. Al was a lover of puns.

- Pasteurize: too far too see.
- Propaganda: a gentlemanly goose.
- Toboggan: Why we go to an auction.
- Oboe: A English tramp.
- When you dream in colour, it's a pigment of your imagination.
- Reading whilst sunbathing makes you well-red.
- When two egotist meet, it's an I for an I.
- Alarms: what an octopus is.
- Dockyard: A physician's garden.
- Incongruous: Where bills are passed.



Bob Lalonde

Summary of items arising from the 19 February 2009 meeting of the Executive Council

By Annabelle Firlej, Secretary

Strategic Review – Committee Structure

Action from this committee has been addressed and services from this committee are no longer required. The Board decided to dissolve the Strategic Review Committee.

Electronic Balloting

The Society should adopt electronic balloting; it's paperless and does not reduce the vote by members. P. Fields proposed that the Election Committee change the wording to the Standing Rules and send it to the Bylaws, Rules and Regulations Committee for revision. A ballot will be sent thereafter to the Board for approval and the new version of the standing rules will be prepared for adoption at the Annual General Meeting in Winnipeg. It was suggested that R. West search information about how to install electronic balloting on the web site.

Treasurer

A report and summary analysis of the Society's financial status was presented by P. Bouchard. The account is healthy, actually in excess of \$115 000. For 2008, the Society saved up to \$45 000 essentially because of the decrease in *TCE* issue printing (200 pages fewer) and the printing of the *Bulletin* from Ottawa. Other costs could be saved in the future as an estimate will be drawn up by a competing printing company. The contract with NRC Research Press will expire at the end of 2009 and a new one will be negotiated by P. Bouchard with the assistance of G. Gibson. Questions and matters regarding the negotiation should be sent to P. Bouchard.

Translation of the mail for membership

V. Martel, Chair of the Bilingualism Committee, agreed that official e-mail to members from the office manager and committee chairs will be translated into French by the Bilingualism Committee. Following changes to the Bilingualism Committee guidelines, a ballot will be sent to the Board for approval.

ESC Headquarters Committee

Work that needs to be completed during 2009 includes: repairing the ceiling and upstairs windows, painting of the office and entrance area, and replacement of flooring in the office area. A new tenant needs to be found for the upstairs apartment. Because V. Behan-Pelletier left as Committee Chair in April 2009, a new Chair should be found in Ottawa before the middle of March.

Finance Committee

Important issues regarding the financial health of the Society were addressed in the report: the future of the *TCE* and the absence of page charges for ESA members. For this last issue, P. Fields proposed that G. Gibson find information on the page charges for ESA journals for members and non-members and if they propose to change these in the coming years.

Award Winners Printed in Annual Meeting Program

The Committee recommended that all information on award winners (Gold Medal, Hewitt, etc.) be published only within the Joint Annual Meeting program and subsequently in the *Bulletin* and no longer be printed as brochures and given individually to meeting participants. The committee guidelines were modified and the French version updated by V. Martel. Both versions were sent to W. Riel by the Secretary.

Ad Hoc Business Plan Committee

P. Fields said that *TCE* scanning of back issues is going ahead well and that scanning of *Memoirs* will be finished next month. The committee looked at the possibility of scanning *Bulletin* back issues (average cost of \$3 000), but some members of the executive council didn't see this option as a priority for the moment.

Scientific Editor

R. Bennett emphasized that the number of manuscripts submitted to *TCE* is steady and, fortunately, papers submitted appear to be of better quality than in the previous two years. But the general problem of low manuscript submissions to *TCE* is unchanged since the last meeting. R. Bennett wants to keep six good quality issues per year. Also, the Editorial Board will discuss with NRC Research Press to allow one-month open access to manuscripts featured on the BioOne website. The Editor-in-Chief suggested increasing the Editorial Board stipend in recognition of their excellent job. A ballot should be sent to the Board to approve changes in stipends for the Editorial board. R. Bennett will attend a meeting of NRC Research Press in June 2009. Editor expenses of \$1000 planned in the budget 2009 will be used to cover a part of the expenditures. P. Fields thanked the Editor-in-Chief and the Editorial Board for their excellent work.

Editor – *Bulletin*

The *Bulletin* production and distribution is going well. K. Floate will be stepping down at the end of 2009. A new Editor should be found this summer. In order to facilitate the transition with the next Editor, the actual *Bulletin* Editor should create a list of announcements for each particular issue of the *Bulletin* (if it has not yet been done). Pictures are still difficult to find for the cover; P. Fields suggested the *Bulletin* Editor should put an announcement for pictures in the next *Bulletin* issue.

Web Site

Among items reported, the webmaster expressed his idea to create a page on the website that will include a link to past meeting sites (if available). Regional societies should provide pdfs from past meetings and T. Shore will email the representatives of regional societies to obtain them. The Board thought that including bibliographies, obituaries and lab profiles on special webpages is a good idea. The Board suggested that R. West discuss with the *Bulletin* Editor about procedure to do that. As suggested by the Webmaster and in agreement with the Board, the photo contest should be added to the duty of the Publication Committee guidelines and a ballot should be sent to the Board to approve changes to guidelines.

Ad Hoc Web Content Committee

The Board recommended that this committee become permanent. R. West has drafted the committee guidelines. Once drafted, the committee guidelines should be sent to the Bylaws, Rules and Regulations Committee for revision. A ballot will be sent to the Board for approval addition to the committee guidelines and Standing Rules. Modification to standing rules should be prepared for adoption at the Annual General Meeting in Winnipeg.

Authorization to Publish/Copyright Assignment

The present 'Authorization to Publish/Copyright Assignment' form is confusing and will be revised in consultation with R. Bennett. It was suggested by the Board that the Publication Committee consider the format of copyright forms used by the Entomological Society of America, which are simpler.

Achievement Awards Committee

Two nominations were received for the Gold Medal award. Nobody was nominated for the Gordon Hewitt Award. Re-writing for the Achievement Awards Committee is in process.

Membership Committee

P. Fields stressed the need for a new form to allow the members to pay fees and online access because membership is a critical source of revenue for the Society. As postal charges are now independent from membership fees, P. Fields suggested reviewing membership fees for all categories: regular, student, emeritus and honorary members. The Membership Committee helped by the Finance Committee should propose a new version of membership fees with special attention about what should be charged to each category of membership for *TCE* online access.

Paypal Link For Affiliate Society Membership

Comments from the Board were shared about the usefulness of PayPal. Concerns rose also about fees applied to each transaction. P. Mason underlined that members from regional societies would certainly prefer sending checks for their membership fee (often less than 50\$) rather than using PayPal. The conclusion is that more information and reflection are needed to go ahead.

Student Awards Committee

The Chair, J. Myers, underlined that applications for the Research Travel Award will be submitted by e-mail this year and that documents will be placed on a protected page on the website. R. West set up a secure page for access to the Student Awards Committee.

Student Travel Award conditions

P. Field discussed changes to the Travel Award conditions with Chair J. Myers. A revised version of the Travel Award conditions will be sent to the Board for approval by e-mail ballot.

Ed Becker Conference Travel Award

The online submission by students and the transfer of pdfs to the Committee was a difficult process. The webmaster worked with the Student Awards Chair to set up a protected page on the Society's website that committee members can access to download applications.

Science Policy and Education Committee

P. Mason stressed that the Society should provide details regarding Access and Benefits Sharing (ABS) adopted by countries during the Convention on Biological Diversity (CBD). The protection of genetic resources that have a potential economic value will certainly impact on biological control development. The Committee will look at this and propose some recommendations this fall. Following a suggestion by P. Fields, P. Mason will contact the Annual Meeting organization to plan a workshop during the next Annual Meeting in Winnipeg.

Student Affairs

A. Thielman expressed her disappointment that the local organizing committee decided to cancel the student mixer at the upcoming Annual Meeting. The Board agreed to provide the local organizing committee with funding to retain the mixer. P. Fields will follow up with the local organizing committee.

Marking Sheets for President's Prize Competition

The Secretary sent a ballot for approval by the Board requesting that marking sheets for the President's Prize Competition be appended to the "How to Organize the Annual Meeting" document, and placed on the website for students. The marking sheets should be reviewed thereafter by Board members and posted on the website.

Directory of Entomological Education in Canada

An updated version of *The Directory of Entomological Education in Canada* is being produced by G. Smith. A. Thielman suggested that a contact person at each institution in the country be

contacted to provide information to update the directory. The Board underlined the difficulty in doing so and suggested instead that the Student Affairs Committee make it a priority to complete the revision of the Directory.

Marketing Committee

In response to items from the report, the board suggested that Marketing Committee circulates the ESC brochure/poster to the entire Board, asking for their comments for improvements. P. Mason will see if any ESC members in the Ottawa area are interested in joining the Marketing Committee.

Annual Meeting Committee

The Annual Meeting Committee tried to retrieve programs from past annual meetings. T. Shore proposed to standardize the financial-sharing agreement for annual meetings but P. Mason stressed that standing rules are clear on the procedure to follow. P. Mason suggested that a special poster session be organized to let people read posters and to permit judges to properly assess the student posters. The suggestion needs to be approved by the Board.

Biological Survey of Canada

The Biological Survey of Canada (BSC) is finalizing an agreement with the Canadian Museum of Nature to support the Secretariat until 2010. Also, the BSC submitted documents to become a non-profit-corporation. Finally, a Symposium on Terrestrial Arthropods will be organized at the next Annual Meeting in Winnipeg.

Affiliated Entomological Societies

Updates were received from two regional Societies. There were no requests for action.

Memorandum of Collaboration

At the last Entomological Society of America meeting (November 2008), M. Evenden and M. Roy were invited as representatives of the ESC to discuss the elaboration of a "Memorandum of Collaboration" that would promote exchange of information between Entomological Societies as a basis for the preparation of consensus statements on important issues. Positives comments were previously addressed by the Board on the formulation of the Memorandum. The Board approved the Memorandum of Collaboration by e-mail ballot in February 2009.

Next ESC Board Meeting and Annual General Meeting

The next meeting of the ESC Board will be held on Saturday, October 18 from 8:00 am to 5:00 pm. The Annual General Meeting will be held Tuesday, October 20 from 5:00 – 5:45 pm. Both meetings will be at the Fort Garry Hotel, Winnipeg.

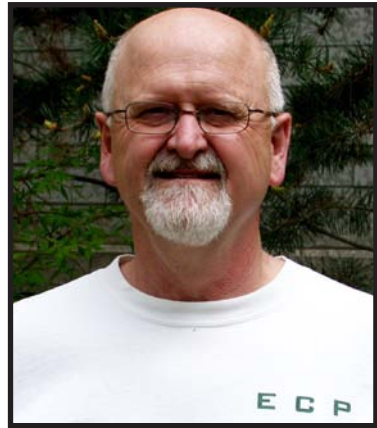
Overall financial assessment of the Entomological Society of Canada (values in dollars)

	2008	2007	2006	2005	2004
Balance beginning of year	815 203	808 180	825 764	803 884	748 731
Total revenue (General account)	198 626	224 214	202 892	206 712	217 386
Total expenditure (General account)	181 442	236 679	240 865	204 015	207 232
Excess revenue (expenditure) for year (General account)	17 184	(12 465)	(37 973)	2 697	10 154
Gain (loss) on sale of investment (General account)	NA	NA	NA	(178)	250
Interest on investment (General account)	17 654	17 460	18 869	14 964	14 083
Net revenue (expenditure) for year (General account)	33 339	4 995	(19 104)	17 483	24 487
Net revenue (expenditure) - Endowment fund	10	754	(639)	529	362
Net revenue (expenditure) - Scholarship fund	6 859	11 814	10 642	11 994	37 210
Expenses / taxes / depreciation of ESC Head Office	(8 980)	(10 540)	(8 483)	(8 126)	(6 906)
Balance end of year	847 930	815 203	808 180	825 764	803 884

*Negative values are in parentheses
For more details, please see <http://www.esc-sec.ca/> and click on Members' area*

Nominations for ESC governing board

The following have been nominated and agreed to stand for election in 2009 for the indicated positions. Members will receive more detailed information in the mail. The ballot must be mailed to the Elections Committee by July 15th, so PLEASE VOTE!



Candidates for Second vice-President : Michel Cusson (left) and Owen Olfert (right).



Candidates for Director-at-Large : Rebecca Hallett (left), Felix Sperling (middle) and Martin Erlandson (right).

Scholarship Fund

Once again the Society would like to thank and acknowledge the very generous donors to the ESC Scholarship Fund. These tax-deductible donations are very important to the Society, as it is only because of these donations that the scholarship fund is self-sustainable. Donations can be made at any time and a receipt for income tax purposes in Canada will be issued. Please make cheques payable to the Entomological Society of Canada.

Le Fonds de bourses d'études de la SEC

La Société tient à remercier, une fois de plus, les très généreux donateurs et donatrices au Fonds de bourses d'études de la SEC. Ces dons déductibles d'impôt sont très importants pour la Société, puisque c'est seulement grâce à ces dons que le Fonds de bourses d'études est autosuffisant. Les dons peuvent être faits en tout temps, et un reçu pour fin d'impôt vous sera envoyé. Veuillez libeller votre chèque au nom de la Société d'entomologie du Canada.

2008 Scholarship donors – Donateurs et donatrices pour 2008

John Arnason	Staffan Lindgren
J.C. Arrand	S.R. Loschiavo
Robert P. Bodnaryk	Kenna MacKenzie
Soren Bondrup-Nielsen	Valin G. Marshall
John Borden	John A. McLean
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J.J. Churcher	P.C. Nigam
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Johanne Delisle	Pedro M. Pereyra
Peggy L. Dixon	Diether Peschken
Douglas C. Eidt	B.J.R. Philogene
Maya Evenden	William B. Preston
Wayne Fairchild	Edward B. Radcliffe
Paul Fields	Miriam H. Richards
Robert S. Forbes	Harold Robinson
Donna Giberson	Bernie Roitberg
Gary Gibson	David M. Rosenberg
Bruce Gill	Lucie Royer
David R. Gillespie	J.D. Shorthouse
Cedric Gillott	Dr. Derek Sikes
Ronald Gooding	John R. Spence
Peter E. Hallett	A.B. Stevenson
Peter Harris	Jon Sweeney
George T. Harvey	Stephen J. Takacs
Neil J. Holliday	Richard Westwood
Robert P. Jaques	Neville Winchester
Peter Kevan	David L. Wood
David Wm. Langor	Peter W. Wood
Robin Leech	

...and those who preferred to remain anonymous.

...et ceux et celles qui ont préféré rester anonyme.

Annual Photo Contest – Seeking a Few Good Photos!

The Fifth Annual Photo Contest to select images for the 2010 covers of the *Canadian Entomologist* and the *Bulletin of the Entomological Society of Canada* is underway. The cover images are intended to represent the breadth of entomology covered by the Society's publications. Insects and non-insects in forestry, urban or agriculture; landscapes, field, laboratory or close-ups; or activities associated with physiology, behaviour, taxonomy or IPM are all desirable. A couple 'Featured Insects' (for the spine and under the title) are also needed. If selected, your photo will grace the cover of both publications for the entire year. In addition, winning photos may be used on the ESC website.

Contest rules are as follows:

1. Photos can be submitted as an electronic file (preferred), a slide or a print (negative will be required if chosen). Digital images must have a resolution of at least 50 pixels/cm.
2. Entrants can submit more than one photo. A brief description (i.e. caption) should be provided with each photo submitted.
3. Photos must be taken by the entrant, or the entrant must own the copyright.
4. The copyright of the photo remains with the entrant, but use must be granted to the Entomological Society of Canada for inclusion on the cover of one volume (i.e. 6 issues) of *The Canadian Entomologist*, one volume (i.e. 4 issues) of the *Bulletin of the Entomological Society of Canada*, and on the ESC website.
5. The entrant must be a member in good standing of the Entomological Society of Canada.
6. The judging committee will be chosen by the Chair of the Publications Committee of ESC.
7. Photos are not restricted to insect "portraits". To represent the scope of entomological research we encourage the submission of photos with diverse subjects such as field plots, laboratory experiments, insect impacts, sampling equipment, non-insect arthropods, and the like.
8. A selection of the entries may be exhibited and the winners may be announced at the Annual Meeting of the Entomological Society of Canada or in the *Bulletin*.
9. There is no cash award for the winners, but, photographers will be acknowledged in each issue the photos are printed.
10. Submissions should be sent by **July 31, 2009** to:

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

Concours annuel de photographie – À la recherche de quelques bons clichés!

La cinquième édition du concours annuel de photographie visant à sélectionner des images pour les couvertures de *The Canadian Entomologist* et du *Bulletin de la Société d'entomologie du Canada* de 2010 est présentement en cours. Les images des couvertures doivent représenter l'étendue de l'entomologie couverte par les publications de la Société. Des photos représentant des insectes et d'autres arthropodes forestiers, urbains ou agricoles, des paysages, du travail de terrain ou de laboratoire, des gros plans, ainsi que des activités associées à la physiologie, au comportement, à la taxonomie ou à la lutte intégrée seraient souhaitées. Nous avons également besoin de quelques « insectes vedettes » (pour le dos et sous le titre). Si vos photographies sont sélectionnées, elles seront utilisées pour la couverture des deux publications pour l'année entière. De plus, les photos gagnantes pourront être utilisées pour le site web de la SEC.

Les règlements du concours sont les suivants :

1. Les photos peuvent être soumises sous forme de fichiers électroniques (de préférence), de diapositives ou imprimées (le négatif sera requis si la photo est choisie). Les images numériques doivent avoir une résolution minimale de 50 pixels/cm.
2. Les concurrents peuvent soumettre plus d'une photo. Une brève description doit être fournie avec chaque photographie soumise.
3. Les photos doivent avoir été prises par le concurrent, ou ce dernier doit en posséder les droits d'auteur.
4. Les droits d'auteur de la photo appartiennent au concurrent, mais l'utilisation doit être accordée à la Société d'entomologie du Canada pour son utilisation sur la couverture d'un volume (i.e. 6 numéros) dans *The Canadian Entomologist* et un volume (i.e. 4 numéros) dans le *Bulletin de la Société d'entomologie du Canada*.
5. Le concurrent doit être un membre en règle de la Société d'entomologie du Canada.
6. Le jury d'évaluation sera choisi par le président du Comité des publications de la SEC.
7. Les photos n'ont pas à être restreintes à des « portraits » d'insectes. Afin de représenter l'étendue des recherches en entomologie, nous encourageons les photographies de terrain, d'expériences de laboratoires, d'impacts des insectes, d'équipement d'échantillonnage, d'arthropodes autres qu'insectes, etc.
8. Une sélection des candidats sera exposée et les gagnants seront annoncés à la réunion annuelle de la Société d'entomologie du Canada ou dans le *Bulletin*.
9. Il n'y a pas de récompense monétaire pour les gagnants, mais les photographes seront remerciés dans chacun des numéros où les photos apparaîtront.
10. Les soumissions doivent être envoyées avant le **31 juillet 2009** à :

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

New Research Network to Shed Light on Pollinator Decline

Research on insect pollinators is getting a major boost in support thanks to a newly funded NSERC Strategic Network. The *Canadian Pollination Initiative* (NSERC-CANPOLIN) is a five-year, \$5 million research network designed to investigate the multi-faceted problem of pollinator decline.

Several years in the making, NSERC-CANPOLIN is the first coordinated study of pollination conducted in Canada on a national scale. Led by Peter Kevan at the University of Guelph, the Network has over 45 researchers at 26 institutions across the country. Numerous other scientists, members of the agricultural industry, and representatives from different NGOs were consulted or otherwise participated in CANPOLIN as it evolved from concept to operational research network. At every stage, Network planners met with growing enthusiasm and interest from a range of stakeholders – a reflection of the timeliness of the initiative and the need for a concerted, coordinated research effort on the topic of pollination and pollinator decline.

One of the most unique and valuable aspects of NSERC-CANPOLIN is that it transcends many of the cross-disciplinary barriers that have traditionally hampered pollination research. The Network is comprised of entomologists, plant biologists, ecologists, genomicists, modelers, and economists. Collectively, their expertise represents all major groups of pollinators, the pollination of all groups of plants (including those that are wind pollinated), all types of pollinator habitat, and the various economic and environmental aspects of pollination. The integrated, broad-spectrum approach offered by a network framework is key to addressing the full scope of the pollination problem.

Research activities in NSERC-CANPOLIN fall under four broad themes: *Pollinators*, *Plants*, *Ecosystems*, and *Prediction and Economics*. Each theme has two working groups, and most Network members belong to at least two working groups, demonstrating the truly cross-disciplinary and collaborative nature of the Network.



Steve Marshall

Toxomerus geminatus (Syrphidae)

Pollinators

This thematic area is focused on the diversity, taxonomy, conservation and bionomics of native/wild pollinators. Extensive sampling is set to take place across Canada, and a major deliverable of this theme will be a complete inventory of the bees and selected Diptera and Lepidoptera of Canada. The Network will also produce user-friendly, interactive identification guides for all the major pollinating groups of insects. The health and efficiency of managed bees (e.g., honeybees, bumble bees, alfalfa leafcutting bees) will be investigated, with the goal of developing new technologies and management strategies for the suite of diseases now impacting these pollinators. The potential of developing alternative species as commercial pollinators will also be explored. (Theme Leader: Laurence Packer, York University)

Plants

This theme is set to address the lack of data on the sexual reproductive systems of wild Canadian flora and their pollination needs, as well as new and old crops. Such data are needed to properly gauge the role of pollinators in ecosystem functioning and sustainability, and to identify which plants and associated guilds are most at risk from declining pollinators. Additional studies on gene flow will shed light on pollen movement and its role in hybridization and the spread of invasive plants, as well as which conservation and crop pollination strategies are most effective. One group of researchers in this theme will also study pollen production and dispersal in wind pollinated plants, which are a major component of most Canadian ecosystems. (Theme Leaders: Dan Schoen, McGill University, and Kermit Ritland, UBC)

Ecosystems

The Ecosystems theme combines the floral and faunistic studies in an ecological context. Researchers will examine a range of factors affecting plant and pollinator diversity across Canadian ecozones, including habitat loss, fragmentation, competition for pollinators with non-native plants, agricultural and forestry practices, and climate change, and the interactions between these factors. Sampling activities will take place in all major ecozones across the country, in keeping with the national scope of the Network's mandate. Ecozones to be studied include the Arctic, Carolinian Forest, Boreal Forest, St. Lawrence/Great Lakes Forest, Atlantic Maritimes, Tall Grass Prairies, Montane Forest, and the Garry Oak system, among others. The Network will also tackle wider comparisons of ecotones and mixed habitats, such as those dominated by agricultural and urban environments. (Theme Leaders: Elizabeth Elle, SFU, and Jana Vamosi, University of Calgary)

Prediction and Economics

A major goal of the NSERC-CANPOLIN is to predict future management needs regarding the ecological and economic aspects of pollination, particularly as it relates to the effects of climate change and land use change. In this "social impacts" thrust of the Network, state of the art modeling techniques will provide estimates of how ranges and abundance of pollinator species are expected to change over the coming decades, while macroeconomic analyses will highlight the potential economic impacts and provide critical linkages to policy making. (Theme Leaders: Jeremy Kerr, University of Ottawa, and Alfons Weersink, University of Guelph)

In 2002, the International Convention on Biological Diversity identified pollination as a key ecosystem function that is threatened globally. Since that time, public and scientific awareness of the plight of pollinators has only grown, as has recognition of the need for more research. NSERC-CANPOLIN promises to capitalize on the expertise of the Canadian scientific community and make a major contribution towards understanding the extent of pollinator decline and how this essential ecosystem service can be protected and sustained in the face of future global change.

Readers wishing to explore possible involvement with NSERC-CANPOLIN are encouraged to visit www.uoguelph.ca/canpolin or contact Theme Leaders directly.

Announcing the Paul Riegert Graduate Scholarship, University of Regina

Effective 1 September 2009, the Department of Biology at the University of Regina will introduce the Paul Riegert Graduate Scholarship. The late Dr. Riegert was a faculty member in the Dept. of Biology for over 3 decades and well known for being an excellent teacher and mentor. Paul was also a highly active member of the Entomology Society of Canada.

The scholarship will provide funds of up to \$1500 to help graduate students in the Department attend an International or National conference where they are giving a presentation about their thesis research. All graduate students are eligible for one award during the course of their program. More details will be available via the Department web site <http://www.uregina.ca/biology/>.

There will be a public reception to formally initiate the award at the University on Wednesday 23 September 2009 in the RIC building beginning at 4:30 pm. Contributions to the fund would be gratefully received. Cheques should be made payable to the University of Regina and sent to the Head of the Department of Biology (Regina, SK, S4S 0A2).

Paul Riegert, a Fellow and a former President of the ESC, died 9 May 2002. As Chair of the Heritage Committee (1982-1995) and independently through his writings, Paul did as much and perhaps more than anybody to preserve the heritage of the Society. His book 'From Arsenic to DDT. A History of Entomology in Western Canada' should be mandatory for new entomologists in Canada. – Editor.

On *not* failing

“I have not failed. I’ve just found 10,000 ways that don’t work.”

– Thomas A. Edison

“You have not failed until you stop trying.”

– Unknown author

Photo Gallery / Galerie d'images

By Jay Cossey

In 2008, Jay Cossey received the ESC's Norman Criddle Award in recognition of his insect photography and activities that have enhanced the visibility of entomology in Canada (see the March issue of the Bulletin, Vol. 41: 6-7). Several of Jay's photographs are highlighted here. A more extensive collection of his photographs can be viewed on-line at <http://www.photosfromnature.com/>.



Assassin bug eggs



Northern Bluet Damselfly peekaboo



Regal Fritillary (*Speyeria idalia*) male



A long-legged fly (Dolichopodidae)



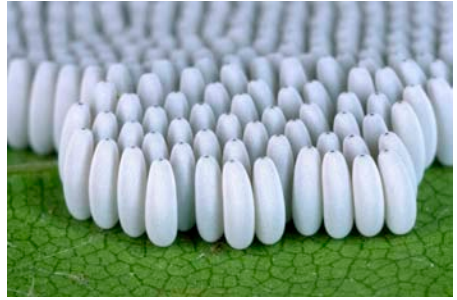
Bog Copper on cane



A crane fly's head



Robber fly (Asilidae) portrait



Syrphid fly eggs (*Helophilus* sp.)



Giant Swallowtail (*Papilio cresphontes*)



Horse fly, scratching its head



Four Zebra Swallowtail moths (*Eurytides marcellus*)



A saddleback caterpillar's rear (*Acharia stimulea*)

Officers of Affiliated Societies, 2008-2009 Dirigeants des sociétés associées, 2008-2009

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Editor (Journal) Hugh Barclay
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Journal Editor Don Ostaff
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<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: Kevin Floate
Assistant Editor: Fred Beaulieu

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.

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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.

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**Submission deadline for the
next issue: 31 July 2009**



Bulletin de la Société d'entomologie du Canada

Rédacteur : Kevin Floate
Rédacteur adjoint : Fred Beaulieu

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

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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 :
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**Date de tombée pour
le prochain numéro :
31 juillet 2009**

The Buzz / Bourdonnements

By Kevin Floate, Editor / Rédacteur



Paul Coghin

What does the FSC logo mean?

If you received this issue of the *Bulletin* in hardcopy, you may have noticed the FSC ‘check-tree’ logo on the back cover.

Use of this logo indicates that the *Bulletin* is now printed on paper that is certified by the Forest Stewardship Council (FSC). FSC certification is an international certification and labelling system that guarantees the forest products (e.g., paper) marked with this logo come from responsibly managed and verified recycled sources.

With FSC certification, not only are forests independently certified, but fibre from certified forests is tracked all the way to the consumer through the chain of custody certification system. This means forests, sawmills, manufacturers, distributors and printers must all obtain FSC certification in order for a product to carry the FSC label (<http://www.fsccanada.org/>).

Your Society... doing its bit to promote environmental sustainability and the well-being of xylophagous arthropods everywhere.

Qu'est-ce que le logo FSC signifie?

Si vous recevez ce numéro du *Bulletin* en version papier, vous avez peut-être remarqué le logo FSC, représenté par un arbre et un crochet, au dos de la couverture.

L'utilisation de ce logo indique que le *Bulletin* est maintenant imprimé sur du papier certifié par le Forest Stewardship Council (FSC). La certification FSC est une certification internationale et un système d'étiquetage qui garantit que les produits de la forêt (ex. le papier) marqués de ce logo viennent de sources gérées de façon responsable et recyclées.

Avec la certification FSC, non seulement les forêts sont indépendamment certifiées, mais les fibres provenant des forêts certifiées sont suivies le long de la chaîne jusqu'au consommateur. Ceci signifie que les forêts, scieries, manufactures, distributeurs, et imprimeurs doivent tous obtenir la certification FSC afin que le produit puisse porter le logo FSC (<http://www.fsccanada.org/>).

Votre Société fait sa part afin de promouvoir la durabilité de l'environnement et la santé des arthropodes xylophages partout.



Entomological Society of Canada, 2008-2009

Société d'entomologie du Canada, 2008-2009

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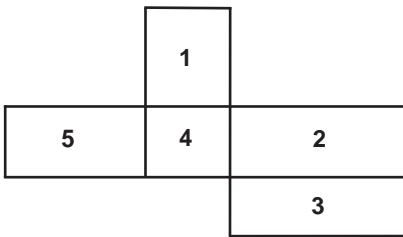
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Images

On the spine: The lady beetle *Anatis labiculata* (Coleoptera: Coccinellidae) feeding on an adult *Uroleucon rudbeckiae* (Hemiptera: Aphididae). Photo: Pat MacKay

Beneath the title: The thistle gall fly, *Urophora cardui* (Diptera: Tephritidae), was introduced from Europe to North America for the control of Canada thistle, *Cirsium arvense*. Photo: Steve Marshall

1. Male Douglas-fir seed chalcid, *Megastigmus spermotrophus* (Hymenoptera: Torymidae). Photo: Dion Manastyrski

2. A mason wasp, probably *Ancistrocerus* sp. (Hymenoptera: Vespidae: Eumeninae). Photo: Joanne Bovee

3. A burnet moth, *Zygaena* sp. (Lepidoptera: Zygaenidae) on knapweed. Photo: Alicia Leroux

4. Checking weevil traps in strawberries. Photo: Kenna MacKenzie

5. *Misumena vatia* (Araneae: Thomisidae) mating and dining on a dance fly (Diptera: Empididae). Photo: Brian Klinkenberg

Back cover: A tropical dragonfly, *Neurothemis* sp. (Odonata: Libellulidae), cooling by thermoregulation, Thailand. Photo : Jeremy McNeil

Français à l'intérieur de la couverture avant

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